Oracle SBC with Local Media Optimization
For Microsoft Teams Direct Routing

Technical Application Note
Disclaimer

The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, and timing of any features or functionality described for Oracle’s products remains at the sole discretion of Oracle.
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1 Revision History

<table>
<thead>
<tr>
<th>Version</th>
<th>Date Revised</th>
<th>Description of Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>3/3/2020</td>
<td>Initial Publication</td>
</tr>
</tbody>
</table>

2 Intended Audience

This document describes how to connect the Oracle SBC to Local Media Optimization in Media Bypass mode for Microsoft Teams Direct Routing. This paper is intended for IT or telephony professionals.

This Document assumes users have an existing environment with the Oracle SBC connected to Microsoft Teams Direct Routing Interface with Media Bypass Enabled. All of the Tenant and Licensing requirements are in place and operational. Also, the information used below is for example only, and specific to Oracle’s Test environment. All IP addresses, FQDN’s and other information used in the example below cannot be used outside of this Oracle Communications test environment.

The initial implementation of the Oracle SBC with Microsoft Teams is outside the scope of this document. If users do not have an existing, operational setup and require information regarding the initial setup and configuration, please refer to the documentation at the link below or Reach out to your Oracle Sales Consultant.

https://www.oracle.com/webfolder/technetwork/acmepacket/Microsoft/SBC-MSFTTeams-MB.pdf

3 Related Documentation:

3.1 Oracle SBC

https://www.oracle.com/webfolder/technetwork/acmepacket/Microsoft/Final_version_Media_bypass.pdf

https://docs.oracle.com/cd/F13782_01/doc/esbc_scz830_configuration.pdf

https://docs.oracle.com/cd/F12246_01/doc/sbc_scz830_security.pdf

3.2 Microsoft

https://docs.microsoft.com/en-us/microsoftteams/direct-routing-media-optimization-configure

https://docs.microsoft.com/en-us/microsoftteams/direct-routing-media-optimization

https://docs.microsoft.com/en-us/microsoftteams/cloud-voice-network-settings
4 Validated Oracle Versions

This software release with the configuration listed below can run on any of the following products:

- AP 1100
- AP 3900
- AP 4600
- AP 6350
- AP 6300
- VME

5 Test Bed Requirements

- Oracle SBC configured and paired with Microsoft Teams Direct Routing
- Regional Oracle SBC deployed and paired with PSTN Environment

6 Teams Tenant Configuration

Configuring your Teams Tenant for Local Media Optimization is outside the scope of this document. Please see the related documentation section of this guide for more information about how to setup your tenant to work with this feature.

7 About Teams Local Media Optimization

This feature was built jointly between Microsoft and SBC partners.

Local Media Optimization in Media Bypass mode for Direct Routing helps to better manage voice quality by letting enterprises:

- Control how the media traffic flows between the Teams clients and customer SBCs;
- Allowing media streams between the Teams clients and SBCs even if SBCs are behind the corporate firewalls with private IPs and not visible to Microsoft directly;

7.1 When call is established:

7.1.1 Microsoft provides:

- Information about which SBC must be used for the call in Request URI header;
- Information about how traffic should flow based on the configuration by tenant administrator (X-MS-MediaPath header)
7.1.2 SBC vendors:

- Based on information provided by Microsoft, the SBC supplies the correct IP address of a media termination point in SDP;
- Sends Re-Invite messages if the initially chosen media path is not optimal

8 Design

There are two design models created by Microsoft in partnership with Oracle Communications Global Business Unit which are applicable to a majority of customer implementations. They are referred to as Europe Model and Asia Model.

8.1 Europe Model

Customer centralizes all trunks in “Europe” and creates the ability of media to flow between a central Oracle SBC and the users, based on the user location. If user is internal, media flows between the internal IP of the central Oracle SBC and Teams client. If user is external, media flows between the external IP of the Oracle SBC and Teams client.

8.2 Asia Model

Customer implements a proxy Oracle SBC which is paired to Microsoft Direct Routing, which directs media between the Direct Routing interface and the downstream Oracle SBCs. The downstream Oracle SBCs are not directly visible (but they are paired via Set-CSOnlinePTNGateway command) to Direct Routing in APAC (Asia). Media always stays local when possible. External users have media between the client and the central, proxy Oracle SBC.

This document will outline how configure the Oracle SBC to be deployed in both Europe and Asia Models.

8.3 Europe Model

8.4 Network Parameters

The following information was used for configuring and testing the Oracle SBC deployed in Europe model:

<table>
<thead>
<tr>
<th>Location</th>
<th>Headquarters</th>
<th>Bedfrod</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBC FQDN</td>
<td>Customers.telechat.o-test06161977.com</td>
<td>N/A</td>
</tr>
<tr>
<td>Internal Subnet</td>
<td>N/A</td>
<td>192.168.1.0/24</td>
</tr>
<tr>
<td>External IP of SBC</td>
<td>155.212.214.177</td>
<td>N/A</td>
</tr>
<tr>
<td>External NAT for Internet</td>
<td>155.212.214.174</td>
<td>155.212.214.55</td>
</tr>
<tr>
<td>Internal IP of SBC</td>
<td>192.168.1.10</td>
<td>N/A</td>
</tr>
</tbody>
</table>
8.5 **Europe scenario details**

Customer administrator pairs one Oracle SBC (customers.telechat.o-test06161977.com) to Microsoft Teams Direct Routing. The SBC has a centralized trunk connected to it. When user is in internal network the Oracle SBC provides internal IP of the Oracle SBC for media. When user is outside of the corporate network, the Oracle SBC provides the external (public) IP of the Oracle SBC.

The following two diagrams depict the signaling and media flow based on the users location, internal or external:

8.5.1 **Diagram 1**
8.5.2 Diagram 2

9 Oracle SBC Configuration Europe Model

The following will outline the configuration changes needed on the Oracle SBC for Local Media Optimization. The software release required to allow the SBC to function properly with Microsoft Teams Local Media Optimization features enabled supports both GUI and ACLI. For the purposes of this document, all configuration additions and changes will be completed through the ORACLE SBC ACLI interface.

Any configuration parameter not specifically listed below can remain at its existing value, or, at the ORACLE SBC’s default value and does not require any changes.

This configuration will consist of both new elements to connect the SBC to the corporate internal network as well as changes to the existing configuration elements.

Please note: Some or all of the information in the configuration example below will be different in your environment.

9.1 New Configuration elements

The following configuration will be added to the existing ORACLE SBC configuration. This additional configuration will be used to connect Media flows from the ORACLE SBC directly to users when located inside the Corporate or Internal network.

- Physical Interface
- Network Interface
- Realm Config
- Steering Pool
9.1.1 Phy-Interface

ACLI Path: config t → system → phy-interface

- Name: M01
- Operation Type: Media
- Slot: 0
- Port: 1

```
phy-interface
  name                M01
  operation-type     Media
  port                1
  slot                0
  virtual-mac
  admin-state        enabled
  auto-negotiation   enabled
  duplex-mode        FULL
  speed               100
```

9.1.2 Network Interface

ACLI Path: config t → system → network-interface

- Name: M01
- IP-Address: 192.168.1.10
- Netmask: 255.255.255.0
- Gateway: 192.168.1.1

```
network-interface
  name                M01
  sub-port-id         0
  description
  hostname
  ip-address          192.168.1.10
  pri-utility-addr
  sec-utility-addr
  netmask             255.255.255.0
  gateway             192.168.1.1
```

9.1.3 New Teams Internal Realm

This realm should be configured as a mirror image of the existing realm facing Teams Direct Routing Interface. The only differences between this realm, and the Existing Teams Realm should be the

- Identifier
- Network-Interface
- user-site.
ACLIPath: config t→media-manager→realm-config

- Identifier: Teams-Internal-Users
- Network-Interface: M01:0
- mm-in-realm: enabled
- media-security-policy: sdesPolicy
- rtcp-mux: enabled
- ice-profile: ice
- codec-policy: addCN
- user-site: Bedford

Notice the user-site is set to **Bedford**, which is matching our **NetworkSiteID** configured in Teams Tenant.

```
| realm-config |
|------------------|--------------------------------|
| identifier | Teams-Internal-Users |
| description | Media Realm for Internal Teams Users |
| network-interfaces | M01:0 |
| mm-in-realm | enabled |
| media-sec-policy | sdesPolicy |
| rtcp-mux | enabled |
| ice-profile | ice |
| access-control-trust-level | high |
| codec-policy | addCN |
| rtcp-policy | rtcpGen |
| user-site | Bedford |
```

### 9.1.4 Steering Pool

ACLIPath: config t→media-manager→steering-pool

- Ip-address: 192.168.1.10
- Start-port: 10000
- End-port: 10999
- Realm-id: Teams-Internal-Users

```
| steering-pool |
|------------------|------------------|
| ip-address | 192.168.1.10 |
| start-port | 10000 |
| end-port | 10999 |
| realm-id | Teams-Internal-Users |
| network-interface | |
```

### 9.2 Changes to Existing Teams Realm

The following additions are required to the existing Teams Realm on the ORACLE SBC

ACLIPath: config t→media-manager→realm-config
- Media-Realm-List: Teams, Teams-Internal-Users
- User-Site: External
- Teams-fqdn-in-uri: enabled
- Sdp-inactive-only: enabled

```
realm-config
    identifier    Teams
    description   Realm Facing Teams Direct Routing
    network-interfaces M00:0.4
    media-realm-list Teams,Teams-Internal-Users
    mm-in-realm    enabled
    media-sec-policy sdesPolicy
    rtcp-mux       enabled
    ice-profile    ice
    teams-fqdn-in-uri enabled
    sdp-inactive-only enabled
    codec-policy   addCN
    rtcp-policy    rtcpGen
    user-site      External
```

You may notice in the realm output above, there are two additional parameters listed

- Teams-fqdn-in-uri
- Sdp-inactive-only

Both of which are set to enabled. These, along with another parameter under the session agent config element, “ping-response”, are additional features contained in this software release (and future GA releases) that will take the place of most, if not all of the sip-manipulations that were required for the ORACLE SBC to interop with Teams direct routing. Due to some additional interop requirements with Teams Local Media Optimization, these are required to be enabled for both Europe and Asia ORACLE SBC deployments on the realm facing Microsoft Teams direct routing. Please see Appendix A for additional information regarding these parameters, along with the configuration changes that will be needed once these parameters are enabled on the realm and session agents.
9.3 Save and Activate Configuration

- After all changes are made, back out of configuration mode and **save** and **activate** your config:

```
NN3900-101# save-config
checking configuration
Save-Config received, processing.
save-config waiting 120000 ms for request to finish
Request to 'SAVE-CONFIG' has Finished,
Save complete
Currently active and saved configurations do not match!
To sync & activate, run 'activate-config' or 'reboot activate'.
*NN3900-101# activate-config
Activate-Config received, processing.
activate-config waiting 120000 ms for request to finish
Request to 'ACTIVATE-CONFIG' has Finished,
Activate Complete
NN3900-101#
```

- This concludes the configuration additions and changes for the Oracle SBC to interwork with Microsoft Teams Local Media Optimization enabled, Europe Model

10 Asia Model

10.1 Network Parameters

The following information was used for configuring and testing the Oracle SBC’s deployed in Asia model:

<table>
<thead>
<tr>
<th>Location</th>
<th>Headquarters (Proxy)</th>
<th>Bedford (Downstream)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBC FQDN</td>
<td>Customers.telechat.o-test06161977.com</td>
<td>Sbc5.customers.telechat.o-test06161977.com</td>
</tr>
<tr>
<td>Internal Subnet</td>
<td>192.168.3.0/24</td>
<td>192.168.1.0/24</td>
</tr>
<tr>
<td>External IP of SBC</td>
<td>155.212.214.177</td>
<td>N/A</td>
</tr>
<tr>
<td>External NAT for Internet</td>
<td>155.212.214.174</td>
<td>155.212.214.55</td>
</tr>
<tr>
<td>Internal IP of SBC</td>
<td>192.168.3.10</td>
<td>192.168.1.10</td>
</tr>
</tbody>
</table>

*Note: The FQDN assigned to the downstream SBC does not need to be resolvable to an ip address, as it has no direct connection to Teams Direct Routing Interface.*
10.2 Asia scenario details

Customer administrator pairs one Oracle SBC (customers.telechat.o-test06161977.com), also called the Proxy ORACLE SBC to Microsoft Teams Direct Routing.

The administrator next added the downstream ORACLE SBC (sbc5.customers.telechat.o-test06161977.com) using PowerShell command New-CSOnlinePSTNGateway, indicating that the downstream ORACLE SBC can be reached via the proxy ORACLE SBC (customer.telechat.o-test06161977.com). The downstream SBC doesn’t have the public IPs to connect direct to Microsoft Teams Direct Routing, however it can be assigned to voice routes.

When a user is in an office where the downstream ORACLE SBC is, the media traffic flows between the user and the Downstream ORACLE SBC directly. If user is outside of the office (on a public internet or in a different office) the media flows from the user to the public IP of the Proxy ORACLE SBC, which proxies it to the downstream ORACLE SBC.

The following two diagrams depict the signaling and media flow based on the users location, internal or external:

10.2.1 Diagram 3
11 Oracle SBC Configuration

For Asia Model, we’ll be configuring two SBC’s as depicted in diagram 3 and diagram 4 above. They will be referred to as Downstream SBC, and Proxy SBC. Similar to Europe model above, we’ll be using the Oracle SBC ACLI to configure the SBC’s. Please note that while in configuration mode, all elements need to be selected for changes to be performed…

Note: The software must be loaded on both the Downstream and Proxy Oracle SBC’s to support Microsoft Teams Local Media Optimization.

11.1 Downstream SBC Configuration

This document will outline a full SBC configuration of the downstream SBC mainly focusing on the configuration elements needed for a successful connection between the Downstream SBC and the Proxy SBC. While examples will be provided for a basic setup on the PSTN side of the downstream SBC, Oracle recommends working with your PSTN provider and Oracle Consulting for proper setup and configuration.

11.2 Global Configuration Elements

Before you can configuration more granular parameters on the SBC, there are three global configuration elements that must be enabled to proceed.

- System-Config
- Media-manager-Config
- Sip-Config
11.2.1 System-Config

To configure system level functionality for the ORACLE SBC, you must first enable the system-config.

ACLI Path: config t→system→system-config

Note: The following parameters are optional but recommended for system config:

- Hostname
- Description
- Location

```system-config
hostname sbc5.customers.telechat.o-test06161977.com
description Downstream SBC for Local Media Optimization
location Bedford
```

11.2.2 Media Manager

To configure media functionality on the SBC, you must first enabled the global media manager. There are no required additions to the global media manager config, but it must be selected to be enabled, and the following options are recommended:

ACLI Path: config t→media-manager→media-manager-config

- Options+audio-allow-asymmetric-pt
- Options+xcode-gratuitous-rtcp-report-generation

```media-manager
state enabled
latching enabled
flow-time-limit 86400
initial-guard-timer 300
subsq-guard-timer 300
tcp-flow-time-limit 86400
tcp-initial-guard-timer 300
tcp-subsq-guard-timer 300
tcp-number-of-ports-per-flow 2
hnt-rtcp disabled
algd-log-level NOTICE
mbcd-log-level NOTICE
options audio-allow-asymmetric-pt
        xcode-gratuitous-rtcp-report-generation
```
11.2.3 Sip Config

To enable sip related objects on the ORACLE SBC, you must first configure the global Sip Config element:

ACLI Path: config t → session-router → sip-config

The following are recommended parameters under the global sip-config:

- Options +inmanip-before-validate
- Options +max-udp-length=0

<table>
<thead>
<tr>
<th>sip-config</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>state</td>
<td>enabled</td>
</tr>
<tr>
<td>operation-mode</td>
<td>dialog</td>
</tr>
<tr>
<td>dialog-transparency</td>
<td>enabled</td>
</tr>
<tr>
<td>home-realm-id</td>
<td></td>
</tr>
<tr>
<td>egress-realm-id</td>
<td></td>
</tr>
<tr>
<td>auto-realm-id</td>
<td></td>
</tr>
<tr>
<td>nat-mode</td>
<td>None</td>
</tr>
<tr>
<td>registrar-domain</td>
<td>*</td>
</tr>
<tr>
<td>registrar-host</td>
<td>*</td>
</tr>
<tr>
<td>registrar-port</td>
<td>5060</td>
</tr>
<tr>
<td>register-service-route</td>
<td>always</td>
</tr>
<tr>
<td>init-timer</td>
<td>500</td>
</tr>
<tr>
<td>max-timer</td>
<td>4000</td>
</tr>
<tr>
<td>trans-expire</td>
<td>32</td>
</tr>
<tr>
<td>initial-inv-trans-expire</td>
<td>0</td>
</tr>
<tr>
<td>invite-expire</td>
<td>180</td>
</tr>
<tr>
<td>red-sync-start-time</td>
<td>5000</td>
</tr>
<tr>
<td>red-sync-comp-time</td>
<td>1000</td>
</tr>
<tr>
<td>options</td>
<td>inmanip-before-validate</td>
</tr>
<tr>
<td></td>
<td>max-udp-length=0</td>
</tr>
</tbody>
</table>

11.3 Network Configuration

To connect the SBC to network elements, we must configure both physical and network interfaces. For the purposes of this example, we will configure two physical interfaces, and two network interfaces. One to communicate with the Proxy ORACLE SBC, the other to connect to PSTN Network.

11.3.1 Physical Interfaces

ACLI Path: config t → system → phy-interface

- Use the following table as a configuration example:
### Network Interfaces

ACLI Path: config t→system→network-interface

- Use the following table as a configuration example: This is only an example. The addresses used in customer environments will be completely different from what is shown below.
### Configuration Parameter

<table>
<thead>
<tr>
<th>Configuration Parameter</th>
<th>PSTN</th>
<th>ToProxySBC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>s0p0</td>
<td>s1p0</td>
</tr>
<tr>
<td>Hostname</td>
<td>s0p0</td>
<td>Sbc5.customers.telechat.o-test06161977.com</td>
</tr>
<tr>
<td>IP Address</td>
<td>155.212.214.174</td>
<td>192.168.1.10</td>
</tr>
<tr>
<td>Netmask</td>
<td>255.255.255.0</td>
<td>255.255.255.0</td>
</tr>
<tr>
<td>Gateway</td>
<td>155.212.214.1</td>
<td>192.168.1.1</td>
</tr>
<tr>
<td>DNS Primary IP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DNS Domain</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: The hostname parameter in the network interface connecting to the Proxy SBC must be configured with the FQDN of the Downstream SBC, in this case, sbc5.customers.telechat.o-test06161977.com

```
network-interface
  name             s0p0
  sub-port-id      0
  description
  hostname
  ip-address       155.212.214.174
  pri-utility-addr
  sec-utility-addr
  netmask          255.255.255.0
  gateway          155.212.214.1

network-interface
  name             s1p0
  sub-port-id      0
  description
  hostname
  ip-address       192.168.1.10
  pri-utility-addr
  sec-utility-addr
  netmask          255.255.255.0
  gateway          192.168.1.1
```

### 11.4 Media Security Configuration

This section outlines how to configure support for media security between the ORACLE SBC and the Proxy SBC.
11.4.1 Sdes-profile

This is the first element to be configured for media security, where the algorithm and the crypto’s to be used are configured.

The only crypto-suite option supported by Microsoft is **AES_CM_128_HMAC_SHA1_80** and must be included in the crypto list.

ACL! Path: config t ➔ security ➔ media-security ➔ sdes-profile

The following two configuration parameters are required to be changed from default:

- Name: SDES
- Lifetime: 31

```
sdes-profile
  name        SDES
  crypto-list AES_CM_128_HMAC_SHA1_32
                AES_CM_128_HMAC_SHA1_80
  srtp-auth   enabled
  srtp-encrypt enabled
  srtcp-encrypt enabled
  mki          disabled
  egress-offer-format same-as-ingress
  use-ingress-session-params
  options
  key
  salt
  srtp-rekey-on-re-invite disabled
  lifetime     31
```

*Note:* The lifetime parameter set to a value of 31 is required if utilizing Media Bypass on Microsoft Teams

11.4.2 Media Security Policy

Media-sec-policy instructs the SBC how to handle the SDP received/sent under a realm (RTP, SRTP or any of them) and, if SRTP needs to be used, the sdes-profile that needs to be used.

In this example, we are configuring two media security policies. One to secure and decrypt media toward the Proxy SBC, the other for non secure media facing PSTN.

ACL! Path: config t ➔ security ➔ media-security ➔ media-sec-policy
Notice the profile under the secure media security policy with name of \texttt{sdesPolicy} above. This is where the sdes-profile configured previously is assigned.

### 11.5 Transcoding Configuration

Transcoding is the ability to convert between media streams that are based upon disparate codecs. The ORACLE SBC supports IP-to-IP transcoding for SIP sessions, and can connect two voice streams that use different coding algorithms with one another.
11.5.1 Media Profile

For different codecs and media types, you can setup customized media profiles that serve to police media values and define media bandwidth policies.

Since CN offered by Microsoft teams is using a payload type which is different usual, the ORACLE SBC supports this by configuring media profile on the SBC.

ACLI Path: config t→session-router→media-profile

Configure the following media profile to support Comfort Noise:

<table>
<thead>
<tr>
<th>media-profile</th>
<th>name</th>
<th>CN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>subname</td>
<td>wideband</td>
</tr>
<tr>
<td></td>
<td>media-type</td>
<td>audio</td>
</tr>
<tr>
<td></td>
<td>payload-type</td>
<td>118</td>
</tr>
<tr>
<td></td>
<td>transport</td>
<td>RTP/AVP</td>
</tr>
<tr>
<td></td>
<td>clock-rate</td>
<td>16000</td>
</tr>
<tr>
<td></td>
<td>req-bandwidth</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>frames-per-packet</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>parameters</td>
<td></td>
</tr>
<tr>
<td></td>
<td>average-rate-limit</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>peak-rate-limit</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>max-burst-size</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>sdp-rate-limit-headroom</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>sdp-bandwidth</td>
<td>disabled</td>
</tr>
<tr>
<td></td>
<td>police-rate</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>standard-pkt-rate</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>as-bandwidth</td>
<td>0</td>
</tr>
</tbody>
</table>

11.5.2 Codec Policies

Codec policies are sets of rules that specify the manipulations to be performed on SDP offers allowing the ORACLE SBC the ability to add, strip, and reorder codecs for SIP sessions

*Note: This is an optional configuration. Only configure codec policies if deemed necessary in your environment*

ACLI Path: config t→media-mangae→codec-policy

Some SIP trunks may have issues with codec being offered by Microsoft teams. For this reason, we have created a codec policy – “OptimizeCodecs” - for the SIP trunk to remove the codecs that are not required or supported.
Create another codec-policy, **addCN**, to allow the SBC to generate Comfort Noise packets towards Teams

<table>
<thead>
<tr>
<th>codec-policy</th>
<th>name</th>
<th>OptimizeCodecs</th>
</tr>
</thead>
<tbody>
<tr>
<td>allow-codecs</td>
<td>* G722: no PCMA: no CN: no SIREN: no RED: no G729: no</td>
<td></td>
</tr>
<tr>
<td>add-codecs-on-egress</td>
<td>PCMU</td>
<td></td>
</tr>
<tr>
<td>order-codecs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>packetization-time</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>force-ptime</td>
<td>disabled</td>
<td></td>
</tr>
<tr>
<td>secure-dtmf-cancellation</td>
<td>disabled</td>
<td></td>
</tr>
<tr>
<td>dtmf-in-audio</td>
<td>disabled</td>
<td></td>
</tr>
<tr>
<td>tone-detection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>tone-detect-renegotiate-timer</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>reverse-fax-tone-detection-reinvite</td>
<td>disabled</td>
<td></td>
</tr>
<tr>
<td>fax-single-m-line</td>
<td>disabled</td>
<td></td>
</tr>
<tr>
<td>evrc-tty-baudot-transcode</td>
<td>disabled</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>codec-policy</th>
<th>name</th>
<th>addCN</th>
</tr>
</thead>
<tbody>
<tr>
<td>allow-codecs</td>
<td>*</td>
<td>CN</td>
</tr>
<tr>
<td>add-codecs-on-egress</td>
<td>CN</td>
<td></td>
</tr>
<tr>
<td>order-codecs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>packetization-time</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>force-ptime</td>
<td>disabled</td>
<td></td>
</tr>
<tr>
<td>secure-dtmf-cancellation</td>
<td>disabled</td>
<td></td>
</tr>
<tr>
<td>dtmf-in-audio</td>
<td>disabled</td>
<td></td>
</tr>
<tr>
<td>tone-detection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>tone-detect-renegotiate-timer</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>reverse-fax-tone-detection-reinvite</td>
<td>disabled</td>
<td></td>
</tr>
<tr>
<td>fax-single-m-line</td>
<td>disabled</td>
<td></td>
</tr>
<tr>
<td>evrc-tty-baudot-transcode</td>
<td>disabled</td>
<td></td>
</tr>
</tbody>
</table>

### 11.5.3 RTCP Policy

The following RTCP policy needs to be configured for the ORACLE SBC to generate RTCP sender reports. The **media manger** options config, xcode-gratuitous-rtcp-report-generation, allows the SBC to generate receiver reports.

ACLI Path: `config t ➔ media-manger ➔ rtcp-policy`
### 11.5.4 Ice Profile

SBC supports ICE-Lite. This configuration is required to support MSTeams media-bypass.

ACLI Path: `config t media-manager ice-profile`

#### ice-profile

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>name</td>
<td>ice</td>
</tr>
<tr>
<td>stun-conn-timeout</td>
<td>0</td>
</tr>
<tr>
<td>stun-keep-alive-interval</td>
<td>0</td>
</tr>
<tr>
<td>stun-rate-limit</td>
<td>100</td>
</tr>
<tr>
<td>mode</td>
<td>DOWNSTREAM</td>
</tr>
</tbody>
</table>

*Note: The mode in the ice profile must be set to DOWNSTREAM on the Downstream SBC to support Local Media Optimization.*

### 11.5.5 Realm Config

In this example, we are configuring two realms as listed below:

#### 11.5.6 ToProxySBC Realm

This is a standalone realm configured on the Downstream ORACLE SBC facing the Proxy SBC.

#### 11.5.7 PSTN Realm

This is a standalone realm facing PSTN.

ACLI Path: `config t media-manager realm-config`
Use the following table as a configuration example for the two realms.

<table>
<thead>
<tr>
<th>Config Parameter</th>
<th>ToProxySBC</th>
<th>PSTN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identifier</td>
<td>ToProxySBC</td>
<td>PSTN</td>
</tr>
<tr>
<td>Network-Interface</td>
<td>s1p0:0</td>
<td>s0p0:0</td>
</tr>
<tr>
<td>mm-in-realm</td>
<td>Enabled</td>
<td>Enabled</td>
</tr>
<tr>
<td>media-sec-policy</td>
<td>sdesPolicy</td>
<td>RTP</td>
</tr>
<tr>
<td>rtcp-mux</td>
<td>enabled</td>
<td></td>
</tr>
<tr>
<td>ice-profile</td>
<td>ice</td>
<td></td>
</tr>
<tr>
<td>teams-fqdn-in-uri</td>
<td>enabled</td>
<td></td>
</tr>
<tr>
<td>sdp-inactive-only</td>
<td>enabled</td>
<td></td>
</tr>
<tr>
<td>codec-policy</td>
<td>addCN</td>
<td>OptimizeCodecs</td>
</tr>
<tr>
<td>rtcp-policy</td>
<td>rtcpGen</td>
<td></td>
</tr>
</tbody>
</table>

Notice, the realm configuration is where we assign some of the elements configured earlier in this document, i.e…

- Network interface
- Media security policy
- Ice profile (Only required with Media Bypass set to enabled in Direct Routing Interface)
- Codec policy
- Rtcp policy

Also, as mentioned previously in this guide, there are two settings on the Realm that are new with this software release (and future GA releases). They are:

- Teams-fqdn-in-uri
- Sdp-inactive-only

These two parameters will take the place of most, if not all of the sip manipulations that were required to be configured on the ORACLE SBC to interface properly with Microsoft Teams Direct Routing Interface. For more information regarding the changes to existing configs that may be required, please see Appendix A.

11.5.8 Steering Pools

Steering pools define sets of ports that are used for steering media flows through the ORACLE SBC. These selected ports are used to modify the SDP to cause receiving session agents to direct their media toward this system.

We configure one steering pool for PSTN and one for ToProxySBC Realms.

ACL1 Path: config t media-manger steering-pool
11.6 Sip Configuration

This section outlines the configuration parameters required for processing, modifying and securing sip signaling traffic.

11.6.1 SIP Profile

A sip profile needs to be configured and assigned to the ToProxySBC sip interface.

ACLI Path: config t→session-router→sip-profile

```
sip-profile
  name forreplaces
  redirection inherit
  ingress-conditional-cac-admit inherit
  egress-conditional-cac-admit inherit
  forked-cac-bw inherit
  cnam-lookup-server
  cnam-lookup-dir egress
  cnam-unavailable-ptype
  cnam-unavailable-utype
  replace-dialogs enabled
```
11.6.2 Sip Interface

The SIP interface defines the transport addresses (IP address and port) upon which the ORACLE SBC receives and sends SIP messages.

Configure two sip interfaces, one associated with PSTN Realm, and the other associated with ToProxySBC Realm.

ACLI Path: config t→session-router→sip-interface

Use the table below as an example to Configure:

<table>
<thead>
<tr>
<th>Config Parameter</th>
<th>ToProxySBC</th>
<th>PSTN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Realm ID</td>
<td>ToProxySBC</td>
<td>PSTN</td>
</tr>
<tr>
<td>secured-network</td>
<td>enabled</td>
<td></td>
</tr>
<tr>
<td>Sip-profile</td>
<td>replaces</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sip Port Config Parameter</th>
<th>Sip Trunk</th>
<th>Teams</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td>192.168.1.10</td>
<td>155.212.214.174</td>
</tr>
<tr>
<td>Port</td>
<td>5060</td>
<td>5060</td>
</tr>
<tr>
<td>Transport protocol</td>
<td>TCP</td>
<td>UDP</td>
</tr>
<tr>
<td>Allow anonymous</td>
<td>agents-only</td>
<td>agents-only</td>
</tr>
</tbody>
</table>

Note: If not using TLS to secure the connection between the Downstream SBC and the Proxy SBC, you must enabled the Secured-network parameter on the Downstream SBC Sip Interface Facing the Proxy SBC in order for the SBC’s to successfully negotiate SRTP. If you are not using TLS, and this param is set to its default value of disabled, the SBC will reject request offering SRTP with a 488 Not Allowed response.

11.6.3 Session Agents

Session Agents are configuration elements which are trusted agents that can both send and receive traffic from the ORACLE SBC with direct access to the trusted data path.

ACLI Path: config t→session-router→session-agent

We are using two Session Agents in this example configuration, One for PSTN side, the other for Proxy SBC.

Use the table below as an example to configure both:

<table>
<thead>
<tr>
<th>Config parameter</th>
<th>Session Agent for PSTN</th>
<th>Session Agent for Proxy SBC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hostname</td>
<td>68.68.117.67</td>
<td>192.168.3.10</td>
</tr>
<tr>
<td>IP Address</td>
<td>68.68.117.67</td>
<td>192.168.3.10</td>
</tr>
<tr>
<td>Port</td>
<td>5060</td>
<td>5060</td>
</tr>
<tr>
<td>Transport method</td>
<td>UDP+TCP</td>
<td>StaticTCP</td>
</tr>
<tr>
<td>Realm ID</td>
<td>PSTN</td>
<td>ToProxySBC</td>
</tr>
<tr>
<td>Ping Method</td>
<td>OPTIONS</td>
<td>OPTIONS</td>
</tr>
<tr>
<td>Ping Interval</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Refer Call Transfer</td>
<td></td>
<td>enabled</td>
</tr>
<tr>
<td>Ping-response</td>
<td>Enabled</td>
<td>enabled</td>
</tr>
</tbody>
</table>

Note: Refer-Call-Transfer must be enabled on either the session agent or the realm facing the Proxy ORACLE SBC. In Asia Model, the Downstream SBC must handle all call transfers.
11.6.4 Sip Feature

The following sip feature needs to be added to the Configuration of the SBC to enable support for the replaces, allowing for successful consultative transfer:

ACLI Path: config t→session-router→sip-feature

<table>
<thead>
<tr>
<th>sip-feature</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>name</td>
<td>replaces</td>
<td></td>
</tr>
<tr>
<td>realm</td>
<td>TeamsLocation</td>
<td></td>
</tr>
<tr>
<td>support-mode-inbound</td>
<td>Pass</td>
<td></td>
</tr>
<tr>
<td>require-mode-inbound</td>
<td>Pass</td>
<td></td>
</tr>
<tr>
<td>proxy-require-mode-inbound</td>
<td>Pass</td>
<td></td>
</tr>
<tr>
<td>support-mode-outbound</td>
<td>Pass</td>
<td></td>
</tr>
<tr>
<td>require-mode-outbound</td>
<td>Pass</td>
<td></td>
</tr>
<tr>
<td>proxy-require-mode-outbound</td>
<td>Pass</td>
<td></td>
</tr>
</tbody>
</table>

11.7 Routing Configuration

This section outlines how to configure the ORACLE SBC to route traffic to and from The Proxy SBC which is directly interfacing with Microsoft Teams Direct Routing Interface.

11.7.1 Local Policy Configuration

Local Policy config allows for the SBC to route calls from one end of the network to the other based on routing criteria.

ACLI Path: config t→session-router→local-policy

In order to route traffic to and from The Proxy ORACLE SBC and PSTN, the following local-policies will need to be configured.
From PSTN to Proxy SBC:

```
local-policy
  from-address *
  to-address *
  source-realm SIPTrunk
  policy-attribute next-hop 192.168.3.10
  realm ToProxySBC
```

From Proxy SBC to PSTN:

```
local-policy
  from-address *
  to-address *
  source-realm ToProxySBC
  policy-attribute next-hop 68.68.117.67
  realm PSTN
```

This concludes the Downstream ORACLE SBC configuration. At this point, you can back out of the configuration mode and perform a Save and Activate Configuration.

12 Proxy SBC Configuration

Similar to Europe model outlined above, this note assumes there is at least one ORACLE SBC that is currently interfacing with Teams Direct Routing. In Asia scenario, that SBC will become the Proxy SBC in our example. With that being said, the Proxy SBC configuration outlined below will be limited to the necessary additions and changes required for the ORACLE SBC to work properly with Teams Local Media Optimization. If you do not have an existing ORACLE SBC configured and working with Teams, please refer to the following document and reach out to your Oracle Representatives for assistance with setup if required.

https://www.oracle.com/webfolder/technetwork/acmepacket/Microsoft/SBC-MSFTTeams-MB.pdf

12.1 Configuration Changes

The following ORACLE SBC configuration elements facing Microsoft Teams Direct Routing require changes to support Local Media Optimization feature.

- Network-Interface
- Realm-Config
- Ice-Profile
- 3 Session Agents configured for Microsoft Teams
12.1.1 Network Interface

The Proxy SBC FQDN, (eg.customers.telechat.o-test06161977.com), needs to be added to the hostname field of the network interface assigned to the Teams facing realm if it is not already there:

Acli Path: config t→system→network-interface

```
<table>
<thead>
<tr>
<th>name</th>
<th>M00</th>
</tr>
</thead>
<tbody>
<tr>
<td>sub-port-id</td>
<td>0</td>
</tr>
<tr>
<td>description</td>
<td></td>
</tr>
<tr>
<td>hostname</td>
<td>customers.telechat.o-test06161977.com</td>
</tr>
<tr>
<td>ip-address</td>
<td>155.212.214.177</td>
</tr>
<tr>
<td>pri-utility-addr</td>
<td></td>
</tr>
<tr>
<td>sec-utility-addr</td>
<td></td>
</tr>
<tr>
<td>netmask</td>
<td>255.255.255.0</td>
</tr>
<tr>
<td>gateway</td>
<td>155.212.214.1</td>
</tr>
</tbody>
</table>
```

This field will be used by other parts of the configuration moving forward. For more details on those changes, please see Appendix A.

12.1.2 Realm Config

The following need to be enabled on the Realm configured facing Microsoft Teams:

- teams-fqdn-in-uri: enabled
- sdp-inactive-only: enabled

Acli Path: config t→media-manger→realm-config
### realm-config

<table>
<thead>
<tr>
<th>Option</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>identifier</td>
<td>Teams</td>
</tr>
<tr>
<td>description</td>
<td>Realm Facing MSFT Teams</td>
</tr>
<tr>
<td>addr-prefix</td>
<td>0.0.0.0</td>
</tr>
<tr>
<td>network-interfaces</td>
<td>M00:0.4</td>
</tr>
<tr>
<td>media-realm-list</td>
<td></td>
</tr>
<tr>
<td>mm-in-realm</td>
<td>enabled</td>
</tr>
<tr>
<td>mm-in-network</td>
<td>enabled</td>
</tr>
<tr>
<td>mm-same-ip</td>
<td>enabled</td>
</tr>
<tr>
<td>mm-in-system</td>
<td>enabled</td>
</tr>
<tr>
<td>bw-cac-non-mm</td>
<td>disabled</td>
</tr>
<tr>
<td>msm-release</td>
<td>disabled</td>
</tr>
<tr>
<td>qos-enable</td>
<td>enabled</td>
</tr>
<tr>
<td>max-bandwidth</td>
<td>0</td>
</tr>
<tr>
<td>fallback-bandwidth</td>
<td>0</td>
</tr>
<tr>
<td>max-priority-bandwidth</td>
<td>0</td>
</tr>
<tr>
<td>max-latency</td>
<td>0</td>
</tr>
<tr>
<td>max-jitter</td>
<td>0</td>
</tr>
<tr>
<td>max-packet-loss</td>
<td>0</td>
</tr>
<tr>
<td>observ-window-size</td>
<td>0</td>
</tr>
<tr>
<td>parent-realm</td>
<td></td>
</tr>
<tr>
<td>dns-realm</td>
<td></td>
</tr>
<tr>
<td>media-policy</td>
<td></td>
</tr>
<tr>
<td>media-sec-policy</td>
<td>sdesPolicy</td>
</tr>
<tr>
<td>rtcp-mux</td>
<td>enabled</td>
</tr>
<tr>
<td>ice-profile</td>
<td>ice</td>
</tr>
<tr>
<td>teams-fqdn-in-uri</td>
<td>enabled</td>
</tr>
<tr>
<td>sdp-inactive-only</td>
<td>enabled</td>
</tr>
</tbody>
</table>

**Note:** Check to see if the field “refer-call-transfer” is enabled in the Teams Realm. If it is, that too must be disabled. In Asia Model, the Downstream SBC will handle call transfers.

For more information on these features, please see Appendix A.

### 12.1.3 Ice Profile

Set the mode parameter on the existing ice profile to Proxy.

ACL1 Path: config t → media-manger → ice-profile
12.1.4 Session Agent

In an existing ORACLE SBC configuration, there should be three session agents configured for Microsoft Teams, they are:

- sip.pstnhub.microsoft.com
- sip2.pstnhub.microsoft.com
- sip3.pstnhub.microsoft.com

Change the following on each agent

- Refer-Call-Transfer: from enabled to disabled on each of the three agents
- Ping-response: set to enabled

ACL! Path: config t→session-router→session-agent

<table>
<thead>
<tr>
<th>ice-profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>name</td>
</tr>
<tr>
<td>stun-conn-timeout</td>
</tr>
<tr>
<td>stun-keep-alive-interval</td>
</tr>
<tr>
<td>stun-rate-limit</td>
</tr>
<tr>
<td>mode</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>session-agent</th>
</tr>
</thead>
<tbody>
<tr>
<td>hostname</td>
</tr>
<tr>
<td>port</td>
</tr>
<tr>
<td>transport-method</td>
</tr>
<tr>
<td>realm-id</td>
</tr>
<tr>
<td>ping-method</td>
</tr>
<tr>
<td>ping-interval</td>
</tr>
<tr>
<td>ping-response</td>
</tr>
<tr>
<td>refer-call-transfer</td>
</tr>
<tr>
<td>hostname</td>
</tr>
<tr>
<td>port</td>
</tr>
<tr>
<td>transport-method</td>
</tr>
<tr>
<td>realm-id</td>
</tr>
<tr>
<td>ping-method</td>
</tr>
<tr>
<td>ping-interval</td>
</tr>
<tr>
<td>ping-response</td>
</tr>
<tr>
<td>refer-call-transfer</td>
</tr>
</tbody>
</table>
12.2 Proxy ORACLE SBC Configuration For Downstream ORACLE SBC

This section describes how to configure the Proxy SBC to communicate with the Downstream SBC. The following may be required:

- Physical Interface
- Network Interface
- Realm
- Steering Pool
- Sip Interface
- Session agent
- Local Policies for routing

12.2.1 Physical Interface

ACLI Path: `config t→system→phy-interface`

Set the following:

- Name
- Operation Type
- Slot
- Port

```plaintext
phy-interface
  name          M10
  operation-type Media
  slot          1
  port          0
```

```plaintext
session-agent
  hostname      sip3.pstnhub.microsoft.com
  port          5061
  transport-method StaticTLS
  realm-id      Teams
  ping-method   OPTIONS
  ping-interval 30
  ping-response enabled
  refer-call-transfer disabled
```
12.2.2 Network Interface

ACLI Path: config t→system→network-interface

Configure the following

- Name
- Ip-address
- Netmask
- Gateway

```
network-interface
<table>
<thead>
<tr>
<th>name</th>
<th>M10</th>
</tr>
</thead>
<tbody>
<tr>
<td>ip-address</td>
<td>192.168.3.10</td>
</tr>
<tr>
<td>netmask</td>
<td>255.255.255.0</td>
</tr>
<tr>
<td>gateway</td>
<td>192.168.3.1</td>
</tr>
</tbody>
</table>
```

12.2.3 Realm Config

ACLI Path: config t→media-manager→realm-config

Set the following for the Realm facing Downstream SBC:

- Identifier
- Network-interface
- mm-in-realm
- media-sec-policy (this will be the same security policy assigned to your realm Facing Teams)
- codec-policy (we recommend using the same codec policy assigned to your Teams facing Realm)

```
realm-config
<table>
<thead>
<tr>
<th>identifier</th>
<th>ToDownstreamSBC</th>
</tr>
</thead>
<tbody>
<tr>
<td>network-interfaces</td>
<td>M10:0</td>
</tr>
<tr>
<td>mm-in-realm</td>
<td>enabled</td>
</tr>
<tr>
<td>media-sec-policy</td>
<td>sdesPolicy</td>
</tr>
<tr>
<td>codec-policy</td>
<td>addCN</td>
</tr>
</tbody>
</table>
```
### 12.2.4 Steering Pool

ACLI Path: `config t → media-manger → steering-pool`

Set the following in the Steering Pool Configuration

- Ip-address
- Realm-ID
- Start-port
- End-Port

```
steering-pool
  ip-address  192.168.3.10
  start-port  10000
  end-port    10999
  realm-id    ToDownstreamSBC
```

### 12.2.5 Sip Interface

ACLI Path: `config t → session-router → sip-interface`

Set the following Under Sip-interface Config

- Realm-id

**Sip-Port:**

- Address
- Port
- Transport-protocol
- Allow-anonymous

```
sip-interface
  realm-id    ToDownstreamSBC
  sip-port
    address  192.168.3.10
    port     5060
    transport-protocol  TCP
    allow-anonymous    agents-only
```
12.2.6 Session-Agent

ACLI Path: config t→session-router→session-agent

Configure the following for the Downstream SBC Session agent

- Hostname
- IP-address
- Port
- Transport-method
- Realm-ID
- Ping-method
- Ping-response

```
session-agent
    hostname    sbc5.customers.telechat.o-test06161977.com
    ip-address  192.168.1.10
    port        5061
    transport-method StaticTCP
    realm-id    ToDownstreamSBC
    ping-method OPTIONS
    ping-response enabled
```

12.2.7 Local Policy

For the purposes of this example configuration, we’ll configure two local policies. One to route Sip Traffic from the Downstream SBC to Teams Direct Routing, the other to route SIP traffic from Teams Direct Routing to the Downstream SBC.

ACLI Path: config t→session-router→local-policy

Configure the following for each local policy

- To-address
- From-address
- Source-realm

**Policy-attributes**

- Next-hop
- Realm
This concludes the basic configuration for the Proxy ORACLE SBC. You can now exit configuration mode and [Save and Activate Configuration](#).

### 13 Appendix A

As mentioned throughout this document, there are three new configuration parameters available in this software release (and future GA releases). Two are under the realm configuration element, and one under the session agent configuration element. The purpose of these configuration options is to simplifying the configuration of the Oracle SBC when interfacing with Microsoft Teams Direct Routing by eliminating the need for most, if not all the sip manipulations that were required in the original phases of implementation.

The three options are as follows:

**Under Realm config, you have:**

- teams-fqdn-in-uri
- sdp-inactive-only

**Under Session Agent Config, you have:**

- Ping-response

Below is an outline of the sip manipulations these config options replace taken from the original Oracle SBC recommended configuration. The names of the sip-manipulation that are being replaced can be found in the following document:

[https://www.oracle.com/webfolder/technetwork/acmepacket/Microsoft/SBC-MSFTTeams-MB.pdf](https://www.oracle.com/webfolder/technetwork/acmepacket/Microsoft/SBC-MSFTTeams-MB.pdf)
teams-fqdn-in-uri, when enabled under the realm facing Microsoft Teams, replaces Teamsoutmanip, found of page 51.

Sdp-inactive-only, when enabled under the realm facing Microsoft Teams, replaces the manipulations needed to convert SDP attributes a=sendonly, a=recvonly, to and from a=inactive. This replaces the headers rules under both Teamsoutmanip, found on page 51 and Teamsinmanip, found on page 63.

Ping-response, when enabled on all three session agents configured for Microsoft Teams, replaces the need for Teamsinmanip, found on page 63 of the SBC-MSFTTeams-MB.pdf guide.

Since there are additional features tied to teams-fqdn-in-uri directly related to Local Media Optimization, it is a requirement this be enabled on the Teams facing realm. This will require the existing sip manipulations to be unassigned from your existing configuration. Based on our documentation, the recommendation was to assign both, Teamsinmanip and Teamsoutmanip to the sip-interface for Teams…To remove them, please do the following:

```
NN3900-101# config t

NN3900-101(configure)# session-router sip-interface

NN3900-101(sip-interface)# select

<RealmID>:
1: OCOMREALM    10.232.50.50:5060
2: Teams        155.212.214.177:5061
3: TeamsLocationTesting 192.168.3.10:5061

selection: 2

NN3900-101(sip-interface)# in-manipulationid ""

NN3900-101(sip-interface)# out-manipulationid ""

NN3900-101(sip-interface)# done

**NN3900-101(sip-interface)# quit

Save and Activate Configuration
```

Prior to making this change, Oracle highly recommends you review the document at the link above, and compare the manipulations in that guide to what you currently have in your configuration. Unwanted removal of sip manipulation mime, header, or element rules could cause disruption in service.
14 Troubleshooting

If you experience any issues with configuration, or with service after Local Media Optimization has been enabled on both the Oracle SBC's and your Microsoft Teams Tenant, please reach out to your Oracle Sales Consultant for assistance and direction with your issue.