Interactive Intelligence

CIC 2017 R2 Patch6

Configuration Guide

Performed By

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DOCUMENT REVISION HISTORY

Version	*Reason for Change*	*Date*	*Created/Updated by*
1.1	Initial Release	7/17/2017	Pradeep Gali

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1 Introduction

This configuration guide describes how to configure an Interactive Intelligence (ININ) CIC 2017 R2 P4 SERVER with an Oracle Acme Packet SBC running ECZ740p2 release on a AP3900. The deployment model covered in this application note is an ININ CIC 2017 R2 SERVER with an Oracle Acme Packet SBC 3900 connected to the SIP trunk.

The configuration of the ININ CIC 2017 R2 SERVER detailed in this document is based on a lab environment with a simple dial-plan used to ensure proper interoperability between the Oracle Acme Packet SBC 3900 and SIP trunk.

Testing was performed by tekVizion Labs, an independent testing and certification facility, in accordance to ININ Certification Test Plan. Key features verified are:

- New services install processes
- Call capabilities (various features, basic call operations, local calling, domestic long distance calling and international calling)
- FAX
- Out-of-band DTMF
- Conference Calls

The configuration described in this document details the critical commands to have enabled for interoperability to be successful.

This Application Note details the configuration used for connectivity to the tekVizion PSTN network. This document serves as guidance for the integration, but does not guarantee interoperability for every use case or release combinations.

2 Validation Environment

2.1 Network Topology

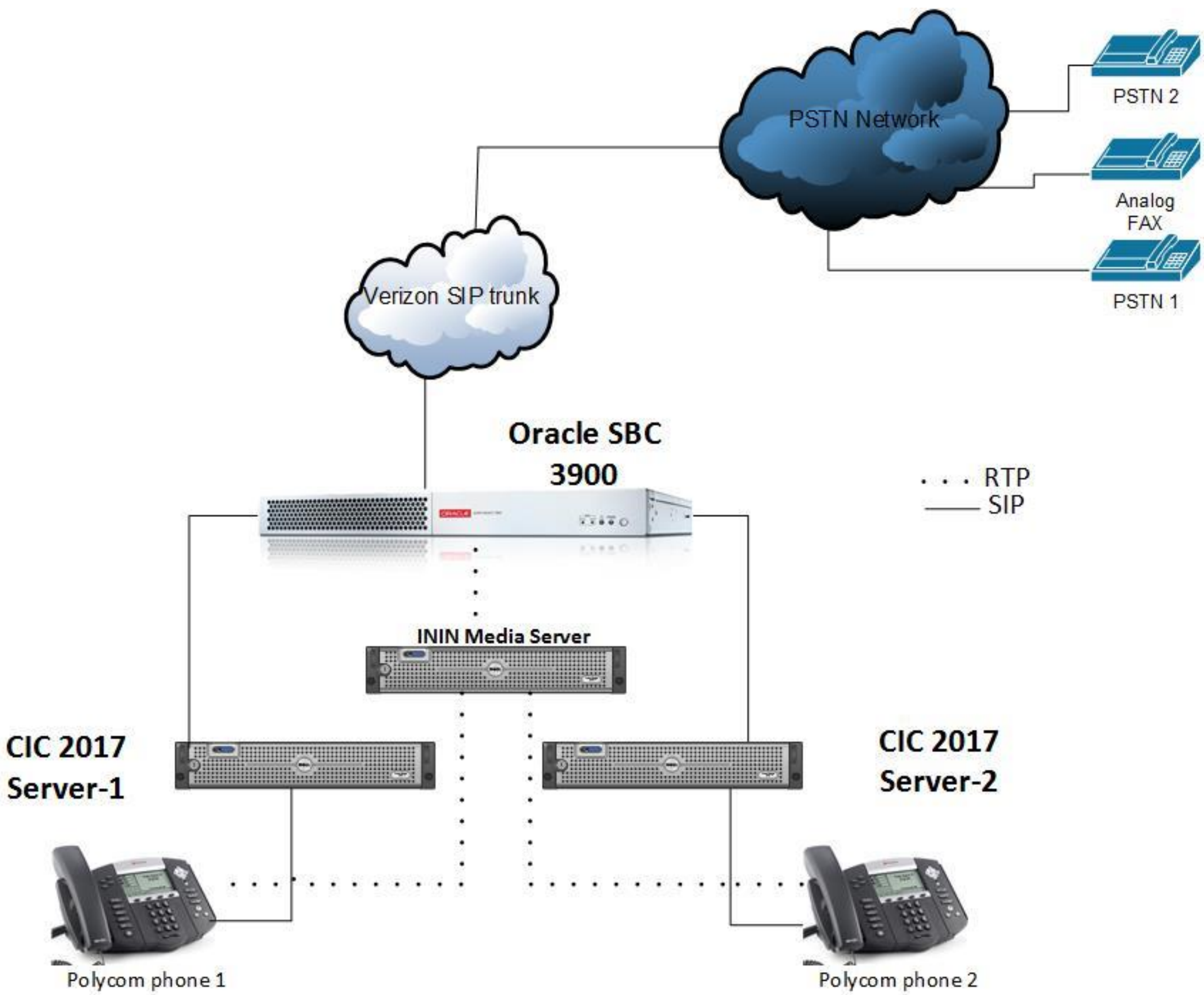

Figure 1: Network Topology

2.2 Hardware Components

- ININ CIC Media Server
- ININ CIC 2017 Servers
- Polycom IP 550 and IP 650 Phones
- Oracle SBC 3900

2.3 Software Requirements

- ININ CIC 2017 R2 Patch6
- Acme Packet 3900 ECZ7.4 Patch 2

2.4 Features

2.4.1 Features Supported

- Voice calls using G.711 codec
- RFC 3261 support
- Calling number presentation / restriction
- Call conferencing
- Call transfer (attended, unattended & blind transfer)
- Call hold and resume
- Call forwarding
- CIC Server Switchover

2.4.2 Features Not Supported

Summary of Test Results

2.5 Declaration

tekVizion has tested the ININ CIC 2017 R2 Patch6 with the Oracle “Acme Packet SBC” and has validated its use with the Service Provider.

2.5.1 Purpose

This document serves to provide other areas of ININ CIC 2017 R2 Patch6 Certification test review of the Oracle Acme Packet SBC 3900. Uses of this product outside that of public voice call termination/origination to the Oracle Acme Packet SBC 3900 host falls outside the scope of this validation.

2.6 Passed

All test cases that were successfully executed have been marked as ‘Pass’

2.7 Not Tested / Not Supported

- None identified

2.8 Known Limitations and Restrictions

- None identified

2.9 Test Plan

- **Device Under Test (DUT) –** Oracle Acme Packet SBC 3900
- **DUT - Customer Interface Type –** SBC
- **WAN Transport –** Direct Internet connection

#	TC#	Title	Results	
1	4906	Configure SIP Carrier to Route Calls to IC	Pass	
2	11403	Configure SIP Carrier Line	Pass	
3	11402	Configure & Provision Managed IP Phones	Pass	
4	11406	Configure Dial Plan for Outgoing Calls	Pass	
5	11411	Out-of-band DTMF	Pass	
6	11416	G.711 Through Carrier	Pass	
7	4898	Inbound call with ANI	Pass	
8	4899	Inbound Call without ANI	Pass	
9	4900	Outbound Call with ANI	Pass	Call works only if the ANI information is valid DID for ITSP
10	8700	Early Media	Pass	
11	5553	Transfer - Blind (Internal)	Pass	
12	4877	Transfer – Consult (Internal)	Pass	
13	4878	Transfer – Blind (External)	Pass	
14	4879	Transfer – Consult (External)	Pass	
#	**TC#**	**Title**	**Results**	
15	4884	Hold Support – Re-Invite to 0.0.0.0	Pass	
16	4885	Forward Incoming Call - from Carrier to Carrier	Pass	
17	4886	3 Party Conference	Pass	
18	4887	Fax - G.711 Pass-through	Pass	10 out of 10 inbound and outbound FAX calls are successful
19	14094	Always In Audio	Pass	
20	4908	Service Unavailable – 503 response from carrier	Pass	ITSP is sending announcement saying “The number is no longer is in service".
21	4915	Power Failure	Pass	
22	14127	Switchover Support	Pass	
23	14128	WAN Failure	Pass	

24	14311	Latency SIP Outbound	Pass	Latency is measured as 10ms. Call was loop backed at DUT
25	14150	Outbound Call with RESTRICTED ANI	Pass	
26	4880	Putback (Release Link) Transfer (Blind)	Pass	Completed REFER based test cases using different ITSP as we had issues with Verizon SIP trunk
27	4881	Putback (Release Link) Transfer (Consult)	Pass	Completed REFER based test cases using different ITSP as we had issues with Verizon SIP trunk
28	4888	Fax - T.38 (Inbound)	Pass	10 out of 10 FAX calls are successful
29	4889	Fax - T.38 (Outbound)	Pass	10 out of 10 FAX calls are successful
30	4890	Dynamic Audio	Pass	
#	**TC#**	**Title**	**Results**	
32	6001	QoS tagging of RTP is preserved	Pass	
33	6002	QoS tagging of SIP Signaling is preserved	Pass	
Optional Test Cases –FS 1259				
34	6113	Multiple Ports	Pass	
35	6114	SIP to SIP call support	Pass	
36	6115	Support for TCP SIP Messaging	Pass	
37	6655	Support for sRTP	Pass	
38	6722	Support for TLS	Pass	
WAN Managed Phone Test Cases – FS 1422				
#	**TC#**	**Title**	**Results**	**Notes**
40	14179	Provision WAN Managed Phone	Pass	
41	14183	WAN Phone Intercom Calls	Pass	
42	14184	WAN Phone External Calls	Pass	
43	14185	WAN Phone Transfer (Blind)	Pass	
44	14186	WAN Phone Transfer (Consult)	Pass	
45	14187	WAN Phone Conference	Pass	
46	14188	WAN Phone Switchover	Pass	No issues with SBC functionality. Normal switchover scenarios were executed successfully. While trying to execute WAN phone based switchover scenarios, ININ CIC server is not processing the calls as expected. Support ticket opened with ININ Incident NO: **927664**

3 CIC Server Trunk Configuration

3.1 Trunk (Line) Configuration

3.1.1 Set Server IP Address

1. Navigate **Start > Control Panel > Network and Internet > View Network Status and Tasks> Change Adapter Settings > Ethernet> Ethernet Status > Properties > Internet Protocol Version 4(TCP/IP4) > Properties**
2. **Use the Following IP Address:** Selected
3. Set **IP Address**: Enter the IP address assigned for the ININ CIC 2017 server
4. Set **Subnet Mask**: 255.255.0.0 is used for this example
5. Set **Default Gateway**: 10.64.1.1 is used for this example
6. Set **Preferred DNS Server**: 10.64.3.39 is used for this example
7. Set **Alternate DNS Server**: Enter the DNS server address for Enterprise network..
8. Click **OK**

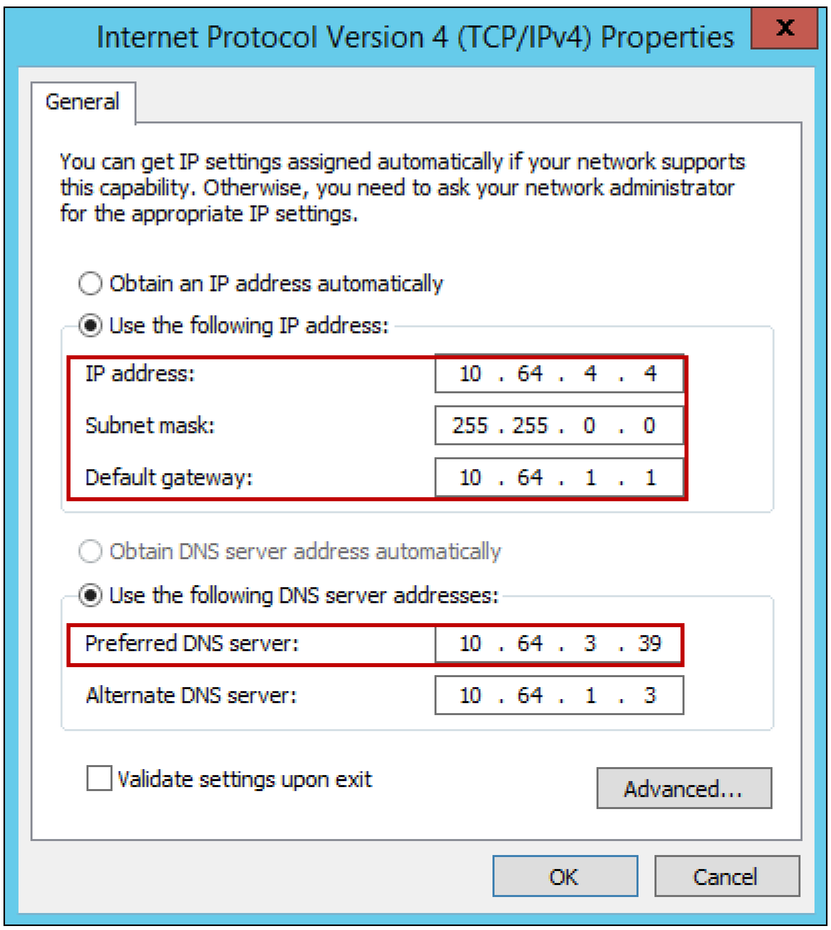

Figure 2: Server IP Address

3.1.2 SIP Line Configuration

1. In **Interaction Administrator**: Navigate to CICSERVER1(Name of IC Server) – 2017 > R2 Lines
2. Right-click on **Lines** and select **New**
3. Set **Line Name**: Stations-UDP is used for this example

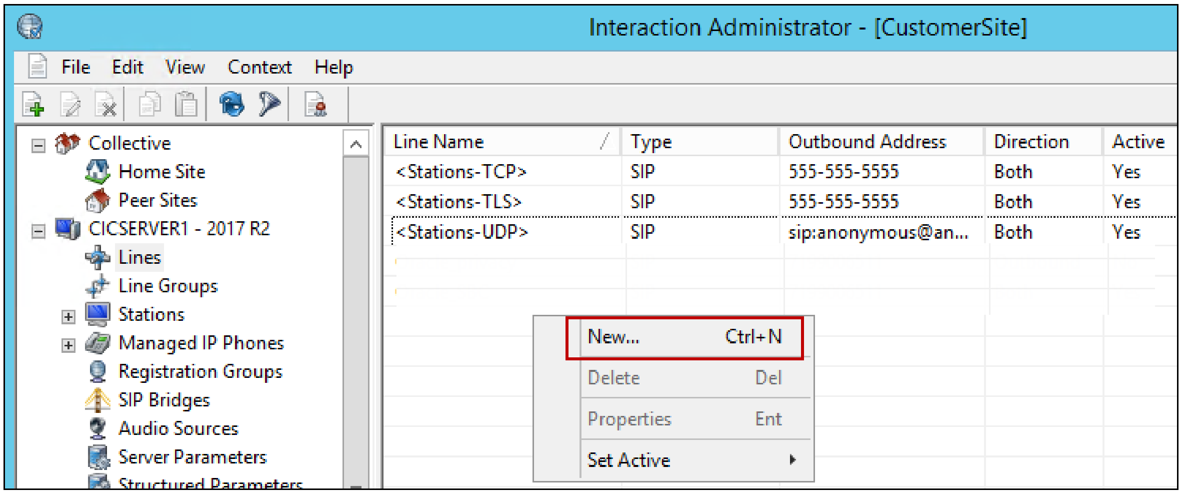

Figure 3: Line Configuration

3.1.2.1 Line Configuration

1. Select the **SIP Line Configuration** tab
2. In left navigation pane, select **Line**
3. Set **Line Usage**: *General Purpose* is selected from the drop down menu
4. Set **Domain Name**: Enter the FQDN of the server provided at the domain controller.
5. Set **Fax Protocol**: T30 then T38 were selected for this example
6. Check **Enable Fax Detection.** This supports both Fax Protocols T30 & T38. This can be changed based on the carrier requirement.
7. All the other values are set to default values

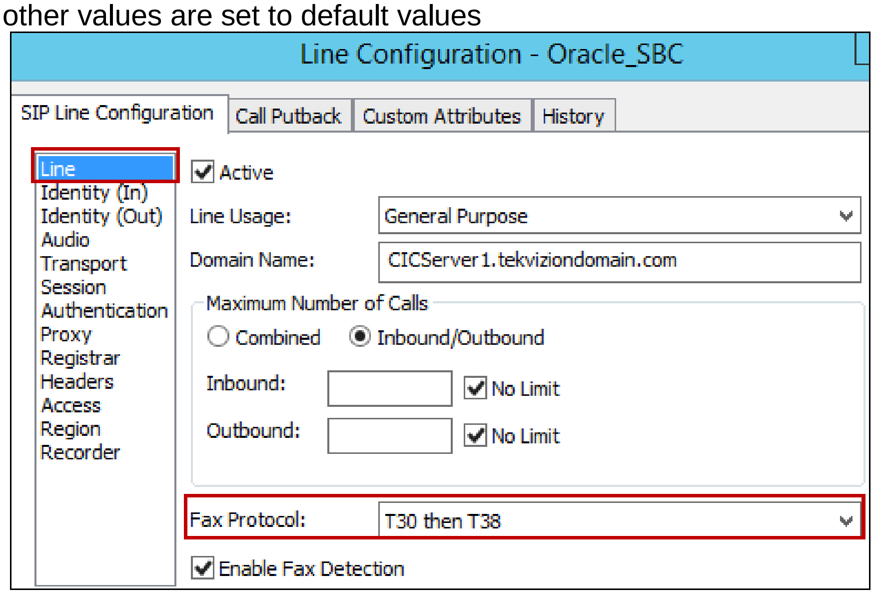

Figure 4: Line Configuration – Cont.

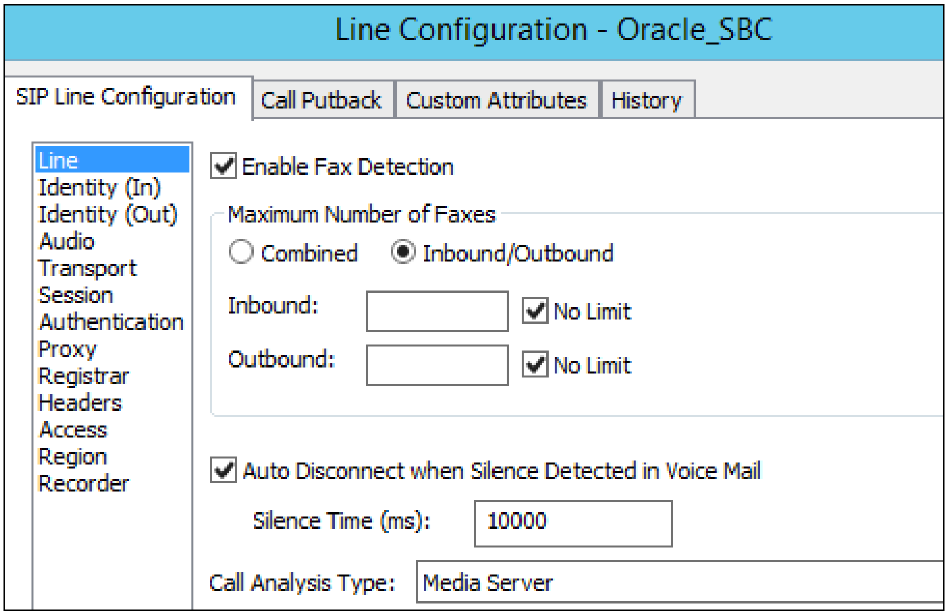

Figure 5: Line Configuration – Cont.

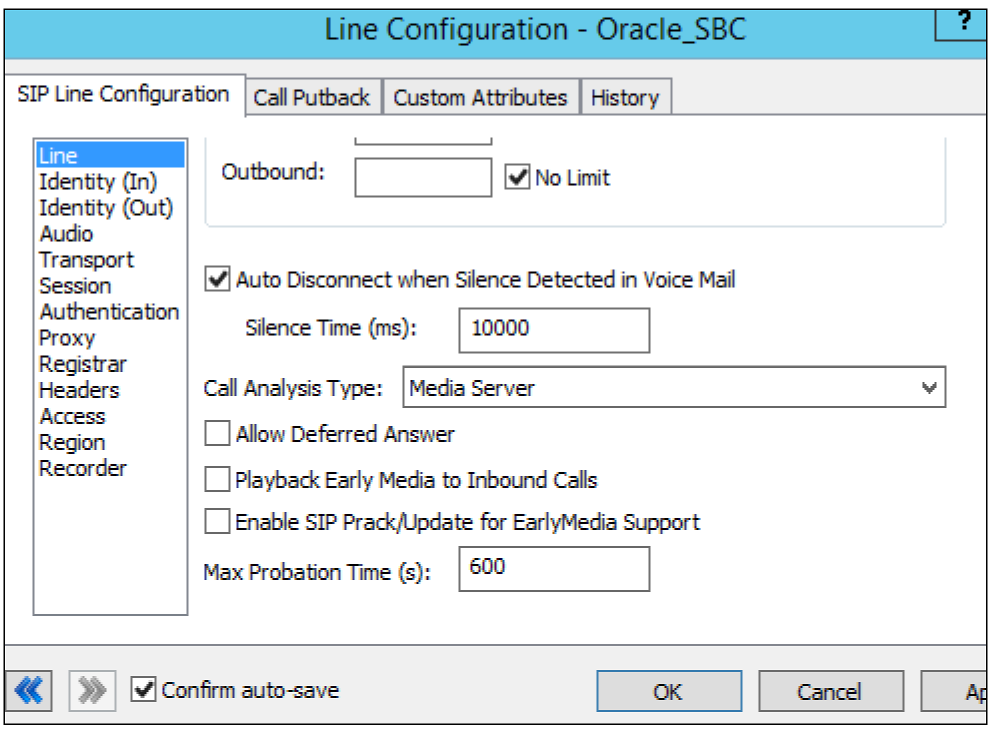

Figure 6: Line Configuration – Cont.

3.1.2.2 Identity (In)

1. In left navigation pane, click **Identity (In)**
2. All the values are set to default values

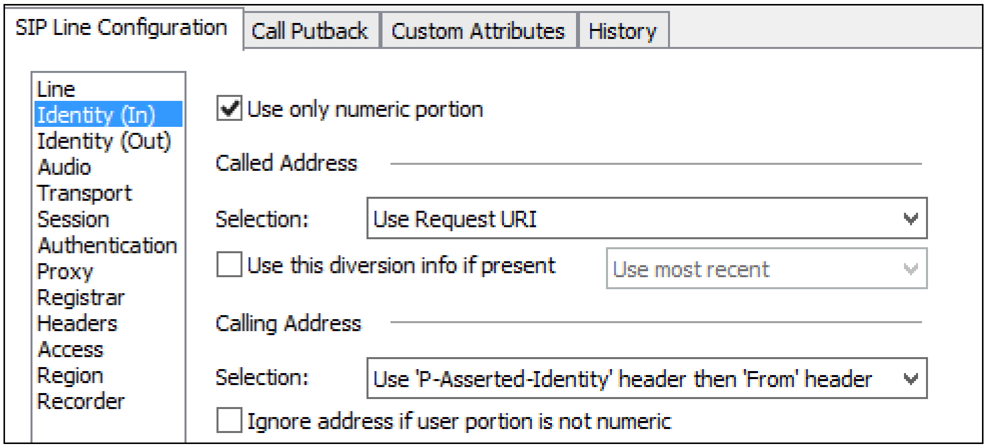

Figure 7: Line Configuration – Identity (In)

3.1.2.3 Identity (Out)

1. In left navigation pane, select **Identity (Out)**
2. Set **Line Value 1**
3. Set **Name**: Oracle is given for this example
4. Set **Address**: Enter the pilot number of the DID range assigned by ITSP
5. Click **OK**
6. All the other values are set to default values

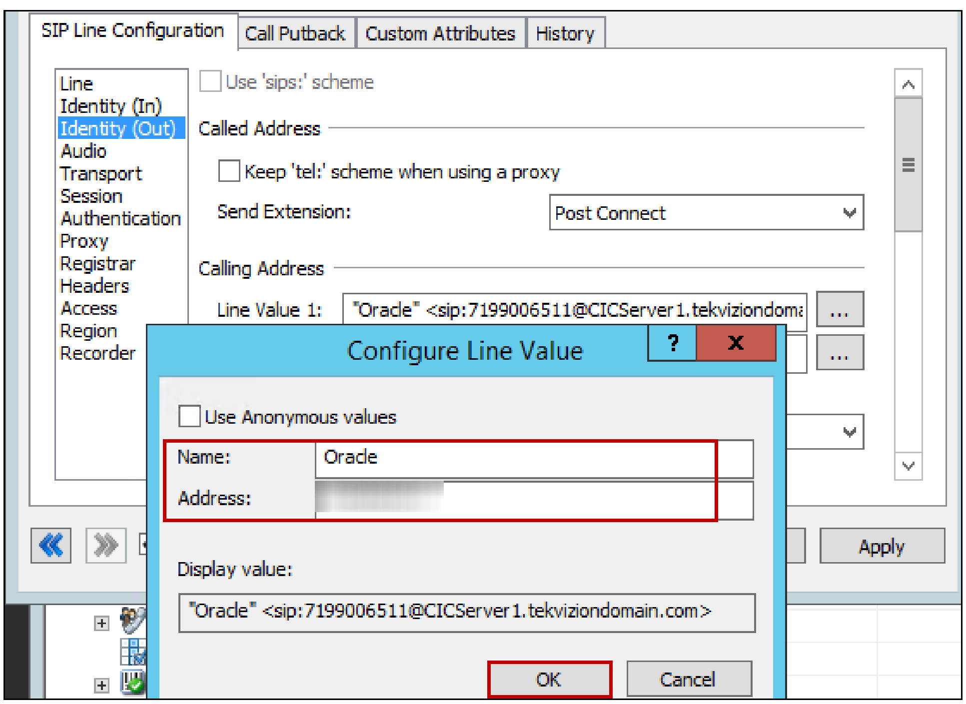

Figure 8: Line Configuration - Identity (Out)

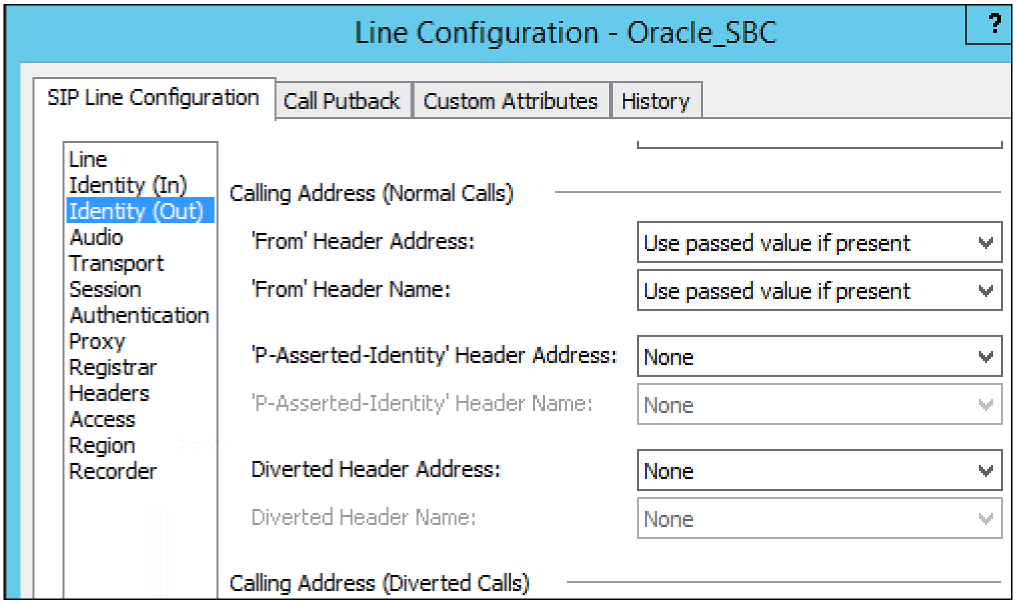

Figure 9: Line Configuration - Identity (Out) – Cont.

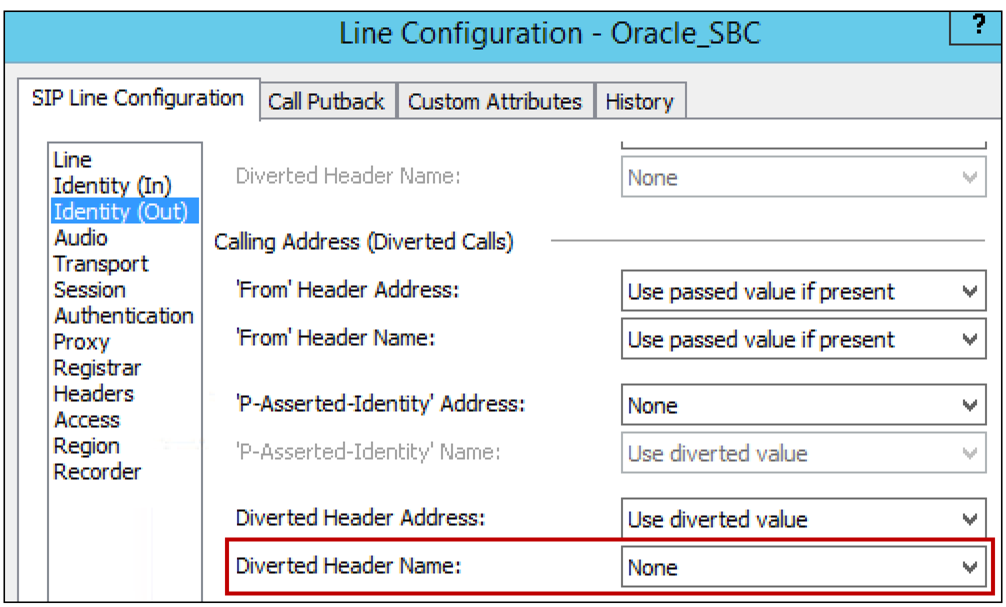

Figure 10: Line Configuration - Identity (Out) – Cont.

3.1.2.4 Audio

1. In left navigation pane, select **Audio**
2. Set **Audio Path**: *Always In* is selected. This disables the Media Bypass.
3. Set **DTMF Type**: *RFC2833 if supported, otherwise inband* is selected
4. Set **DTMF Payload**: 101 is selected for this example
5. All the values are set to default values

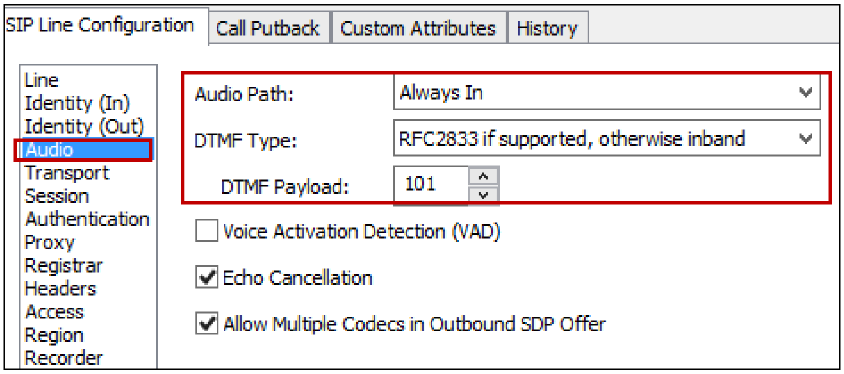

Figure 11: Line Configuration – Audio

3.1.2.5 Transport

1. In left navigation pane, select **Transport**
2. All the values are set to default values

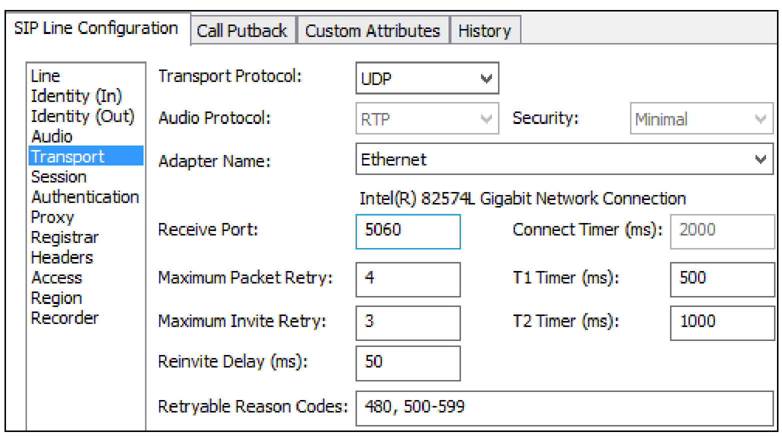

Figure 12: Line Configuration – Transport

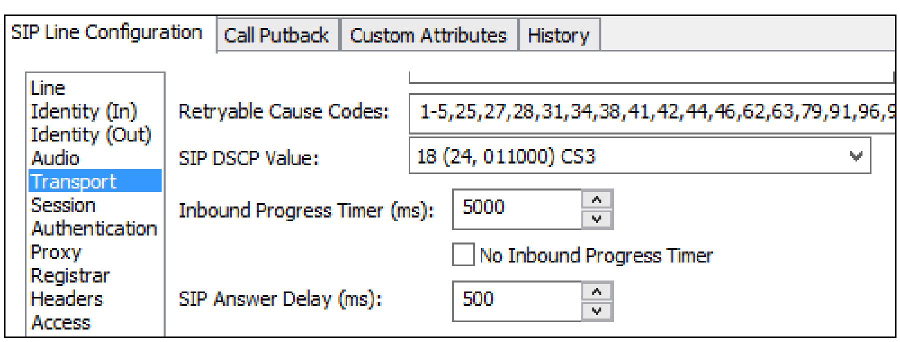

Figure 13: Line Configuration –Transport – Cont.

3.1.2.6 Session

1. In left navigation pane, select **Session**
2. All the values are set to default values

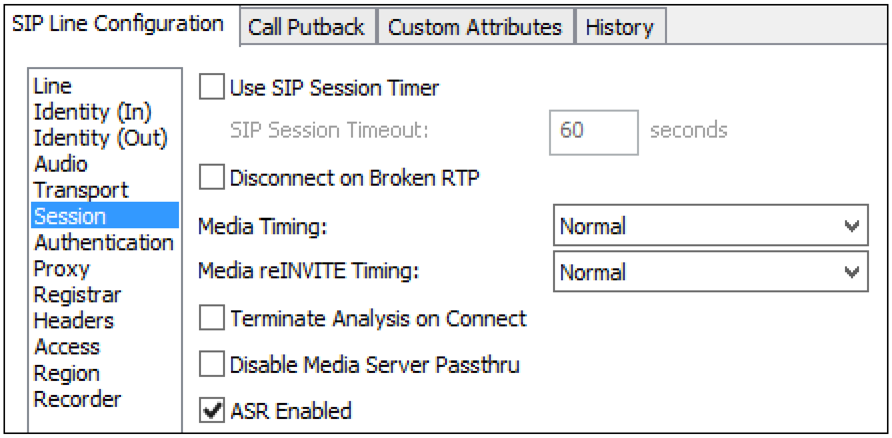

Figure 14: Line Configuration – Session

3.1.2.7 Authentication

1. In left navigation pane, select **Authentication**
2. All the values are set to default values

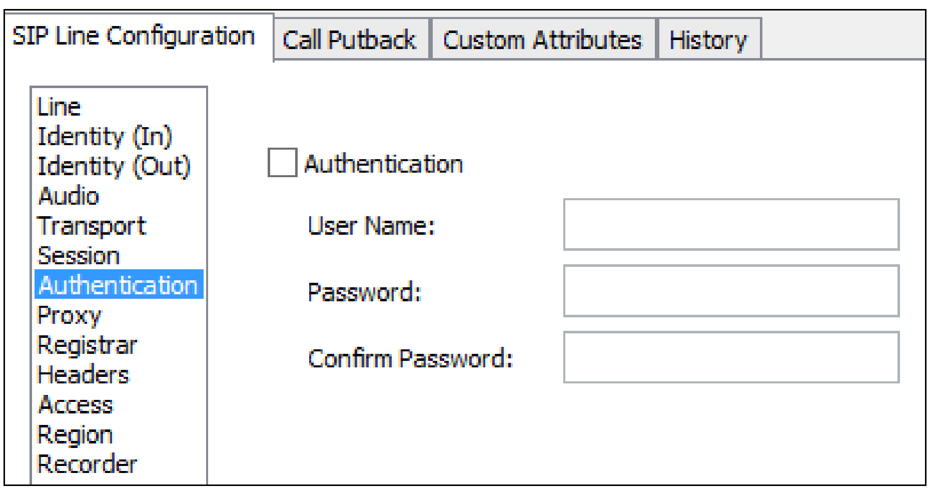

Figure 15: Line Configuration – Authentication

3.1.2.8 Proxy

1. In left navigation pane, select **Proxy**
2. Set **Address**: Enter the Address of the next hop (i.e. Oracle Acme Packet SBC 3900 LAN IP Address). 10.64.4.127 is used for this example.
3. Set **Port Number**: 5060 is given for this example
4. Click **OK**

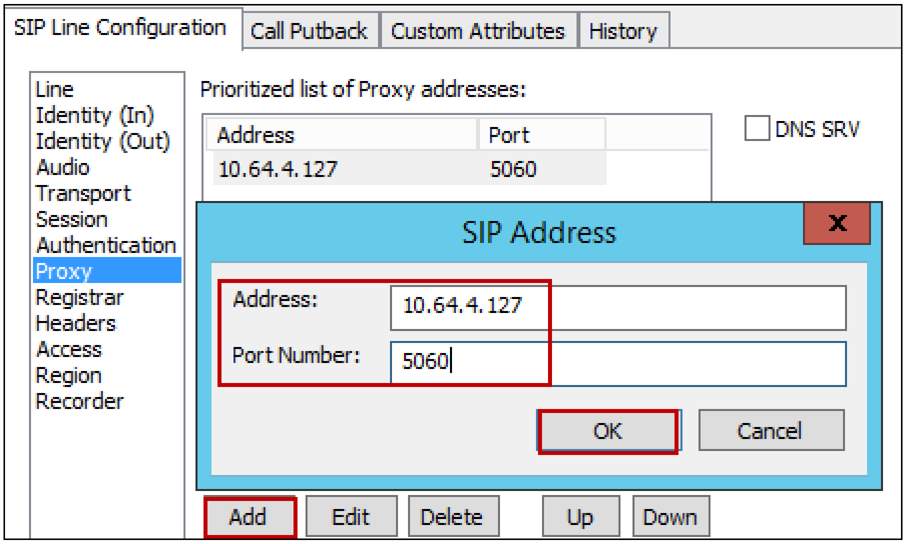

Figure 16: Line Configuration – Proxy

3.1.2.9 Registrar

1. In left navigation pane, select **Registrar**
2. All the values are set to default values

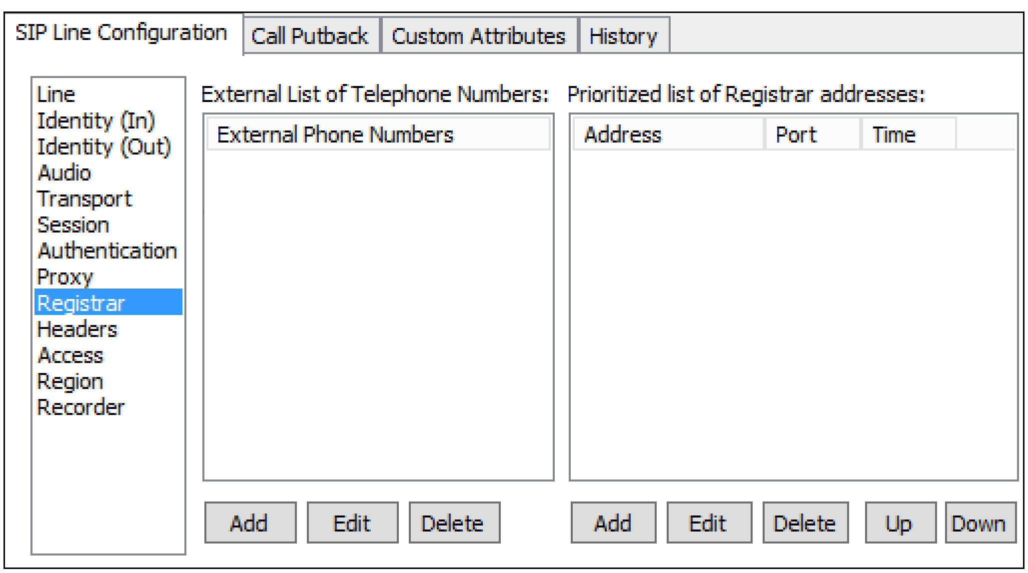

Figure 17: Line Configuration – Registrar

3.1.2.10 Headers

1. In left navigation pane, select **Headers**
2. All the values are set to default values

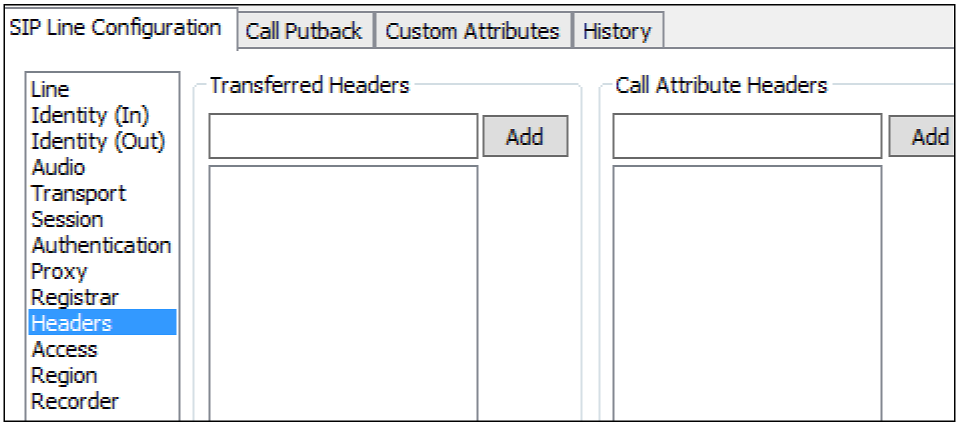

Figure 18: Line Configuration – Headers

3.1.2.11 Access

1. In left navigation pane, select **Access**
2. Under **All Computers will be**: Check ***Denied Access***
3. Click **Add**
4. Set **Address**: Enter the Address of the next hop (i.e. Oracle Acme Packet SBC 3900 IP Address). 10.64.4.127 is used for this example.

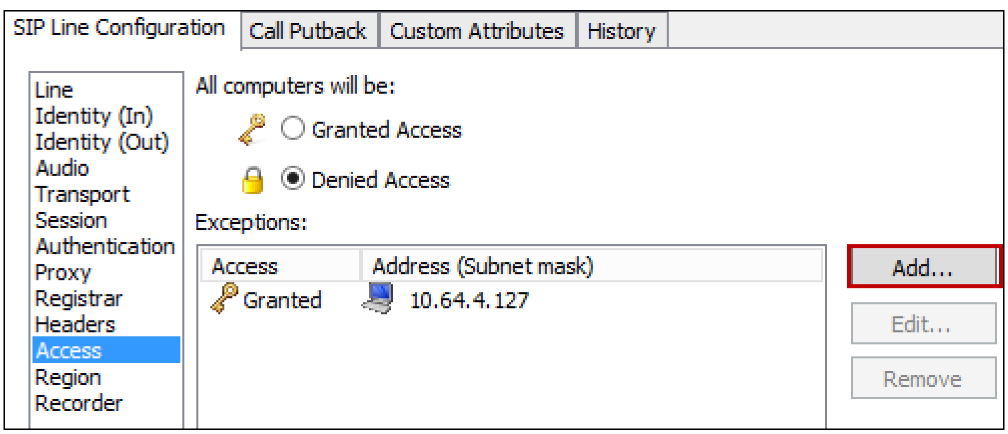

Figure 19: Line Configuration – Access

3.1.2.12 Region

1. In left navigation pane, select **Region**
2. All the values are set to default values as shown in the figure below

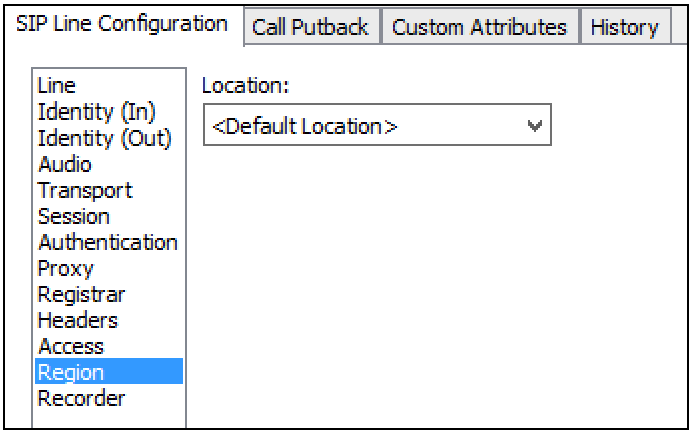

Figure 20: Line Configuration – Region

3.1.2.13 Recorder

1. In left navigation pane, select **Recorder**
2. All the values are set to default values

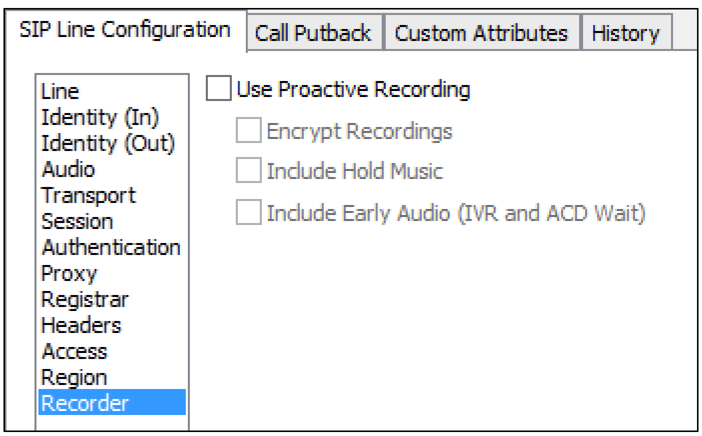

Figure 21: Line Configuration – Recorder

3.1.2.14 Call Putback

3.1.2.14.1 Sending SIP REFER Messages Disabled

1. Select the **Call Putback** tab
2. **Enable sending SIP REFER messages** is unchecked for Internal (Blind & Consultative) Transfers

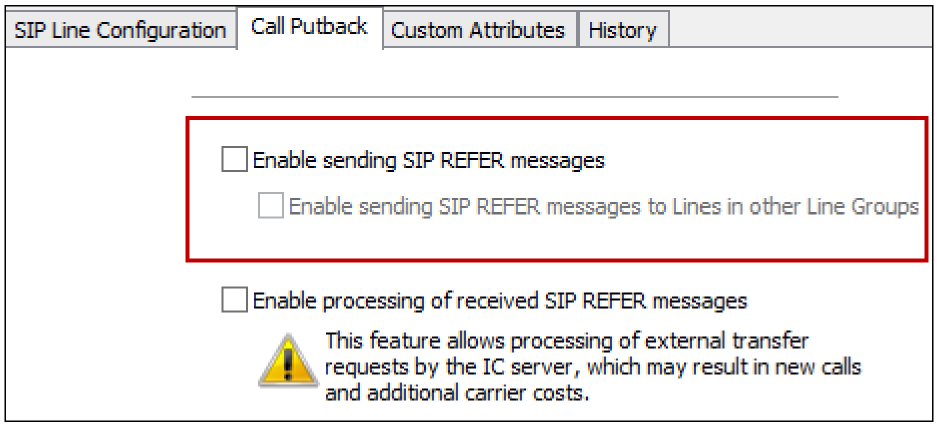

Figure 22: Line Configuration – Call Putback

3.1.2.15 Custom Attributes

1. Select the **Custom Attributes** tab
2. All the values are set to default values

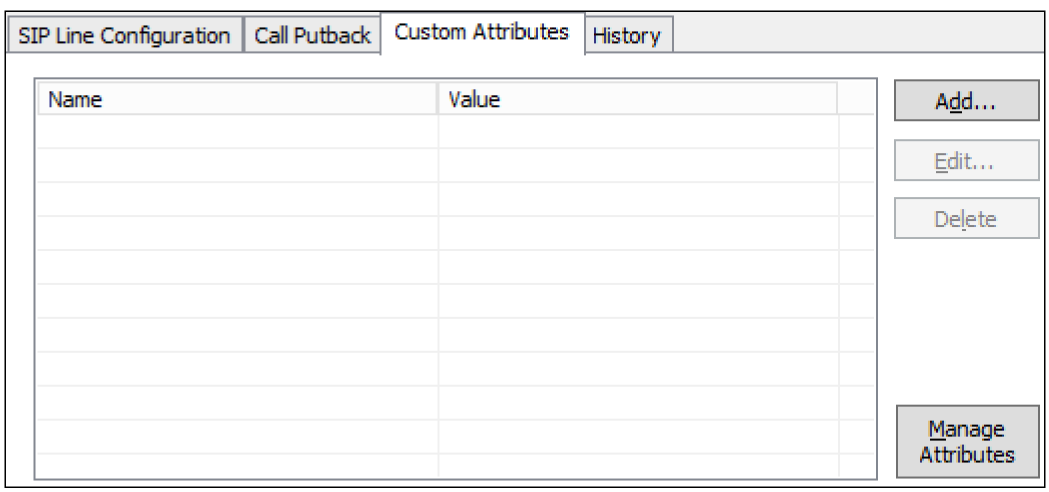

Figure 23: Line Configuration – Custom Attributes

3.1.3 Line Groups

1. Navigate to **CICSERVER1** > **Line Groups**
2. Right-Click and select **New**
3. Set **Enter the Group Name**: Oracle_SBC Group is given for this example
4. Click **OK**

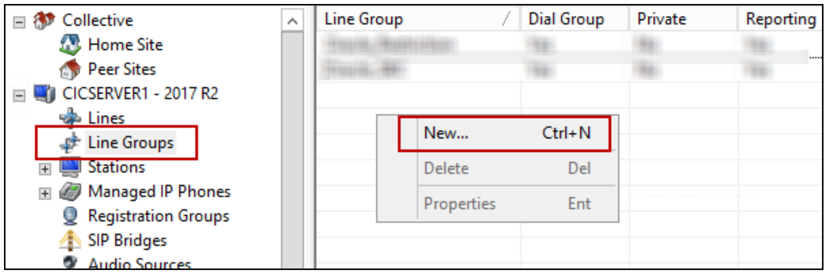

Figure 24: Line Groups

3.1.3.1 Line Group Configuration

1. **Use for Reporting**: Checked
2. **Use as Dial Group:** Checked
3. Under **Hunt Selection Method**: Select *Descending Sequential*
4. Click **Apply**

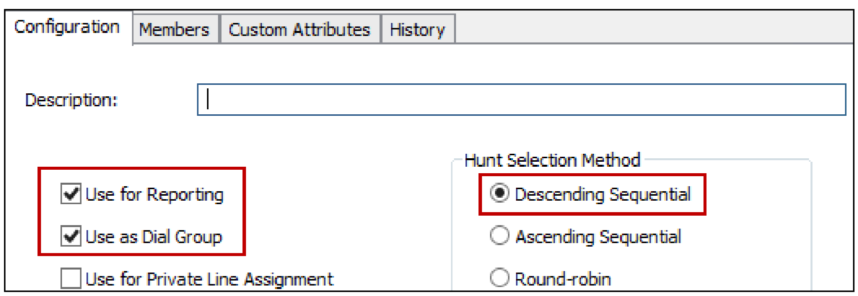

Figure 25: Line Group Configuration

3.1.3.2 Members

1. Select the **Members** tab
2. From **Available Lines**: Select Oracle_SBC and Click **Add →**
3. The **Oracle_SBC** Line should be moved to “Currently Selected Lines” as shown below
4. Click **Apply**

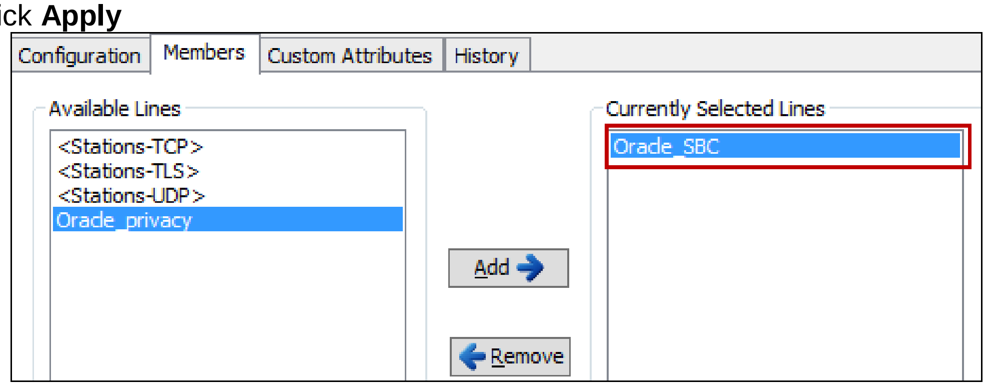

Figure 26: Line Groups – Members

3.1.4 Dial Plan Configuration

1. Navigate to system **Configuration > Phone numbers > Configuration**
2. Under **Regional Dial Plan**: Click Dial Plan
3. To route the 10 digit outbound call out from the IC Server to the Carrier, the Dial plan needs to be configured as shown below. To use this dial plan, dial the access code (9) followed by PSTN number.
4. Click **Add Group** and add the Line Group added in Section 4.1.3

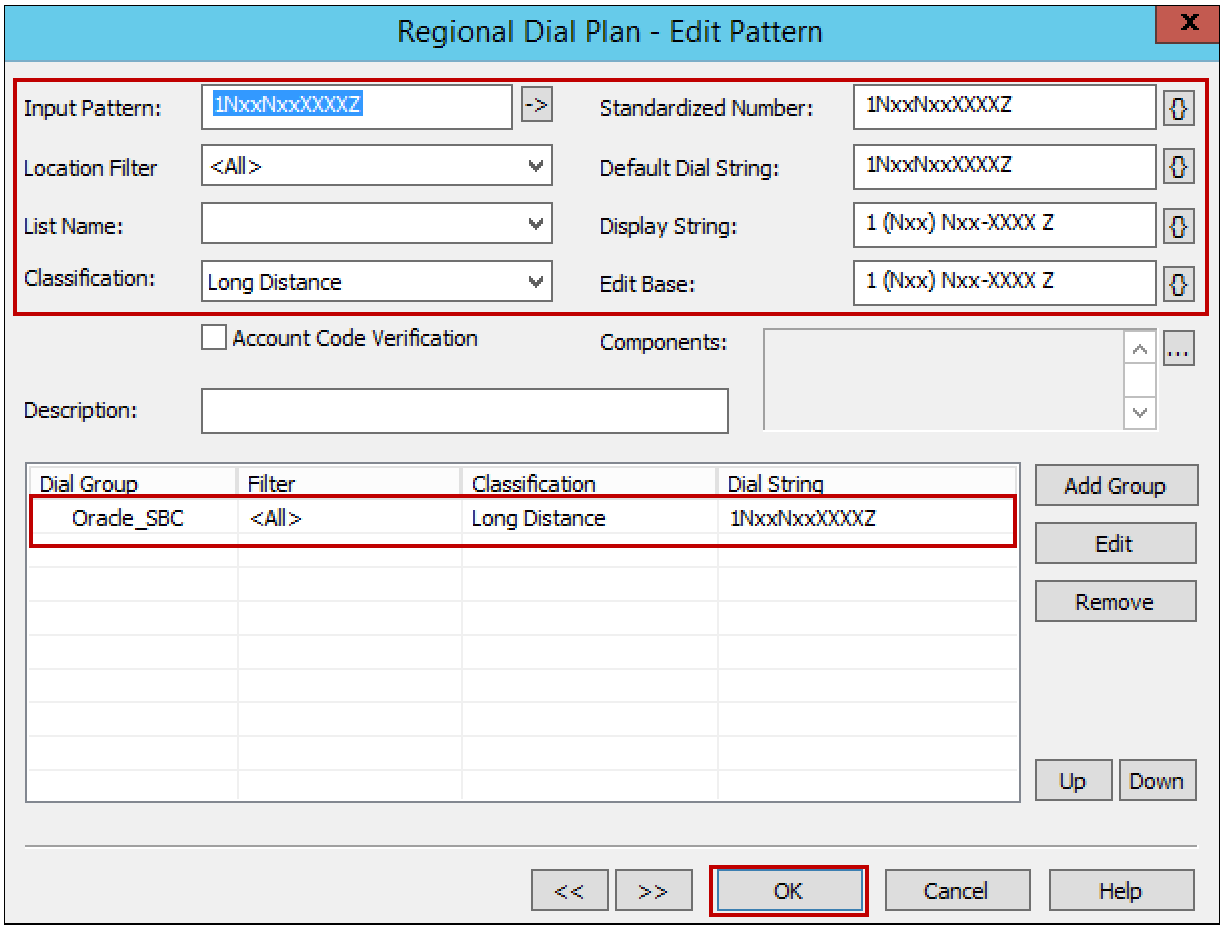

Figure 27: Regional Dial Plan

4 Oracle SBC 3900 Configuration

```
certificate-record
        name                    ININ
        state                   TX
        locality                Plano
        common-name             ininoracle
certificate-record
        name                    rootcert
        state                   TX
        locality                Plano
        common-name             CICSERVER1_Server Group
local-policy
        from-address            *
        to-address              10.64.4.127
        source-realm            *
        policy-attribute
                next-hop        152.188.29.XXX
                realm           outside
local-policy
        from-address            *
        to-address              *
        source-realm            inside
        policy-attribute
                next-hop        152.188.29.XXX
                realm           outside
local-policy
        from-address            *
        to-address              *
        source-realm            outside
        policy-attribute
                next-hop        SAG:ININ
                realm           inside
media-manager
        hnt-rtcp                enabled
        anonymous-sdp           enabled
media-sec-policy
```

```
          name                        SRTP
          inbound
                profile                   SRTP
                mode                        srtp
                protocol                    sdes
          outbound
                profile                   SRTP
                mode                        srtp
                protocol                    sdes
media-sec-policy
          name                        noSRTP
network-interface
          name                        s0p0
          description                  WAN
          ip-address                   192.65.79.XXX
          netmask                      255.255.255.128
          gateway                      192.65.79.XXX
          icmp-address                   192.65.79.XXX
network-interface
          name                        s0p1
          description                  LAN
          ip-address                   10.64.4.127
          netmask                      255.255.255.0
          gateway                      10.64.1.1
          hip-ip-list                10.70.65.20
                                   10.64.4.127
                                   10.64.4.238
          icmp-address                   10.70.65.20
                                   10.64.4.127
                                   10.64.4.238
          telnet-address                 10.70.65.20
phy-interface
          name                        s0p0
          operation-type                 Media
          duplex-mode
          speed
```

```
phy-interface
        name                        s0p1
        operation-type                  Media
        port                        1
realm-config
        identifier                  inside
        network-interfaces                  s0p1:0
        mm-in-realm                 enabled
        restricted-latching         sdp
        restriction-mask            24
        options                     refer-reinvite
        delay-media-update                  enabled
realm-config
        identifier                  outside
        network-interfaces                  s0p0:0
        mm-in-realm                 enabled
        restricted-latching         sdp
        restriction-mask            24
        options                     refer-reinvite
        delay-media-update                  enabled
sdes-profile
        name                        SRTP
        crypto-list                 AES_CM_128_HMAC_SHA1_80
                                  AES_CM_128_HMAC_SHA1_32
session-agent
        hostname                    10.64.4.4
        ip-address                  10.64.4.4
        realm-id                    inside
        ping-method                 OPTIONS;hops=0
        ping-interval               30
session-agent
        hostname                    10.64.4.5
        ip-address                  10.64.4.5
        realm-id                    inside
        ping-method                 OPTIONS;hops=0
        ping-interval               30
```

```
session-agent
      hostname                152.188.29.XXX
      ip-address              152.188.29.XXX
      port                    5072
      realm-id                outside
      ping-method             OPTIONS;hops=0
      ping-interval           30
session-group
      group-name              ININ
      dest                    10.64.4.4
                              10.64.4.5
sip-config
      home-realm-id           inside
      registrar-domain        *
      registrar-host          *
      registrar-port          5060
      options                 max-udp-length=0
      extra-method-stats      enabled
sip-interface
      realm-id                inside
      sip-port
            address                 10.64.4.127
            allow-anonymous         agents-only
      sip-port
            address                 10.64.4.127
            port                    5061
            transport-protocol      TCP
            allow-anonymous         agents-only
      registration-caching    enabled
sip-interface
      realm-id                outside
      sip-port
            address                 192.65.79.XXX
            allow-anonymous         agents-only
      sip-port
            address                 192.65.79.XXX
```

```
        port                      8060
        allow-anonymous                 registered
    nat-traversal               always
    registration-caching          enabled
    route-to-registrar           enabled
    out-manipulationid            NAT_IP
    sip-profile                 Replaces
sip-manipulation
    name                        AlterRefer
    header-rule
        name                        storeReferTo
        header-name                     Refer-To
        action                      store
        msg-type                      request
        methods                       REFER
        match-value                    (.*)(@.*)
    header-rule
        name                        DelReferTo
        header-name                     Refer-To
        action                      delete
        msg-type                      request
        methods                       REFER
    header-rule
        name                        AddReferTo
        header-name                     Refer-To
        action                      add
        msg-type                      request
        methods                       REFER
        new-value                     $storeReferTo.$1+"@"+$REMOTE_IP+">"
    header-rule
        name                        delxinin
        header-name                     x-inin-crn
        action                      delete
        msg-type                      request
        methods                       REFER
    header-rule
```

```
            name                      alterReferredBy
            header-name                  Referred-By
            action                    manipulate
            msg-type                    request
            methods                     REFER
            element-rule
                  name                        alterReferredBy_er
                  type                      uri-host
                  action                    find-replace-all
                  new-value                     $LOCAL_IP
sip-manipulation
      name                      NAT_IP
      header-rule
            name                      From
            header-name                  From
            action                    manipulate
            msg-type                    request
            methods                     INVITE
            element-rule
                  name                        From_er
                  type                      uri-host
                  action                    find-replace-all
                  new-value                     $LOCAL_IP
      header-rule
            name                      To
            header-name                  To
            action                    manipulate
            msg-type                    request
            methods                     INVITE
            element-rule
                  name                        To_er
                  type                      uri-host
                  action                    find-replace-all
                  new-value                     $REMOTE_IP
      header-rule
            name                      Div
```

```
        header-name             Diversion
        action              manipulate
        msg-type              request
        methods               INVITE
        element-rule
            name                  Div_er
            type                uri-host
            action              find-replace-all
            new-value             $LOCAL_IP
    header-rule
        name                 storeReferredBy
        header-name             Referred-By
        action              store
        msg-type              request
        methods               INVITE
        match-value            (.*)(@.*)
    header-rule
        name                 delReferredBy
        header-name             Referred-By
        action              delete
        msg-type              request
        methods               INVITE
    header-rule
        name                 addPai
        header-name             P-Asserted-Identity
        action              add
        comparison-type         boolean
        msg-type              request
        methods               INVITE
        match-value            $storeReferredBy
        new-value             $storeReferredBy.$1+"@"+$LOCAL_IP
    header-rule
        name                 alterReplaces
        header-name             Refer-To
        msg-type              request
        methods               REFER
```

```
        element-rule
            name                    alterReplaces_er
            parameter-name              Replaces
            type                    header-value
            action                  delete-element
    header-rule
        name                        CallAlterRefer
        header-name                     Refer-To
        action                      sip-manip
        new-value                       AlterRefer
sip-monitoring
sip-profile
    name                        Replaces
    replace-dialogs                 enabled
static-flow
    in-realm-id                 outside
    in-destination                  192.65.79.XXX:8088
    out-realm-id                    inside
    out-source                  10.64.4.127
    out-destination                 10.64.4.4:8088
    protocol                    TCP
    alg-type                    NAPT
    start-port                  40000
    end-port                    45000
static-flow
    in-realm-id                 outside
    in-destination                  192.65.79.XXX:8089
    out-realm-id                    inside
    out-source                  10.64.4.127
    out-destination                 10.64.4.4:8089
    protocol                    TCP
    alg-type                    NAPT
    start-port                  45002
    end-port                    49500
steering-pool
    ip-address                  10.64.4.127
```

```
    start-port                 49452
    end-port                    65535
    realm-id                   inside
steering-pool
    ip-address                   192.65.79.XXX
    start-port                 49542
    end-port                    65535
    realm-id                   outside
system-config
    process-log-level               DEBUG
    default-gateway                 192.65.7X.XX
tls-profile
    name                       ININ
    end-entity-certificate          ININ
    trusted-ca-certificates          rootcert
    mutual-authenticate               enabled
    tls-version                 tlsv12
web-server-config
```