Avaya Solution & Interoperability Test Lab

Application Notes for Configuring Avaya Communication Server 1000E R7.5 with Avaya Aura® Session Manager R6.1 and Avaya Session Border Controller for Enterprise R4.0.5 to support BT Global Services NOAS SIP Trunk - Issue 1.0

Abstract

These Application Notes describe the steps to configure Session Initiation Protocol (SIP) trunking between an Avaya SIP enabled enterprise solution and the BT Global Services NOAS SIP Trunk service. The Avaya solution consists of Avaya Aura® Session Manager and Avaya Communication Server 1000E connected to an Avaya Session Border Controller for Enterprise. BT is a member of the Global SIP Service Provider program.

Information in these Application Notes has been obtained through DevConnect compliance testing and additional technical discussions. Testing was conducted via the DevConnect Program at the Avaya Solution and Interoperability Test Lab.

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1. Introduction

These Application Notes describe the necessary steps to configure Session Initiation Protocol (SIP) trunking between an Avaya SIP enabled enterprise solution and the BT SIP Trunk Service. The Avaya solution consists of Avaya Aura® Session Manager, an Avaya Communication Server 1000E (CS1000E) and an Avaya Session Border Controller for Enterprise (Avaya SBCE) connected to the BT SIP Trunk Service. Customers using this Avaya SIP enabled enterprise solution with the BT SIP Trunk Service are able to place and receive PSTN calls via a dedicated Internet connection using the SIP protocol. This converged network solution is an alternative to traditional PSTN trunks. The approach normally results in lower cost and a more flexible implementation for the enterprise customers.

2. General Test Approach and Test Results

The general test approach was to configure a simulated enterprise site using an Avaya SIP telephony solution consisting of Session Manager, Communication Server 1000E and the Avaya SBCE. The enterprise site was configured to use the SIP Trunk Service provided by BT, with all PSTN traffic transiting via the BT SIP Trunk Service.

DevConnect Compliance Testing is conducted jointly by Avaya and DevConnect members. The jointly-defined test plan focuses on exercising APIs and/or standards-based interfaces pertinent to the interoperability of the tested products and their functionalities. DevConnect Compliance Testing is not intended to substitute full product performance or feature testing performed by DevConnect members, nor is it to be construed as an endorsement by Avaya of the suitability or completeness of a DevConnect member's solution.

2.1. Interoperability Compliance Testing

The interoperability test included the following:

- Incoming calls to the enterprise site from the PSTN were routed to the DID numbers assigned by BT. Incoming PSTN calls were terminated on Digital, Unistim, SIP and Analogue telephones at the enterprise side.
- Outgoing calls from the enterprise site were completed via BT to PSTN telephones. Outgoing calls from the enterprise to the PSTN were made from Digital, Unistim, SIP and Analogue telephones.
- Calls were made using G.729A, and G.711A codecs.
- Fax calls to/from a group 3 fax machine to a PSTN connected fax machine using the T.38 transmission mode.
- DTMF transmission using RFC 2833 with successful IVR menu progression.
- User features such as hold and resume, transfer, conference, call forwarding, etc.
- Caller ID Presentation and Caller ID Restriction.
- Call coverage and call forwarding for endpoints at the enterprise site.
- Transmission and response of SIP OPTIONS messages sent by BT requiring Avaya response and sent by Avaya requiring BT response.

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2.2. Test Results

Interoperability testing of the sample configuration was completed with successful results for the BT SIP Trunk Service with the following observations:

- No inbound toll free numbers were tested, however routing of inbound DID numbers and the relevant number translation was successfully tested.
- Routing to emergency numbers (such as 112) was tested.
- G.729 annex b (silence suppression) is not supported by BT SIP Trunk Service and thus was not tested.
- Unsupervised transfer of incoming or outgoing PSTN calls to PSTN called parties is not permitted; this is a PSTN imposed restriction. The same restriction exists for supervised transfers of an existing PSTN call to a PSTN called party.
- Mobile-X call to service DN, then making a call out to the PSTN. The call rings for a second and is dropped immediately, a BYE is sent from NOAS.

2.3. Support

For technical support on BT products please use the following web link.
http://btbusiness.custhelp.com/app/contact

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3. Reference Configuration

Figure 1 illustrates the test configuration. The test configuration shows an Enterprise site connected to BT's SIP Trunk Service. Located at the Enterprise site is a Session Border Controller, Session Manager and CS1000E. Endpoints are Avaya 1140 series IP telephones, Avaya 1200 series (not shown in **Figure 1**) IP telephones (with Unistim and SIP firmware), Avaya IP Softphones (SMC3456, 2050 and Avaya one-X® Communicator), Avaya Digital telephone, Analogue telephone and fax machine. For security purposes, any public IP addresses or PSTN routable phone numbers used in the compliance test are not shown in these Application Notes.

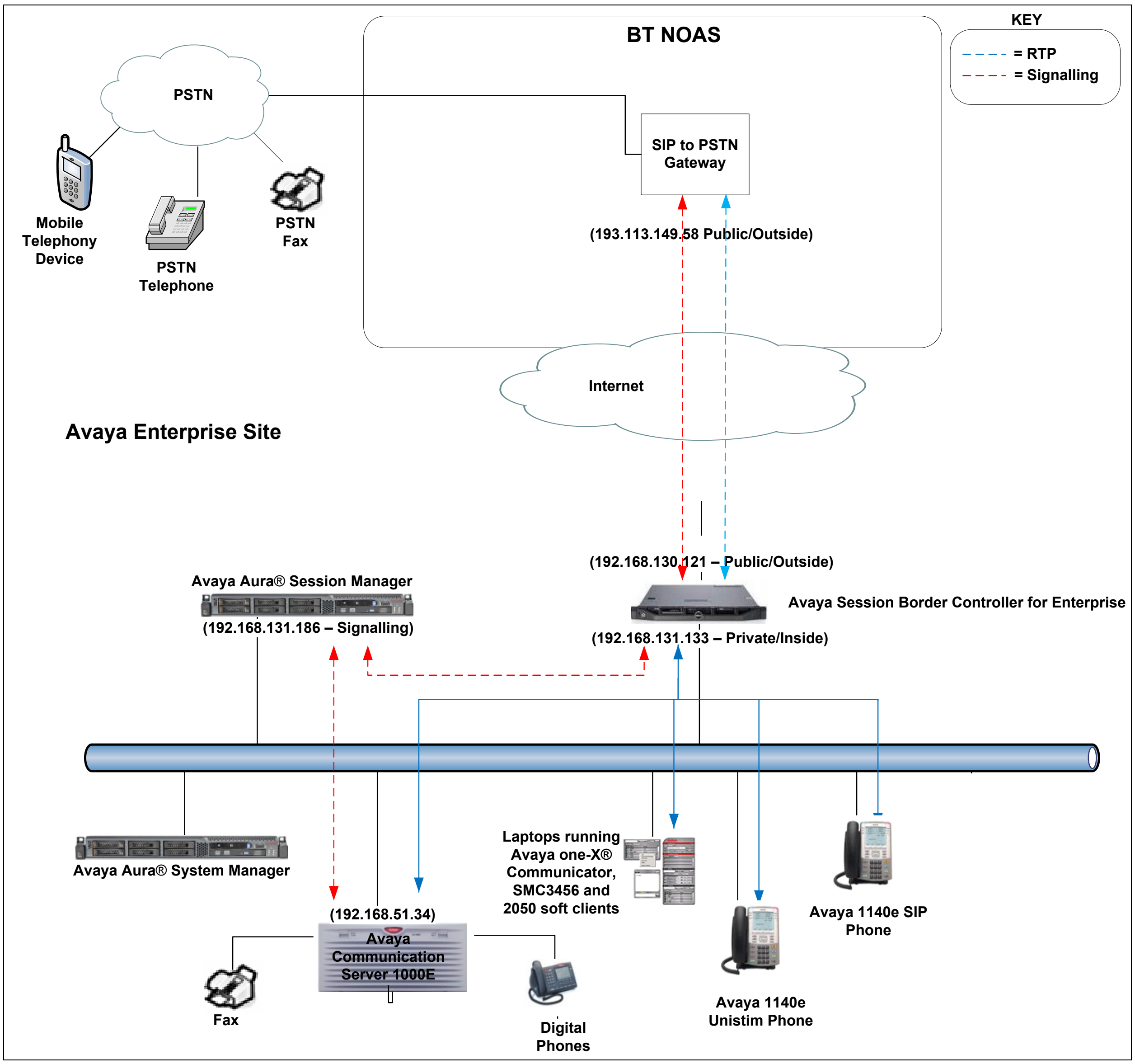

Figure 1: Test Setup BT SIP Trunk Service to Avaya Enterprise

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4. Equipment and Software Validated

The following equipment and software were used for the sample configuration provided:

Equipment	Software
Avaya Communication Server 1000E	Avaya Communication Server 1000E 007.50Q/ 7.50.17 (PSWV 100 with latest Patches and Deplist as shown in **Appendix A**)
Avaya Communication Server 1000E Media Gateway	CSP Version: MGCC CD01 MSP Version: MGCM AB01 APP Version: MGCA BA07 FPGA Version: MGCF AA18 BOOT Version: MGCB BA07 DSP1 Version: DSP1 AB04
Avaya S8800 Server running Avaya Aura® Session Manager	Avaya Aura® Session Manager 6.1 (6.1.3.0.613006)
Avaya S8800 Server running Avaya Aura® System Manager	Avaya Aura® System Manager 6.1 (6.1.7.1.1260)
Dell R210 V2 Server running Avaya Session Border Controller for Enterprise	Avaya Session Border Controller for Enterprise (4.0.5.Q02)
Avaya 1140e Unistim Phone	FW: 0625C8J
Avaya 1140e SIP Phone	FW: 4.00.04.00
Avaya one-X® Communicator	Version cs6.1.0.25
Avaya SMC3456	Version 2.6 Build 57666
Avaya Analogue Telephone	N/A
Avaya M3904 Digital Telephone	N/A
BT NOAS SIP Trunking	3.120.5.17

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5. Configure Avaya Communication Server 1000E

This section describes the steps required to configure Communication Server 1000E for SIP Trunking and also the basic configuration for telephones (Analogue, SIP and IP phones). SIP trunks are established between Communication Server 1000E and Session Manager. SIP trunks are also established between Session Manager and the Avaya SBCE private interface. The Avaya SBCE public interface connects to the BT Global Services NOAS SIP trunks. Incoming PSTN calls from the BT Global Services NOAS SIP Trunk service traverse the Avaya SBCE and are directed to the Session Manager, which directs the calls to Communication Server 1000E (see **Figure 1**).

The Avaya SBCE media manager has been configured to ensure RTP packets are managed correctly from the Avaya SBCE public interface to the private interface and vice versa. When a SIP message arrives at Communication Server 1000E, further incoming call treatment, such as incoming digit translations and class of service restrictions may be performed. All outgoing calls to the PSTN are processed within Communication Server 1000E and may be first subject to outbound features such as route selection, digit manipulation and class of service restrictions. When Communication Server 1000E selects a SIP trunk for outgoing PSTN calls, SIP signaling is directed to the Session Manager. The Session Manager directs the outbound SIP messages to the Avaya SBCE private interface. The Avaya SBCE public interface manages outgoing SIP sessions onwards to the BT Global Services NOAS SIP trunks.

Specific Communication Server 1000E configuration was performed using Element Manager and the system terminal interface. The general installation of the Avaya Communication Server 1000E, System Manager, Session Manager and Avaya SBCE is presumed to have been previously completed and is not discussed here. Configuration details will be provided as required to draw attention to changes in default system configurations.

5.1. Logging into the Avaya Communication Server 1000E

Log in using SSH to the ELAN IP address of the call server using a user with correct privileges. Once logged in, type **csconsole,** this will take the user into the VxWorks shell of the call server. Next type **logi**, the user will then be asked to login with correct credentials. Once logged in, the user can then progress to load any overlay.

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5.2. Confirm System Features

The keycode installed on the call server controls the maximum values for these attributes. If a required feature is not enabled or there is insufficient capacity, contact an authorized Avaya sales representative to add additional capacity. Use the Communication Server 1000E system terminal and manually load overlay 22 to print the System Limits (the required command is SLT), and verify that the number of SIP Access Ports reported by the system is sufficient for the combination of trunks to the BT network, and any other SIP trunks needed. See the following screenshot for a typical System Limits printout. The value of **SIP ACCESS PORTS** defines the maximum number of SIP trunks for the Communication Server 1000E.

```
System type is - Communication Server 1000E/CP PM
CP PM - Pentium M 1.4 GHz

IPMGs Registered:               4
IPMGs Unregistered:             0
IPMGs Configured/unregistered:  2

TRADITIONAL TELEPHONES   120    LEFT   110    USED    10
DECT USERS                16    LEFT    16    USED     0
IP USERS               10000    LEFT  9954    USED    46
BASIC IP USERS            16    LEFT    13    USED     3
TEMPORARY IP USERS         8    LEFT     8    USED     0
DECT VISITOR USER         16    LEFT    16    USED     0
ACD AGENTS               192    LEFT   185    USED     7
MOBILE EXTENSIONS          8    LEFT     7    USED     1
TELEPHONY SERVICES        16    LEFT    13    USED     3
CONVERGED MOBILE USERS     8    LEFT     8    USED     0
AVAYA SIP LINES           16    LEFT    12    USED     4
THIRD PARTY SIP LINES     16    LEFT    16    USED     0
PCA                       20    LEFT    18    USED     2
ITG ISDN TRUNKS            0    LEFT     0    USED     0
H.323 ACCESS PORTS       524    LEFT   524    USED     0
AST                     6652    LEFT  6640    USED    12
SIP CONVERGED DESKTOPS    16    LEFT    16    USED     0
SIP CTI TR87              16    LEFT     8    USED     8
SIP ACCESS PORTS         524    LEFT   518    USED     6
RAN CON                   90    LEFT    90    USED     0
MUS CON                  120    LEFT   120    USED     0
```

Load overlay 21, and confirm the customer is setup to use ISDN trunks (see below).

```
REQ: prt
TYPE: net
TYPE NET_DATA
CUST 0

TYPE NET_DATA
CUST 00
OPT RTD
AC1 INTL NPA SPN NXX LOC
AC2
FNP YES
ISDN YES
```


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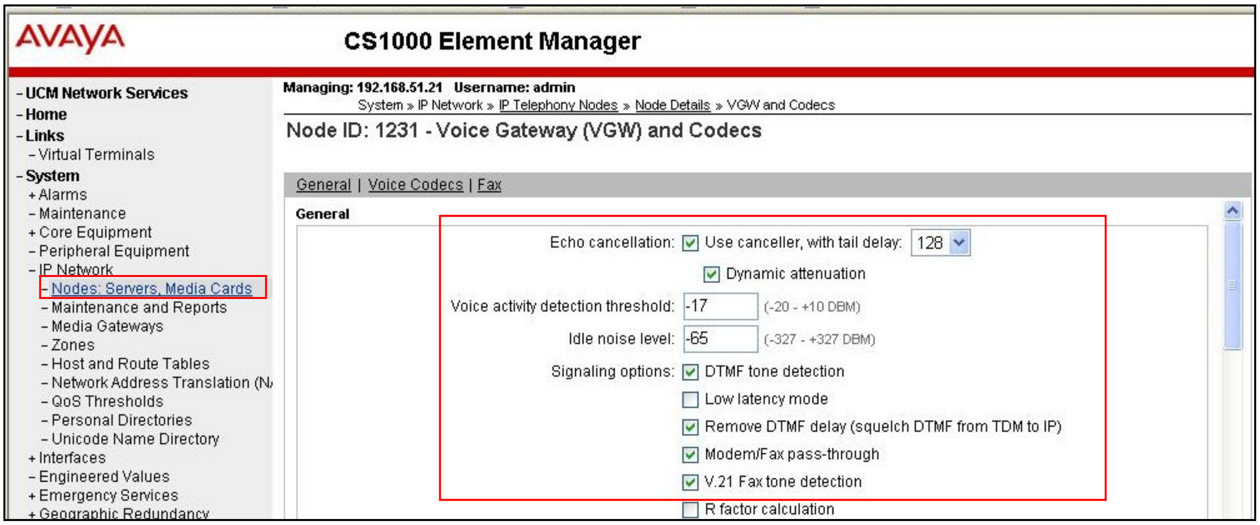
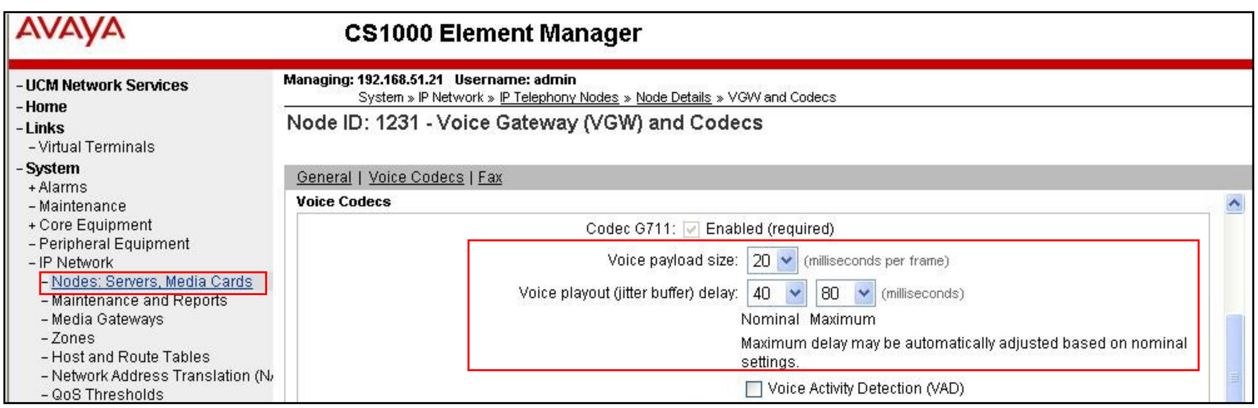
5.3. Configure Codecs for Voice and FAX operation

The BT Global Services NOAS SIP Trunk service supports G.711A and G.729A voice codecs and T.38 FAX transmissions. Using the Communication Server 1000E element manager sidebar, select **Nodes, Servers, Media Cards**. Navigate to the **IP Network → IP Telephony Nodes → Node Details → VGW and Codecs** property page and configure the Communication Server 1000E General codec settings as in the following screenshots. The values highlighted are required for correct operation. The following screenshot shows the necessary **General** settings.



Move down to the Voice Codecs section and configure the G.711 codec settings. The following screenshot shows the G.711 codec settings.



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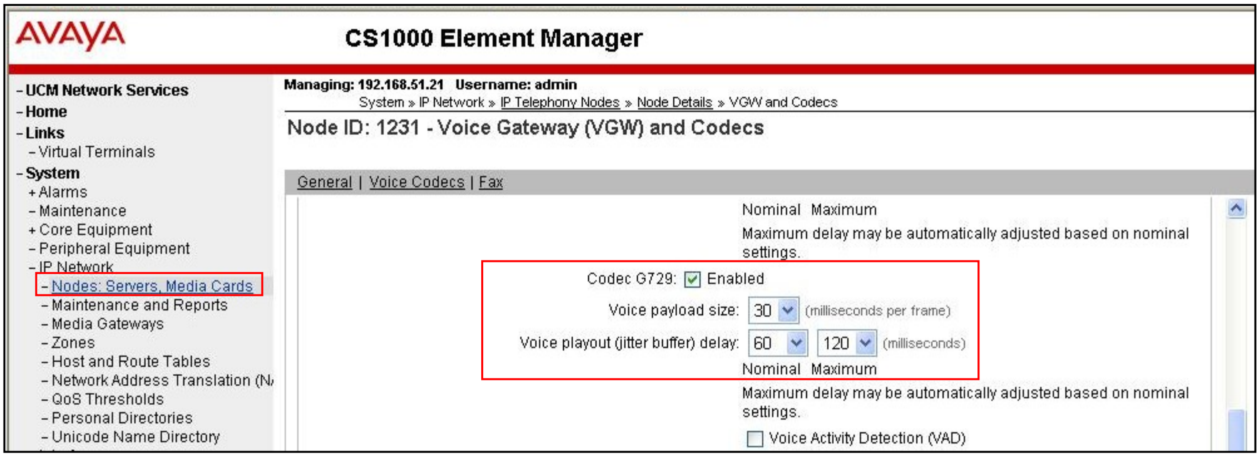
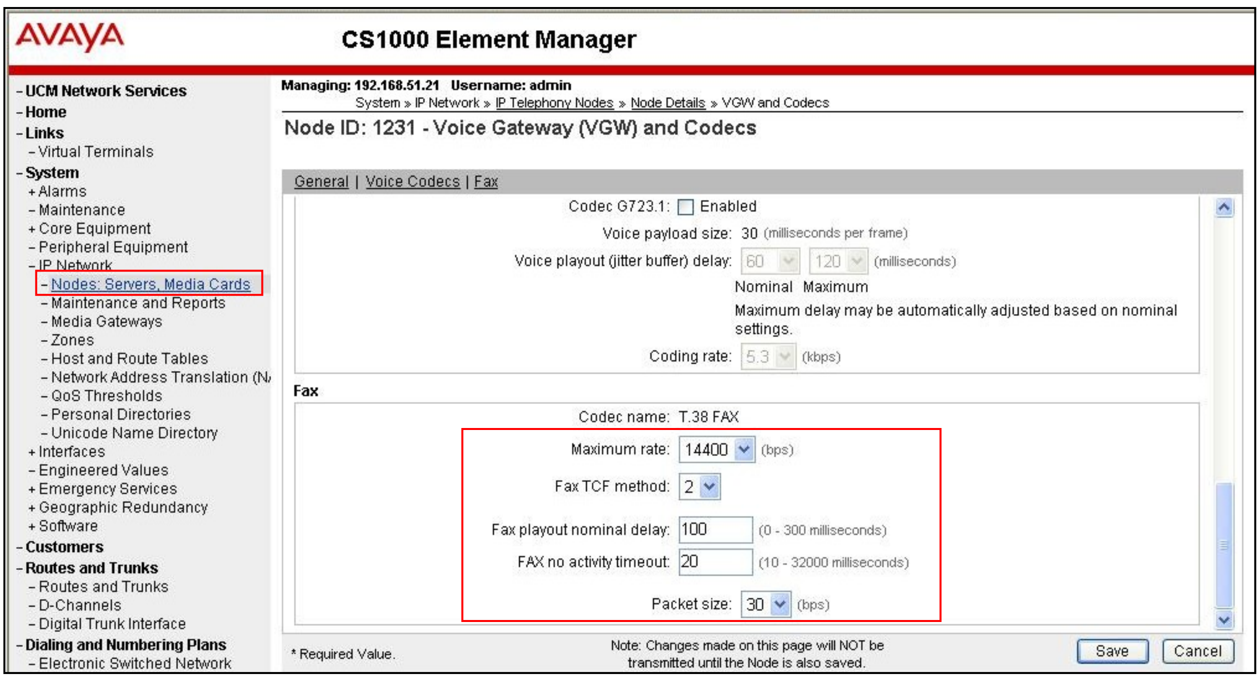
Next, scroll down to the G.729 codec section and configure the settings.



Finally, configure the Fax settings as in the highlighted section of the next screenshot. Click on the **Save** button when finished.



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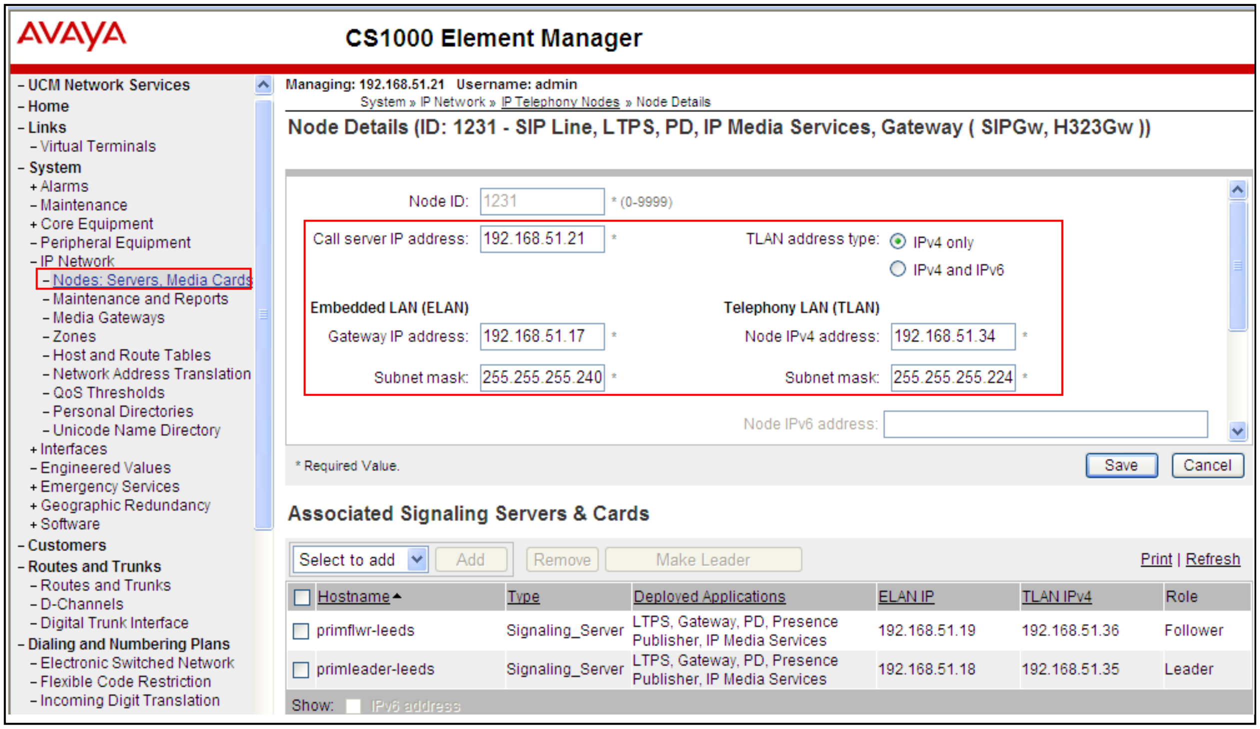
5.4. Virtual Trunk Gateway Configuration

Use Communication Server 1000E Element Manager to configure the system node properties. Navigate to the **System → IP Networks → IP Telephony Nodes → Node Details** and verify the highlighted section is completed with the correct IP addresses and subnet masks.



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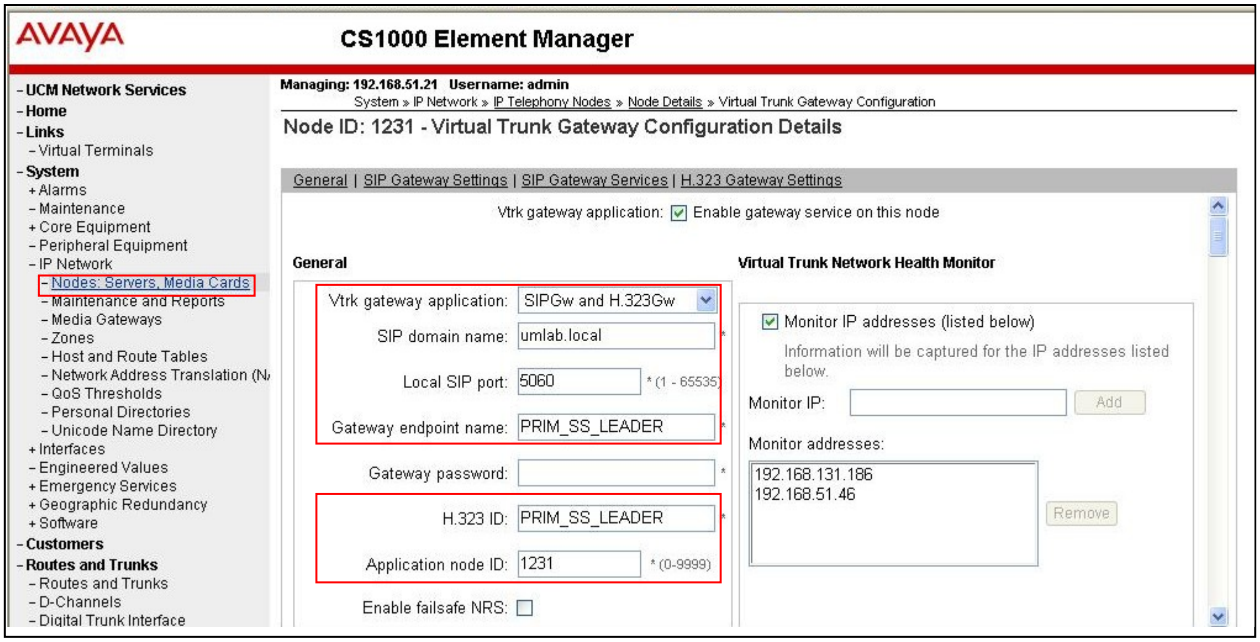
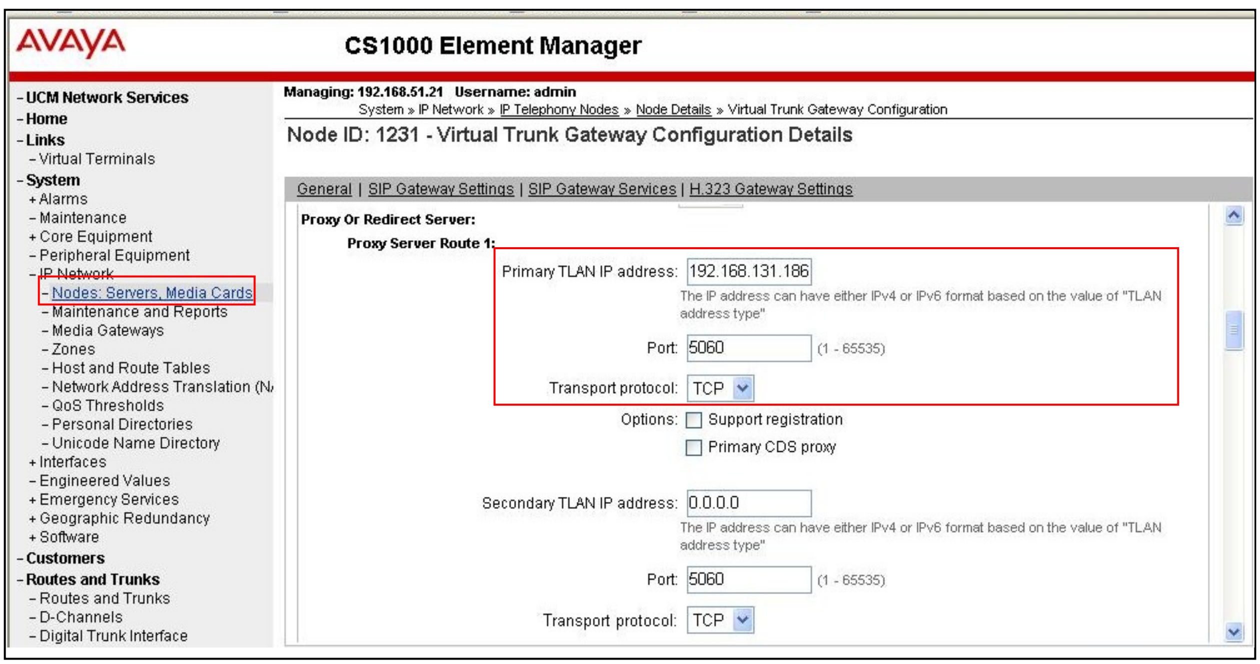
The next screenshot shows the SIP Virtual Trunk Gateway configuration, navigate to **System → IP Networks → IP Telephony Nodes → Node Details → Virtual Trunk Configuration Details** and in the **General** area, fill in the highlighted areas with the relevant settings.



Scroll down to the **Proxy or Redirect Server** area and fill in the values for **Proxy Server Route 1**. The Primary **TLAN IP address**, **Port** and **Transport protocol** values are required.



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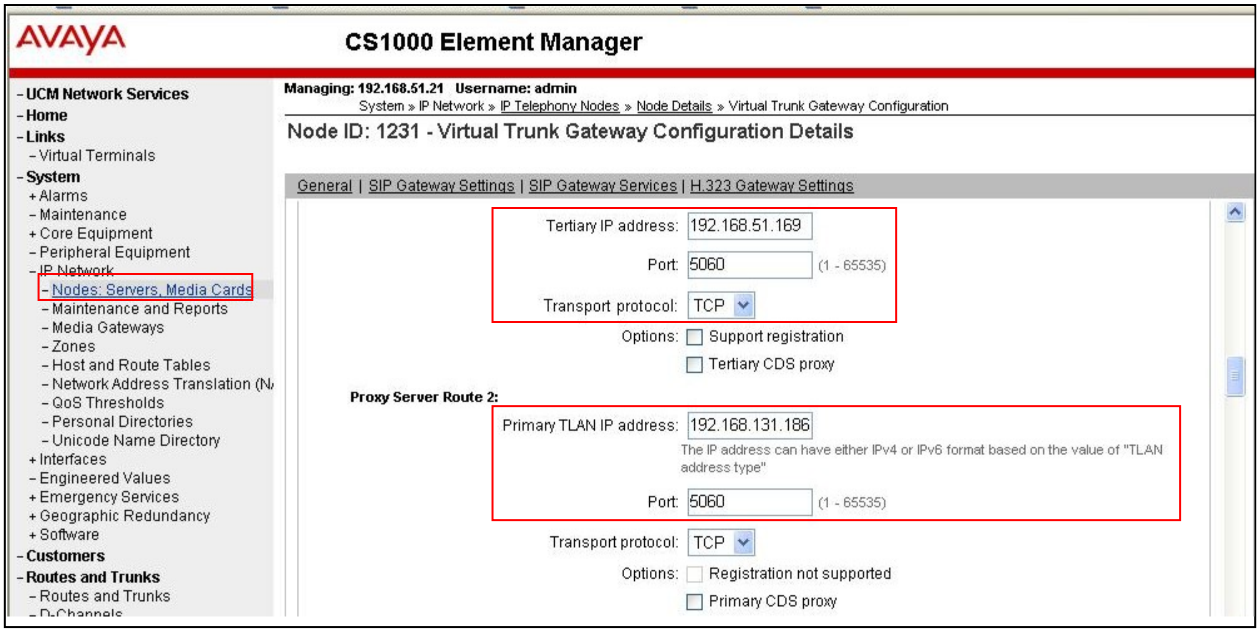
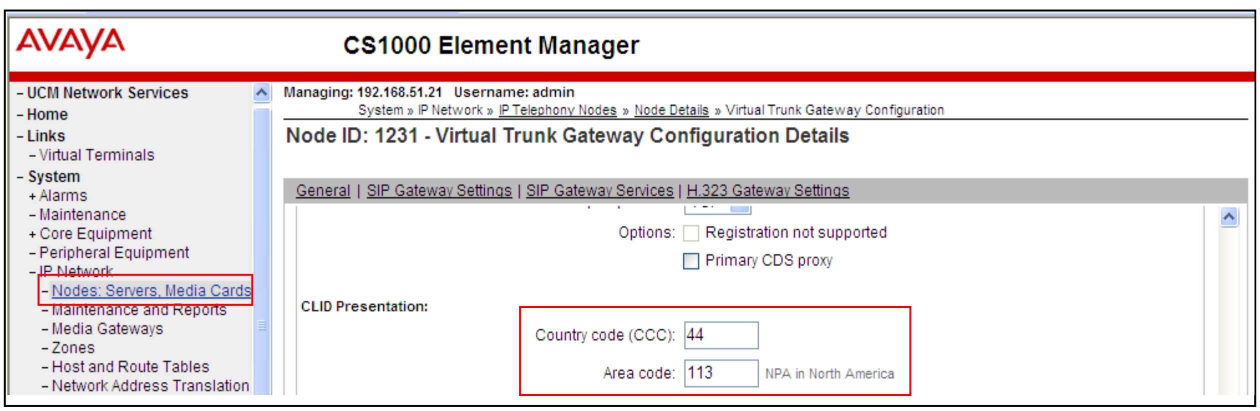
Move down the page and fill in **Tertiary IP address**, **Port** and **Transport protocol** (see the next screenshot). Fill in the **Proxy Server Route 2** values including **Primary TLAN IP address**, **Port** and **Transport protocol**.



Scroll down to the CLID Presentation section and fill in the **Country code (CCC)** and **Area code** values as shown below.



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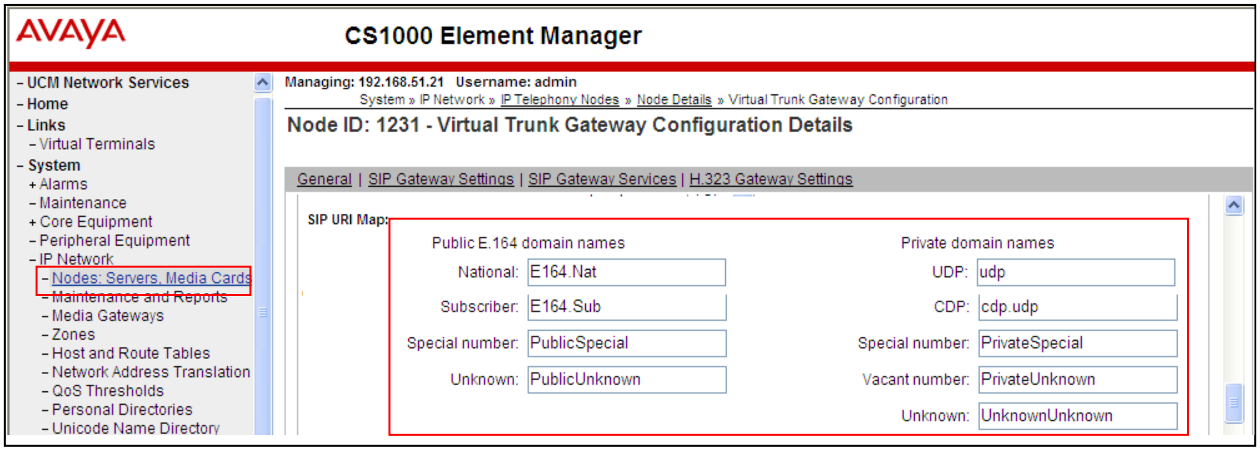
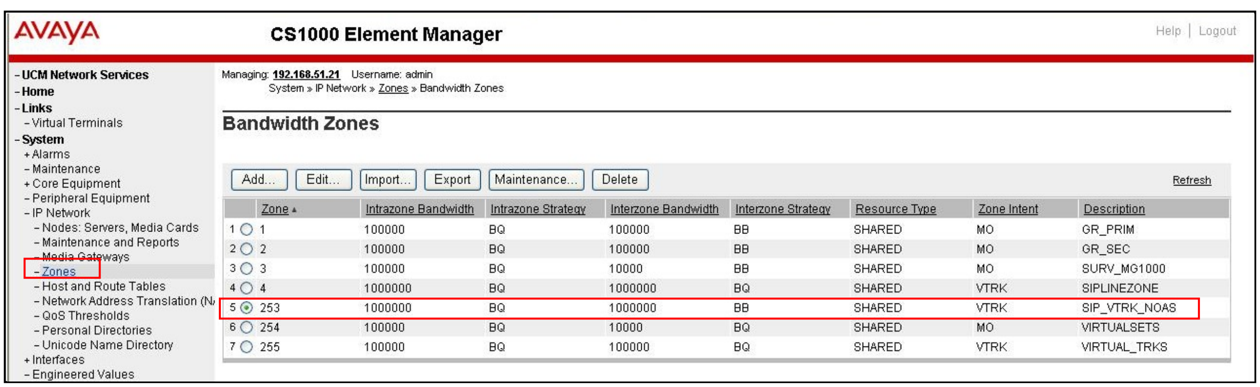
Move to the **SIP URI Maps** section and fill in the values (see next screenshot).



Scroll down to the bottom of the page and click on the **Save** button (not shown), then save and transmit (not shown).

5.5. Configure Bandwidth Zones

Bandwidth Zones are used for alternate call routing between IP stations and for Bandwidth Management. SIP trunks require a unique zone that are not shared with other resources and best practice dictates that IP telephones and Media Gateways are all placed in a separate zone than SIP trunks. Use Element Manager to define bandwidth zones as in the following highlighted example. Use Element Manager and navigate to **Zones → System → IP Network → Zones → Bandwidth Zones** and add new zones as required.



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5.6. Configure SIP Trunks

Communication Server 1000E virtual trunks will be used for all inbound and outbound PSTN calls to the BT SIP Trunk Service. Five separate steps are required to configure Communication Server 1000E virtual trunks:-

- Configure a D-Channel Handler (**DCH**); configure using the Communication Server 1000E system terminal and overlay 17.
- Configure a SIP trunk Route Data Block (**RDB**); configure using the Communication Server 1000E system terminal and overlay 16.
- Configure SIP trunk members; configure using the Communication Server 1000E system terminal and overlay 14.
- Configure a Route List Block (**RLB**); configure using the Communication Server 1000E system terminal and overlay 86.
- Configure Special Prefix Numbers (**SPN's**); configure using the Communication Server 1000E system terminal and overlay 90.

The following is an example DCH configuration for SIP trunks. Load overlay 17 at the Communication Server 1000E system terminal and enter the following values. The highlighted entries are required for correct SIP trunk operation. Exit overlay 17 when completed.

```
Overlay 17
ADAN     DCH 50
  CTYP DCIP
  DES  VIR_TRK
  USR  ISLD
  ISLM 4000
  SSRC 1800
  OTBF 32
  NASA YES
  IFC  SL1
  CNEG 1
  RLS  ID  5
  RCAP ND2
  MBGA NO
  H323
    OVLR NO
    OVLS NO
```


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Next, configure the SIP trunk Route Data Block (RDB) using the Communication Server 1000E system terminal and overlay 16. Load overlay 16, enter **RDB** at the prompt, press return and commence configuration. The value for **DCH** is the same as previously entered in overlay 17. The value for **NODE** should match the node value in **Section 5.3**. The value for **ZONE** should match that used in **Section 5.4** for **SIP_VTRK_NOAS**. The remaining highlighted values are important for correct SIP trunk operation.

```
Overlay 16
TYPE: rdb
CUST 00
ROUT 100
TYPE RDB
CUST 00
ROUT 100
DES  VIR_TRK
TKTP TIE
NPID_TBL_NUM   0
ESN  NO
RPA  NO
CNVT NO
SAT  NO
RCLS EXT
VTRK YES
ZONE 00253
PCID SIP
CRID NO
NODE 1231
DTRK NO
ISDN YES
    MODE ISLD
    DCH  50
    IFC  SL1
    PNI  00001
    NCNA YES
    NCRD YES
    TRO  NO
    FALT NO
    CTYP UKWN
    INAC NO
    ISAR NO
    DAPC NO
MBXR NO
MBXOT NPA
MBXT 0
PTYP ATT
CNDP UKWN
AUTO NO
DNIS NO
DCDR NO
ICOG IAO
SRCH LIN
TRMB YES
STEP
```

```
ACOD 1600
TCPP NO
PII NO
AUXP NO
TARG
CLEN 1
BILN NO
OABS
INST
IDC  YES
DCNO 10
NDNO 10 *
DEXT NO
DNAM NO
SIGO STD
STYP SDAT
MFC  NO
ICIS YES
OGIS YES
TIMR ICF  1920
     OGF  1920
     EOD  13952
     LCT  256
     DSI  34944
     NRD  10112
     DDL  70
     ODT  4096
     RGV  640
     GTO  896
     GTI  896
     SFB  3
     PRPS  800
     NBS  2048
     NBL  4096
     IENB  5
     TFD  0
     VSS  0
     VGD  6
     EESD  1024
SST  5 0
DTD  NO
SCDT NO
2 DT NO
NEDC ORG
FEDC ORG
```

```
CPDC NO
DLTN NO
HOLD 02 02 40
SEIZ 02 02
SVFL 02 02
DRNG NO
CDR  NO
NATL YES
SSL
CFWR NO
IDOP NO
VRAT NO
MUS  YES
MRT  21
PANS YES
RACD NO
MANO NO
FRL  0 0
FRL  1 0
FRL  2 0
FRL  3 0
FRL  4 0
FRL  5 0
FRL  6 0
FRL  7 0
OHQ  NO
OHQT 00
CBQ  NO
AUTH NO
TTBL 0
ATAN NO
OHTD NO
PLEV 2
OPR  NO
ALRM NO
ART  0
PECL NO
DCTI 0
TIDY 1600 100
ATRR NO
TRRL NO
SGRP 0
ARDN NO
CTBL 0
AACR NO
```


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Next, configure virtual trunk members using the Communication Server 1000E system terminal and overlay 14. Configure sufficient trunk members to carry both incoming and outgoing PSTN calls. The following example shows a single SIP trunk member configuration. Load overlay 14 at the system terminal and type **new X**, where X is the required number of trunks. Continue entering data until the overlay exits. The **RTMB** value is a combination of the **ROUT** value entered in the previous step and the first trunk member (usually 1). The remaining highlighted values are important for correct SIP trunk operation.

```
Overlay 14
TN   160 0 0 0
DATE
PAGE
DES  VIR_TRK
TN   160 0 00 00  VIRTUAL
TYPE IPTI
CDEN 8D
CUST 0
XTRK VTRK
ZONE 00253
TIMP 600
BIMP 600
AUTO_BIMP NO
NMUS NO
TRK  ANLG
NCOS 0
RTMB 100 1
CHID 1
TGAR 1
STRI/STRO WNK WNK
SUPN YES
AST  NO
IAPG 0
CLS  TLD DTN CND ECD WTA LPR APN THFD XREP SPCD MSBT
     P10 NTC
TKID
AACR NO
```

Configure a Route List Block (RLB) in overlay 86. Load overlay 86 at the system terminal and type **new**. The following example shows the values used. The value for **ROUT** is the same as previously entered in overlay 16. The **RLI** value is unique to each RLB.

```
Overlay 86
CUST 0
FEAT rlb
RLI  24
ELC  NO
ENTR 0
LTER NO
ROUT 100
TOD  0 ON  1 ON  2 ON  3 ON
     4 ON  5 ON  6 ON  7 ON
VNS  NO
SCNV NO
CNV  NO
EXP  NO
FRL  0
DMI  0
CTBL 0
ISDM 0
FCI  0
FSNI 0
BNE  NO
DORG NO
SBOC NRR
PROU 1
IDBB DBD
IOHQ NO
OHQ  NO
CBQ  NO
ISET 0
NALT 5
MFRL 0
OVLL 0
```


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Next, configure Special Prefix Number(s) (SPN) which users will dial to reach PSTN numbers. Use the Communication Server 1000E system terminal and overlay 90. The following are some example SPN entries used. The highlighted **RLI** value previously configured in overlay 86 is used as the Route List Index (RLI). This is the default PSTN route to the SIP Trunk service.

SPN 999 FLEN 3 ITOH NO CLTP NONE **RLI 24** SDRR NONE ITEI NONE	SPN 90 FLEN 7 ITOH NO CLTP NONE **RLI 24** SDRR NONE ITEI NONE	SPN 2 FLEN 7 ITOH NO CLTP NONE **RLI 24** SDRR NONE ITEI NONE	SPN 15 FLEN 3 ITOH NO CLTP NONE **RLI 24** SDRR NONE ITEI NONE

5.7. Configure Analogue, Digital and IP Telephones

A variety of telephone types were used during the testing. The following is the configuration for the Avaya 1140e Unistim IP telephone. Load overlay 20 at the system terminal and enter the following values. A unique five digit number is entered for the **KEY 00** and **KEY 01** value. The value for **CFG_ZONE** is the value used in **Section 5.4** for **VIRTUALSETS**.

```
Overlay 20 IP Telephone configuration
DES  1140
TN   096 0 01 16  VIRTUAL
TYPE 1140
CDEN 8D
CTYP XDLC
CUST 0
NUID
NHTN
CFG_ZONE 00254
CUR_ZONE 00254
ERL  0
ECL  0
FDN  0
TGAR 0
LDN  NO
NCOS 0
SGRP 0
RNPG 1
SCI  0
LNRS 16
XLST
SCPW
SFLT NO
CAC_MFC 0
CLS  UNR FBA WTA LPR PUA MTD FNA HTA TDD HFA CRPD
     MWA LMPN RMMD SMWD AAD IMD XHD IRD NID OLD VCE DRG1
     POD SLKD CCSD SWD LNA CNDA
     CFTD SFD MRD DDV CNID CDCA MSID DAPA BFED RCBD
     ICDA CDMD LLCN MCTD CLBD AUTR
     GPUD DPUD DNDA CFXA ARHD FITD CLTD ASCD
     CPFA CPTA ABDD CFHD FICD NAID BUZZ AGRD MOAD
     UDI RCC HBTA AHD IPND DDGA NAMA MIND PRSD NRWD NRCD NROD
     DRDD EXR0
     USMD USRD ULAD CCBD RTDD RBDD RBHD PGND OCBD FLXD FTTC DNDY DNO3 MCBN
     FDSD NOVD VOLA VOUD CDMR PRED RECA MCDD T87D SBMD KEM3 MSNV FRA  PKCH MUTA MWTD

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```


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```
---continued from previous page----

DVLD CROD CROD
CPND_LANG ENG
RCO  0
HUNT 0
LHK  0
PLEV 02
PUID
DANI NO
AST  00
IAPG 1
AACS NO
ITNA NO
DGRP
MLWU_LANG 0
MLNG ENG
DNDR 0
KEY  00 MCR 52000 0     MARP
        CPND
          CPND_LANG ROMAN
            NAME IP1140
            XPLN 10
            DISPLAY_FMT FIRST,LAST
     01 MCR 52000 0
        CPND
          CPND_LANG ROMAN
            NAME IP1140
            XPLN 10
            DISPLAY_FMT FIRST,LAST
     02
     03 BSY
     04 DSP
     05
     06
     07
     08
     09
     10
     11
     12
     13
     14
     15
     16
     17 TRN
     18 AO6
     19 CFW 16
     20 RGA
     21 PRK
     22 RNP
     23
     24 PRS
     25 CHG
     26 CPN
```


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Digital telephones are configured using the overlay 20; the following is a sample 3904 digital set configuration. Again, a unique number is entered for the **KEY 00** and **KEY 01** value.

```
Overlay 20 – Digital Set configuration
TYPE: 3904
DES  3904
TN   000 0 09 08  VIRTUAL
TYPE 3904
CDEN 8D
CTYP XDLC
CUST 0
MRT
ERL  0
FDN  0
TGAR 0
LDN  NO
NCOS 0
SGRP 0
RNPG 1
SCI  0
SSU
LNRS 16
XLST
SCPW
SFLT NO
CAC_MFC 0
CLS  UNR FBD WTA LPR PUA MTD FND HTD TDD HFA GRLD CRPA STSD
     MWA LMPN RMMD SMWD AAD IMD XHD IRD NID OLD VCE DRG1
     POD SLKD CCSD SWD LNA CNDA
     CFTD SFD MRD DDV CNID CDCA MSID DAPA BFED RCBD
     ICDA CDMA LLCN MCTD CLBD AUTU
     GPUD DPUD DNDA CFXA ARHD FITD CNTD CLTD ASCD
     CPFA CPTA ABDA CFHD FICD NAID BUZZ AGRD MOAD
     UDI RCC HBTD AHA IPND DDGA NAMA MIND PRSD NRWD NRCD NROD
     DRDD EXR0
     USMD USRD ULAD CCBD RTDD RBDD RBHD PGND OCBD FLXD FTTC DNDY DNO3 MCBN
     FDSD NOVD CDMR PRED RECA MCDD T87D SBMD PKCH CROD CROD
CPND_LANG ENG
RCO  0
HUNT
PLEV 02
PUID
DANI NO
SPID NONE
AST
IAPG 1
AACS
ACQ
ASID
SFNB
SFRB
USFB
CALB
FCTB
ITNA NO
DGRP
PRI  01
MLWU_LANG 0

---continued on next page----
```


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```
---continued from previous page----

MLNG ENG
DNDR 0
KEY  00 MCR 52001 0     MARP
        CPND
          CPND_LANG ROMAN
            NAME Digital Set
            XPLN 10
            DISPLAY_FMT FIRST,LAST
     01 MCR 52001 0
        CPND
          CPND_LANG ROMAN
            NAME Digital Set
            XPLN 10
            DISPLAY_FMT FIRST,LAST
     02 DSP
     03 MSB
     04
     05
     06
     07
     08
     09
     10
     11
     12
     13
     14
     15
     16
     17 TRN
     18 AO6
     19 CFW 16
     20 RGA
     21 PRK
     22 RNP
     23
     24 PRS
     25 CHG
     26 CPN
     27 CLT
     28 RLT
     29
     30
     31
```


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Analogue telephones are also configured using overlay 20; the following example shows an Analogue port configured for Plain Ordinary Telephone Service (POTS) and also configured to allow T.38 Fax transmission. A unique value is entered for **DN** which is the extension number. **DTN** is required if the telephone uses DTMF dialing. Values **FAXA** and **MPTD** configure the port for T.38 Fax transmissions.

```
Overlay 20 – Analogue Telephone Configuration
DES  500
TN   100 0 00 03
TYPE 500
CDEN 4D
CUST 0
MRT

ERL 00000
WRLS NO
DN   52002
AST  NO
IAPG 0
HUNT
TGAR 0
LDN  NO
NCOS 0
SGRP 0
RNPG 0
XLST
SCI  0
SCPW
SFLT NO
CAC_MFC 0
CLS  UNR DTN FBD XFD WTA THFD FND HTD ONS
     LPR XRD AGRD CWD SWD MWD RMMD SMWD LPD XHD SLKD CCSD LND TVD
     CFTD SFD MRD C6D CNID CLBD AUTU
     ICDD CDMD LLCN EHTD MCTD
     GPUD DPUD CFXD ARHD OVDD AGTD CLTD LDTD ASCD SDND
     MBXD CPFA CPTA UDI RCC HBTD IRGD  DDGA NAMA MIND
     NRWD NRCD NROD SPKD CRD PRSD MCRD
     EXR0 SHL SMSD ABDD CFHD DNDY DNO3
     CWND USMD USRD CCBD BNRD OCBD RTDD RBDD RBHD FAXA CNUD CNAD PGND FTTC
     FDSD NOVD CDMR PRED MCDD T87D SBMD PKCH MPTD
PLEV 02
PUID
AACS NO
MLWU_LANG 0
FTR  DCFW 4
```


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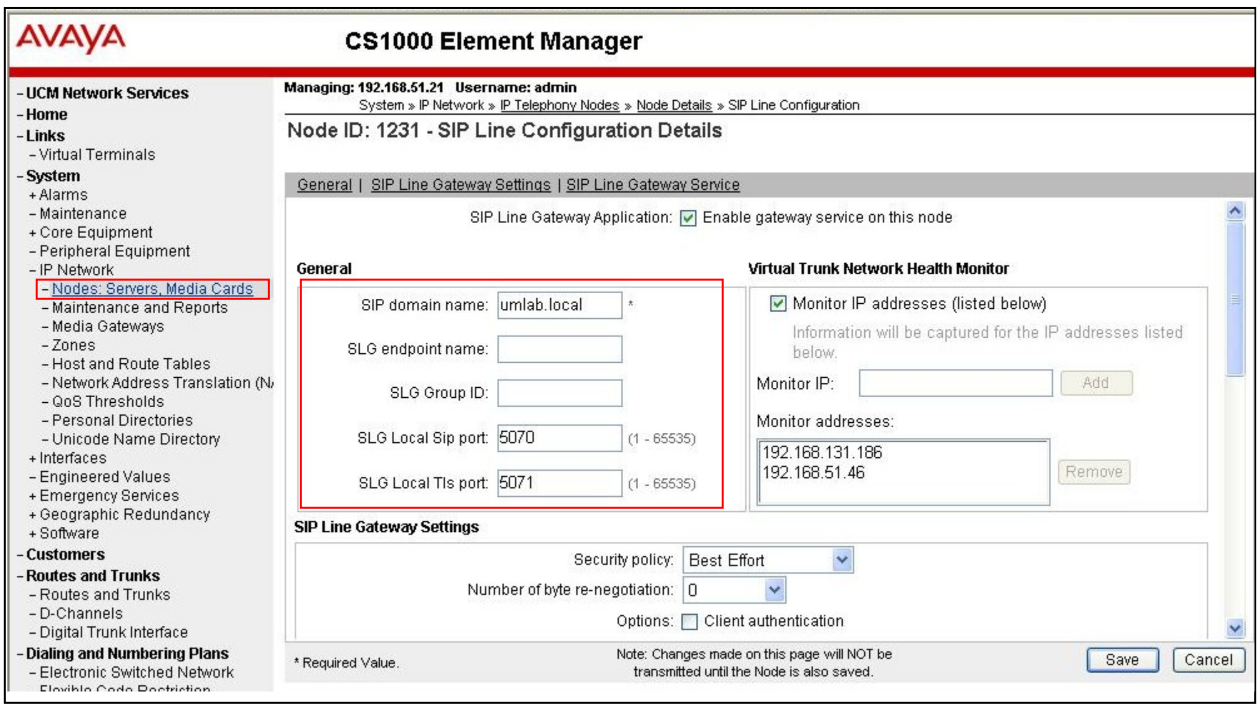
5.8. Configure the SIP Line Gateway Service

SIP terminal operation requires the Communication Server node to be configured as a SIP Line Gateway (SLG) before SIP telephones can be configured. Prior to configuring the SIP Line node properties, the SIP Line service must be enabled in the customer data block. Use the Communication Server 1000E system terminal and overlay 15 to activate SIP Line services, as in the following example where **SIPL_ON** is set to **YES**.

```
SLS_DATA
  SIPL_ON YES
  UAPR 78
  NMME NO
```

The numerical value entered for the **UAPR** setting will be pre-appended to all SIP Line phones, and is used internally to track SIP phones. Use Element Manager and navigate to the **IP Network → IP Telephony Nodes → Node Details → SIP Line Gateway Configuration** page. In the **General** section, configure the **SIP domain name**, **SLG Local Sip port** and **SLG Local Tls port**.



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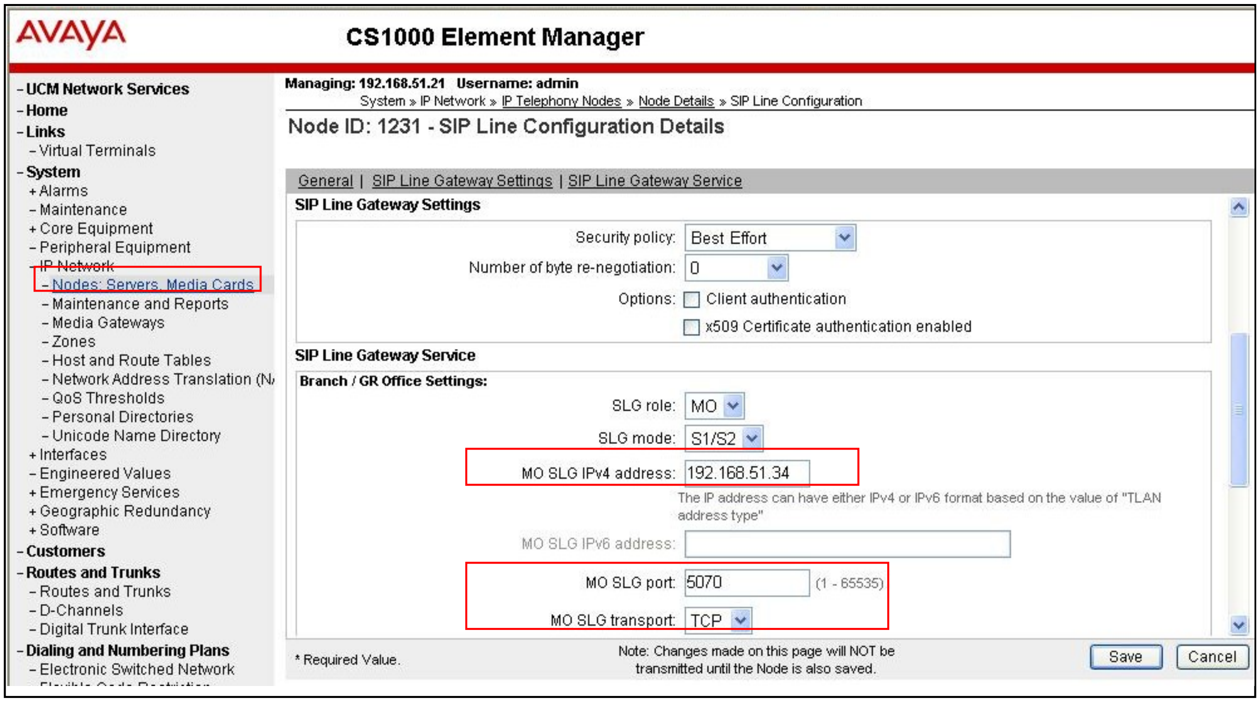
Scroll down to the **Branch /GR Office Settings** area. The IP address in **MO SLG IPv4 address** is the system **NODE IP address**, previously configured in **Section 5.3**. The **MO SLG port** and **MO SLG transport** values will be **5070** and **TCP**. Click on the **Save** button when finished.



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5.9. Configure SIP Line Telephones

When SIP Line service configuration is completed, use the Communication Server 1000E system terminal and overlay 20 to add a Universal Extension (UEXT). See the following example of a SIP Line extension. The value for **UXTY** must be **SIPL**. This example is for an Avaya SIP telephone, so the value for **SIPN** is 1. The **SIPU** value is the username, **SCPW** is the logon password and these values are required to register the SIP telephone to the SLG. The value for **CFG_ZONE** is the value set for **SIPLINEZONE** in **Section 5.4**. A unique telephone number is entered for value **KEY 00**. The value for **KEY 01** is comprised of the **UAPR** value (set to 78 previously in this section) and the telephone number used in **KEY 00**.

```
Overlay 20 – SIP Telephone Configuration
DES  SIPD
TN   096 0 01 15  VIRTUAL
TYPE UEXT
CDEN 8D
CTYP XDLC
CUST 0
UXTY SIPL
MCCL YES
SIPN 1
SIP3 0
FMCL 0
TLSV 0
SIPU 52003
NDID 5
SUPR NO
SUBR DFLT MWI RGA CWI MSB
UXID
NUID
NHTN
CFG_ZONE 00004
CUR_ZONE 00004
ERL  0
ECL  0
VSIT NO
FDN
TGAR 0
LDN  NO
NCOS 0
SGRP 0
RNPG 0
SCI  0
SSU
XLST
SCPW 52003
SFLT NO
CAC_MFC 0
CLS  UNR FBD WTA LPR MTD FNA HTA TDD HFD CRPD
     MWD LMPN RMMD SMWD AAD IMD XHD IRD NID OLD VCE DRG1
     POD SLKD CCSD SWD LND CNDA
     CFTD SFD MRD DDV CNID CDCA MSID DAPA BFED RCBD
     ICDD CDMD LLCN MCTD CLBD AUTU
     GPUD DPUD DNDA CFXA ARHD FITD CLTD ASCD
     CPFA CPTA ABDD CFHD FICD NAID BUZZ AGRD MOAD
```


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```
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     UDI RCC HBTD AHA IPND DDGA NAMA MIND PRSD NRWD NRCD NROD
     DRDD EXR0
     USMD USRD ULAD CCBD RTDD RBDD RBHD PGND OCBD FLXD FTTC DNDY DNO3 MCBN
     FDSD NOVD VOLA VOUD CDMR PRED RECD MCDD T87D SBMD ELMD MSNV FRA  PKCH MWTD DVLD
CROD CROD
CPND_LANG ENG
RCO  0
HUNT
LHK  0
PLEV 02
PUID
DANI NO
AST
IAPG 0 *

AACS NO
ITNA NO
DGRP
MLWU_LANG 0
MLNG ENG
DNDR 0
KEY  00 MCR 52003 0     MARP
        CPND
          CPND_LANG ROMAN
            NAME Sigma 1140
            XPLN 11
            DISPLAY_FMT FIRST,LAST*
     01 HOT U 7852003 MARP 0
     02
     03
     04
     05
     06
     07
     08
     09
     10
     11
     12
     13
     14
     15
     16
     17 TRN
     18 AO6
     19 CFW 16
     20 RGA
     21 PRK
     22 RNP
     23     *
     24 PRS
     25 CHG
     26 CPN
     27
     28
     29
     30
     31
```


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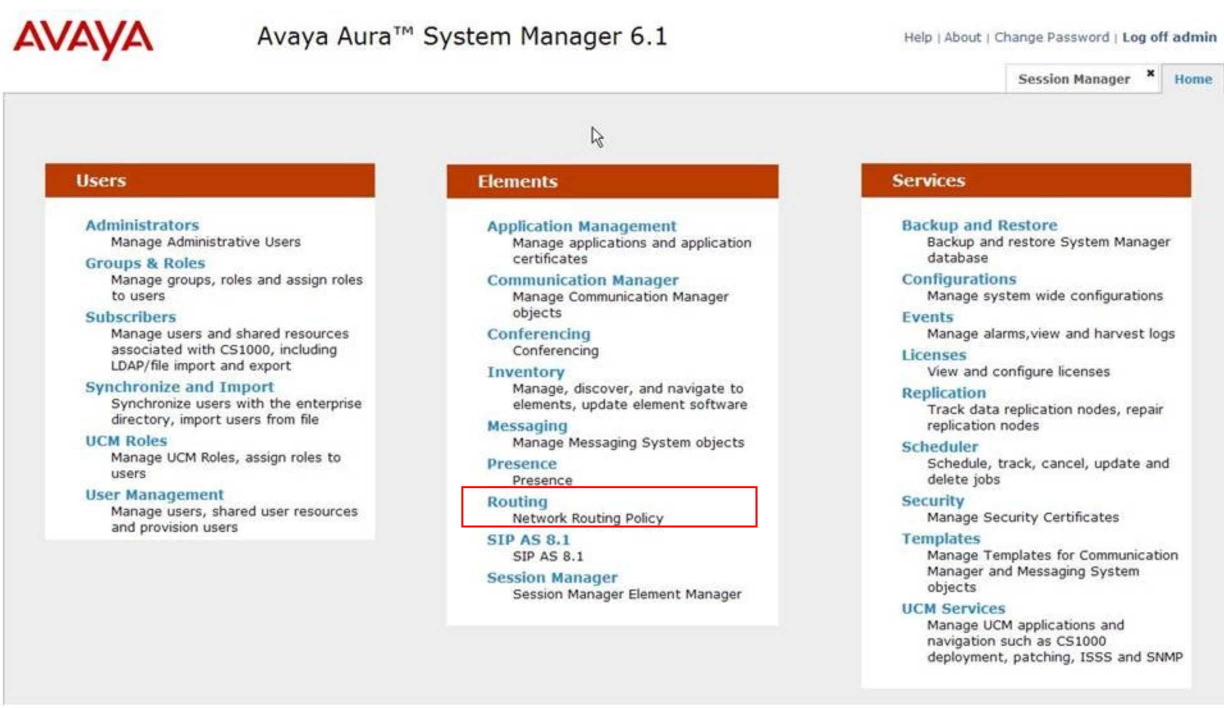
6. Configuring Avaya Aura® Session Manager

This section provides the procedures for configuring Session Manager. The Session Manager is configured via the System Manager. The procedures include the following areas:

- Log in to Avaya Aura® System Manager
- Administer SIP domain
- Administer Locations
- Administer Adaptations
- Administer SIP Entities
- Administer Entity Links
- Administer Routing Policies
- Administer Dial Patterns
- Administer Avaya Communication Server 1000E as a Managed Element

6.1. Log in to Avaya Aura® System Manager

Access the System Manager using a Web Browser by entering **http://<FQDN >/SMGR**, where **<FQDN>** is the fully qualified domain name of System Manager. Log in using appropriate credentials (not shown) and the **Home** tab will be presented with menu options shown below.



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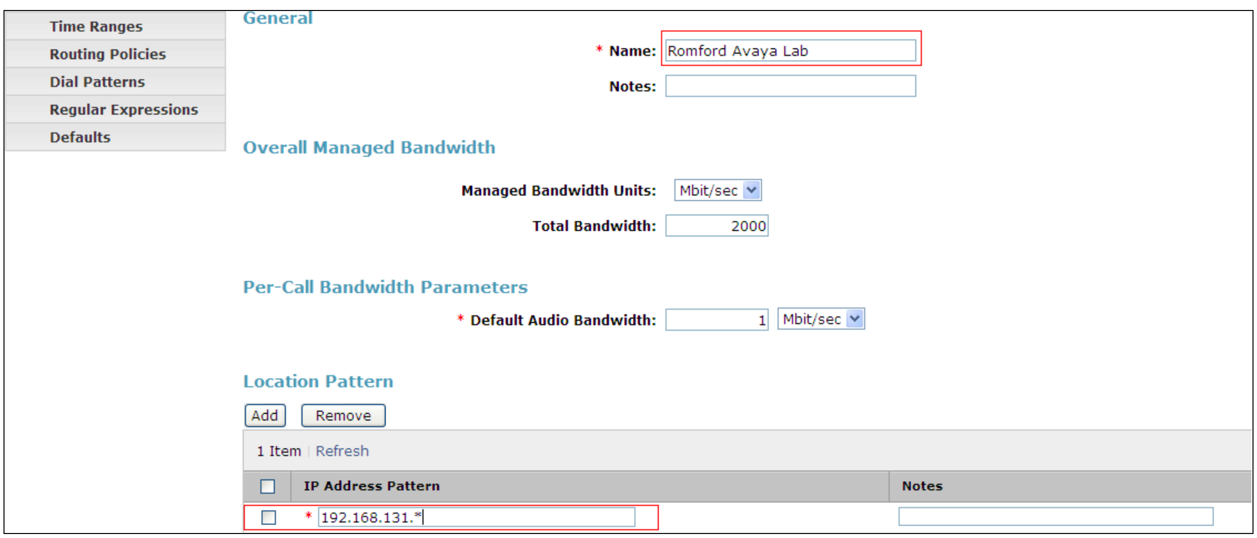
6.2. Administer SIP Domain

To add the SIP domain that will be used with Session Manager, select **Routing** from the Elements Home tab menu and in the resulting tab select **Domains** from left hand menu. Click the **New** button (not shown) to create a new SIP domain entry. In the **Name** field, enter the domain name (e.g., **umlab.local**) and optionally a description for the domain in the **Notes** field. Click **Commit** to save changes.

6.3. Administer Locations

Locations are used to identify logical and/or physical locations where SIP Entities reside, for the purposes of bandwidth management. One location is added to the sample configuration for the enterprise SIP entities. On the **Routing** tab, select **Locations** from the left hand menu. Under **General,** in the **Name** field enter an informative name for the location. Scroll to the bottom of the page and under **Location Pattern**, click **Add** Enter an **IP Address Pattern** in the resulting new row, ***** is used to specify any number of allowed characters at the end of the string. Below is the location configuration used for the simulated enterprise.



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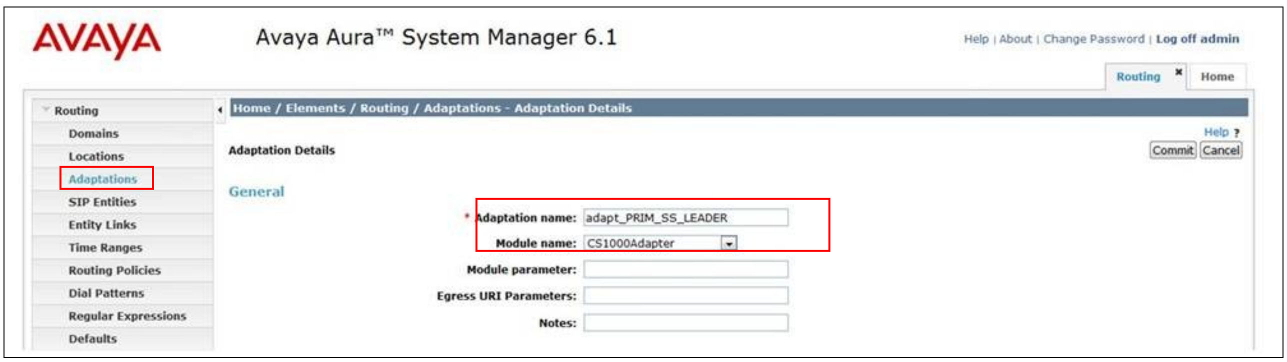
6.4. Administer Adaptations

Please note that the testing was performed in BT's lab in the UK. This lab is also being used for other work other than Compliance testing with the NOAS platform. There were two adaptations being used, one on the CS1000E and one on the Avaya SBCE. For completeness both adaptations will be described, however there is an overlap in what each adaptation is trying to achieve regarding digit manipulation.

6.4.1. Administer Adaptation for Communication Server 1000E

To ensure that the E.164 numbering format is used between the enterprise and BT SIP Trunk Service, an adaptation module is used to perform some digit manipulation. This adaptation is applied to the Communication Server 1000E SIP entity. To add an adaptation, under the **Routing** tab select **Adaptations** on the left hand menu and then click on the **New** button (not shown). Under **Adaption Details → General**:

- In the **Adaptation name** field, enter an informative name.
- In the **Module name** field, click on the down arrow and then select the <**click to add module**> entry from the drop down list and type **CS1000Adapter** in the resulting **New Module Name** field.



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Scroll down the page and under **Digit Conversion for Incoming Calls to SM**, click the **Add** button and specify the digit manipulation to be performed as follows:

- Enter the leading digits that will be matched in the **Matching Pattern** field.
- In the **Min** and **Max** fields set the minimum and maximum digits allowed in the digit string to be matched.
- In the **Delete Digits** field enter the number of leading digits to be removed.
- In the **Insert Digits** field specify the digits to be prefixed to the digit string.
- In the **Address to modify** field specify the digits to manipulate by the adaptation. In this configuration the dialed number is the target so destination has been selected.

This will ensure any destination numbers received from Communication Server 1000E are converted to the E.164 numbering format before being processed by Session Manager. The following screenshot shows the settings used.

Digit Conversion for Incoming Calls to SM

Add Remove

12 Items Refresh Filter: Enable

Matching Pattern	Min	Max	Phone Context	Delete Digits	Insert Digits	Address to modify	Notes
003	3	36	PrivateSpecia	2	+	destination	Ireland IDD Code
0113	4	36	PrivateSpecia	1	+44	destination	Leeds Area STD Code
0121	4	36	PrivateSpecia	1	+44	destination	Birmingham Area STD Code
0131	4	36	PrivateSpecia	1	+44	destination	Edinburgh Area STD Code
01903	5	36	PrivateSpecia	1	+44	destination	Worthing Area STD Code
0191	4	36	PrivateSpecia	1	+44	destination	Tyneside Area STD Code
020	3	36	PrivateSpecia	1	+44	destination	London Area STD Code
05	2	36		0	+	both	Type:E164 Local, special rule
07	2	36	PrivateSpecia	1	+44	destination	UK Mobile Services
x	1	36	cdp.udp	0	55	both	Type:Level 0 Regional, special rule
x	1	36	PrivateSpecia	0	56	both	Type:Special, general rule
x	1	36	+1	0	+1	both	Type:E164 National, special rule

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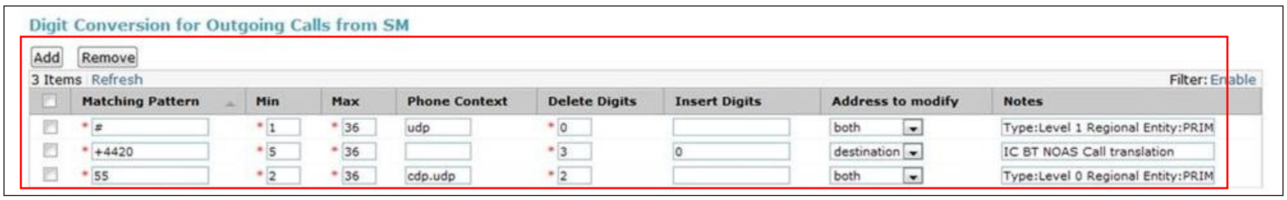
Under **Digit Conversion for Outgoing Calls from Session Manager** click the **Add** button and specify the digit manipulation to be performed as follows:

- Enter the leading digits that will be matched in the **Matching Pattern** field.
- In the **Min** and **Max** fields set the minimum and maximum digits allowed in the digit string to be matched.
- In the **Delete Digits** field enter the number of leading digits to be removed.
- In the **Insert Digits** field specify the digits to be prefixed to the digit string.
- In the **Address to modify** field specify the digits to manipulate by the adaptation. In this configuration the dialed number is the target so destination has been selected.

This will ensure any destination numbers will have the + symbol and international dialing code removed before being presented to Communication Server 1000E. See the following screenshot for the settings used.


Digit Conversion for Outgoing Calls from SM

Add Remove

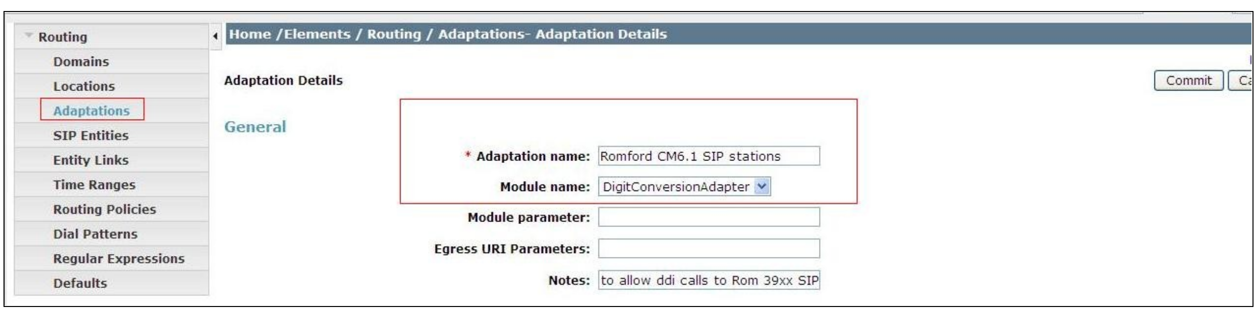
3 Items Refresh Filter: Enable

Matching Pattern	Min	Max	Phone Context	Delete Digits	Insert Digits	Address to modify	Notes
* #	* 1	* 36	udp	* 0		both	Type:Level 1 Regional Entity:PRIM
* +4420	* 5	* 36		* 3	0	destination	IC BT NOAS Call translation
* 55	* 2	* 36	cdp.udp	* 2		both	Type:Level 0 Regional Entity:PRIM

6.4.2. Administer Adaptation for Avaya Session Border Controller for Enterprise

To ensure that the E.164 numbering format is used between the enterprise and BT SIP Trunk Service, an adaptation module is used to perform some digit manipulation. This adaptation is applied to the Avaya SBCE SIP entity. To add an adaptation, under the **Routing** tab select **Adaptations** on the left hand menu and then click on the **New** button (not shown). Under **Adaption Details →General**:

- In the **Adaptation name** field enter an informative name.
- In the **Module name** field click on the down arrow and then select the <**click to add module**> entry from the drop down list and type **DigitConversionAdapter** in the resulting **New Module Name** field.



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Scroll down the page and under **Digit Conversion for Incoming Calls to SM**, click the **Add** button and specify the digit manipulation to be performed as follows:

- Enter the leading digits that will be matched in the **Matching Pattern** field.
- In the **Min** and **Max** fields set the minimum and maximum digits allowed in the digit string to be matched.
- In the **Delete Digits** field enter the number of leading digits to be removed.
- In the **Insert Digits** field specify the digits to be prefixed to the digit string.
- In the **Address to modify** field specify the digits to manipulate by the adaptation. In this configuration the dialed number is the target so destination has been selected.

This will ensure any destination numbers received by Session Manager are converted from E.164 numbering format before being processed and sent to Communication Server 1000E and terminated on to endpoints. The following screenshot shows the settings used.

Digit Conversion for Incoming Calls to SM

Add | Remove

3 Items | Refresh Filter: Enable

Matching Pattern	Min	Max	Phone Context	Delete Digits	Insert Digits	Address to modify	Notes
+442079603250	13	36		13	53005	destination	
+442079603251	13	36		13	252100	destination	
+442079603252	13	36		13	252161	destination	

Under **Digit Conversion for Outgoing Calls from Session Manager** click the **Add** button and specify the digit manipulation to be performed as follows:

- Enter the leading digits that will be matched in the **Matching Pattern** field.
- In the **Min** and **Max** fields set the minimum and maximum digits allowed in the digit string to be matched.
- In the **Delete Digits** field enter the number of leading digits to be removed.
- In the **Insert Digits** field specify the digits to be prefixed to the digit string.
- In the **Address to modify** field specify the digits to manipulate by the adaptation. In this configuration the dialed number is the target so destination has been selected.

This will ensure any destination numbers will have the + symbol and international dialing code added before being presented to the Avaya SBCE. See the following screenshot for the settings used.

Digit Conversion for Outgoing Calls from SM

Add | Remove

7 Items | Refresh Filter: Enable

Matching Pattern	Min	Max	Phone Context	Delete Digits	Insert Digits	Address to modify	Notes
+0	2	36		2	+44	destination	
+00	3	36		3	+	destination	to allow international
+1	3	36		1		destination	To allow DQ calls
+44	3	36		1		origination	remove + for outbound to Hipcon
+9	2	36		1		destination	To allow emgency calls
90	2	36		2	+44	both	to allow sip phones to dial out

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6.5. Administer SIP Entities

A SIP Entity must be added for each SIP-based telephony system supported by a SIP connection to the Session Manager. To add a SIP Entity, select **SIP Entities** on the left panel menu (see the following screenshot) and then click on the **New** button (not shown). The following will need to be entered for each SIP Entity.

Under **SIP Entity Details →General**:

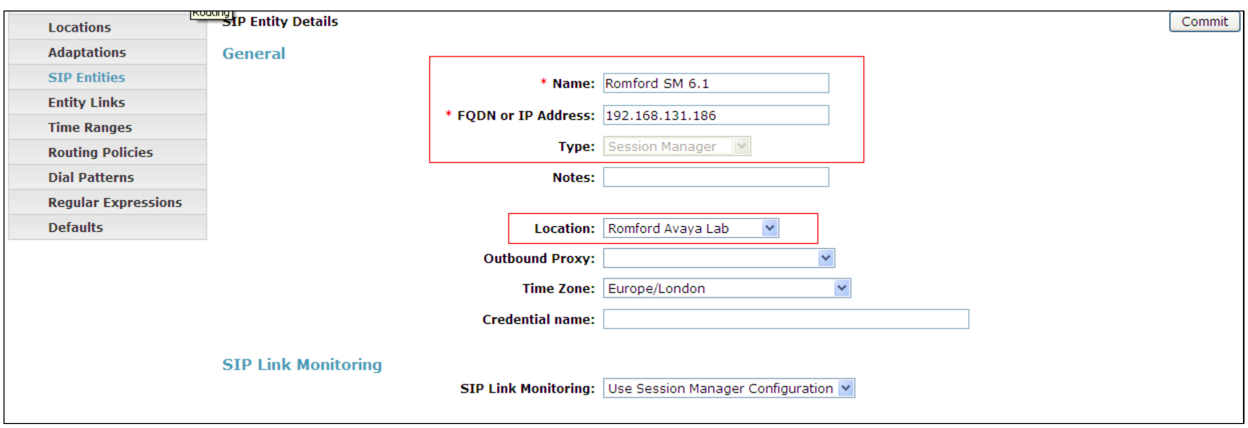
- In the **Name** field enter an informative name.
- In the **FQDN or IP Address** field enter the IP address of Session Manager or the signaling interface on the connecting system.
- In the **Type** field use **Session Manager** for a Session Manager SIP entity, **Other** for a Communication Server 1000E SIP entity.
- In the **Location** field select the appropriate location from the drop down menu.
- In the **Time Zone** field enter the time zone for the SIP Entity.

In this enterprise site configuration there are three SIP Entities configured.

- Avaya Aura® Session Manager SIP Entity
- Communication Server 1000E SIP Entity
- Avaya Session Border Controller For Enterprise SIP Entity

6.5.1. Avaya Aura® Session Manager SIP Entity

The following screens show the SIP entity for Session Manager. The **FQDN or IP Address** field is set to the IP address of the Session Manager SIP signaling interface.



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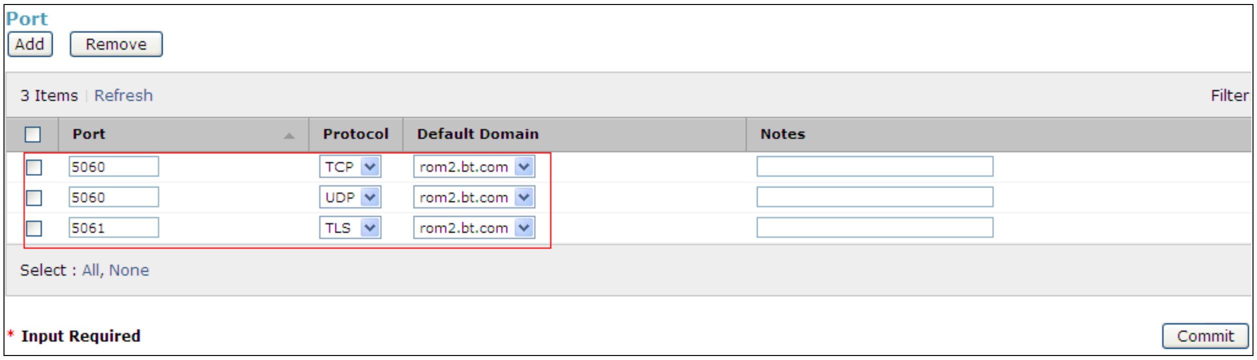
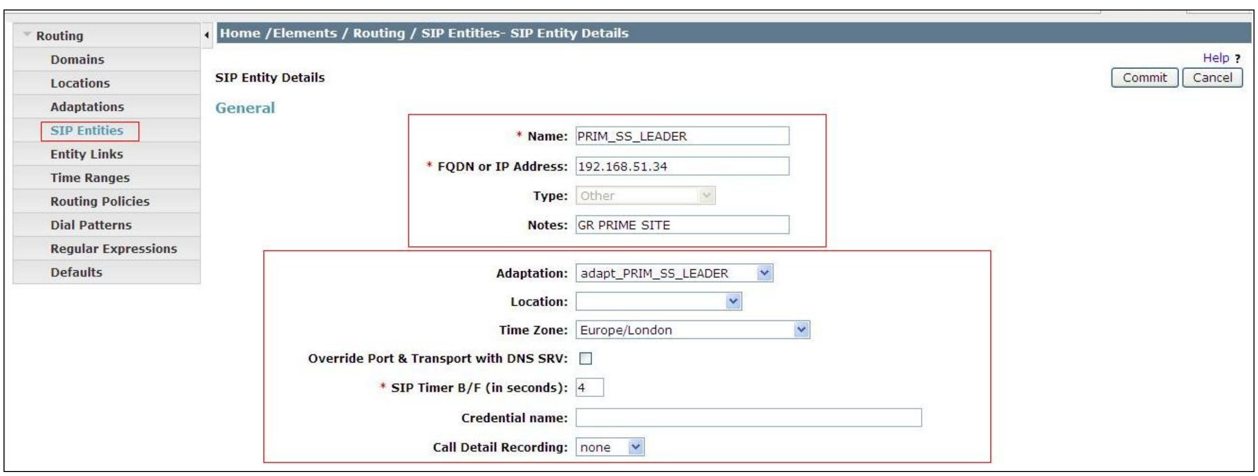
The Session Manager must be configured with the port numbers on the protocols that will be used by the other SIP entities. To configure these scroll to the bottom of the page and under **Port**, click **Add,** then edit the fields in the resulting new row.

- In the **Port** field enter the port number on which the system listens for SIP requests.
- In the **Protocol** field enter the transport protocol to be used for SIP requests.
- In the **Default Domain** field, from the drop down menu select **rom2.bt.com** as the default domain.



6.5.2. Avaya Communication Server 1000E SIP Entity

The following screenshot shows the SIP entity for Communication Server 1000E which is configured as **Type** Other. The **FQDN or IP Address** field is set to the Communication Server 1000E node IP address. For the **Adaptation** field, select the adaptation module previously defined for dial plan digit manipulation in **Section 6.4.1**.



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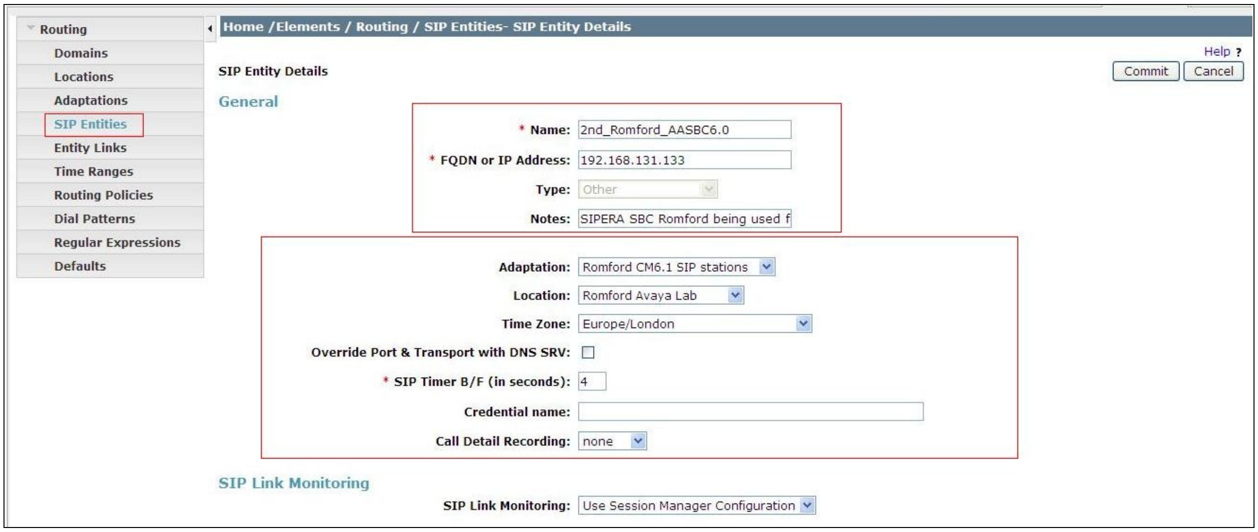
6.5.3. Avaya Session Border Controller for Enterprise SIP Entity

The following screen shows the SIP Entity for the Avaya SBCE. The **FQDN or IP Address** field is set to the IP address of the Avaya SBCE private network interface configured in **Section 7** of this document. For the **Adaptation** field, select the adaptation module previously defined for dial plan digit manipulation in **Section 6.4.2.**



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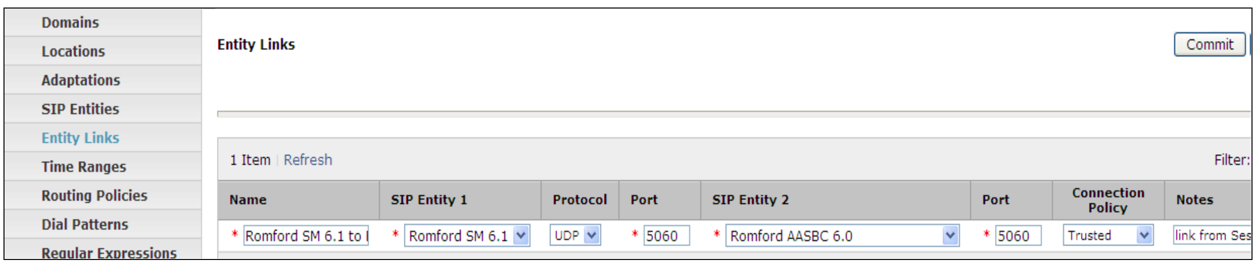
6.6. Administer Entity Links

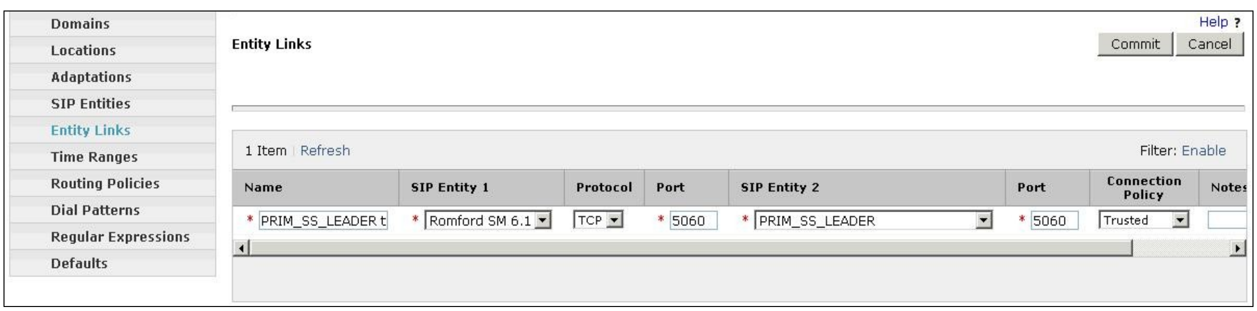
A SIP trunk between a Session Manager and another system is described by an Entity Link. To add an Entity Link, select **Entity Links** on the left panel menu and click on the **New** button (not shown). Fill in the following fields in the new row that is displayed.

- In the **Name** field enter an informative name.
- In the **SIP Entity 1** field select Session Manager.
- In the **Protocol** field enter the transport protocol to be used to send SIP requests.
- In the **Port** field enter the port number to which the other system sends its SIP requests.
- In the **SIP Entity 2** field enter the other SIP Entity for this link, created in **Section 6.5**.
- In the **Port** field enter the port number to which the other system expects to receive SIP requests.
- Select the **Trusted** tick box to make the other system trusted.

Click **Commit** to save changes. The following screen shows the Avaya SBCE Entity Link used in this configuration.



The following screen shows the CS1000E Entity Link used in this configuration.



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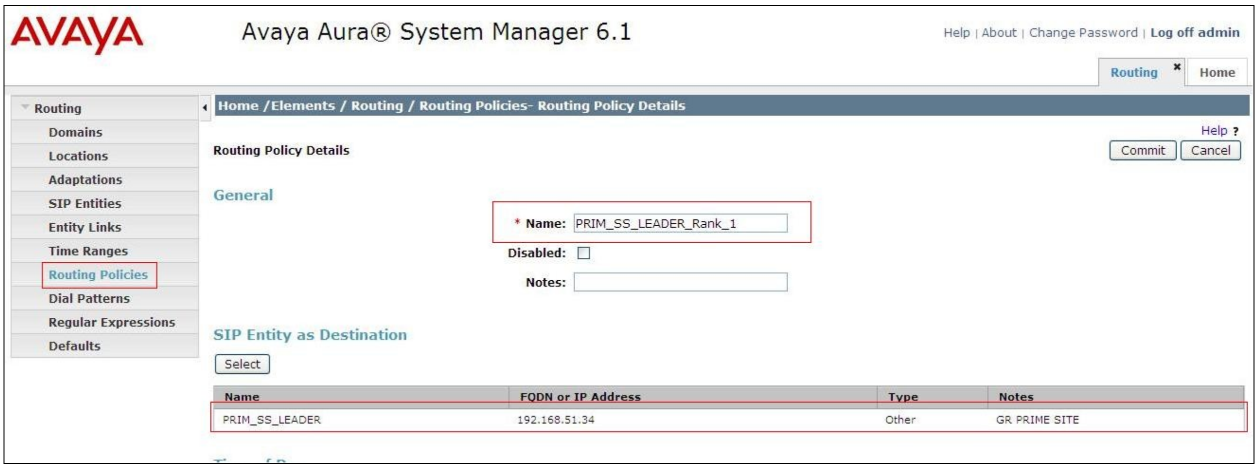
6.7. Administer Routing Policies

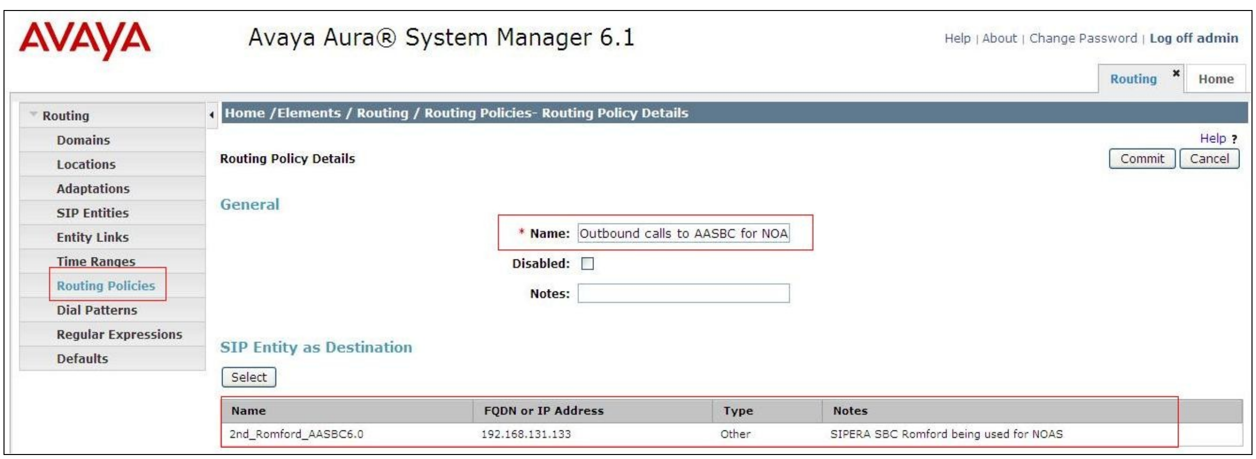
Routing policies must be created to direct how calls will be routed to a system. To add a routing policy, select **Routing Policies** on the left panel menu (see next screenshot) and then click on the **New** button (not shown).

- Under **General** enter an informative name in the Name field.
- Under **SIP Entity as Destination**, click **Select**, and then select the appropriate SIP entity to which this routing policy applies.
- Under **Time of Day**, click **Add**, and then select the time range.

The following screen shows the routing policy for Communication Server 1000E. The **SIP Entity as Destination** value is set to **PRIM_SS_LEADER**, as entered in **Section 6.5.2**. The **Time of Day** is set to 24 hour by 7 day operation, this is not shown.



The following screen shows the routing policy for the Avaya SBCE. The **SIP Entity as Destination** value is set to **2nd_Romford_AAASBCAE6.0**, as entered in **Section 6.5.3**. The **Time of Day** is set to 24 hour by 7 day operation, this is not shown.



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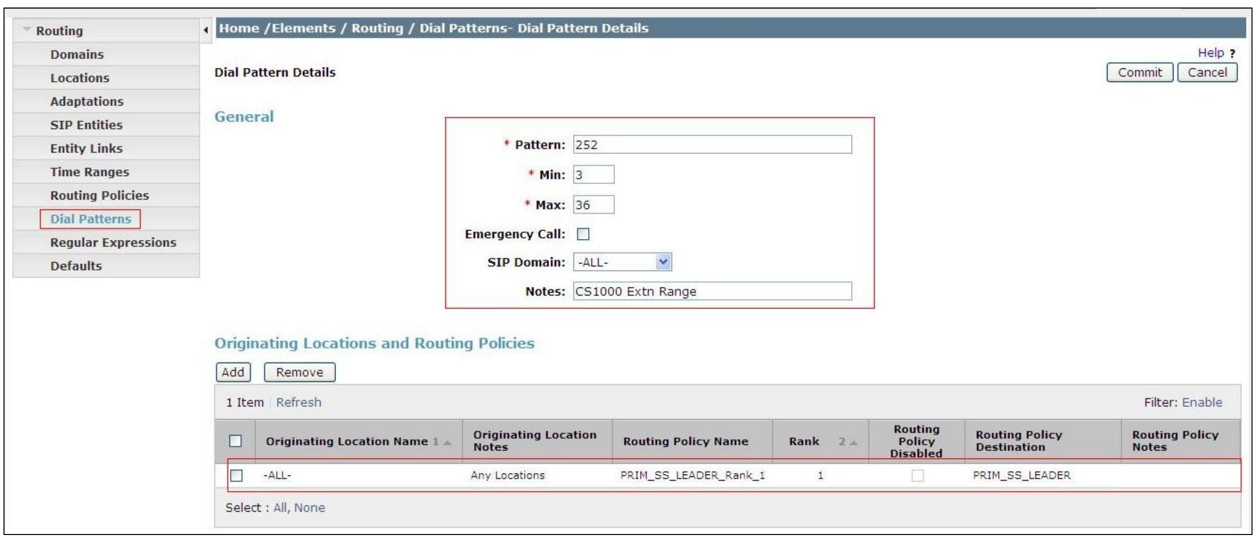
6.8. Administer Dial Patterns

A dial pattern must be defined to direct calls to the appropriate telephony system. To configure a dial pattern select **Dial Patterns** on the left panel menu (see below) and then click on the **New** button (not shown).

Under **Dial Pattern Details → General**:

- In the **Pattern** field enter a dialed number or prefix to be matched.
- In the **Min** field enter the minimum length of the dialed number.
- In the **Max** field enter the maximum length of the dialed number.
- In the **SIP Domain** field select the domain configured in **Section 6.2** or set to All**.**

Under **Originating Locations and Routing Policies**, click **Add**, in the resulting screen (not shown) under **Originating Location** select **ALL** and under **Routing Policies** select one of the routing policies defined in **Section 6.7**. Click **Select** button to save. The following screen shows an example dial pattern configured for the CS1000E. This dial pattern will route the calls to the CS1000E endpoints.



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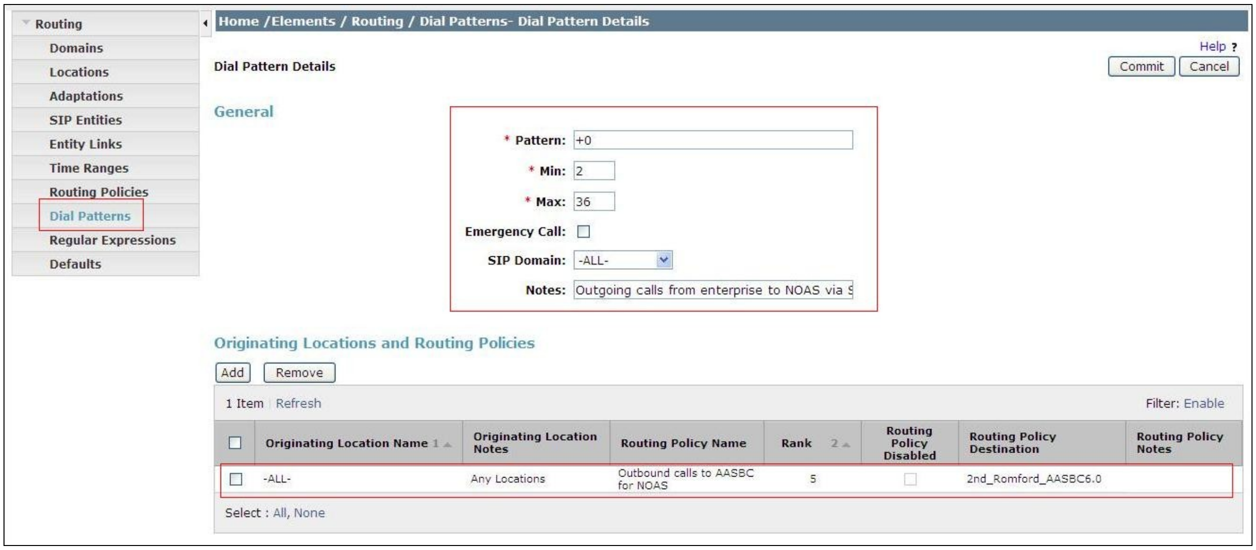
The following screen shows an example dial pattern configured for the Session Border Controller which will route the calls out to BT's SIP Trunk Service NOAS.

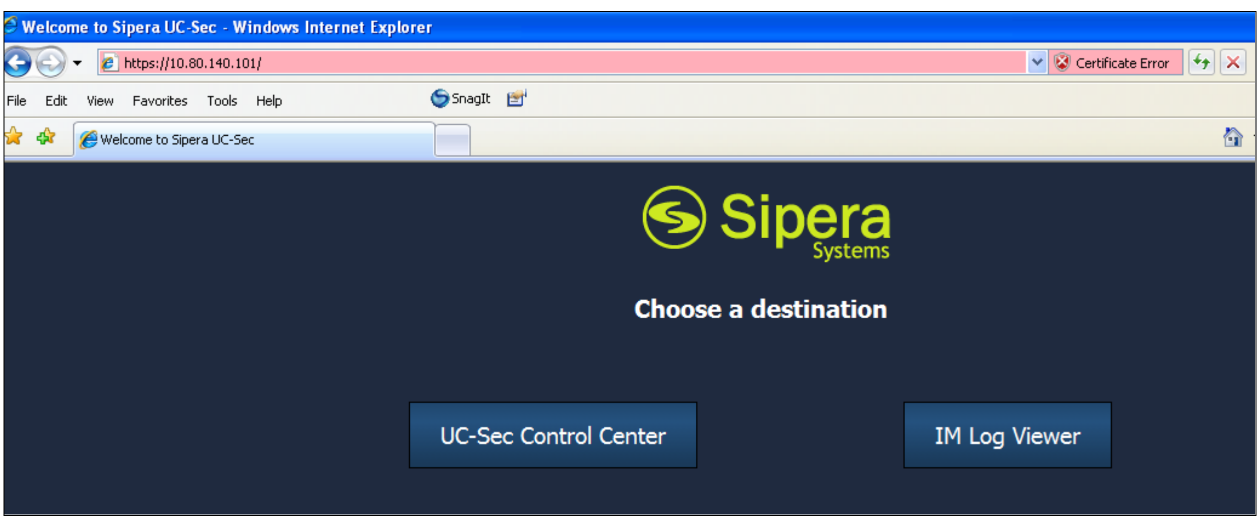


7. Avaya Session Border Controller for Enterprise Configuration

This section provides the procedures for configuring Session Border Controller for Enterprise.

7.1. Accessing UC-Sec Control Centre

Access the web interface by typing **https://x.x.x.x** (where x.x.x.x is the management IP of the Avaya SBCE).



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Select **UC-Sec Control Center** and enter the **Login ID** and **Password**.

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7.2. Global Profiles

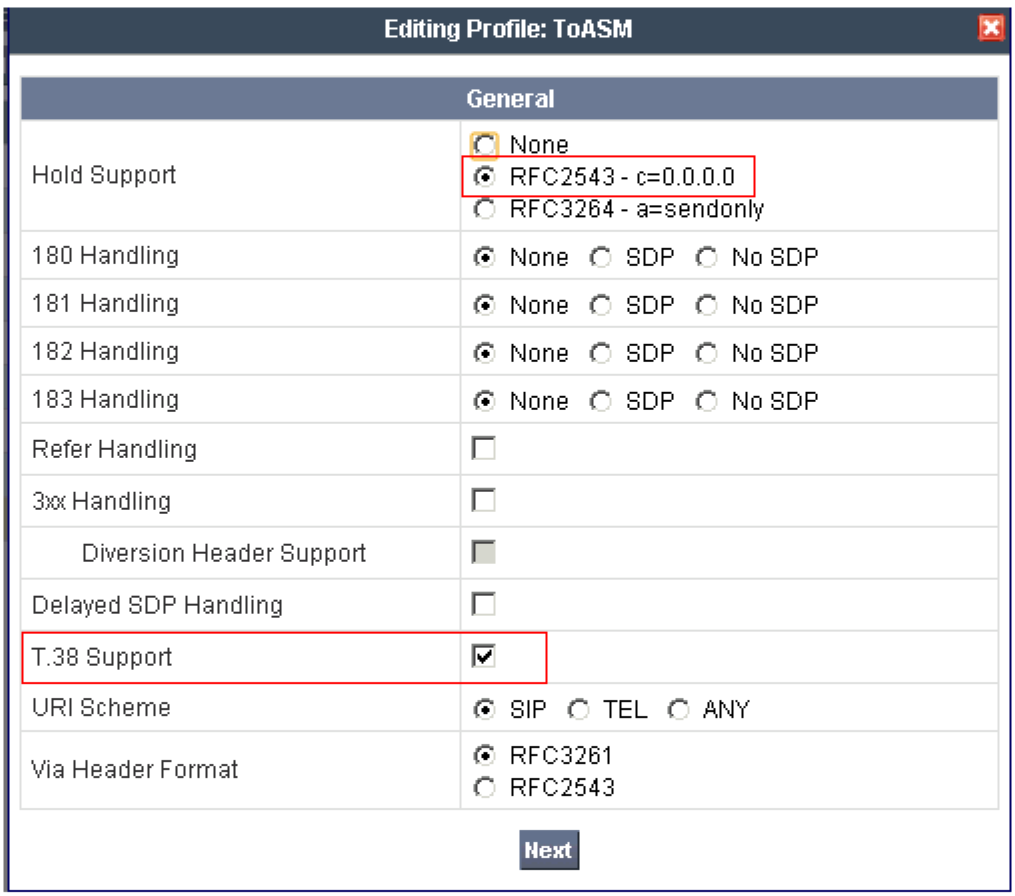
When selected, Global Profiles allows for configuration of parameters across all UC-Sec appliances.

7.2.1. Server Internetworking Avaya Side

Server Internetworking allows you to configure and manage various SIP call server-specific capabilities such as call hold and T.38. From the left hand menu select **Global Profiles → Server Interworking** and click on **Add Profile.**

- Enter **Profile Name: ToASM** and click **Next.**
- Check **Hold Support= RFC2543.**
- Check **T.38 Support.**
- All other options on the General Tab can be left at default.

Click on **Next** on the following screens and then **Finish**.



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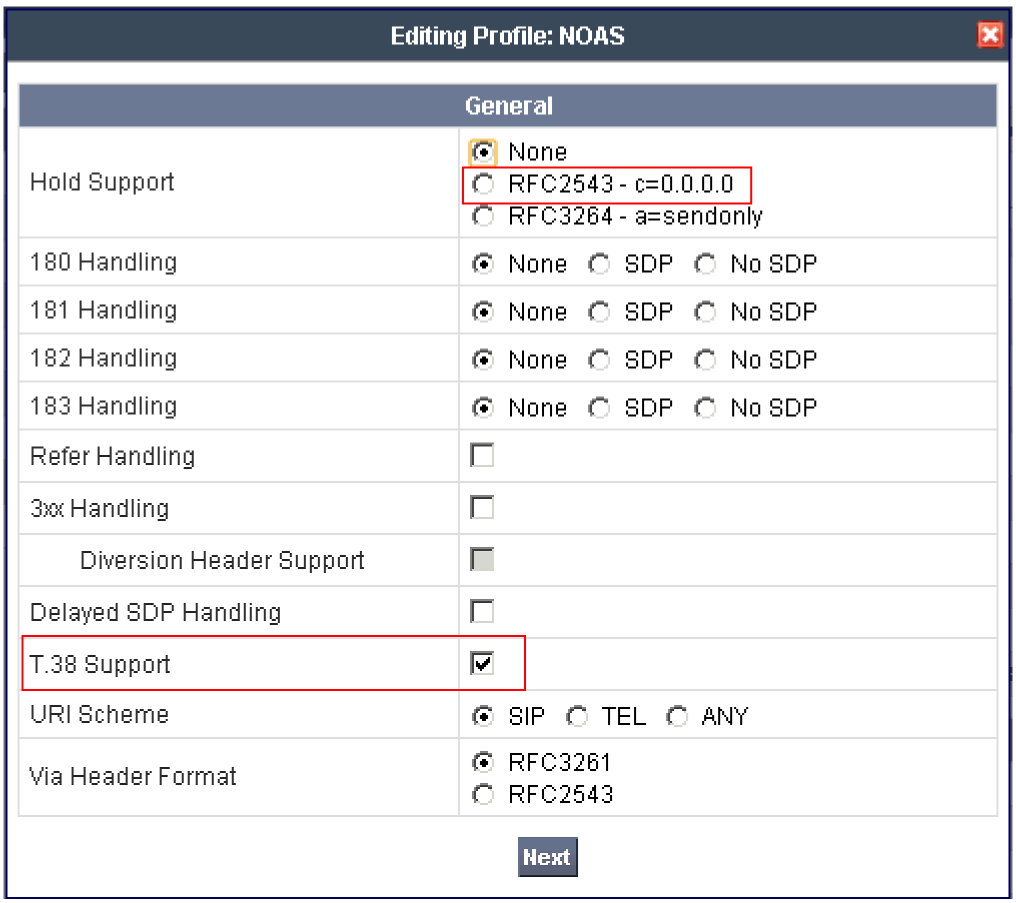
7.2.2. Server Internetworking – BT NOAS side

Server Internetworking allows you to configure and manage various SIP call server-specific capabilities such as call hold and T.38. From the left hand menu select **Global Profiles → Server Interworking** and click on **Add Profile.**

- Enter **Profile Name: NOAS** and click on **Next.**
- Check **Hold Support= RFC2543.**
- Check **T.38 Support.**
- All other options on the General Tab can be left at default.

Click on **Next** on the following screens and then **Finish**.



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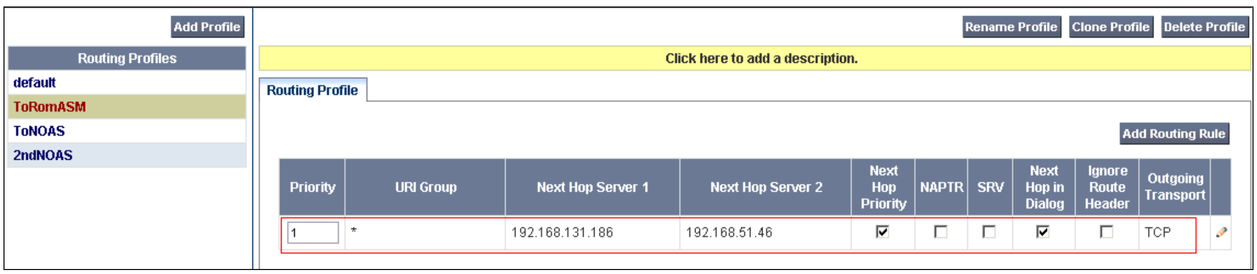
7.2.3. Routing – Avaya side

The Routing Profile allows you to manage parameters related to routing SIP signaling messages. From the left hand menu select **Global Profiles → Routing** and click on **Add Profile**.

- Enter **Profile Name**: **ToRomASM**
- Hit **Next** (not shown)
- **Next Hop Server 1: 192.168.131.186 (Session Manager IP address)**
- **Next Hop Server 2: 192.168.51.46 (Session Manager backup IP address)**
- Select **Routing Priority Based on Next Hop Server**
- Select **Use Next Hop for In-Dialog Messages**
- **Outgoing Transport: TCP**

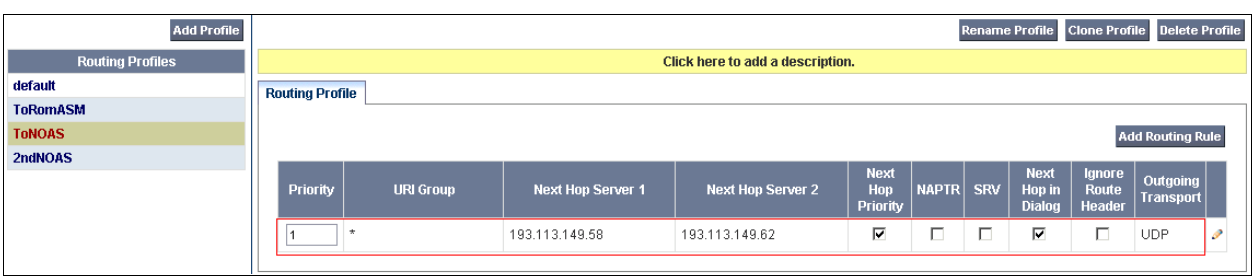
Click **Finish** (not shown).



7.2.4. Routing – BT NOAS side

The Routing Profile allows you to manage parameters related to routing SIP signaling messages. A routing profile must be set for Fixed and Mobile calls. From the left hand menu select **Global Profiles → Routing** and click on **Add Profile**.

- Enter **Profile Name**: **ToNOAS**
- Hit **Next**
- **Next Hop Server 1: 193.113.149.58 (IP Address provided by BT)**
- **Next Hop Server 1: 193.113.149.62 (IP Address provided by BT)**
- Select **Routing Priority Based on Next Hop Server**
- Select **Use Next Hop for In-Dialog Messages**
- **Outgoing Transport: UDP**
- Click **Finish** (not shown)



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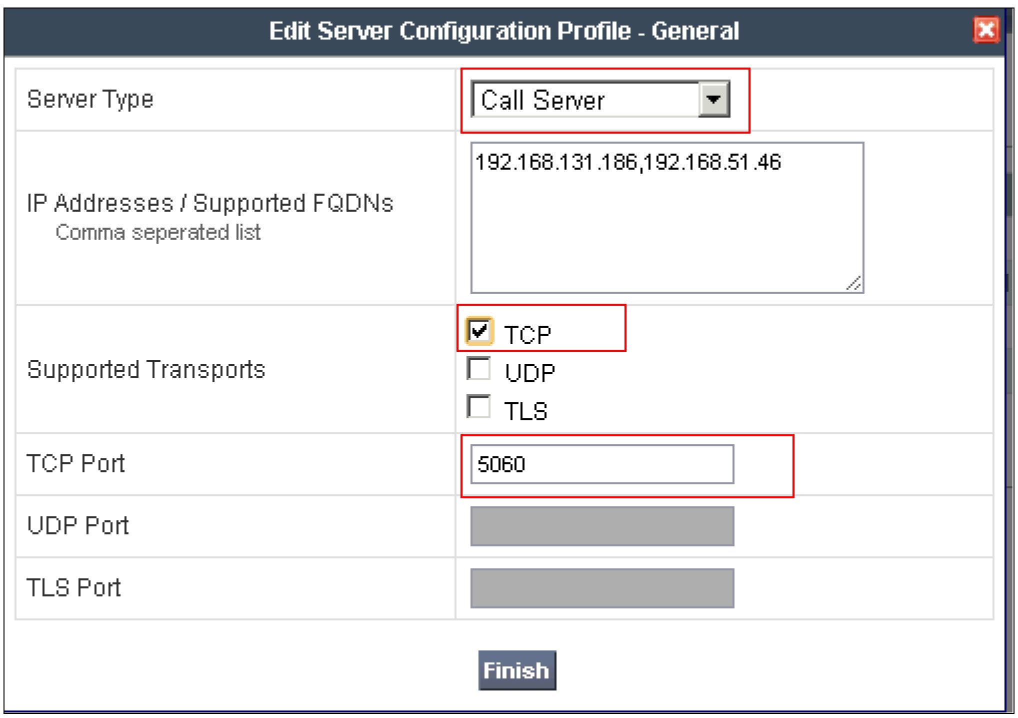
7.2.5. Server Configuration – Avaya Aura® Session Manager

The **Server Configuration** screen contains four tabs: **General**, **Authentication**, **Heartbeat**, and **Advanced**. Together, these tabs allow you to configure and manage various SIP call server-specific parameters such as TCP and UDP port assignments, IP Server type, heartbeat signaling parameters and some advanced options. From the left hand menu select **Global Profiles → Server Configuration** and click on **Add Profile**.

- Enter **Profile Name**: **ASM_CallServer**
- On the **Add Server Configuration Profile** Tab:
- Select **Server Type: Call Server**
- **IP Address: 192.168.131.186,192.168.51.46 (Session Manager IP Addresses)**
- **Supported Transports**: Check **TCP**
- **TCP Port:5060**
- Click on **Next** for the **Authentication** and **Heartbeat** tabs.
- On the **Advanced** Tab
- Select **ToASM** for Interworking Profile
- Hit **Next**
- Click **Finish**



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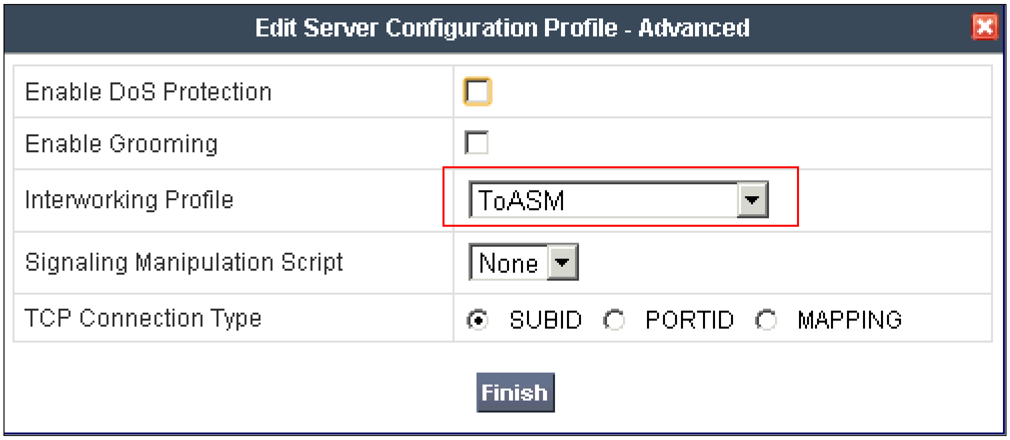

7.2.6. Server Configuration– BT NOAS side

The **Server Configuration** screen contains four tabs: **General**, **Authentication**, **Heartbeat**, and **Advanced**. Together, these tabs allow you to configure and manage various SIP call server-specific parameters such as TCP and UDP port assignments, server type, heartbeat signaling parameters and some advanced options. From the left-hand menu select **Global Profiles → Server Configuration** and click on **Add Profile.**

- **Name: ToNOAS**
- On the **Add Server Configuration Profile** Tab:
- Click on **Edit**
- Select Server Type**: Trunk Server**
- **IP Address: 193.113.149.58,193.113.149.62 (BT Trunk Server)**
- **Supported Transports**: Check **UDP**
- **UDP Port: 5060**
- Hit **Next**
- Click on **Next** for the **Authentication** and **Heartbeat** tabs.
- On the **Advanced** Tab
- Select **NOAS** for Interworking Profile
- Hit **Next**
- Click **Finish**

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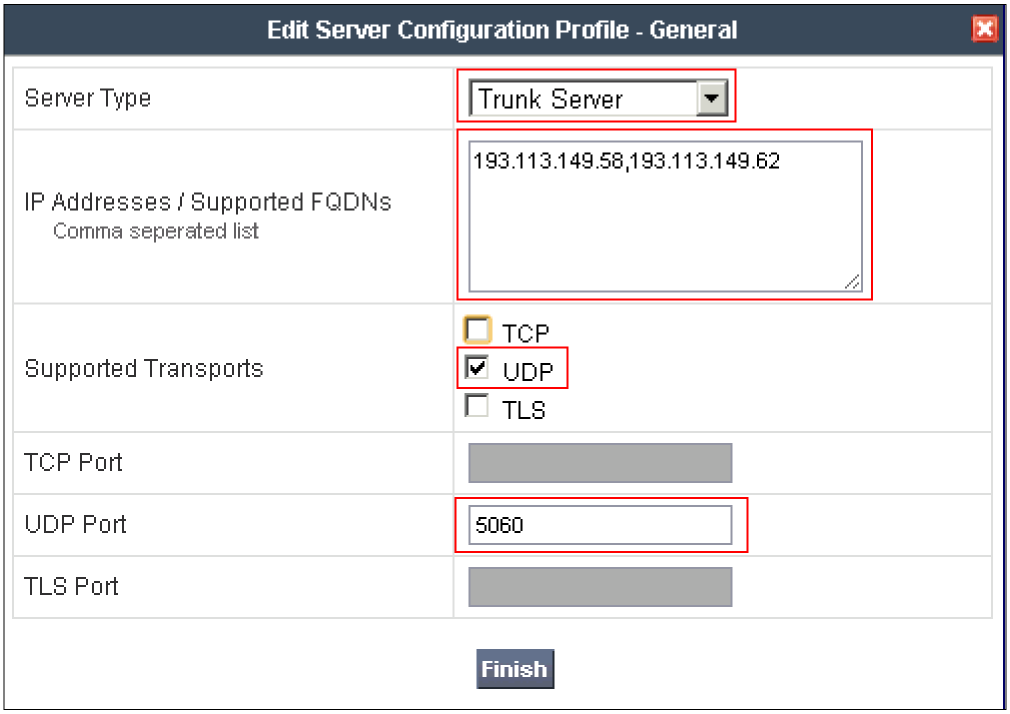

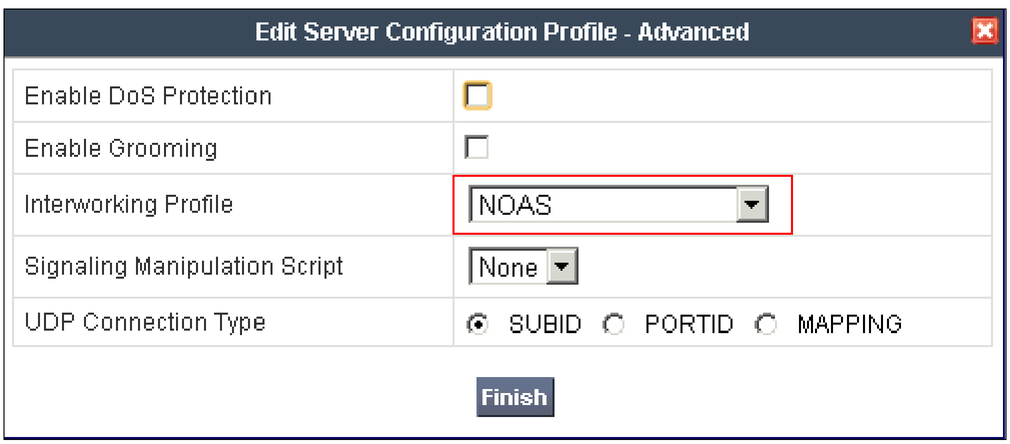

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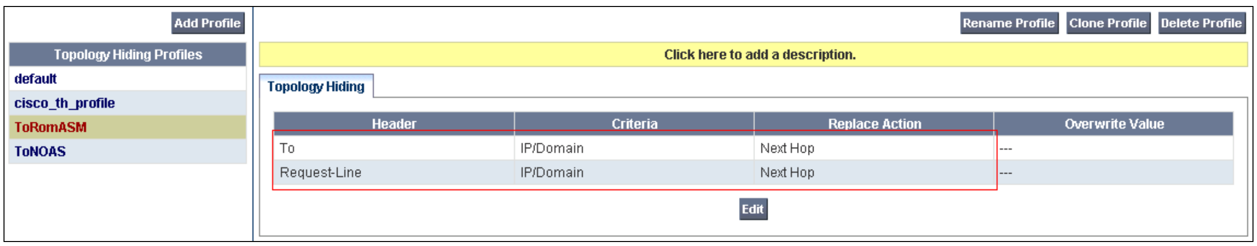
7.2.7. Topology Hiding – Avaya side

The **Topology Hiding** screen allows you to manage how various source, destination and routing information in SIP and SDP message headers are substituted or changed to maintain the integrity of the network. It hides the topology of the enterprise network from external networks. From the left-hand menu select **Global Profiles → Topology Hiding.**

- Click **default** profile and select **Clone Profile.**
- Enter Profile Name**: ASM**
- For the **To** and **Request Line** headers, select **IP/Domain** under **Criteria** and **Next Hop** under **Replace Action.**
- Click **Finish**

The screen below is a result of the details configured above.

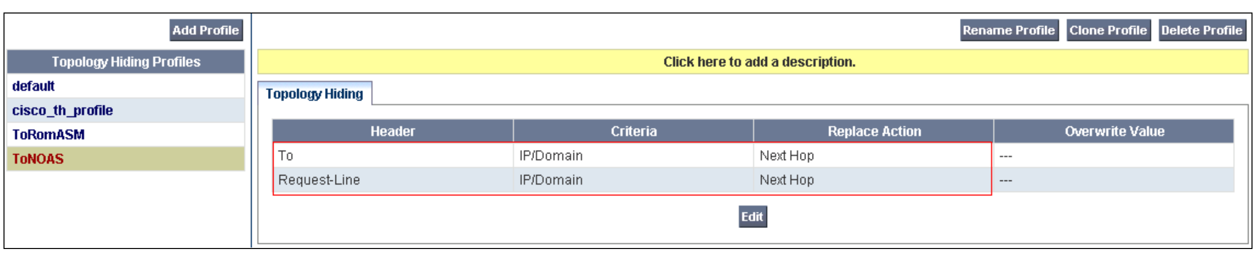


7.2.8. Topology Hiding – BT side

The **Topology Hiding** screen allows you to manage how various source, destination and routing information in SIP and SDP message headers are substituted or changed to maintain the integrity of the network. It hides the topology of the enterprise network from external networks. From the left-hand menu select **Global Profiles → Topology Hiding.**

- Click **default** profile and select **Clone Profile.**
- Enter **Profile Name: ToNOAS**
- For the **To** and **Request Line** headers, select **IP/Domain** under **Criteria** and **NextHop** under **Replace Action.**
- Click **Finish**

The screen below is a result of the details configured above.



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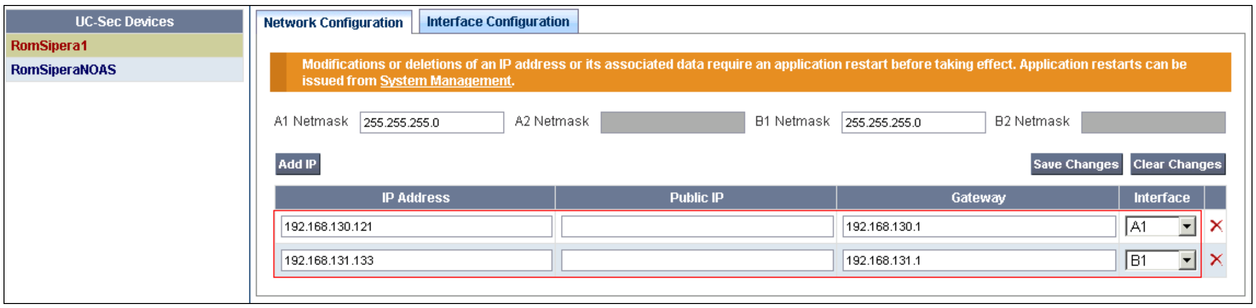
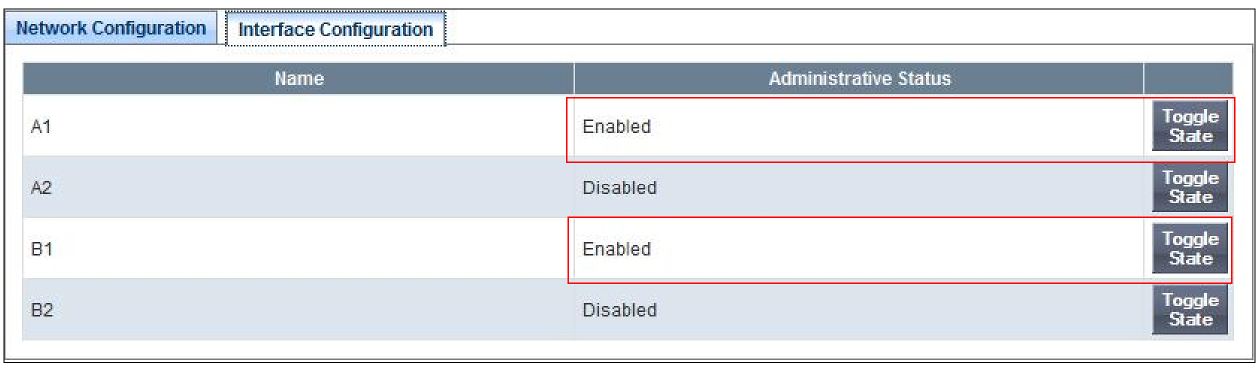
7.3. Device Specific Settings

The **Network Management** feature allows the public and private interface addresses and state to be set. From the left-hand menu select **Device Specific Settings → Network Management**.

- Enter in the **IP Address** and **Gateway Address** for both the Inside and the Outside interfaces.
- Select the physical interface used in the **Interface** column.



Select the **Interface Configuration** Tab and use the **Toggle State** button to enable the interfaces.



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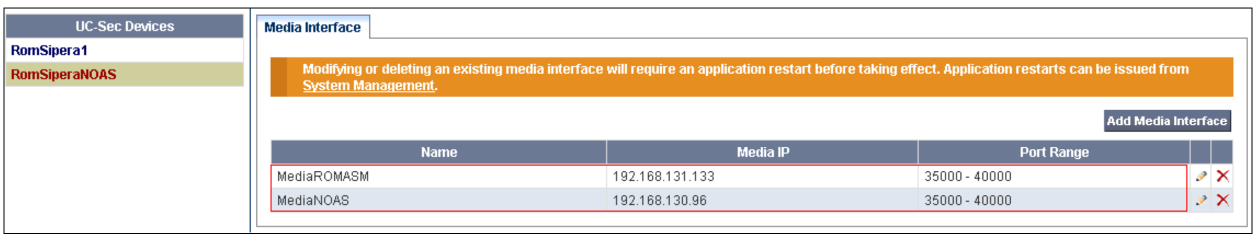
The **Media Interfaces** feature allows the IP Address and ports to be set for transporting Media over the SIP trunk. From the left-hand menu select **Device Specific Settings → Media Interface**.

- Select **Add Media Interface**
- **Name**: **MediaROMASM**
- **Media IP**: **192.168.131.133** (Internal Address for calls toward Session Manager)
- **Port Range**: **35000-40000**
- Click **Finish**
- Select **Add Media Interface**
- **Name**: **MediaNOAS**
- **Media IP**: **192.168.130.96** (External Address for calls toward BT trunk)
- **Port Range**: **35000-40000**
- Click **Finish**
- Select **Add Media Interface**

The screen below is a result of the details configured above.



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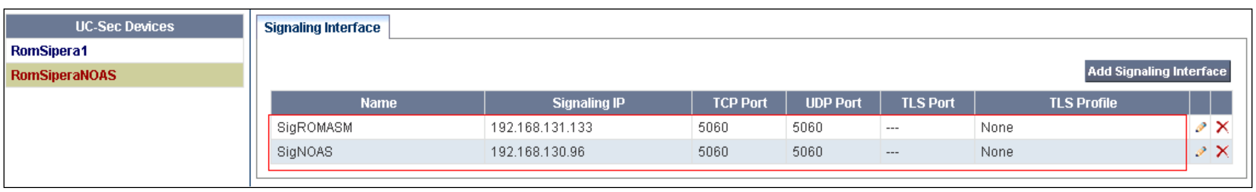
The **Signalling Interfaces** feature allows the IP Address and ports to be set for transporting Media over the SIP trunk. From the left-hand menu select **Device Specific Settings → Signalling Interface**.

- Select **Add Signaling Interface**
- **Name**: **SigROMASM**
- **Signaling IP**: **192.168.131.133** (Internal Address for calls toward Session Manager)
- **TCP Port**: **5060**
- **UDP Port**: **5060**
- Click **Finish**
- Select **Add Media Interface**
- **Name**: **SigNOAS**
- **Signaling IP: 192.168.130.96** (External Address for calls toward BT)
- **TCP Port**: **5060**
- **UDP Port**: **5060**
- Click **Finish**

The screen below is a result of the details configured above.



The **End Point Flows** allow the Interfaces, Policies and Profiles administered to be used to transport the SIP traffic. From the left-hand menu **select Device Specific Settings → Endpoint Flows** and select the **Server Flows** tab. To add the settings for fixed call flow to Session Manager, click on select **Add Flow.**

- **Name**: **Callserver**
- **Server Configuration**: **ROMASM**
- **URI Group: ***
- **Transport**: *****
- **Remote Subnet**: *****
- **Received Interface**: **SigNOAS**
- **Signaling Interface**: **SigROMASM**
- **Media Interface**: **MediaROMASM**
- **End Point Policy Group**: **default-low**
- **Routing Profile**: **ToNOAS**
- **Topology Hiding Profile**: **ToROMASM**
- **File Transfer Profile**: **None**
- Click **Finish**

To add the settings for fixed call flow to BT, select **Add Flow.**

- **Name**: **TrunkServer**

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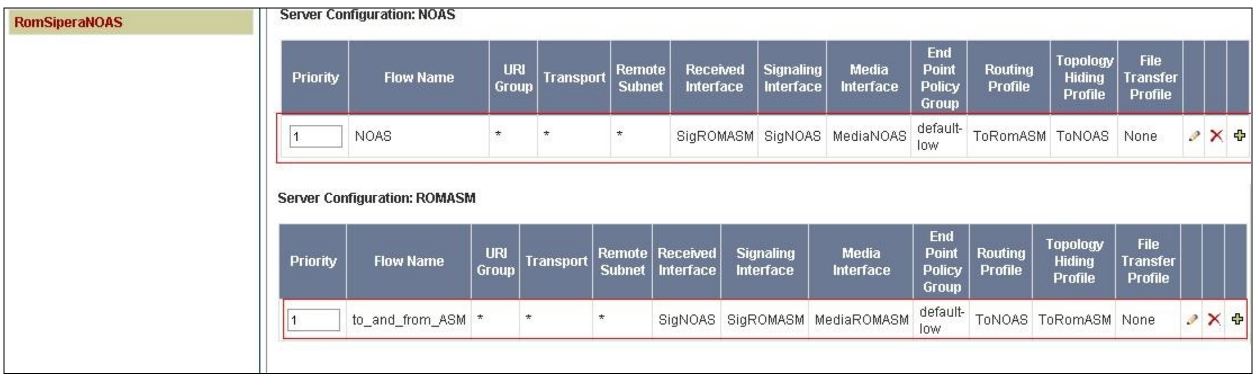
- **Server Configuration**: **NOAS**
- **URI Group**: *****
- **Transport**: *****
- **Remote Subnet**: *****
- **Received Interface**: **SigROMASM**
- **Signaling Interface**: **SigNOAS**
- **Media Interface**: **MediaNOAS**
- **End Point Policy Group**: **default-low**
- **Routing Profile**: **ToRomASM**
- **Topology Hiding Profile**: **ToNOAS**
- **File Transfer Profile**: **None**
- Click **Finish**

The screen below is a result of the details configured above.


RomSiperaNOAS

Server Configuration: NOAS

Priority	Flow Name	URI Group	Transport	Remote Subnet	Received Interface	Signaling Interface	Media Interface	End Point Policy Group	Routing Profile	Topology Hiding Profile	File Transfer Profile
1	NOAS	*	*	*	SigROMASM	SigNOAS	MediaNOAS	default-low	ToRomASM	ToNOAS	None

Server Configuration: ROMASM

Priority	Flow Name	URI Group	Transport	Remote Subnet	Received Interface	Signaling Interface	Media Interface	End Point Policy Group	Routing Profile	Topology Hiding Profile	File Transfer Profile
1	to_and_from_ASM	*	*	*	SigNOAS	SigROMASM	MediaROMASM	default-low	ToNOAS	ToRomASM	None

8. Service Provider Configuration

The configuration of the BT equipment used to support the BT SIP trunk service is outside of the scope for these Application Notes and will not be covered. To obtain further information on BT equipment and system configuration please contact an authorized BT representative using the contact details provided in **Section 2.3**.

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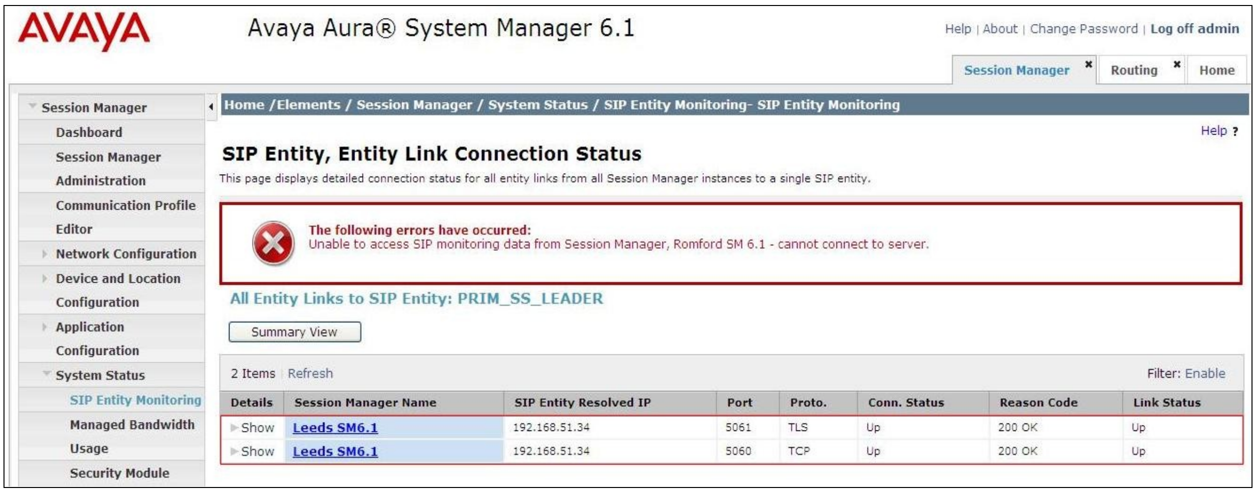
9. Verification Steps

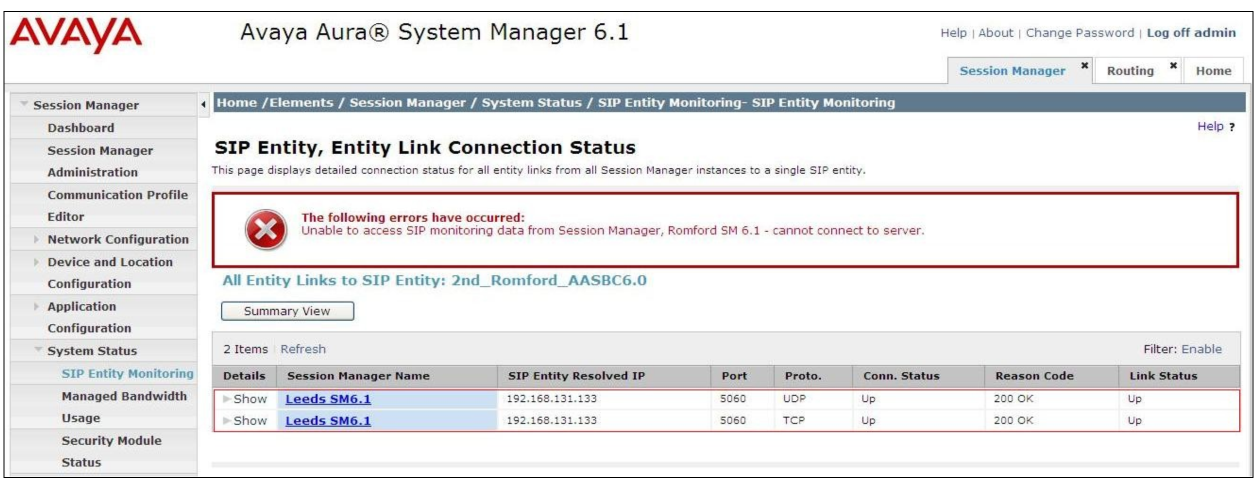
This section provides steps that may be performed to verify that the solution is configured correctly.

1. From System Manager Home Tab click on Session Manager and navigate to **Session Manager → System Status → SIP Entity Monitoring**. Select the relevant SIP Entity from the list and observe if the **Conn Status** and **Link Status** are showing as **up.**

This is the SIP Entity link to the Communication Server 1000E:



This is the SIP Entity link to the Avaya Session Border Controller for Enterprise:



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2. From the Communication Server 1000E system terminal; load overlay 32 and run the command ‘stat vtrm <cust> <x>’ where ‘cust’ is the customer number (usually 0) and ‘x’ is a previously configured SIP trunk route. Confirm all channels on the trunk group display idle registered.

```
stat vtrm 0 100

************************************
STATUS OF VTRL IP TRUNK ROUTE AND MBRS
************************************



====================================
CUST ROUTE PROTOCOL  CALL_DIRCTN
0    100     SIP       IN AND OUT

DCH 50  SSRC TOTAL 2048  SSRC USED 77  SSRC AVAILABLE 1971

MBR STATUS

IDLE UNREGISTERED 0
IDLE REGISTERED 15
BUSY 0
MBSY 0
DSBL UNREGISTERED 0
DSBL REGISTERED 0
LCKO 0
```

3. Verify that endpoints at the enterprise site can place calls to the PSTN and that the call remains active.
4. Verify that endpoints at the enterprise site can receive calls from the PSTN and that the call remains active.
5. Verify that the user on the PSTN can end an active call by hanging up.
6. Verify that an endpoint at the enterprise site can end an active call by hanging up.

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10. Conclusion

These Application Notes describe the configuration necessary to connect Avaya Communication Server 1000E, Avaya Aura® Session Manager and Avaya Session Border Controller for Enterprise to the BT SIP Trunk Service. BT SIP Trunk Service is a SIP-based Voice over IP solution providing businesses with a flexible, cost-saving alternative to traditional hardwired telephony trunks. The service was successfully tested with a number of observations listed in **Section 2.2.**

11. References

This section references the documentation relevant to these Application Notes. Additional Avaya product documentation is available at http://support.avaya.com.

[1] *Installing and Configuring Avaya Aura® System Platform*, Release 6, June 2010.

[2] *Administering Avaya Aura® System Platform*, Release 6, June 2010.

[3] Avaya *Communication Server 1000E Installation and Commissioning*, November 2010, Document Number NN43041-310.

[4] *Feature Listing Reference Avaya Communication Server 1000,* November 2010, Document Number NN43001-111, 05.01.

[5] *Installing and Upgrading Avaya Aura® System Manager Release6.1*, November 2010.

[6] *Installing and Configuring Avaya Aura® Session Manager*, January 2011, Document Number 03-603473

[7] *Administering Avaya Aura® Session Manager,* March 2011, Document Number 03-603324.

[8] RFC 3261 *SIP: Session Initiation Protocol,* http://www.ietf.org/

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Appendix A – Communication Server 1000 Software

Communication Server 1000E call server patches and plug_ins

```
18/08/11 10:33:16
TID: 008808096

VERSION 4021

System type is - Communication Server 1000E/CP PM

CP PM - Pentium M 1.4 GHz

IPMGs Registered:              4
IPMGs Unregistered:            0
IPMGs Configured/unregistered:  2


RELEASE 7
ISSUE 50 Q  +
IDLE_SET_DISPLAY Avaya 7.5
DepList 1: core Issue: 02(created: 2010-11-30 15:12:45 (est))

MDP>LAST SUCCESSFUL MDP REFRESH :2010-12-06 15:33:54(Local Time)
MDP>USING DEPLIST ZIP FILE DOWNLOADED :2010-12-01 08:31:36(est)
SYSTEM HAS NO USER SELECTED PEPS IN-SERVICE


LOADWARE VERSION: PSWV 100
INSTALLED LOADWARE PEPS : 0
ENABLED PLUGINS : 0
```

Communication Server 1000E call server deplists

```
VERSION 4021
RELEASE 7
ISSUE 50 Q +
DepList 1: core Issue: 01 (created: 2012-02-03 09:32:18 (est))

IN-SERVICE PEPS
PAT# CR #            PATCH REF #     NAME      DATE        FILENAME       SPECINS
000  wi00832106      ISS1:1OF1       p30550_1  19/02/2012  p30550_1.cpm   NO
001  wi00856991      ISS1:1OF1       p17588_1  19/02/2012  p17588_1.cpm   NO
002  wi00950857      ISS1:1OF1       p24307_1  19/02/2012  p24307_1.cpm   NO
003  wi00881777      ISS1:1OF1       p25747_1  19/02/2012  p25747_1.cpm   NO
004  wi00905660      ISS1:1OF1       p27968_1  19/02/2012  p27968_1.cpm   NO
005  wi00688381      ISS1:1OF1       p30104_1  19/02/2012  p30104_1.cpm   NO
006  WI00839794      ISS1:1OF1       p28647_1  19/02/2012  p28647_1.cpm   NO
007  wi00896680      ISS1:1OF1       p30357_1  19/02/2012  p30357_1.cpm   NO
008  wi00825488      ISS1:1OF1       p30371_1  19/02/2012  p30371_1.cpm   NO
009  wi00825486      ISS1:1OF1       p30382_1  19/02/2012  p30382_1.cpm   NO
010  wi00961267      ISS1:1OF1       p30288_1  19/02/2012  p30288_1.cpm   NO
011  wi00879322      ISS1:1OF1       p30954_1  19/02/2012  p30954_1.cpm   NO
012  wi00897176      ISS1:1OF1       p30418_1  19/02/2012  p30418_1.cpm   NO
013  wi00903381      ISS1:1OF1       p30421_1  19/02/2012  p30421_1.cpm   NO
014  wi00854130      ISS1:1OF1       p30443_1  19/02/2012  p30443_1.cpm   NO
015  wi00824257      ISS1:1OF1       p30447_1  19/02/2012  p30447_1.cpm   NO
016  wi00836182      ISS1:1OF1       p30450_1  19/02/2012  p30450_1.cpm   NO
017  wi00826075      ISS1:1OF1       p30452_1  19/02/2012  p30452_1.cpm   NO
018  WI00900668      ISS1:1OF1       p30456_1  19/02/2012  p30456_1.cpm   NO
019  wi00854150      ISS1:1OF1       p30468_1  19/02/2012  p30468_1.cpm   NO
020  wi00827950      ISS2:1OF1       p30471_2  19/02/2012  p30471_2.cpm   NO
021  WI00836334      ISS1:1OF1       p30481_1  19/02/2012  p30481_1.cpm   NO
022  wi00833910      ISS2:1OF1       p30492_2  19/02/2012  p30492_2.cpm   NO
023  wi00853031      ISS1:1OF1       p30531_1  19/02/2012  p30531_1.cpm   NO
024  wi00877367      ISS1:1OF1       p30534_1  19/02/2012  p30534_1.cpm   NO
```


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025	wi00834382	ISS1:1OF1	p30548_1	19/02/2012	p30548_1.cpm	NO
026	WI00836292	ISS1:1OF1	p30554_1	19/02/2012	p30554_1.cpm	NO
027	wi00835294	ISS1:1OF1	p30565_1	19/02/2012	p30565_1.cpm	NO
028	wi00856702	ISS1:1OF1	p30573_1	19/02/2012	p30573_1.cpm	NO
029	wi00838073	ISS1:1OF1	p30588_1	19/02/2012	p30588_1.cpm	NO
030	wi00839255	ISS1:1OF1	p30591_1	19/02/2012	p30591_1.cpm	NO
031	wi00854415	ISS1:1OF1	p30593_1	19/02/2012	p30593_1.cpm	NO
032	wi00836981	ISS1:1OF1	p30613_1	19/02/2012	p30613_1.cpm	NO
033	wi00841980	ISS1:1OF1	p30618_1	19/02/2012	p30618_1.cpm	NO
034	wi00839821	ISS1:1OF1	p30619_1	19/02/2012	p30619_1.cpm	NO
035	wi00842409	ISS1:1OF1	p30621_1	19/02/2012	p30621_1.cpm	NO
036	WI00853473	ISS1:1OF1	p30625_1	19/02/2012	p30625_1.cpm	NO
037	WI00843571	ISS1:1OF1	p30627_1	19/02/2012	p30627_1.cpm	NO
038	wi00867905	ISS1:1OF1	p30640_1	19/02/2012	p30640_1.cpm	NO
039	wi00852389	ISS1:1OF1	p30641_1	19/02/2012	p30641_1.cpm	NO
040	wi00859123	ISS1:1OF1	p30648_1	19/02/2012	p30648_1.cpm	NO
041	wi00869695	ISS1:1OF1	p30654_1	19/02/2012	p30654_1.cpm	NO
042	WI00900213	ISS1:1OF1	p30656_1	19/02/2012	p30656_1.cpm	NO
043	wi00897096	ISS1:1OF1	p30676_1	19/02/2012	p30676_1.cpm	NO
044	wi00859449	ISS1:1OF1	p30694_1	19/02/2012	p30694_1.cpm	NO
045	wi00839134	ISS1:1OF1	p30698_1	19/02/2012	p30698_1.cpm	YES
046	wi00953811	ISS1:1OF1	p31002_1	19/02/2012	p31002_1.cpm	NO
047	wi00852365	ISS1:1OF1	p30707_1	19/02/2012	p30707_1.cpm	NO
048	wi00850521	ISS1:1OF1	p30709_1	19/02/2012	p30709_1.cpm	YES
049	wi00841273	ISS1:1OF1	p30713_1	19/02/2012	p30713_1.cpm	NO
050	wi00853178	ISS1:1OF1	p30719_1	19/02/2012	p30719_1.cpm	NO
051	wi00843623	ISS1:1OF1	p30731_1	19/02/2012	p30731_1.cpm	YES
052	wi00856410	ISS1:1OF1	p30749_1	19/02/2012	p30749_1.cpm	NO
053	WI00889786	ISS1:1OF1	p30750_1	19/02/2012	p30750_1.cpm	NO
054	wi00857566	ISS1:1OF1	p30766_1	19/02/2012	p30766_1.cpm	NO
055	wi00840590	ISS1:1OF1	p30767_1	19/02/2012	p30767_1.cpm	NO
056	wi00871969	ISS1:1OF1	p30768_1	19/02/2012	p30768_1.cpm	NO
057	wi00857362	ISS1:1OF1	p30782_1	19/02/2012	p30782_1.cpm	NO
058	wi00863876	ISS1:1OF1	p30787_1	19/02/2012	p30787_1.cpm	NO
059	wi00860279	ISS1:1OF1	p30789_1	19/02/2012	p30789_1.cpm	NO
060	wi00859305	ISS1:1OF1	p30792_1	19/02/2012	p30792_1.cpm	NO
061	wi00925141	ISS1:1OF1	p30802_1	19/02/2012	p30802_1.cpm	NO
062	wi00896394	ISS1:1OF1	p30807_1	19/02/2012	p30807_1.cpm	NO
063	wi00899584	ISS1:1OF1	p30809_1	19/02/2012	p30809_1.cpm	NO
064	wi00858335	ISS1:1OF1	p30819_1	19/02/2012	p30819_1.cpm	NO
065	wi00873382	ISS1:1OF1	p30832_1	19/02/2012	p30832_1.cpm	NO
066	wi00932942	ISS1:1OF1	p30843_1	19/02/2012	p30843_1.cpm	NO
067	wi00877442	ISS1:1OF1	p30844_1	19/02/2012	p30844_1.cpm	NO
068	wi00869243	ISS1:1OF1	p30848_1	19/02/2012	p30848_1.cpm	NO
069	wi00871739	ISS1:1OF1	p30856_1	19/02/2012	p30856_1.cpm	NO
070	wi00890475	p30952	p31048_1	19/02/2012	p31048_1.cpm	NO
071	wi00896420	ISS1:1OF1	p30867_1	19/02/2012	p30867_1.cpm	NO
072	wi00862574	iss1:1of1	p30870_1	19/02/2012	p30870_1.cpm	NO
073	wi00877592	ISS1:1OF1	p30880_1	19/02/2012	p30880_1.cpm	NO
074	wi00938555	ISS1:1OF1	p30881_1	19/02/2012	p30881_1.cpm	YES
075	wi00865477	ISS1:1OF1	p30890_1	19/02/2012	p30890_1.cpm	YES
076	wi00865477	ISS1:1OF1	p30891_1	19/02/2012	p30891_1.cpm	YES
077	wi00865477	ISS1:1OF1	p30892_1	19/02/2012	p30892_1.cpm	YES
078	wi00865477	ISS1:1OF1	p30893_1	19/02/2012	p30893_1.cpm	YES
079	wi00865477	ISS1:1OF1	p30894_1	19/02/2012	p30894_1.cpm	YES
080	wi00865477	ISS1:1OF1	p30895_1	19/02/2012	p30895_1.cpm	YES
081	wi00865477	ISS1:1OF1	p30896_1	19/02/2012	p30896_1.cpm	YES
082	wi00865477	ISS1:1OF1	p30897_1	19/02/2012	p30897_1.cpm	YES
083	wi00865477	ISS1:1OF1	p30898_1	19/02/2012	p30898_1.cpm	YES
084	wi00875701	ISS1:1OF1	p30942_1	19/02/2012	p30942_1.cpm	NO
085	wi00875425	ISS1:1OF1	p30943_1	19/02/2012	p30943_1.cpm	NO
086	wi00903369	ISS1:1OF1	p31165_1	19/02/2012	p31165_1.cpm	NO
087	wi00946282	ISS1:1OF1	p31204_1	19/02/2012	p31204_1.cpm	NO
088	wi00883604	ISS1:1OF1	p30973_1	19/02/2012	p30973_1.cpm	NO
089	wi00882884	ISS1:1OF1	p30975_1	19/02/2012	p30975_1.cpm	NO
090	wi00880836	ISS1:1OF1	p30976_1	19/02/2012	p30976_1.cpm	NO
091	wi00880386	ISS1:1oF1	p30977_1	19/02/2012	p30977_1.cpm	NO
092	wi00925208	ISS1:1OF1	p30986_1	19/02/2012	p30986_1.cpm	NO
093	WI00927300	ISS1:1OF1	p30999_1	19/02/2012	p30999_1.cpm	NO
094	wi00884699	ISS1:1OF1	p31000_1	19/02/2012	p31000_1.cpm	YES

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095	wi00900096	ISS1:1OF1	p31006_1	19/02/2012	p31006_1.cpm	NO
096	wi00879526	ISS1:1OF1	p31007_1	19/02/2012	p31007_1.cpm	NO
097	wi00886321	ISS1:1OF1	p31009_1	19/02/2012	p31009_1.cpm	NO
098	wi00882293	ISS1:1OF1	p31010_1	19/02/2012	p31010_1.cpm	NO
099	wi00887744	ISS2:1OF1	p31026_2	19/02/2012	p31026_2.cpm	NO
100	WI00928455	ISS1:1OF1	p31297_1	19/02/2012	p31297_1.cpm	NO
101	wi00889088	ISS1:1OF1	p31036_1	19/02/2012	p31036_1.cpm	NO
102	wi00890036	ISS1:1OF1	p31044_1	19/02/2012	p31044_1.cpm	NO
103	wi00891626	ISS1:1OF1	p31051_1	19/02/2012	p31051_1.cpm	YES
104	wi00880221	ISS1:1OF1	p31054_1	19/02/2012	p31054_1.cpm	NO
105	wi00877365	ISS1:1OF1	p31060_1	19/02/2012	p31060_1.cpm	NO
106	wi00932948	ISS1:1OF1	p31077_1	19/02/2012	p31077_1.cpm	NO
107	wi00894243	ISS1:1OF1	p31087_1	19/02/2012	p31087_1.cpm	NO
108	wi00893131	ISS1:1OF1	p31089_1	19/02/2012	p31089_1.cpm	NO
109	wi00894443	ISS1:1OF1	p31093_1	19/02/2012	p31093_1.cpm	NO
110	wi00895090	ISS1:1OF1	p31105_1	19/02/2012	p31105_1.cpm	NO
111	wi00895181	ISS1:1OF1	p31106_1	19/02/2012	p31106_1.cpm	NO
112	wi00932958	ISS1:1OF1	p31115_1	19/02/2012	p31115_1.cpm	NO
113	wi00897082	ISS1:1OF1	p31124_1	19/02/2012	p31124_1.cpm	NO
114	wi00937114	ISS1:1OF1	p31310_1	19/02/2012	p31310_1.cpm	NO
115	wi00898327	ISS1:1OF1	p31136_1	19/02/2012	p31136_1.cpm	NO
116	wi00900766	ISS1:1OF1	p31159_1	19/02/2012	p31159_1.cpm	NO
117	wi00868729	ISS1:1OF1	p31163_1	19/02/2012	p31163_1.cpm	NO
118	wi00903085	ISS1:1OF1	p31164_1	19/02/2012	p31164_1.cpm	NO
119	wi00903437	ISS1:1OF1	p31167_1	19/02/2012	p31167_1.cpm	NO
120	wi00855423	ISS1:1OF1	p31328_1	19/02/2012	p31328_1.cpm	YES
121	wi00905297	ISS1:1OF1	p31195_1	19/02/2012	p31195_1.cpm	NO
122	wi00905600	ISS1:1OF1	p31201_1	19/02/2012	p31201_1.cpm	NO
123	wi00906022	ISS1:1OF1	p31202_1	19/02/2012	p31202_1.cpm	NO
124	wi00906098	ISS1:1OF1	p31203_1	19/02/2012	p31203_1.cpm	YES
125	wi00906163	ISS1:1OF1	p31205_1	19/02/2012	p31205_1.cpm	NO
126	wi00946558	ISS1:1OF1	p31358_1	19/02/2012	p31358_1.cpm	NO
127	wi00907403	ISS1:1OF1	p31225_1	19/02/2012	p31225_1.cpm	NO
128	wi00948274	ISS1:1OF1	p31365_1	19/02/2012	p31365_1.cpm	NO
129	wi00907697	ISS1:1OF1	p31227_1	19/02/2012	p31227_1.cpm	NO
130	wi00907707	ISS1:1OF1	p31228_1	19/02/2012	p31228_1.cpm	NO
131	wi00892954	ISS1:1OF1	p31378_1	19/02/2012	p31378_1.cpm	NO
132	wi00908598	ISS1:1OF1	p31235_1	19/02/2012	p31235_1.cpm	NO
133	wi00908933	ISS1:1OF1	p31239_1	19/02/2012	p31239_1.cpm	NO
134	wi00936714	ISS1:1OF1	p31379_1	19/02/2012	p31379_1.cpm	NO
135	wi00921295	ISS1:1OF1	p31265_1	19/02/2012	p31265_1.cpm	NO
136	wi00921340	ISS1:1OF1	p31266_1	19/02/2012	p31266_1.cpm	NO
137	wi00923899	ISS1:1OF1	p31270_1	19/02/2012	p31270_1.cpm	NO
138	wi00898200	ISS1:1of1	p31274_1	19/02/2012	p31274_1.cpm	NO
139	wi00929140	ISS1:1OF1	p31284_1	19/02/2012	p31284_1.cpm	NO
140	wi00927321	ISS1:1OF1	p31286_1	19/02/2012	p31286_1.cpm	YES
141	wi00932204	ISS2:1OF1	p31305_2	19/02/2012	p31305_2.cpm	NO
142	wi00925033	ISS1:1OF1	p31320_1	19/02/2012	p31320_1.cpm	NO
143	wi00930864	ISS1:1OF1	p31325_1	19/02/2012	p31325_1.cpm	NO
144	wi00909476	ISS1:1OF1	p31340_1	19/02/2012	p31340_1.cpm	NO
145	wi00931028	ISS1:1OF1	p31354_1	19/02/2012	p31354_1.cpm	YES
146	wi00941500	ISS1:1OF1	p31394_1	19/02/2012	p31394_1.cpm	NO
147	wi00932929	ISS1:1OF1	p31392_1	19/02/2012	p31392_1.cpm	YES
148	wi00927678	ISS1:1OF1	p31399_1	19/02/2012	p31399_1.cpm	NO
149	wi00943172	ISS1:1OF1	p31402_1	19/02/2012	p31402_1.cpm	NO
150	wi00948931	ISS1:1OF1	p31407_1	19/02/2012	p31407_1.cpm	NO
151	wi00942734	ISS1:1OF1	p31409_1	19/02/2012	p31409_1.cpm	NO
152	wi00949273	ISS1:1OF1	p31411_1	19/02/2012	p31411_1.cpm	NO
153	wi00945533	ISS1:1OF1	p31421_1	19/02/2012	p31421_1.cpm	YES
154	wi00946477	ISS1:1OF1	p31426_1	19/02/2012	p31426_1.cpm	NO
155	wi00946681	ISS1:1OF1	p31428_1	19/02/2012	p31428_1.cpm	NO
156	wi00946876	ISS1:1OF1	p31430_1	19/02/2012	p31430_1.cpm	NO
157	wi00949627	ISS1:1OF1	p31462_1	19/02/2012	p31462_1.cpm	NO
158	wi00951427	ISS1:1OF1	p31478_1	19/02/2012	p31478_1.cpm	NO
159	wi00951837	ISS1:1OF1	p31485_1	19/02/2012	p31485_1.cpm	NO
160	wi00951925	ISS1:1OF1	p31486_1	19/02/2012	p31486_1.cpm	NO
161	wi00956885	ISS1:1OF1	p31489_1	19/02/2012	p31489_1.cpm	NO
162	wi00953900	ISS1:1OF1	p31494_1	19/02/2012	p31494_1.cpm	NO
163	wi00953902	ISS1:1OF1	p31499_1	19/02/2012	p31499_1.cpm	NO
164	wi00955541	ISS1:1OF1	p31501_1	19/02/2012	p31501_1.cpm	NO

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165  wi00925989      ISS1:1OF1       p31514_1  19/02/2012  p31514_1.cpm   NO
166  wi00943748      ISS1:1OF1       p31516_1  19/02/2012  p31516_1.cpm   NO
167  wi00957252      ISS1:1OF1       p31530_1  19/02/2012  p31530_1.cpm   NO
168  wi00958682      ISS1:1OF1       p31540_1  19/02/2012  p31540_1.cpm   NO
169  wi00958776      ISS1:1OF1       p31542_1  19/02/2012  p31542_1.cpm   YES
170  wi00959854      ISS1:1OF1       p31556_1  19/02/2012  p31556_1.cpm   NO
171  wi00960133      ISS2:1OF1       p31557_2  19/02/2012  p31557_2.cpm   NO
172  wi00959820      ISS1:1OF1       p31562_1  19/02/2012  p31562_1.cpm   NO
173  wi00957141      ISS1:1OF1       p31579_1  19/02/2012  p31579_1.cpm   NO
174  wi00962211      ISS1:1OF1       p31580_1  19/02/2012  p31580_1.cpm   NO
175  wi00962557      ISS1:1OF1       p31581_1  19/02/2012  p31581_1.cpm   NO
176  wi00962955      ISS1:1OF1       p31585_1  19/02/2012  p31585_1.cpm   NO
177  wi00965724      ISS1:1OF1       p31606_1  19/02/2012  p31606_1.cpm   NO
MDP>LAST SUCCESSFUL MDP REFRESH :2012-02-19 09:06:34(Local Time)
MDP>USING DEPLIST ZIP FILE DOWNLOADED :2012-02-03 09:32:18(est)
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Communication Server 1000E signaling server service updates

```
Product Release: 7.50.17.00
In system patches: 1
PATCH#  NAME       IN_SERVICE   DATE      SPECINS  TYPE   RPM
2       p30526_1   Yes          19/02/12  NO       FRU    cs1000-pi-control-1.00.00.00-00.noarch

In System service updates: 22
PATCH#  IN_SERVICE   DATE       SPECINS   REMOVABLE   NAME
0       Yes          12/12/11   NO        YES         cs1000-baseWeb-7.50.17.16-1.i386.001
1       Yes          18/02/12   NO        YES         cs1000-csmWeb-7.50.17.16-3.i386.000
3       Yes          17/02/12   NO        YES         cs1000-linuxbase-7.50.17.16-6.i386.000
4       Yes          18/02/12   NO        YES         cs1000-mscAnnc-7.50.17.16-1.i386.000
5       Yes          18/02/12   NO        YES         cs1000-mscTone-7.50.17.16-1.i386.000
6       Yes          18/02/12   NO        YES         cs1000-mscMusc-7.50.17.16-2.i386.000
7       Yes          18/02/12   NO        YES         cs1000-dmWeb-7.50.17.16-2.i386.000
8       Yes          18/02/12   NO        YES         cs1000-sps-7.50.17.16-2.i386.000
9       Yes          14/12/11   NO        YES         cs1000-dbcom-7.50.17-02.i386.000
10      Yes          19/02/12   NO        YES         cs1000-tps-7.50.17.16-11.i386.000
11      Yes          14/12/11   NO        YES         cs1000-shared-pbx-7.50.17.16-1.i386.000
12      Yes          14/12/11   NO        YES         cs1000-kcv-7.50.17.16-1.i386.000
13      Yes          19/02/12   NO        yes         avaya-cs1000-cnd-4.0.20-00.i386.000
14      Yes          14/12/11   NO        YES         cs1000-ipsec-7.50.17.16-1.i386.000
15      Yes          19/02/12   NO        YES         cs1000-emWeb_6-0-7.50.17.16-16.i386.000
16      Yes          19/02/12   NO        YES         cs1000-Jboss-Quantum-7.50.17.16-10.i386.000
17      Yes          17/03/12   NO        YES         cs1000-vtrk-7.50.17.16-43.i386.000
18      Yes          14/12/11   NO        YES         ipsec-tools-0.6.5-14.el5.3_avaya_1.i386.000
19      Yes          14/12/11   NO        YES         spiritAgent-6.1-1.0.0.108.208.i386.000
20      Yes          14/12/11   NO        YES         cs1000-EmCentralLogic-7.50.17.16-1.i386.000
25      Yes          18/02/12   NO        YES         cs1000-ftrpkg-7.50.17.16-7.i386.000
26      Yes          18/02/12   NO        YES         cs1000-bcc-7.50.17.16-46.i386.000
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