Avaya Solution & Interoperability Test Lab

Application Notes for Configuring Avaya Communication Server 1000E R7.5, Avaya Aura® Session Manager R6.1 and Avaya Session Border Controller Advanced for Enterprise to support KPN VoIP Connect Service – Issue 1.0

Abstract

These Application Notes describe the steps used to configure Session Initiation Protocol (SIP) trunking between the KPN VoIP Connect service and an Avaya SIP enabled Enterprise Solution. The Avaya solution consists of Avaya Session Border Controller Advanced for Enterprise, Avaya Aura® Session Manager and Avaya Communication Server 1000E. KPN is a member of the DevConnect 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.

1. Introduction

These Application Notes describe the steps used to configure Session Initiation Protocol (SIP) trunking between KPN VoIP Connect service and an Avaya SIP-enabled Enterprise Solution. The Avaya solution consists of Avaya Session Border Controller Advanced for Enterprise, Avaya Aura® Session Manager and Avaya Communication Server 1000E (CS1000E). Customers using this Avaya SIP-enabled enterprise solution with KPN VoIP Connect service are able to place and receive PSTN calls via a dedicated Internet connection and the SIP protocol. This converged network solution is an alternative to traditional PSTN trunks. This approach generally results in lower cost for the Enterprise customer.

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 CS1000E, Session Manager and Session Border Controller. The enterprise site was configured to use the VoIP Connect service provided by KPN.

2.1. Interoperability Compliance Testing

The interoperability test included the following:

- Incoming calls to the enterprise site from the PSTN routed to the DDI numbers assigned by KPN
- Incoming PSTN calls made to SIP, Unistim, Anolgue and Digital telephones at the enterprise
- Outgoing calls from the enterprise site completed via KPN to PSTN destinations
- Outgoing calls from the enterprise to the PSTN made from SIP, Unistim, Analogue and Digital telephones
- Inbound and outbound PSTN calls to/from the Avaya one-X® Communicator soft phone.
- Calls using the G.711A codec supported by KPN
- Fax calls to/from a group 3 fax machine to a PSTN connected fax machine using T.38
- DTMF transmission using RFC 2833 with successful Voice Mail/Vector navigation for inbound and outbound calls
- 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 KPN requiring Avaya response and sent by Avaya requiring KPN response
- Mobile-X mid call features were not tested

2.2. Test Results

Interoperability testing of the sample configuration was completed with successful results for the KPN VoIP Connect service with the following observations:

- No inbound toll free numbers were tested as none were available from the Service Provider
- No Emergency Services numbers tested as test calls to these numbers should be pre-arranged with the Operator
- Outbound blind transfer calls to the PSTN needs patch MPLR30253 applied in order to hear ring back tone at the calling party when the call is being transferred.

2.3. Support

For technical support on KPN products please visit the website at www.kpn.nl or contact an authorized KPN representative.

3. Reference Configuration

Figure 1 illustrates the test configuration. The test configuration shows an Enterprise site connected to the KPN VoIP Connect 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, Avaya 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.

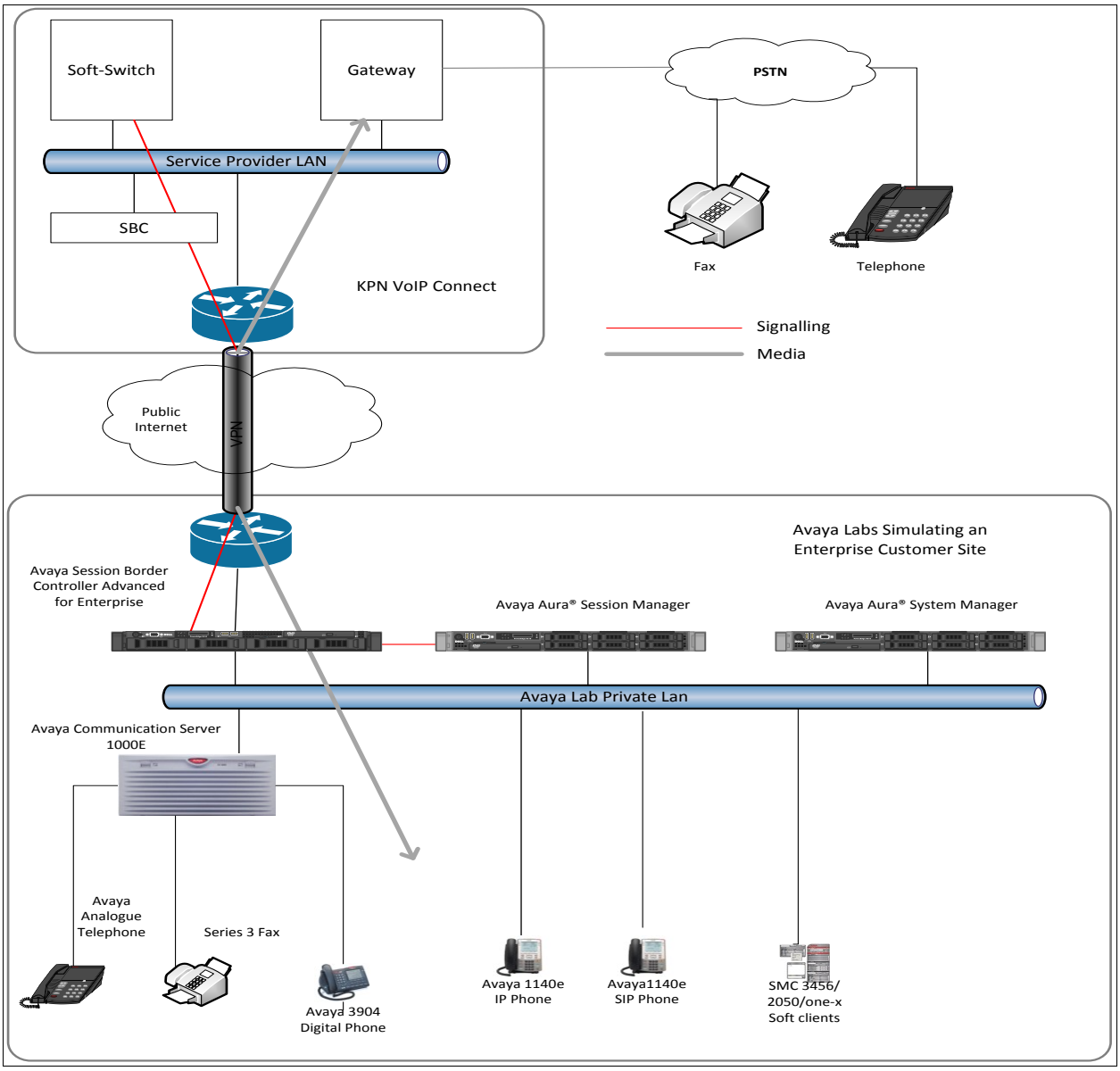


Figure 1: Test Setup KPN VoIP Connect to Avaya Enterprise

4. Equipment and Software Validated

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

Equipment	Software
Avaya S8800 Server	Avaya Aura® Session Manager R6.1 Service Pack 5 (6.1.4.0.614005)
Avaya S8800 Server	Avaya Aura® System Manager R6.1 Service Pack 5 (6.1.8.1.1551)
Dell R310 Server running Avaya Session Border Controller Advanced for Enterprise	Avaya Session Border Controller Advanced for Enterprise R4.0.5.Q02
Avaya Communication Server 1000E running on CP+PM server as co-resident configuration	Avaya Communication Server 1000E R7.5 Version 7.50.17 Deplist: CPL_X21_07_50Q All CS1000E patches listed 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 1140e and 1230 Unistim Telephones	FW: 0625C8A
Avaya 1140e and 1230 SIP Telephones	FW: 04.01.13.00.bin
Avaya SMC 3456	Version 2.6 build 57666
Avaya Analogue Telephone	N/A
Avaya M3904 Digital Telephone	N/A
KPN Equipment	**Software**
IP Multimedia Subsystem	BroadSoft Broadworks version 17
SIP User Agent	Alcatel-Lucent HPSS v3.0.3
Session Border Controller	Acme Net-Net 4250 and 4500 Firmware SC6.2.0 MR-6 Patch 2 (Build 876) Build Date=06/14/11

5. Configure Avaya Communication Server 1000E

This section describes the steps for configuring Communication Server 1000E for SIP Trunking. SIP trunks are established between Communication Server 1000E and Session Manager. These SIP trunks will carry SIP signalling associated with the KPN VoIP Connect Service. For incoming calls, the Session Manager receives SIP messages from the SBC and directs the incoming SIP messages to Communication Server 1000E. Once the 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 automatic route selection, digit manipulation and class of service restrictions. Once Communication Server 1000E selects a SIP trunk, the SIP signalling is routed to the Session Manager. The Session Manager directs the outbound SIP messages to the Session Border Controller at the enterprise site that then sends the SIP messages to the KPN network. Specific Communication Server 1000E configuration was performed using Element Manager and the system terminal interface. The general installation of the Communication Server 1000E, System Manager and Session Manager is presumed to have been previously completed and is not discussed here. **Appendix A** has a list of all CS1000E patches, deplist and service packs loaded on the system.

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.

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 KPN's 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.

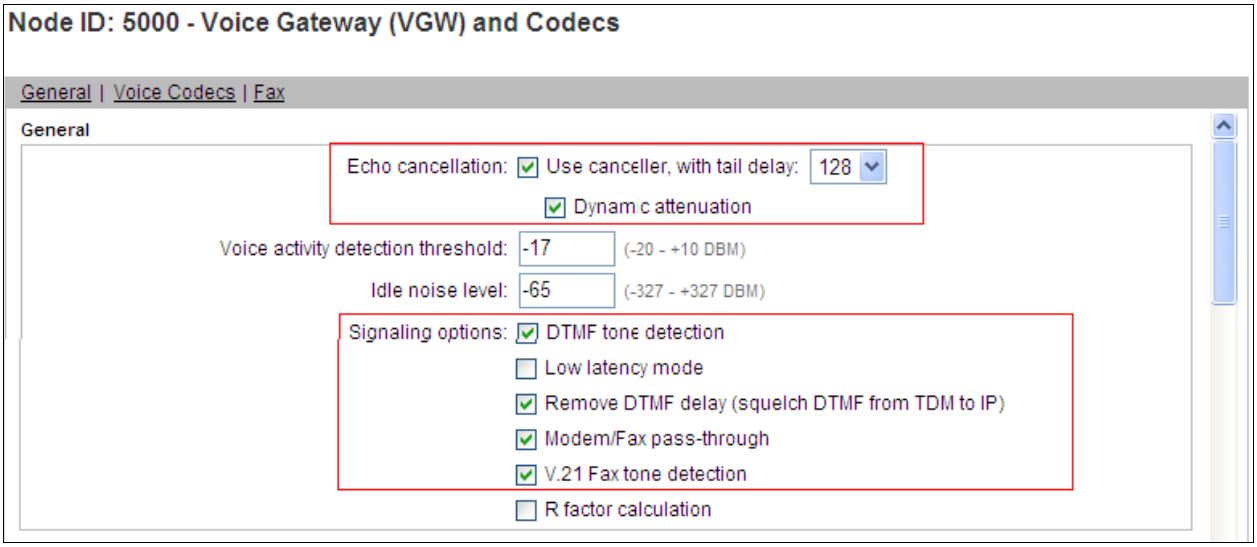
```
Load Overlay 22
req: SLT

System type is - Communication Server 1000E/CPPM Linux
CPPM - Pentium M 1.4 GHz

IPMGs Registered:               1
IPMGs Unregistered:             0
IPMGs Configured/unregistered:  0

TRADITIONAL TELEPHONES 32767    LEFT 32766    USED     1
DECT USERS             32767    LEFT 32767    USED     0
IP USERS               32767    LEFT 32744    USED    23
BASIC IP USERS         32767    LEFT 32766    USED     1
TEMPORARY IP USERS     32767    LEFT 32767    USED     0
DECT VISITOR USER      10000    LEFT 10000    USED     0
ACD AGENTS             32767    LEFT 32752    USED    15
MOBILE EXTENSIONS      32767    LEFT 32767    USED     0
TELEPHONY SERVICES     32767    LEFT 32767    USED     0
CONVERGED MOBILE USERS 32767    LEFT 32767    USED     0
NORTEL SIP LINES       32767    LEFT 32765    USED     2
THIRD PARTY SIP LINES  32767    LEFT 32761    USED     6
SIP CONVERGED DESKTOPS 32767    LEFT 32767    USED     0
SIP CTI TR87           32767    LEFT 32767    USED     0
SIP ACCESS PORTS       32767    LEFT 32752    USED    15
```

Load Overlay 21 and confirm the customer is setup to use **ISDN** trunks by typing the **PRT** and **NET_DATA** commands as shown below.

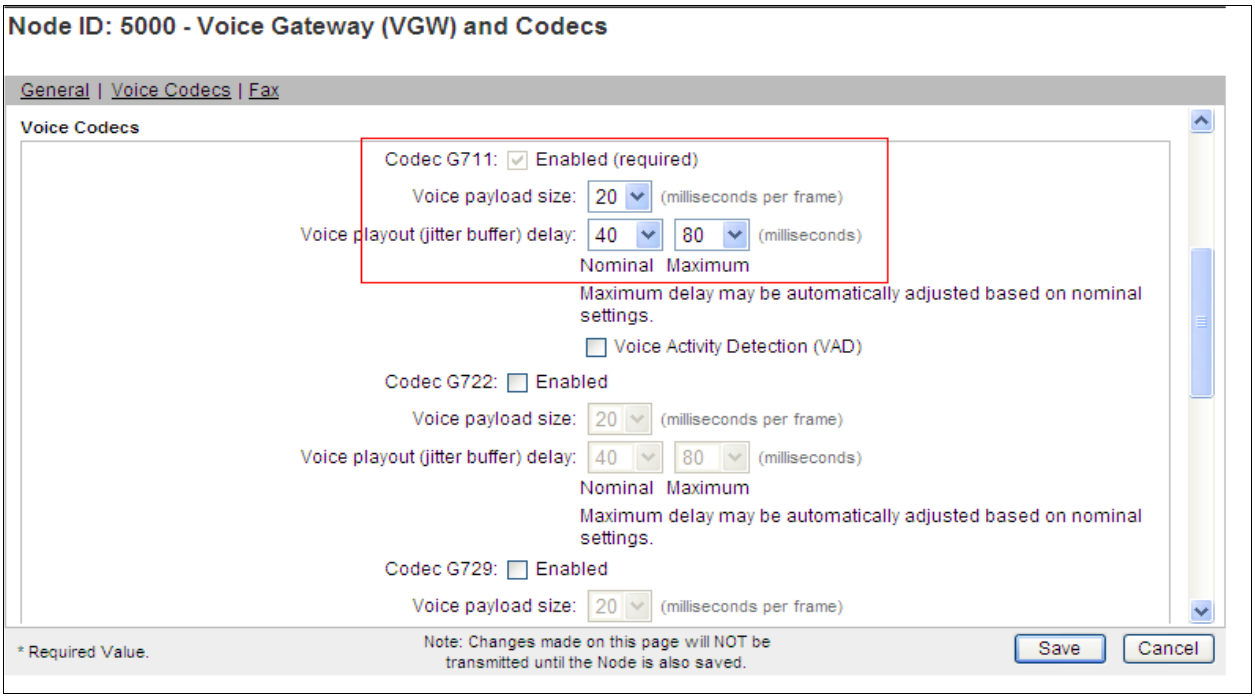
```
Load Overlay 21
REQ: PRT
TYPE: net
TYPE NET_DATA
CUST 0

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

5.3. Configure Codec's for Voice and FAX operation

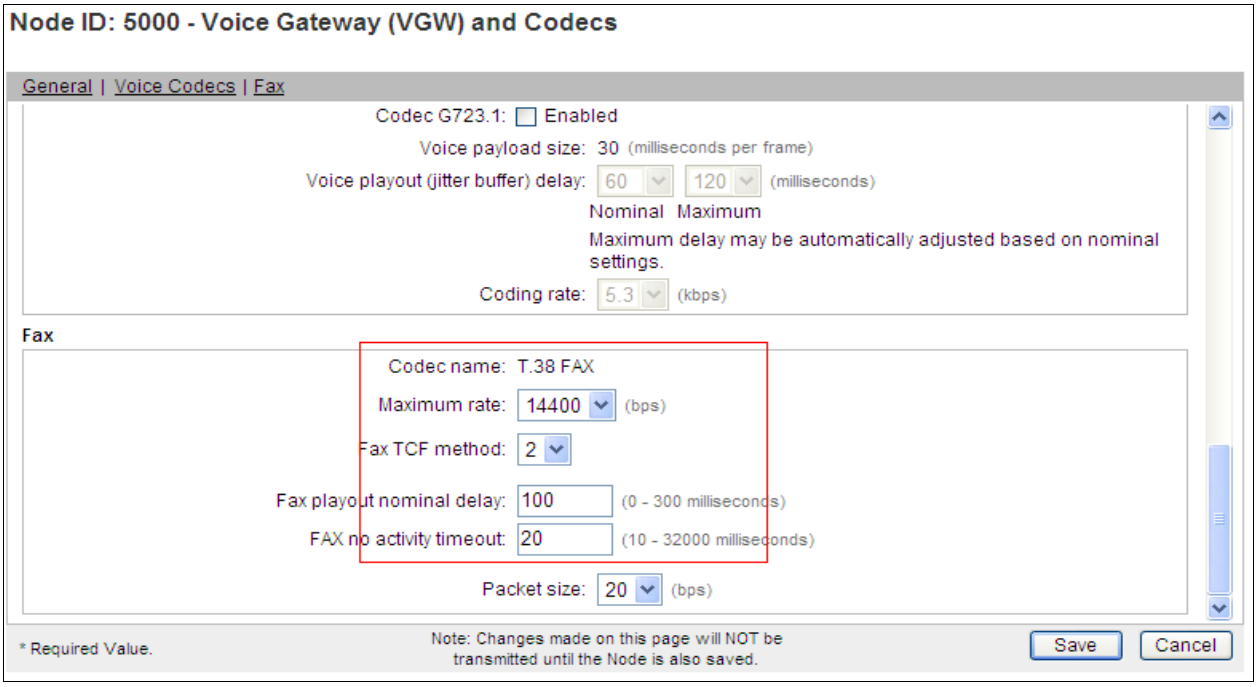
KPN's SIP Trunk service supports G.711A voice codec and T.38 FAX transmissions. Using the Communication Server 1000E element manager sidebar, navigate to the **IP Network → IP Telephony Nodes → Node Details → Voice Gateway (VGW) and Codecs** property page and configure the Communication Server 1000E General codec settings as shown in the screenshot below. The values highlighted are required for correct operation; most of the options are turned on by default but its good practice to ensure that they are set as shown below.



Next, scroll down and configure the CS1000E to use **Codec G.711** only. Default values were configured. This aligns with what KPN support on their SIP network.

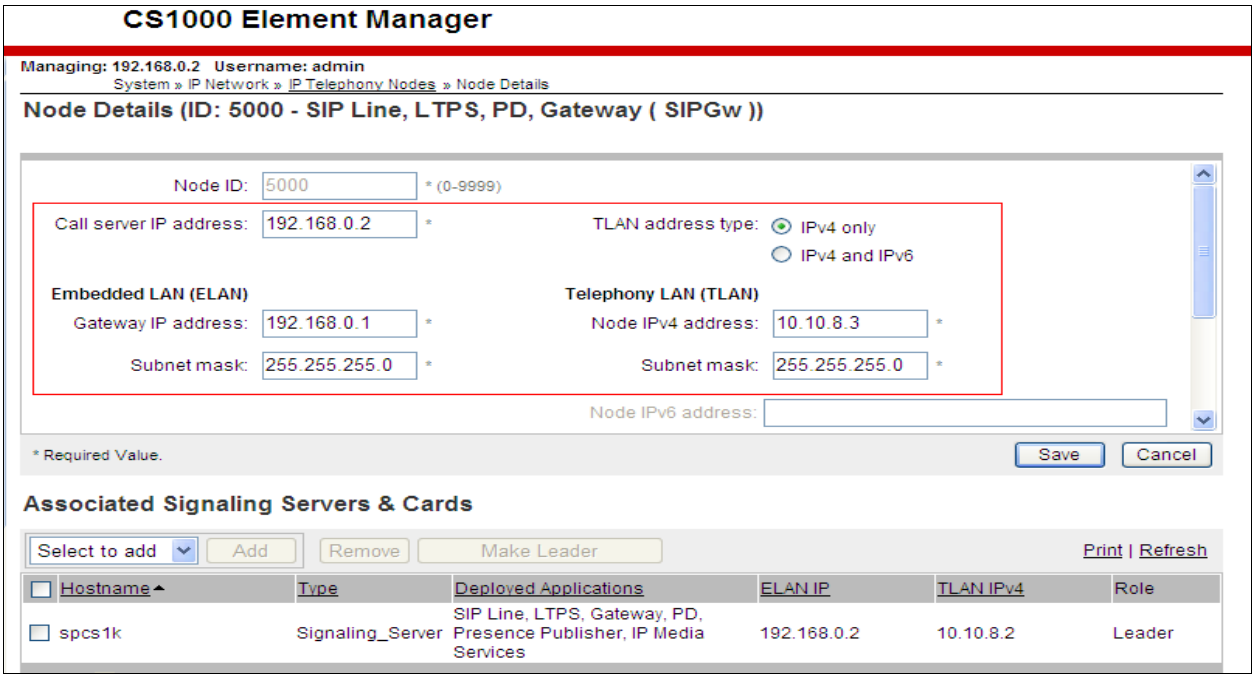


Finally, configure the **Fax** settings as in the highlighted section of the next screenshot with system defaults as shown below.



5.4. Virtual Trunk Gateway Configuration

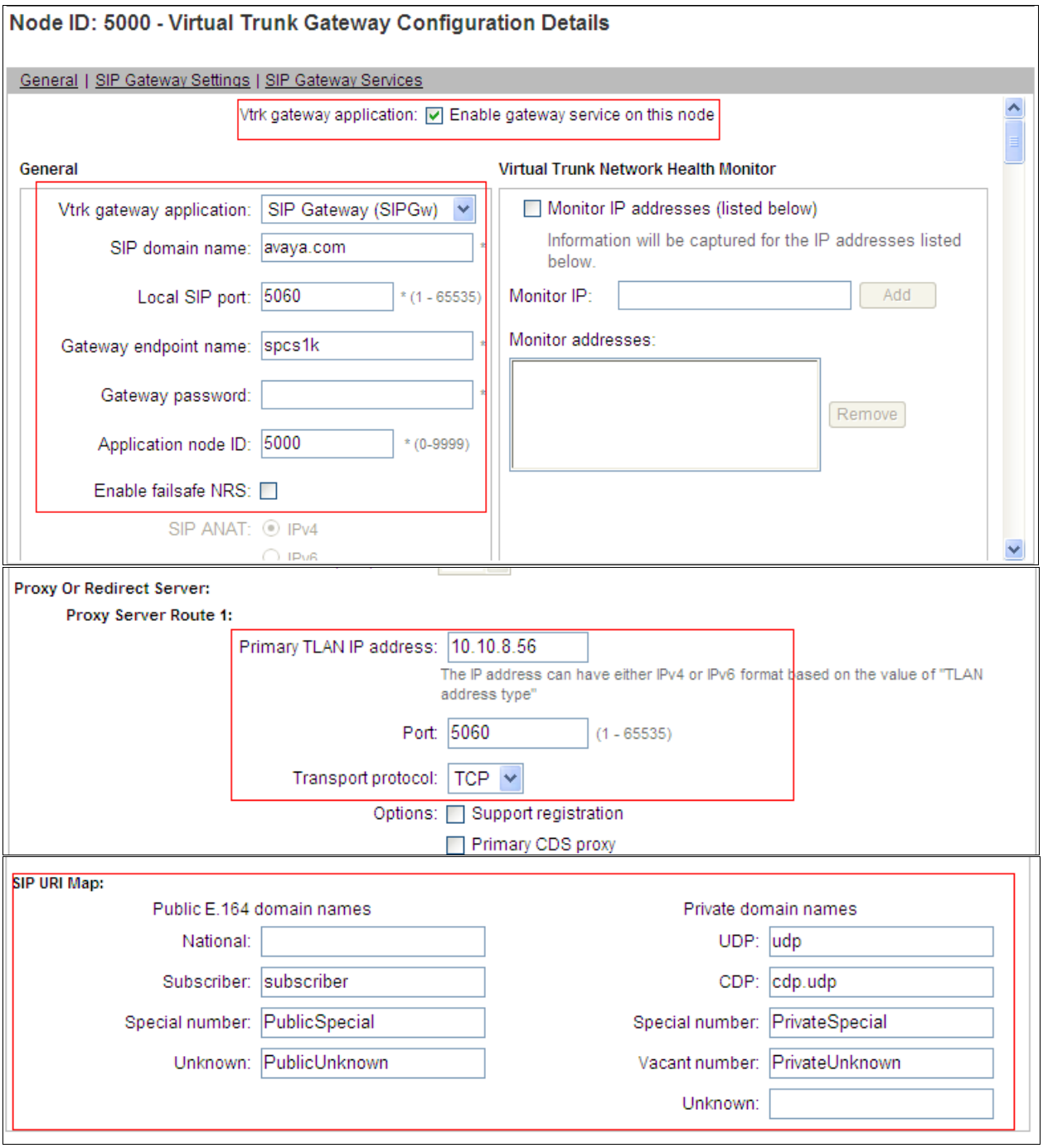
Use Communication Server 1000E Element Manager to configure the system node properties. Navigate to the **System → IP Networks → IP Telephony Nodes → Node Details** and verify the highlighted section is completed with the correct IP addresses and subnet masks of the Node. At this stage the call server has an ip address and so too does the signalling server. The Node IPv4 address is the ip address that the IP phones use to register. This is also where the SIP trunk connection is made to the Session Manager. When an entity link is added in Session Manager for the CS1000E it is the Node IPv4 address that is used (see **Section 6.5** – Define SIP Entities for more details).



The next two screenshots show the SIP Virtual Trunk Gateway configuration, navigate to **System → IP Networks → IP Telephony Nodes → Node Details → Gateway (SIPGW) Virtual Trunk Configuration Details** and fill in the highlighted areas with the relevant settings.

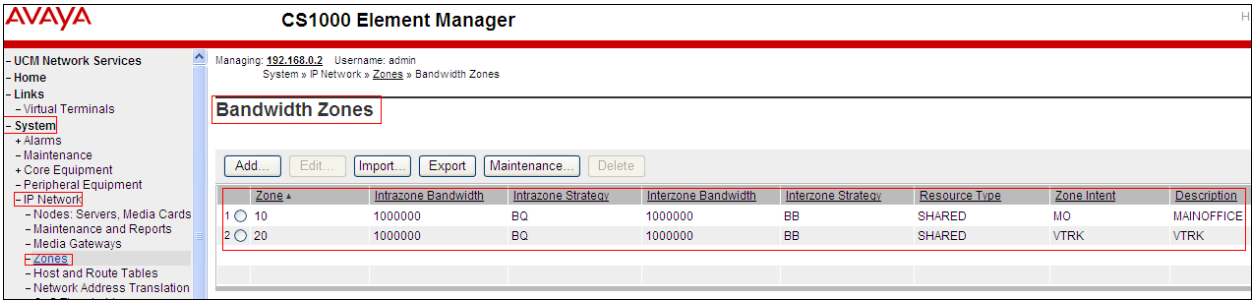
- **Vtrk gateway application:** Provides option to select Gateway applications. The three supported modes are **SIP Gateway (SIPGw)**, **H.323Gw**, and **SIPGw and H.323Gw**
- **SIP domain name:** The SIP Domain Name is the SIP Service Domain. The SIP Domain Name configured in the Signaling Server properties must match the Service Domain name configured in the Session Manager, in this case **avaya.com**
- **Local SIP port:** The Local SIP Port is the port to which the gateway listens. The default value is **5060**
- **Gateway endpoint name:** This field cannot be left blank so a value is needed here. This field is used when a Network Routing Server is used for registration of the endpoint. In this network a Session Manager is used so any value can be put in here and will not be used

- **Application node ID:** This is a unique value that can be alphanumeric and is for the new Node that is being created, in this case **5000**
- **Proxy or Redirect Server:** Primary TLAN ip address is the SM100 ip address of the Session Manager. The **Transport protocol** used for **SIP**, in this case is **TCP**
- **SIP URI Map: Public E.164 - National** and **Private - Unknown** are left blank. All other fields in the SIP URI Map are left with default values



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 not shared with other resources and best practice dictates that IP telephones and Media Gateways are all placed in separate zones. Use Element Manager to define bandwidth zones as in the following highlighted example. Use Element Manager and navigate to **System → IP Network → Zones → Bandwidth Zones** and add new zones as required.



5.6. Configure SIP Trunks

Communication Server 1000E virtual trunks will be used for all inbound and outbound PSTN calls to KPN's 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.

```
Load Overlay 17
ADAN     DCH 10
  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
```

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 5.4**. The value for **ZONE** should match that used in **Section 5.5** for **SIP_VTRK**. The remaining highlighted values are important for correct SIP trunk operation.

```
Load 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 00020
PCID SIP
CRID NO
NODE 5000
DTRK NO
ISDN YES
    MODE ISLD
    DCH  10
    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 0
NDNO 0 *
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
```

Next, configure virtual trunk members using the Communication Server 1000E system terminal and **Load 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.

```
Load Overlay 14
new 30
TN   160 0 0 0
DATE
PAGE
DES  VIR_TRK
TN   160 0 00 00  VIRTUAL
TYPE IPTI
CUST 0
XTRK VTRK
ZONE 0020
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.

```
Load Overlay 86
new
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
```

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 four digit number is entered for the **KEY 00** and **KEY 01** value. The value for **CFG_ZONE** is the same value used in **Section 5.5** for **MAINOFFICE**.

```
Load 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 00010
CUR_ZONE 00010
ERL  0
ECL  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 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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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 8000 0     MARP
        CPND
          CPND_LANG ROMAN
            NAME IP1140
            XPLN 10
            DISPLAY_FMT FIRST,LAST
     01 MCR 8000 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
```

Digital telephones are also configured using **Load 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.

```
Load 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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MLNG ENG
DNDR 0
KEY  00 MCR 8866 0     MARP
        CPND
          CPND_LANG ROMAN
            NAME Digital Set
            XPLN 10
            DISPLAY_FMT FIRST,LAST
     01 MCR 8866 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
```

Analogue telephones are also configured using **Load Overlay 20**. The following example shows an analog port configured for Plain Ordinary Telephone Service (POTS) and also configured to allow T.38 Fax transmission. A unique value is entered for **DN**, this 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.

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

ERL 00000
WRLS NO
DN   8888
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
```

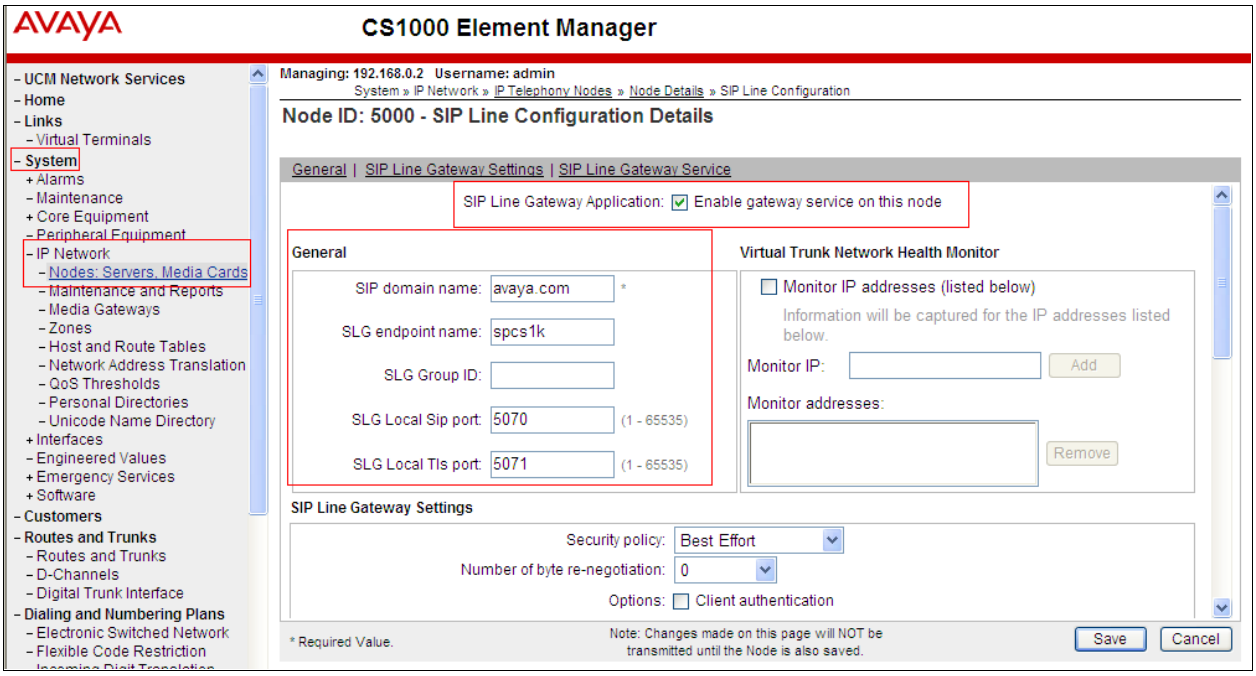
5.8. Configure the SIP Line Gateway Service

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
```

If a numerical value is entered against the **UAPR** setting, this number will be pre appended to all SIP Line configurations, and is used internally in the SIP Line server to track SIP terminals. Use Element Manager and navigate to the **IP Network → IP Telephony Nodes → Node Details → SIP Line Gateway Configuration** page. See the following screenshot for highlighted critical parameters. The value for **SIP Domain Name** must match that configured in **Section 6.2**.

- **SIP Line Gateway Application: Enable the SIP line service on the node**, check the box to enable
- **SIP domain name:** Enter the SIP domain, in this case **avaya.com**
- **SLG endpoint name:** The endpoint name is the same endpoint name as the SIP Line Gateway and will be used for SIP gateway registration
- **SLG Local Sip port:** Default value is **5070**
- **SLG Local TLS port:** Default value is **5071**



5.9. Configure SIP Line Telephones

When the SIP Line service configuration is completed, use the Communication Server 1000E system terminal and **Load 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 **MAINOFFICE** 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 at the beginning of this section) and the telephone number used in **KEY 00**.

```
Load 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 8889
NDID 5
SUPR NO
SUBR DFLT MWI RGA CWI MSB
UXID
NUID
NHTN
CFG_ZONE 00010
CUR_ZONE 00010
ERL  0
ECL  0
VSIT NO
FDN
TGAR 0
LDN  NO
NCOS 0
SGRP 0
RNPG 0
SCI  0
SSU
XLST
SCPW 1234
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

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

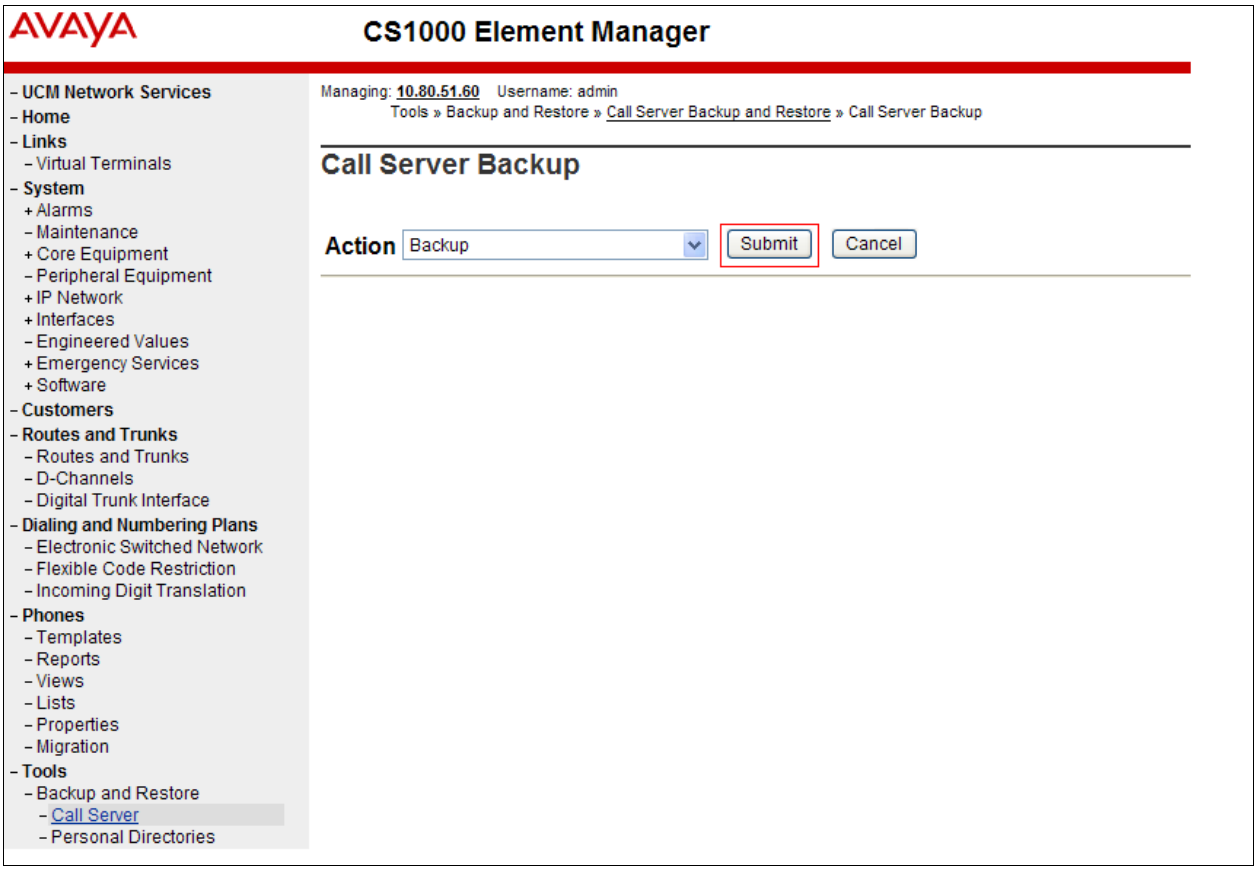
```
---continued from previous page---

     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 8889 0     MARP
        CPND
          CPND_LANG ROMAN
            NAME Sigma 1140
            XPLN 11
            DISPLAY_FMT FIRST,LAST*
     01 HOT U 788889 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
```

5.10. Save Configuration

Expand **Tools → Backup and Restore** on the left navigation panel and select **Call Server.** Select **Backup** (not shown) and click **Submit** to save configuration changes as shown below.



The backup process will take several minutes to complete. Scroll to the bottom of the page to verify the backup process completed successfully as shown below.

Configuration of Communication Server 1000E is complete.

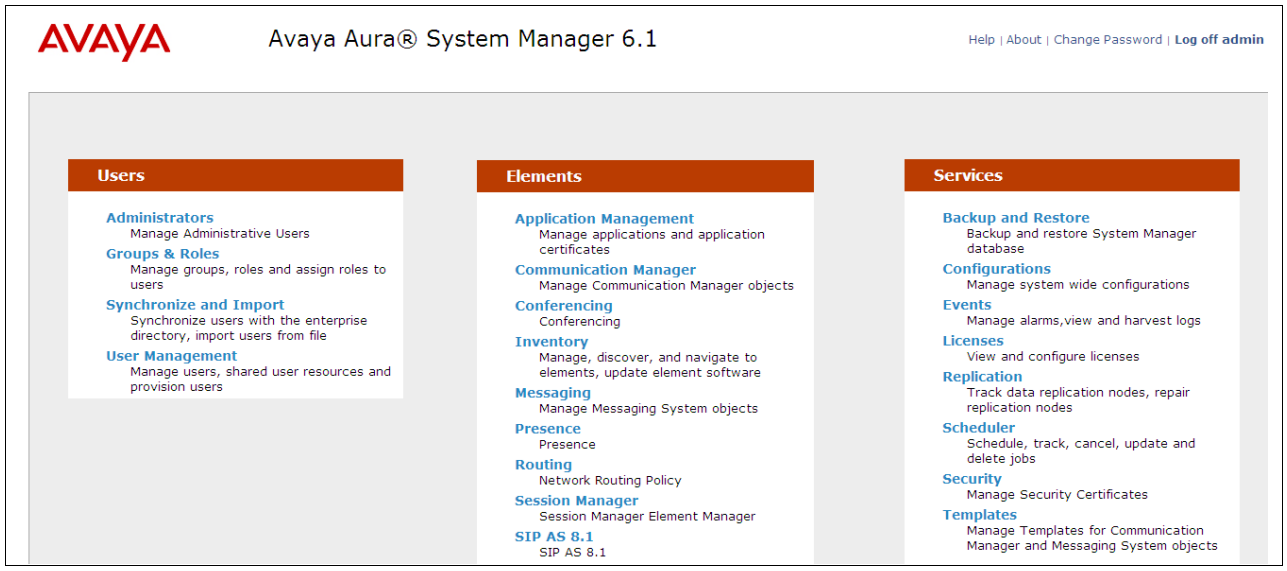
6. Configuring Avaya Aura® Session Manager

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
- Define SIP Domain
- Define Location for Avaya Communication Server 1000E
- Configure Adaptation Module.
- Define SIP Entities
- Define Entity Links
- Define Routing Policies
- Define Dial Patterns

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.

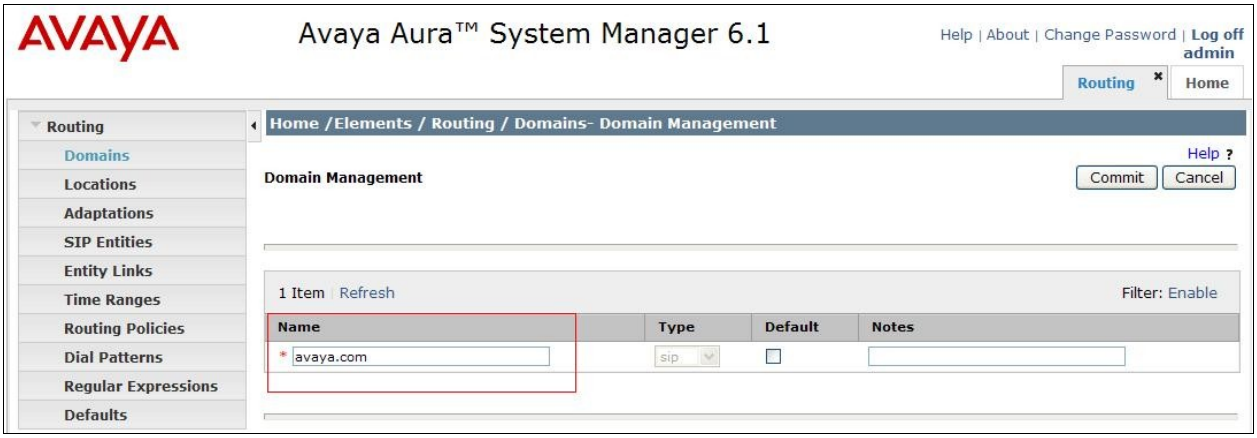


6.2. Define SIP Domain

Expand **Elements → Routing** and select **Domains** from the left navigation menu, click **New** (not shown)**.** Enter the following values and use default values for remaining fields**.**

- **Name** Enter the Domain Name specified for the SIP Gateway in **Section 5.4.** In the sample configuration, **avaya.com** was used
- **Type** Verify **sip** is selected**Notes** Add a brief description [Optional]

Click **Commit** to save. The screen below shows the SIP Domain defined for the sample configuration.



.

6.3. Define Location for Avaya Communication Server 1000E

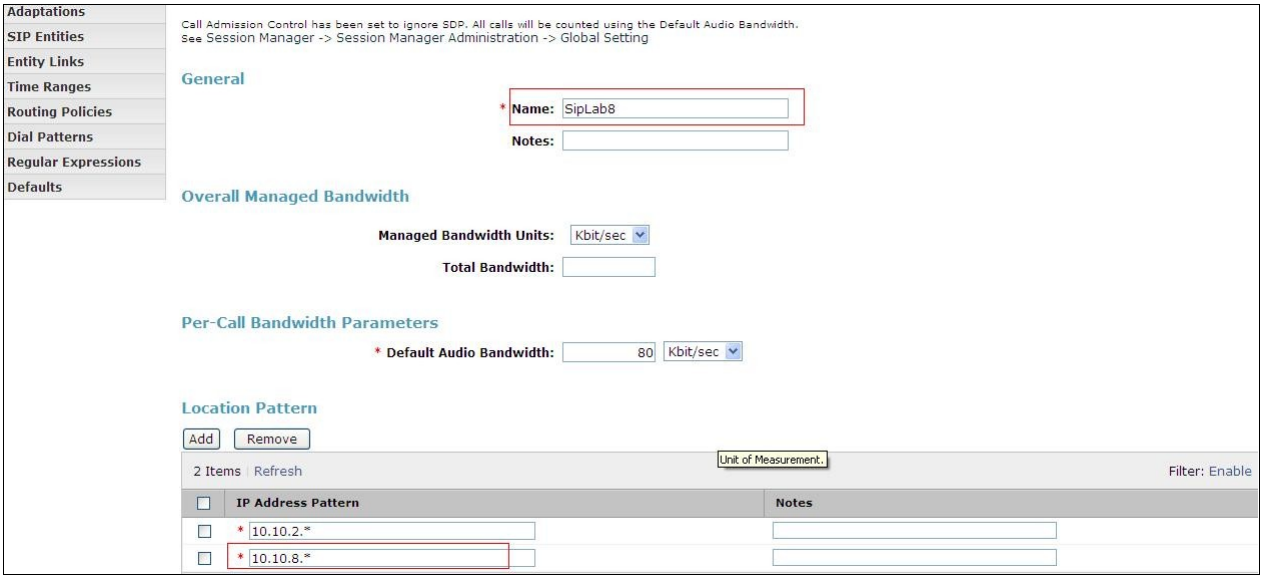
Locations are used to identify logical and/or physical locations where SIP Entities reside, for purposes of bandwidth management or location-based routing. Expand **Elements → Routing** and select **Locations** from the left navigational menu. Click **New** (not shown). In the **General** section**,** enter the following values and use default values for remaining fields**.**

- **Name** Enter a descriptive name for the location
- **Notes** Add a brief description [Optional]

In the **Location Pattern** section, click **Add** and enter the following values.

- **IP Address Pattern** Enter the logical pattern used to identify the location. For the sample configuration, **10.10.8.*** was used
- **Notes** Add a brief description [Optional]

Click **Commit (not shown)** to save. The screenshot below shows the Location defined for Communication Server 1000E in the sample configuration.

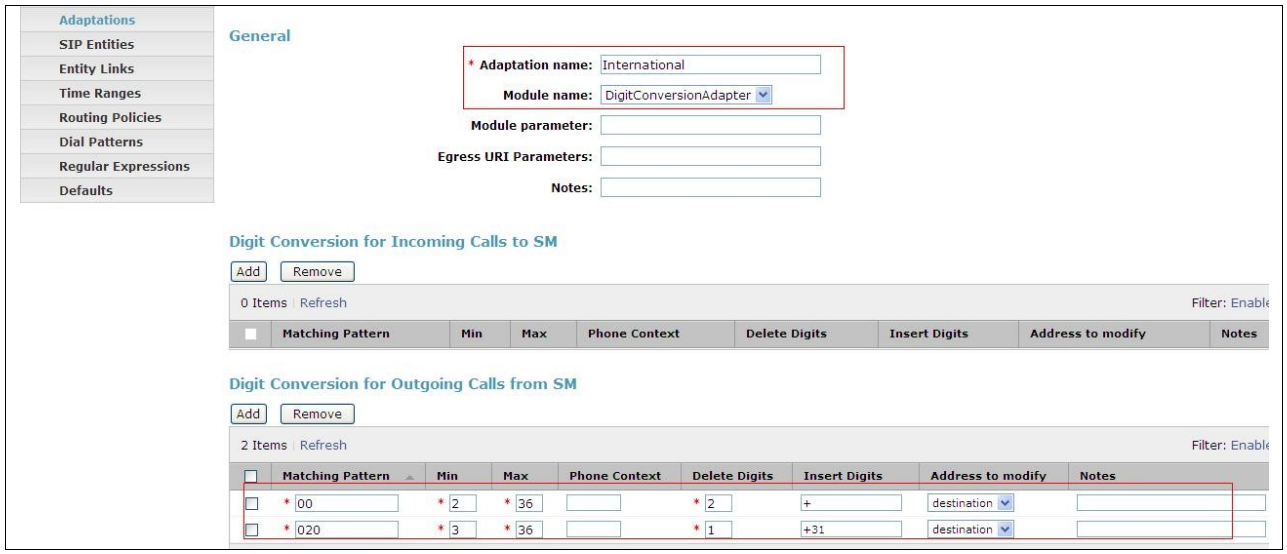


6.4. Configure Adaptation Module

Adaptations can be used to modify the called party number to meet network requirements. The example shown was used in test to convert the called number to E.164 format. The module **DigitConversionAdaptor** is used to convert numbers in the following way:

- International Numbers – remove the international dialing prefix (00) and replace with a "+"
- National Numbers – remove the leading zero and replace with a "+" followed by the country code

These rules are applied to the **destination** addresses.



6.5. Define 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 and then click on the **New** button (not shown). The following will need to be entered for each SIP Entity.
Under **General:**

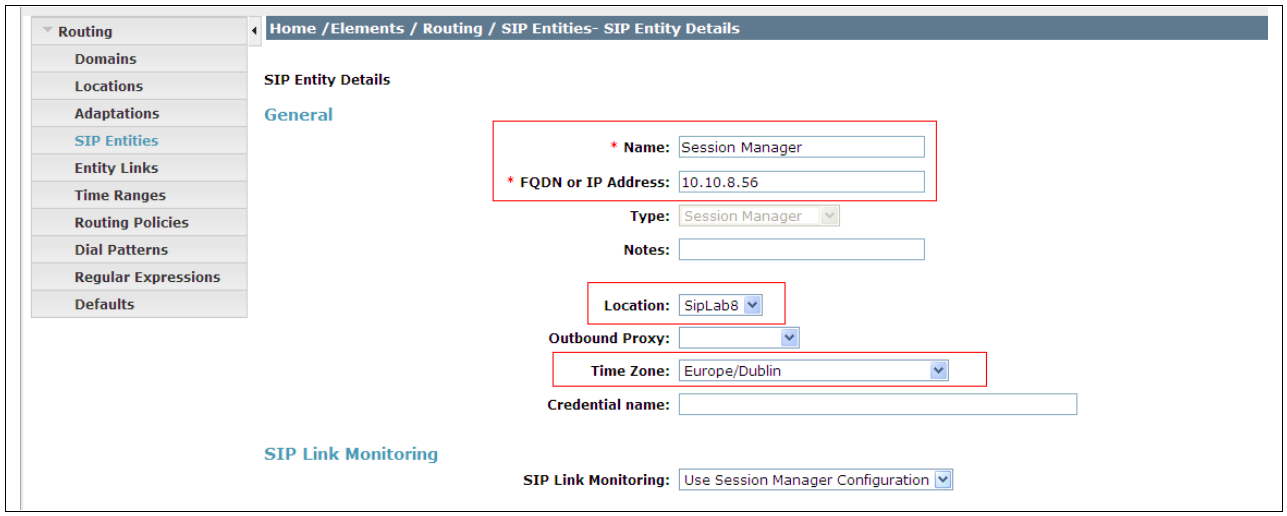
- In the **Name** field enter an informative name
- In the **FQDN or IP Address** field enter the IP address of Session Manager or the signalling interface on the connecting system
- In the **Type** field use **Session Manager** for a Session Manager SIP entity, **Other** for a Communication Server 1000E SIP entity and **Gateway** for the Session Border Controller 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 configuration there are three SIP Entities:

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

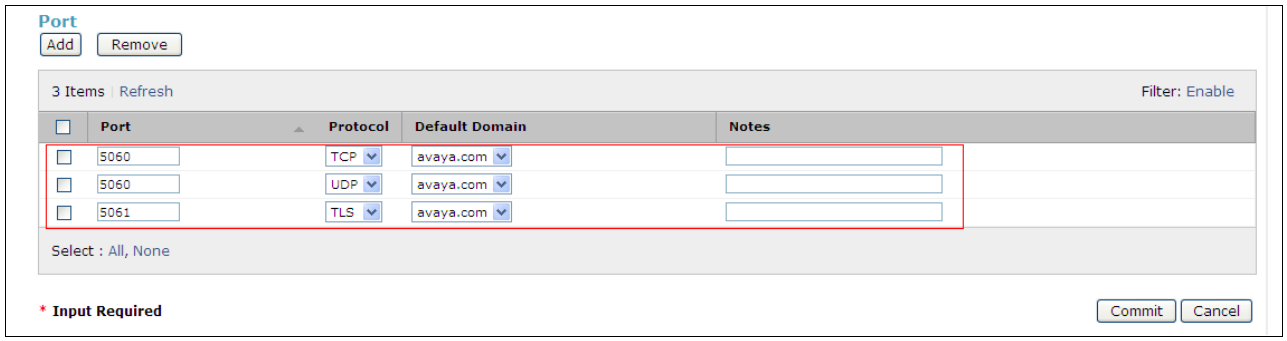
6.5.1. Avaya Aura® Session Manager SIP Entity

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 signalling interface.



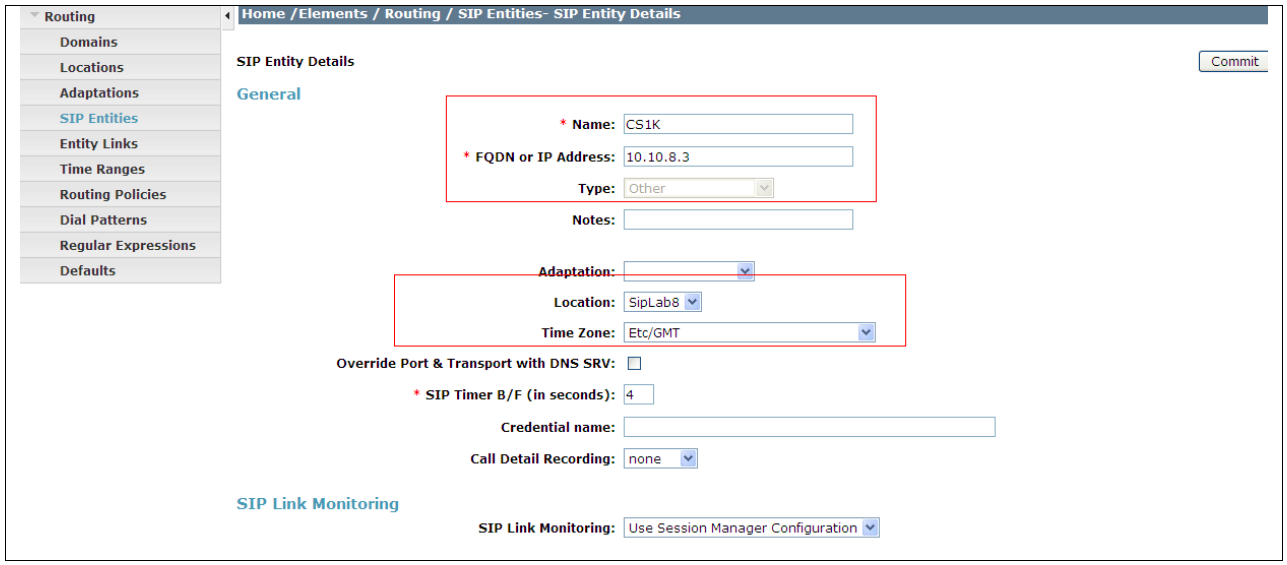
The Session Manager must be configured with the port numbers on the protocols that will be used by the other SIP entities. To configure these scroll to the bottom of the page and under **Port**, click **Add,** then edit the fields in the resulting new row.

- 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 **avaya.com** as the default domain



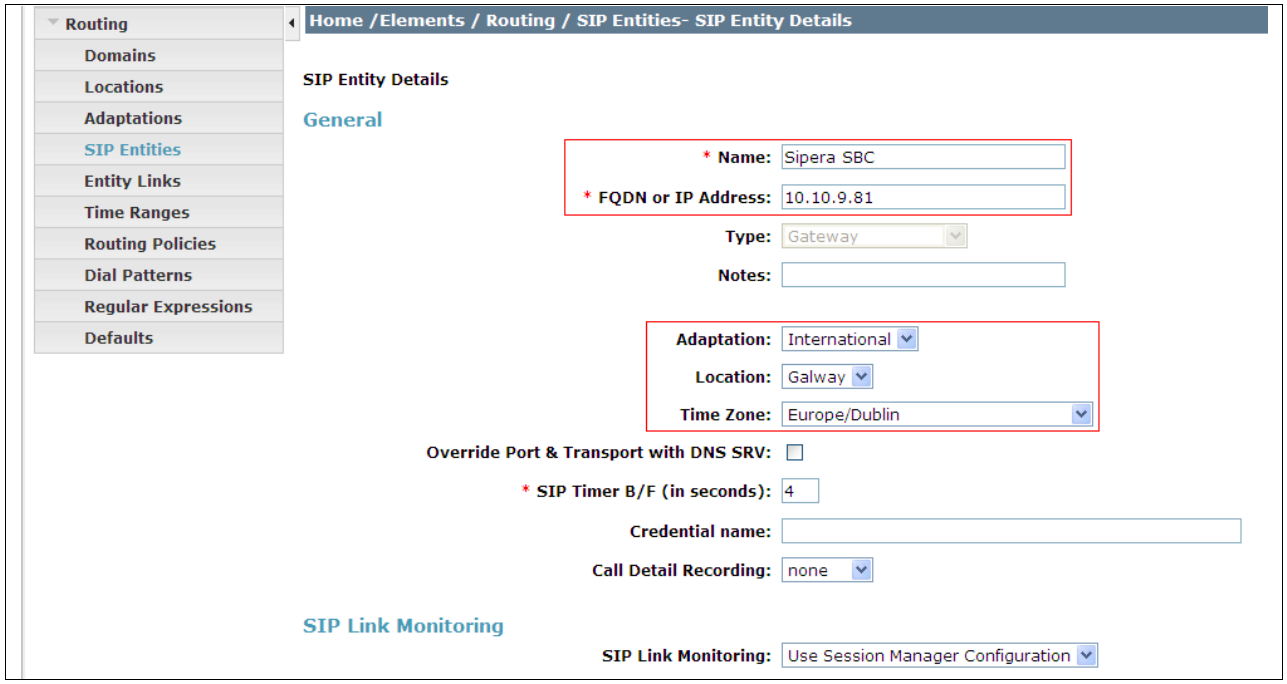
6.5.2. Avaya Communication Server 1000E SIP Entity

The following screen shows the SIP entity for Communication Server 1000E. The **FQDN or IP Address** field is set to the Node IP address of the interface on CS1000E that will be providing SIP signalling, as shown in **Section 5.4**.



6.5.3. Avaya Session Border Controller Advanced for Enterprise SIP Entity

The following screen shows the SIP Entity for the Session Border Controller. The **FQDN or IP Address** field is set to the IP address of the Session Border Controller private network interface

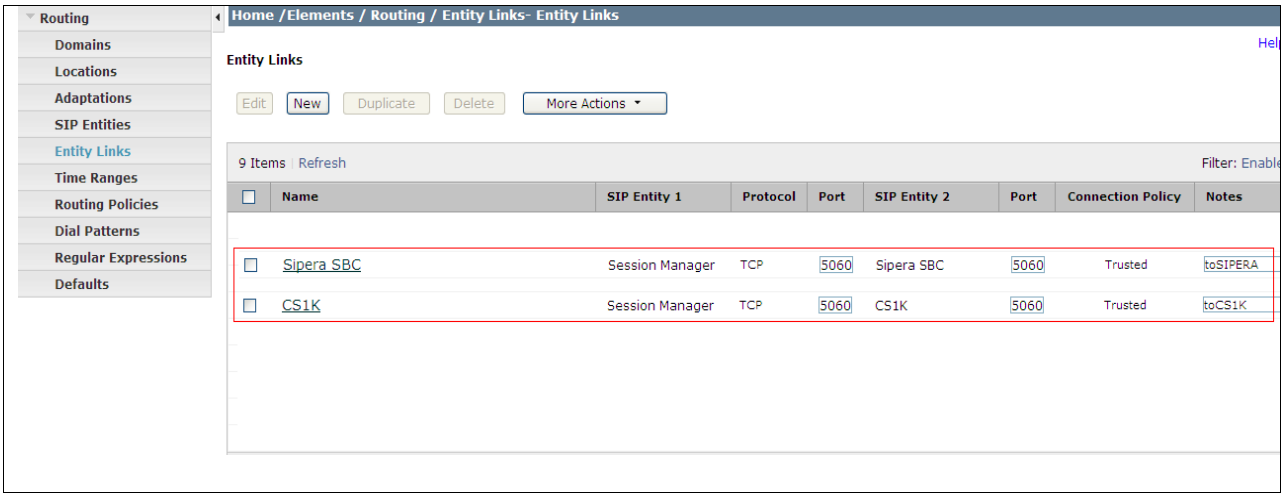


6.6. Define Entity Links

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 (not shown).

- In the **Name** field enter an informative name
- In the **SIP Entity 1** field select **Session Manager**
- 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
- In the **Protocol** field enter the transport protocol to be used to send SIP requests

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



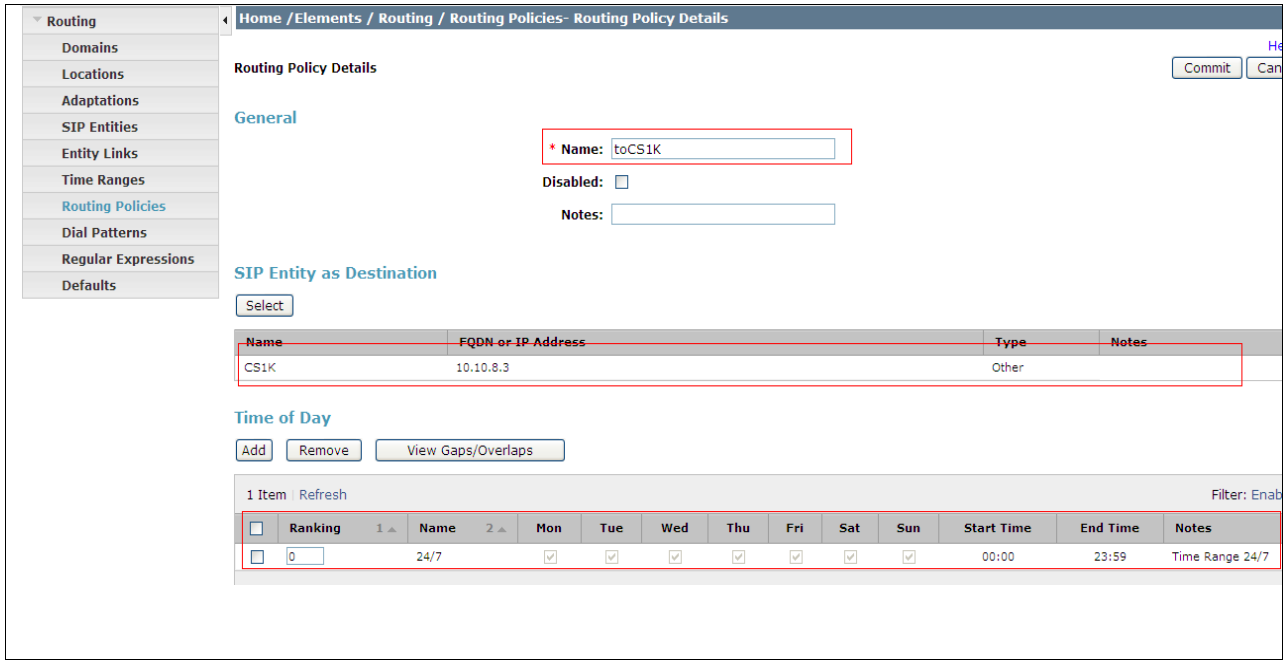
6.7. Define Routing Policies

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 and then click on the **New** button (not shown).

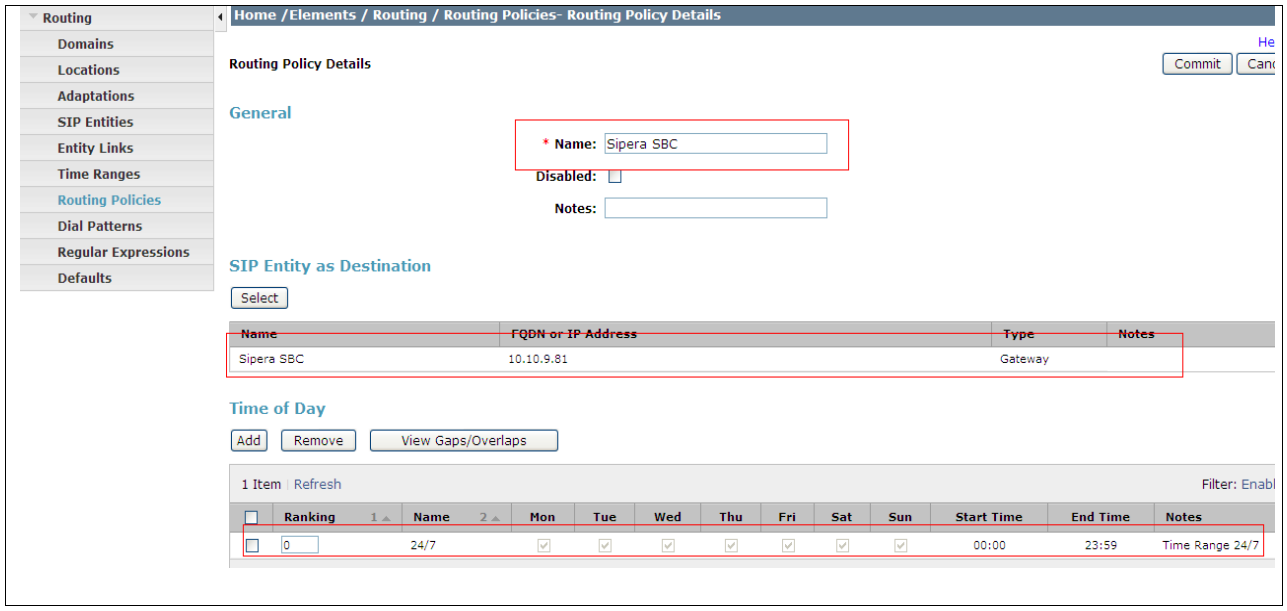
Under **General:**

- Enter an informative name in the **Name** field
- Under **SIP Entity as Destination**, click **Select**, a new window appears (not shown) and 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 following screen shows the routing policy for the Session Border Controller.

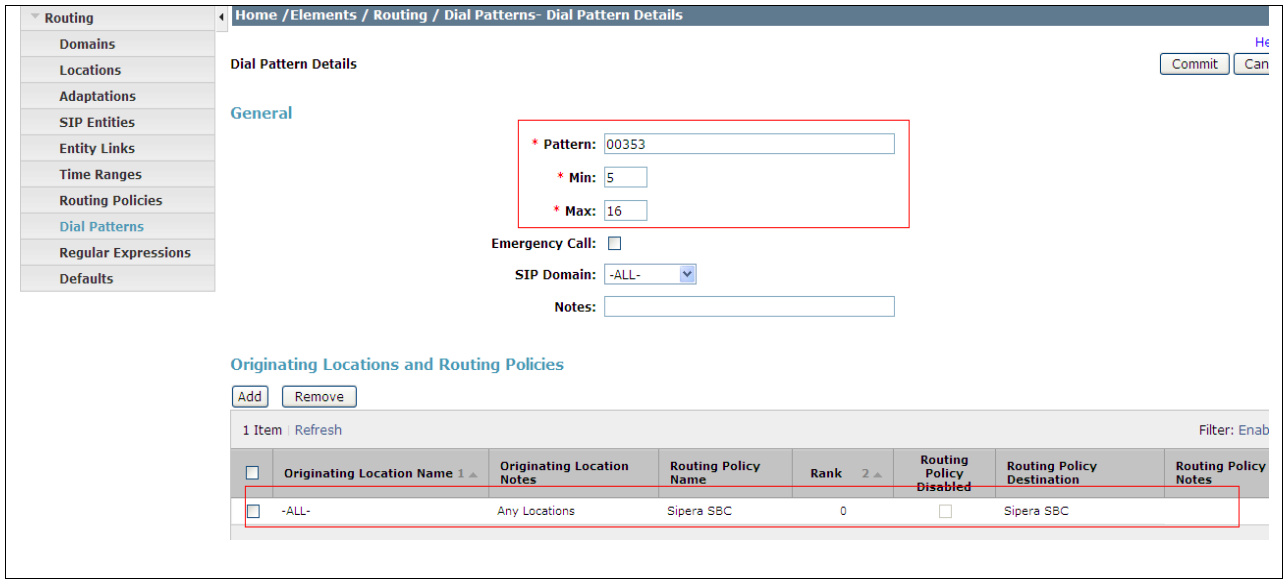


6.8. Define Dial Patterns

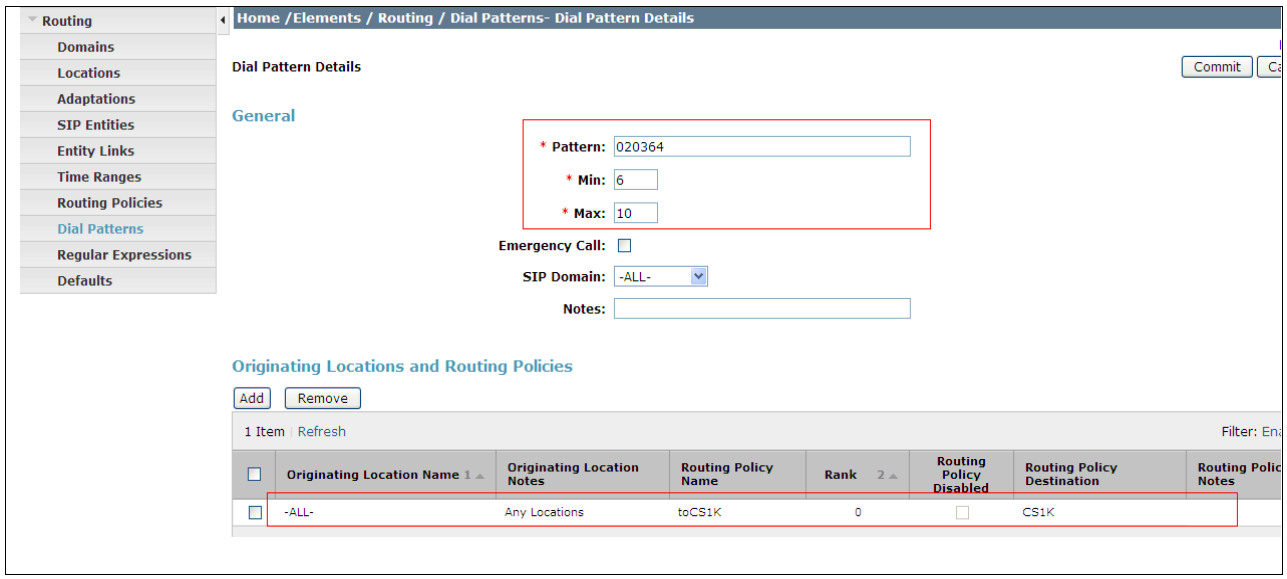
A dial pattern must be defined to direct calls to the appropriate entity. To configure a dial pattern select **Dial Patterns** on the left panel menu and then click on the **New** button (not shown).
Under **General:**

- In the **Pattern** field enter a dialed number or prefix to be matched
- In the **Min** field enter the minimum length of the dialled number
- In the **Max** field enter the maximum length of the dialled number
- In the **SIP Domain** field select **ALL** or alternatively one of those configured in **Section 6.2**

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 Session Border Controller which will route the calls out to the KPN VoIP Connect service.



The following screen shows an example dial pattern configured for the CS1000E. This dial pattern will route the calls to the CS1000E endpoints e.g Unistim and SIP sets.

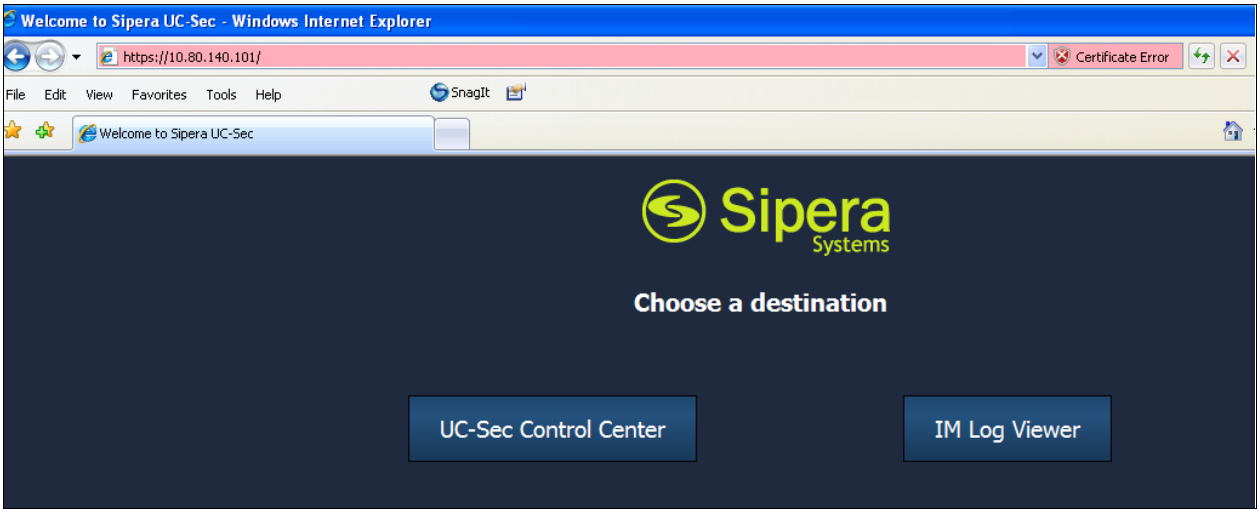


7. Configure Avaya Session Border Controller Advanced for Enterprise

This section provides the procedures for configuring Session Border Controller Advanced or 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 E-SBC).



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

7.2. Global Profiles

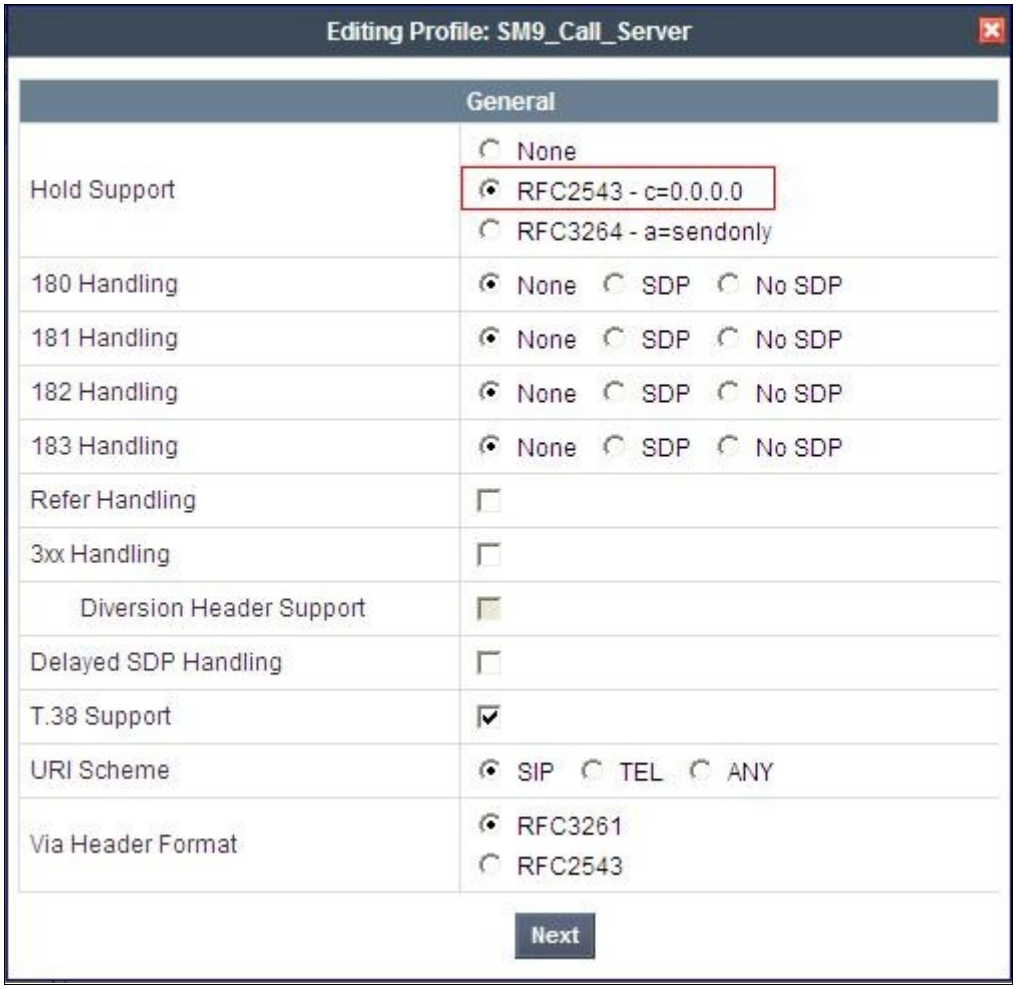
When selected, Global Profiles allows for configuration of parameters across all UC-Sec appliances.

7.2.1. Server Interworking - 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 lefthand menu select **Global Profiles → Server Interworking** and click on **Add Profile** (not shown).

- Enter profile name : **SM9_Call_Server** and click **Next** (not shown)
- Set **Hold Support** to **RFC2543**
- All other options on the General Tab can be left at default.

Click Next on the screen below and screens that follow (not shown) and then click Finish on the last screen (not shown).

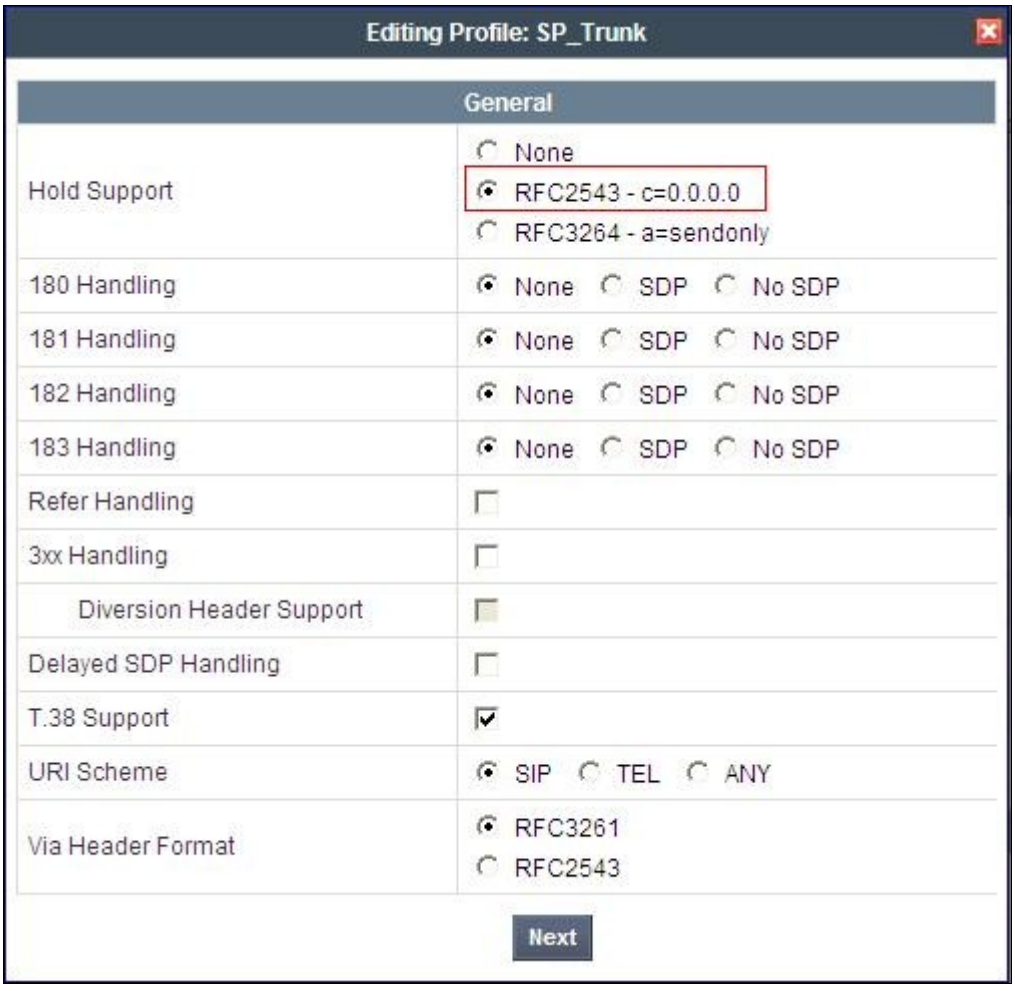


7.2.2. Server Interworking – KPN side

Server Internetworking allows you to configure and manage various SIP call server specific capabilities such as call hold and T.38. From the lefthand menu select **Global Profiles → Server Interworking** and click on **Add Profile** (not shown).

- Enter profile name**: SP_Trunk** and click on **Next** (not shown)
- Check **Hold Support = RFC2543**
- All other options on the General Tab can be left at default.

Click Next on the screen below and screens that follow (not shown) and then click Finish on the last screen (not shown).

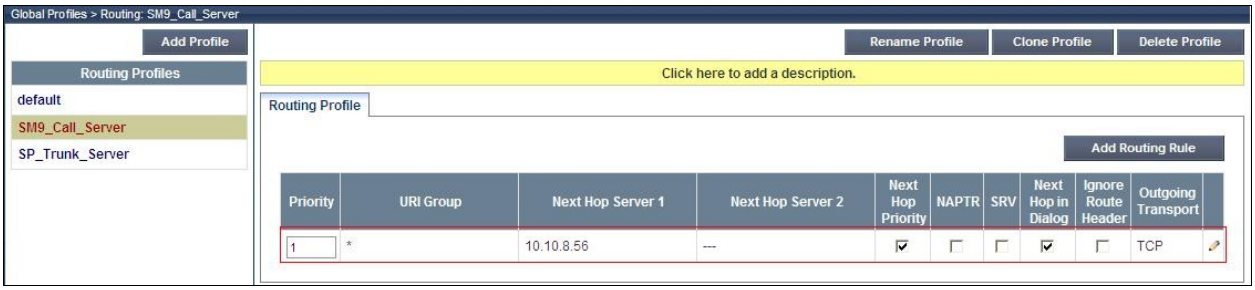


7.2.3. Routing – Avaya side

The Routing Profile allows you to manage parameters related to routing SIP signaling messages. From the lefthand menu select **Global Profiles → Routing** and click on **Add Profile** (not shown).

- Enter Profile Name : **SM9_Call_Server** (not shown)
- Hit **Next** (not shown)
- **Next Hop Server 1** : **10.10.8.56** (Session Manager Secuirty Module IP address)
- Check **Next Hop Priority**
- Check **Use Next Hop for in Dialog**
- **Outgoing Transport: TCP**

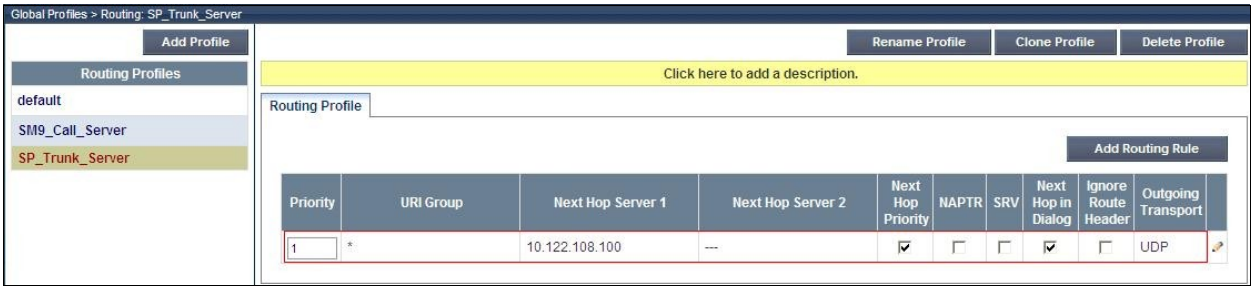
Click **Finish** (not shown).



7.2.4. Routing – KPN side

The Routing Profile allows you to manage parameters related to routing SIP signaling messages. From the lefthand menu select **Global Profiles → Routing** and click on **Add Profile** (not shown).

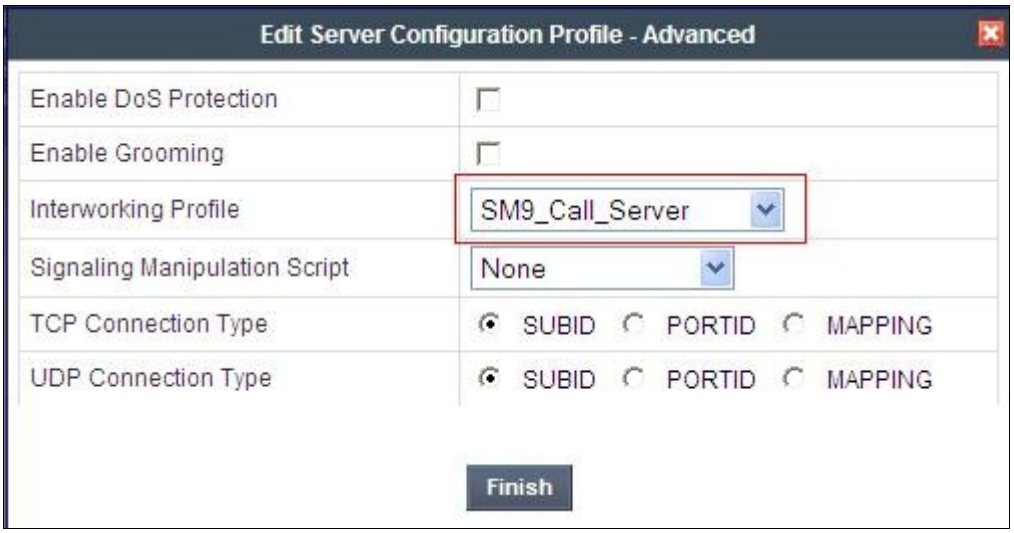
- Enter Profile Name: **SP_Trunk_Server** (not shown)
- Hit **Next** (not shown)
- **Next Hop Server 1** : **10.122.108.100** (IP Address provided by KPN)
- Check **Next Hop Priority**
- Check **Use Next Hop for in Dialog**
- **Outgoing Transport** : **UDP**
- Click **Finish** (not shown)



7.2.5. Server Configuration – Avaya CS1000E

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 lefthand menu select **Global Profiles** → **Server Configuration** and click on **Add Profile** (not shown).

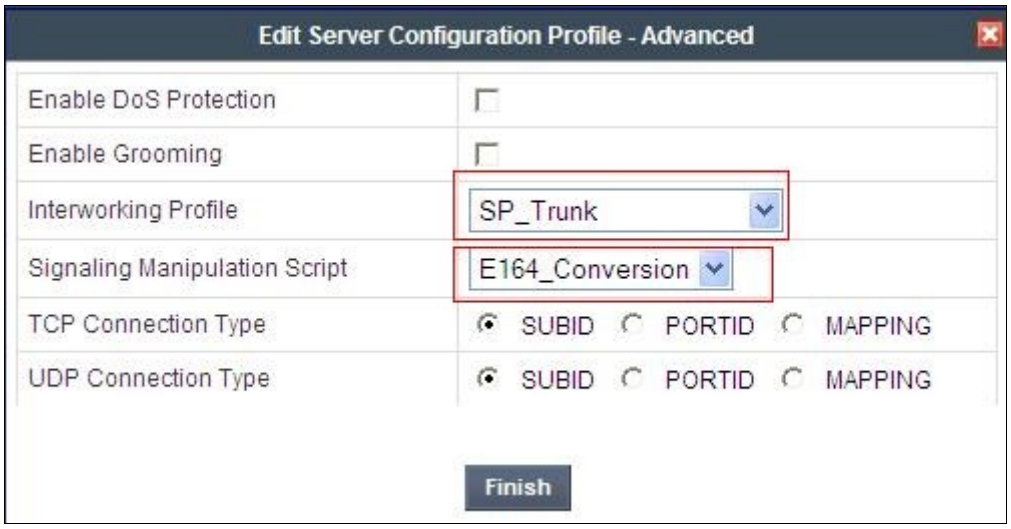
- **Enter profile name** : **SM9_Call_Server** (not shown)
- On the **Add Server Configuration Profile** tab:
- **Server Type** : **Call Server**
- **IP Address** : **10.10.8.56**
- **Supported Transports** : Check **UDP** and **TCP**
- **TCP Port** : **5060**
- **UDP Port** : **5060**
- Hit **Next**
- Click on **Next** for the **Authentication** and **Heartbeat** tabs (not shown).
- On the **Advanced** tab, select **SM9_Call_Sever** for **Interworking Profile**
- Click **Finish**



7.2.6. Server Configuration – KPN side

The **Server Configuration** screen contains fourtabs: **General**, **Authentication**, **Heartbeat**, and **Advanced**. Together, these tabs allow 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** (not shown).

- **Name** : **SP_Trunk_Server** (not shown)
- On the **Add Server Configuration Profile** Tab: (not shown)
- Click on **Edit** (not shown)
- Select Server Type**: Trunk Server**
- **IP Address** : **10.122.108.100** (KPN Trunk Server)
- **Supported Transports**: Check **UDP**
- **UDP Port** : **5060**
- Hit **Next**
- Click on **Next** for the **Authentication** and **Heartbeat** tabs (not shown)
- On the **Advanced** tab, select **SP_Trunk** for **Interworking Profile**
- Select **E164_Conversion** for **Signaling Manipulation Script**, this will be discussed in **Section 7.3**
- Click **Finish**



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** (not shown).

- Click **default** profile and select **Clone Profile** (not shown)
- Enter Profile Name : **SM9_CS**
- Under the **Header** field for **To, From** and **Request Line**, select **IP/Domain** under **Criteria** and **Overwrite** under **Replace Action**. For **Override Value** type **avaya.com**
- Click **Finish** (not shown)

The screen below is a result of the details configured above

7.2.8. Topology Hiding – KPN side

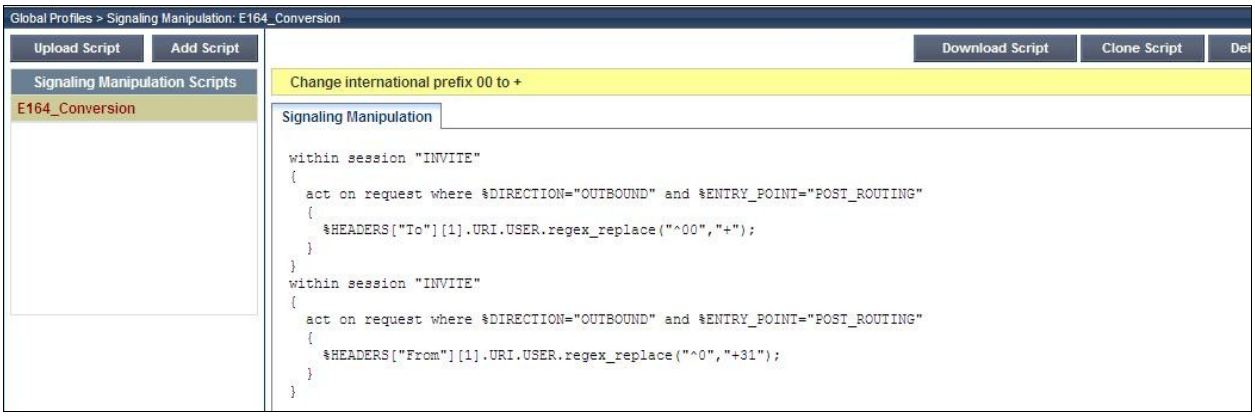
The **Topology Hiding** screen allows you to manage how various source, destination and routing information in SIP and SDP message headers are substituted or changed to maintain the integrity of the network. It hides the topology of the enterprise network from external networks. From the left-hand menu select **Global Profiles → Topology Hiding** (not shown).

- Click **default** profile and select **Clone Profile** (not shown)
- Enter **Profile Name** : **SP_Trunk** (not shown)
- For the Header **To, From** and **Request Line** select **IP/Domain** under **Criteria** and **Next Hop** under **Replace Action**
- Click **Finish** (not shown)

The screen below is a result of the details configured above

7.3. Signaling Manipulation Scripts

This feature adds the ability to add, change and delete any of the headers and other information in a SIP message. During test, a script was written to change the user address in the "To" and "From" field to E.164 format for consistency. Test calls were made successfully without this, but it is shown here for information.. From the lefthand menu select **Global Profiles → Signaling Manipulation** and click on **Add Script**. The script shown below was used for this test:

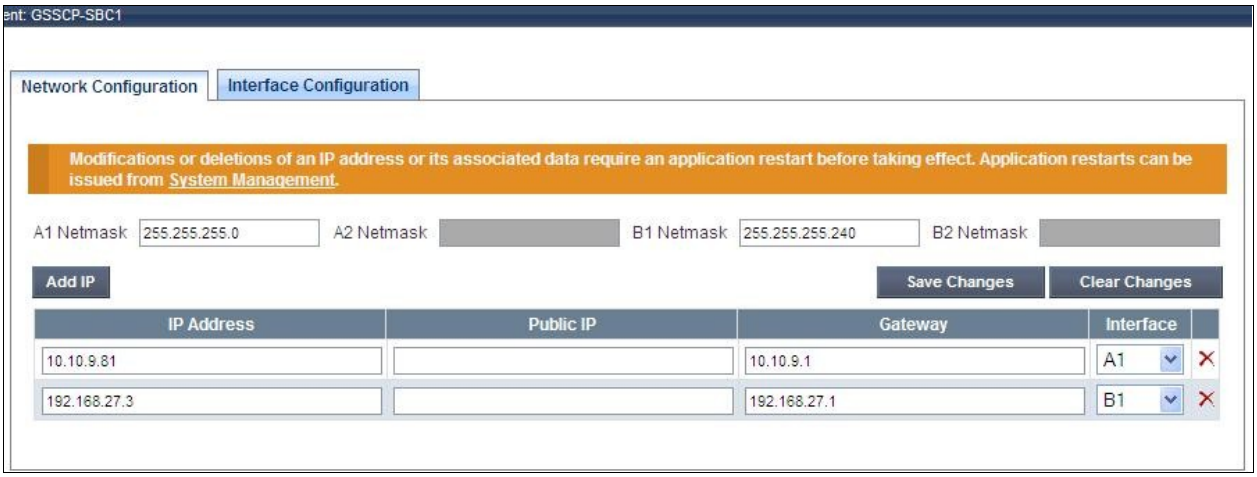


This script was then associated with **Server Configuration – KPN side** defined in **Section 7.2.6** under Signaling Manipulation Script.

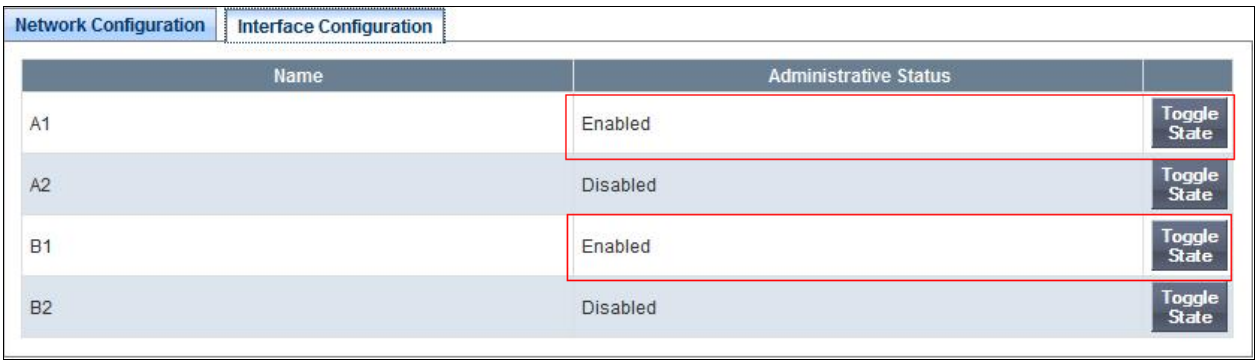
7.4. Device Specific Settings

7.4.1. 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 **I**nterface column



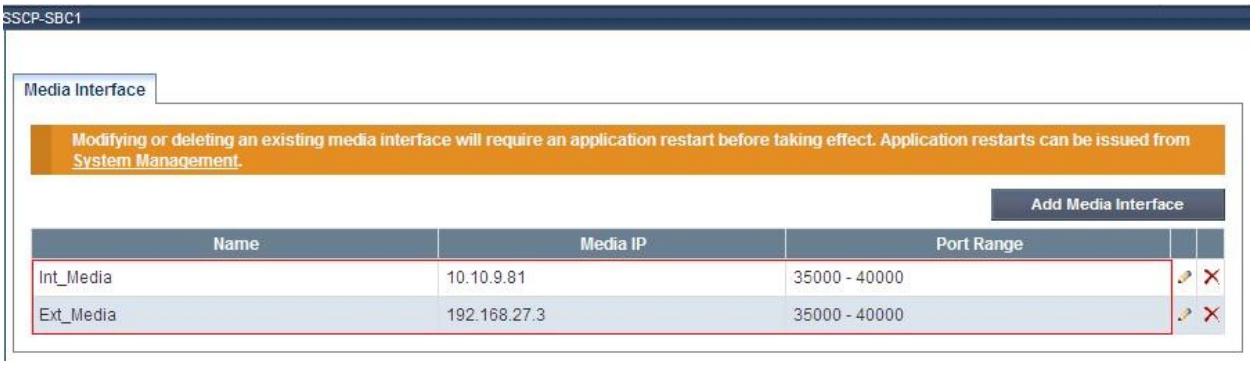
Select the **Interface Configuration** tab and use the **Toggle State** button to enable the interfaces.



7.4.2. 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** (not shown).

- Select **Add Media Interface** (not shown)
- **Name** : **Int_Media**
- **Media IP** : **10.10.9.81** (Internal Address for calls toward the Call Server)
- **Port Range**: **35000-50000**
- Click **Finish**
- Select **Add Media Interface**
- **Name**: **Ext_Media**
- **Media IP** : **192.168.27.3** (External Address for calls toward KPN trunk)
- **Port Range**: **35000-50000**
- Click **Finish**

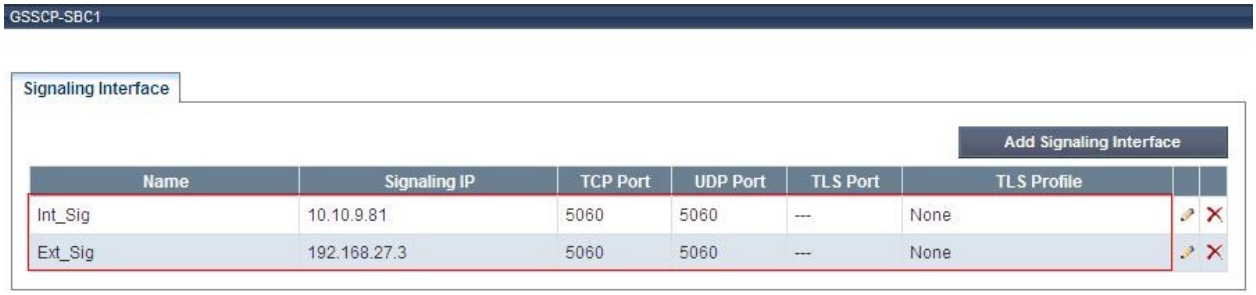
The screen below is a result of the details configured above.



7.4.3. 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** (not shown).

- Select **Add Signaling Interface** (not shown)
- **Name** : **Int_Sig**
- **Signaling IP** : **10.10.9.81** (Internal Address for calls toward Call Server)
- **TCP Port** : **5060**
- **UDP Port** : **5060**
- Click **Finish** (not shown)
- Select **Add Signaling Interface**
- **Name** : **Ext_Sig**
- **Signaling IP** : **192.168.27.3** (External Address for calls toward KPN)
- **TCP Port** : **5060**
- **UDP Port** : **5060**
- Click **Finish** (not shown)

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

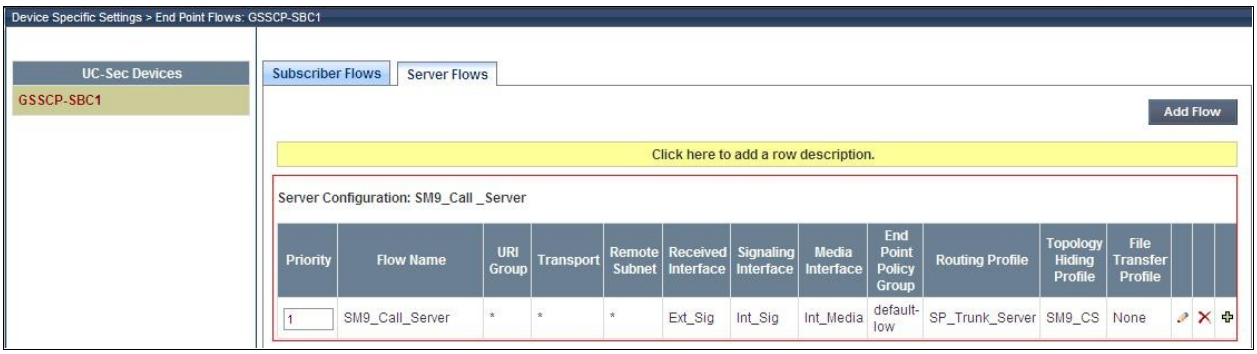


7.4.4. The **End Point Flows** allow the Interfaces**,** Policies and Profiles administered to be used to transport the SIP traffic. From the left-hand menu select **Device Specific Settings → Endpoint Flows** (not shown).

- Select the **Server Flows** tab

To add the settings for call flow to CS1000E. Click on select **Add Flow.**

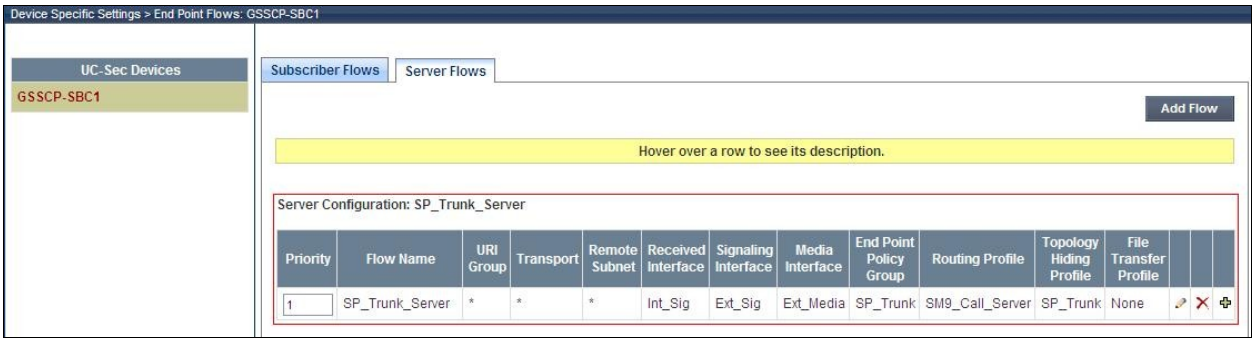
- **Name** : **SM9_Call_Server**
- **Server Configuration** : **SM9_Call_Server**
- **URI Group : ***
- **Transport** : ***
- **Remote Subnet** : ***
- **Received Interface** : **Ext_Sig**
- **Signaling Interface** : **Int_Sig**
- **Media Interface** : **Int_Media**
- **End Point Policy Group** : **default-low**
- **Routing Profile** : **SP_Trunk_Server**
- **Topology Hiding Profile** : **SM9_CS**
- **File Transfer Profile** : **None**
- Click **Finish** (not shown)



To add the settings for call flow to KPN select **Add Flow** (not shown).

- **Name** : **SP_Trunk_Server**
- **Server Configuration** : **SP_Trunk_Server**
- **URI Group** : ***
- **Transport** : ***
- **Remote Subnet** : ***
- **Received Interface** : **Int_Sig**
- **Signaling Interface** : **Ext_Sig**
- **Media Interface** : **Ext_Media**
- **End Point Policy Group** : **default-low**
- **Routing Profile** : **SM9_Call_Server**
- **Topology Hiding Profile** : **SP_Trunk**

- **File Transfer Profile** : **None**
- Click **Finish** (not shown)



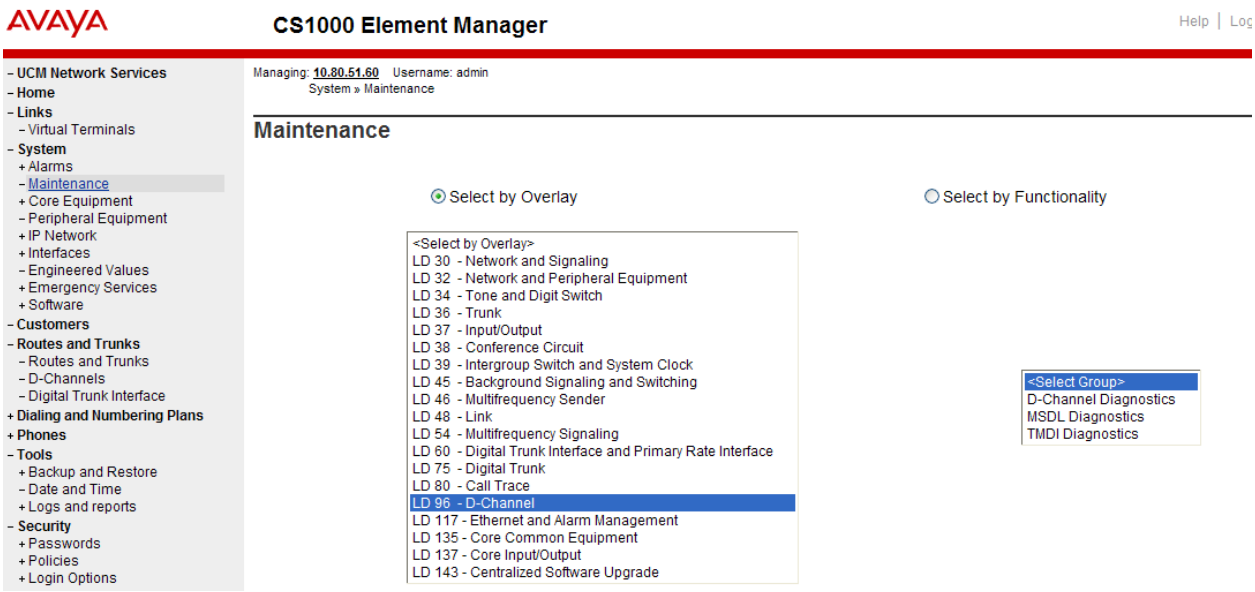
8. Service Provider Configuration

The configuration of the KPN equipment used to support the KPN VoIP Connect service is outside of the scope of these Application Notes and will not be covered. To obtain further information on KPN equipment and system configuration please contact an authorised KPN representative.

9. Verification Steps

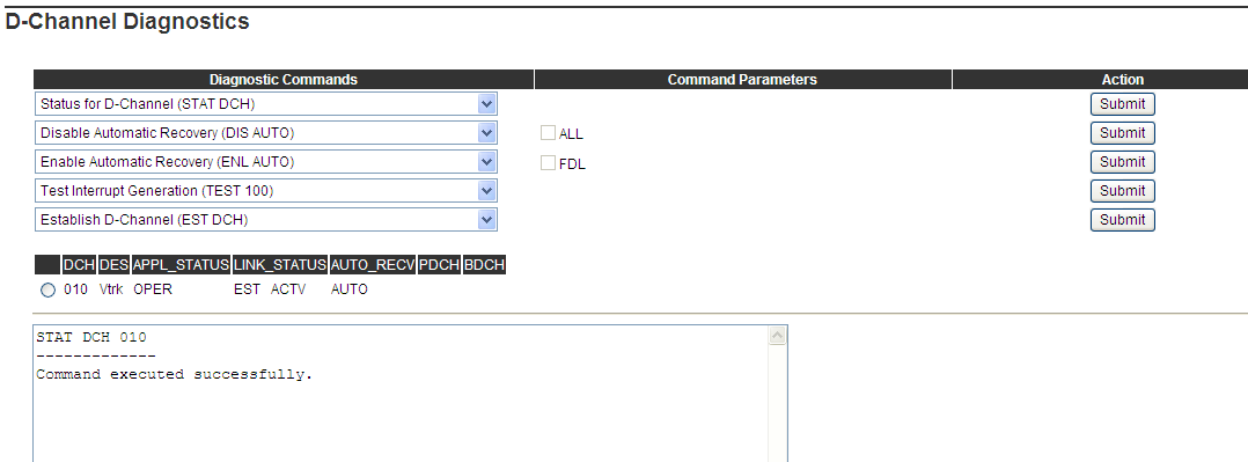
9.1. Verify Avaya Communication Server 1000E Operational Status

Expand **System** on the left navigation panel and select **Maintenance**. Select **LD 96 - D-Channel** from the **Select by Overlay** table and the **D-Channel Diagnostics** function from the **Select Group** table as shown below.



Select **Status for D-Channel (STAT DCH)** command and click **Submit** to verify status of virtual D-Channel as shown below. Verify the status of the following fields:

- **Appl_Status** Verify status is **OPER**
- **Link_Status** Verify status is **EST ACTV**

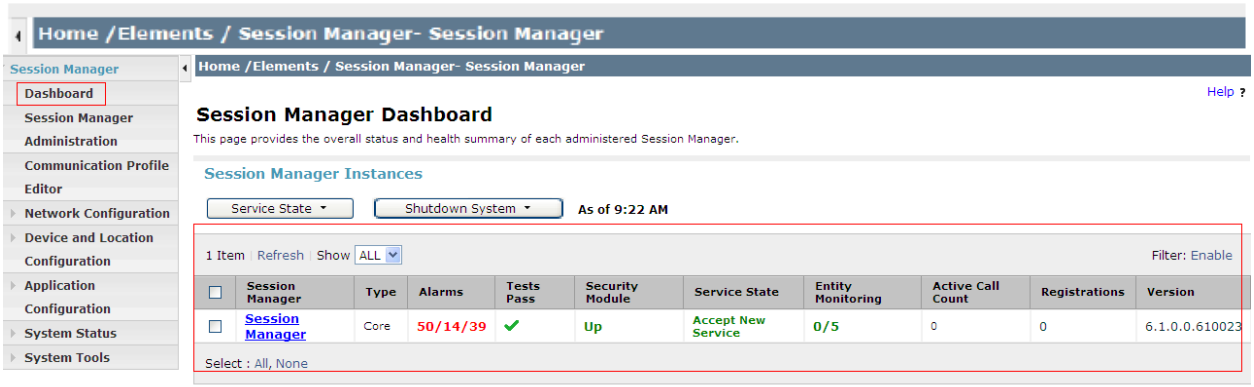


9.2. Verify Avaya Aura® Session Manager Operational Status

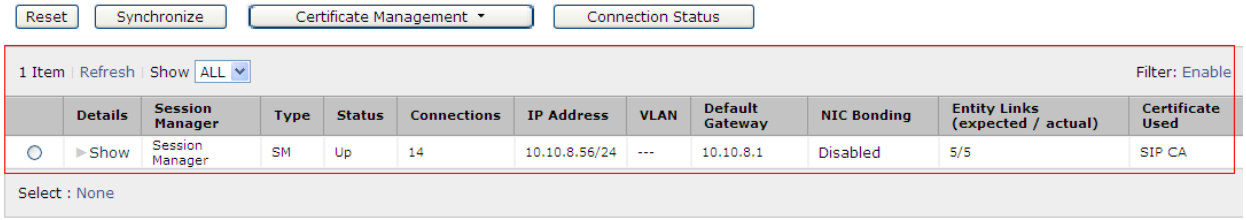
9.2.1. Verify Avaya Aura® Session Manager is Operational

Navigate to **Elements → Session Manager → Dashboard** (not shown) to verify the overall system status for Session Manager. Specifically, verify the status of the following fields as shown below.

- **Tests Pass** ✔
- **Security Module** Up
- **Service State** Accept New Service

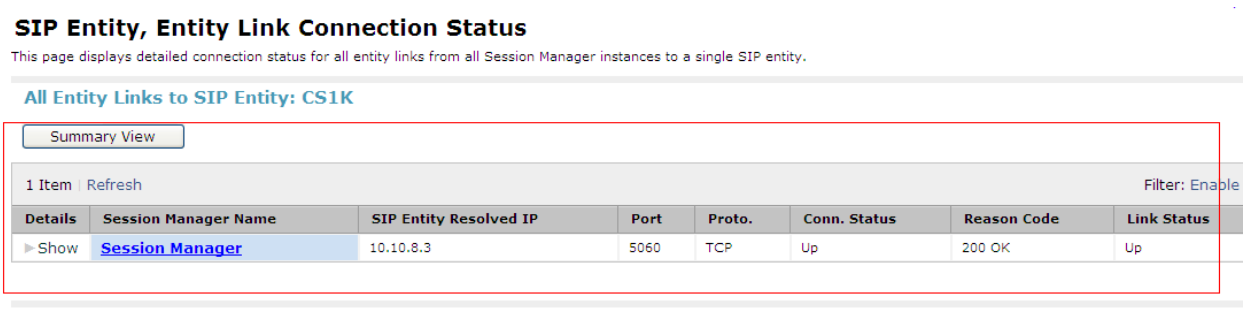


Navigate to **Elements → Session Manager → System Status → Security Module Status** (not shown) to view more detailed status information on the status of Security Module for the specific Session Manager. Verify the **Status** column displays **Up** as shown below.



9.2.2. Verify SIP Entity Link Status

Navigate to **Elements → Session Manager → System Status → SIP Entity Monitoring** (not shown) to view more detailed status information for one of the SIP Entity Links. Select the SIP Entity for Communication Server 1000E from the **All Monitored SIP Entities** table (not shown) to open the **SIP Entity, Entity Link Connection Status** page. In the **All Entity Links to SIP Entity: CS1000 Rel7.5** table, verify the **Conn. Status** for the link is **Up** as shown below.



Verify the SIP link is up between the Session Manager and the SBC by going through the same process as outlined above but selecting the SIP Entity for the SBC in the **All Monitored SIP Entities** table (not shown).

10. Conclusion

These Application Notes describe the configuration necessary to connect Avaya Aura® Communication Server 1000E, Avaya Aura® Session Manager and Avaya Session Border Controller Advanced for Enterprise to KPN VoIP Connect Service. KPN VoIP Connect Service is a SIP-based Voice over IP solution providing businesses 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] Avaya Aura® Session Manager Overview, Doc ID 03-603323, available at http://support.avaya.com.

[2] Installing and Configuring Avaya Aura® Session Manager, available at http://support.avaya.com.

[3] Avaya Aura® Session Manager Case Studies, available at http://support.avaya.com

[4] Maintaining and Troubleshooting Avaya Aura® Session Manager, Doc ID 03-603325, available at http://support.avaya.com.

[5] Administering Avaya Aura® Session Manager, Doc ID 03-603324, available at http://support.avaya.com

[6] IP Peer Networking Installation and Commissioning, Release 7.5, Document Number NN43001-313, available at http://support.avaya.com

[7] Unified Communications Management Common Services Fundamentals, Avaya Communication Server 1000E Release 7.5, Document Number NN43001-116, available at http://support.avaya.com

[8] Network Routing Service Fundamentals, Release 7.5, Document Number NN43001-130, Issue 03.02, available at http://support.avaya.com

[9] Co-resident Call Server and Signaling Server Fundamentals, Avaya Communication Server 1000E Release 7.5, Document Number NN43001-509, available at http://support.avaya.com

[10] Signaling Server and IP Line Fundamentals, Avaya Communication Server 1000E Release 7.5, Document Number NN43001-125, available at http://support.avaya.com

[11] E-SBC (Avaya Session Border Controller Advanced for Enterprise) Administration Guide, November 2011

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

Appendix A
Avaya Communication Server 1000E Software

Communication Server 1000E call server patches and plug ins

```
17/01/12 13:16:37
TID: 46379

VERSION 4121

System type is - Communication Server 1000E/CPPM Linux
CPPM - Pentium M 1.4 GHz

IPMGs Registered:              1
IPMGs Unregistered:            0
IPMGs Configured/unregistered:  0

RELEASE 7
ISSUE 50 Q  +
IDLE SET DISPLAY NORTEL
DepList 1: core Issue: 01(created: 2012-01-10 16:47:54 (est))

MDP>LAST SUCCESSFUL MDP REFRESH :2012-01-17 13:01:58(Local Time)
MDP>USING DEPLIST ZIP FILE DOWNLOADED :2012-01-11 11:07:13(est)
SYSTEM HAS NO USER SELECTED PEPS IN-SERVICE


LOADWARE VERSION: PSWV 100+

INSTALLED LOADWARE PEPS : 1
PAT#  CR #           PATCH REF #     NAME            DATE        FILENAME
00    wi00832543      ISS1:1OF1       DSP1AB04        24/05/2011  DSP1AB04.LW


ENABLED PLUGINS : 1

PLUGIN    STATUS      PRS/CR NUM    MPLR NUM      DESCRIPTION
------------------------------------------------------------
501       ENABLED     Q02138637     MPLR30070     Enables blind transfer to a SIP endpoint even
if SIP UPDATE is not supported by the far end
```

Communication Server 1000E call server deplists

```
VERSION 4121
RELEASE 7
ISSUE 50 Q +
DepList 1: core Issue: 01 (created: 2012-01-10 16:47:54 (est))

IN-SERVICE PEPS
PAT# CR #           PATCH REF #     NAME      DATE        FILENAME       SPECINS
000  wi00832106     ISS1:1OF1       p30550_1  17/01/2012  p30550_1.cpl   NO
001  wi00835294     ISS1:1OF1       p30565_1  17/01/2012  p30565_1.cpl   NO
002  wi00897176     ISS1:1OF1       p30418_1  17/01/2012  p30418_1.cpl   NO
003  wi00925218     ISS1:1OF1       p30675_1  17/01/2012  p30675_1.cpl   NO
004  wi00839821     ISS1:1OF1       p30619_1  17/01/2012  p30619_1.cpl   NO
005  wi00957141     ISS1:1OF1       p31579_1  17/01/2012  p31579_1.cpl   NO
006  wi00842409     ISS1:1OF1       p30621_1  17/01/2012  p30621_1.cpl   NO
007  wi00838073     ISS1:1OF1       p30588_1  17/01/2012  p30588_1.cpl   NO
008  wi00937114     ISS1:1OF1       p31310_1  17/01/2012  p31310_1.cpl   NO
009  wi00841980     ISS1:1OF1       p30618_1  17/01/2012  p30618_1.cpl   NO
010  wi00836981     ISS1:1OF1       p30613_1  17/01/2012  p30613_1.cpl   NO
011  wi00839255     ISS1:1OF1       p30591_1  17/01/2012  p30591_1.cpl   NO
012  wi00843623     ISS1:1OF1       p30731_1  17/01/2012  p30731_1.cpl   YES
013  WI00843571     ISS1:1OF1       p30627_1  17/01/2012  p30627_1.cpl   NO
014  wi00871739     ISS1:1OF1       p30856_1  17/01/2012  p30856_1.cpl   NO
```

```
015  wi00852365      ISS1:1OF1       p30707_1  17/01/2012  p30707_1.cpl   NO
016  wi00852389      ISS1:1OF1       p30641_1  17/01/2012  p30641_1.cpl   NO
017  wi00839134      ISS1:1OF1       p30698_1  17/01/2012  p30698_1.cpl   YES
018  wi00856702      ISS1:1OF1       p30573_1  17/01/2012  p30573_1.cpl   NO
019  wi00857566      ISS1:1OF1       p30766_1  17/01/2012  p30766_1.cpl   NO
020  wi00850521      ISS1:1OF1       p30709_1  17/01/2012  p30709_1.cpl   YES
021  wi00903381      ISS1:1OF1       p30421_1  17/01/2012  p30421_1.cpl   NO
022  wi00863876      ISS1:1OF1       p30787_1  17/01/2012  p30787_1.cpl   NO
023  WI00853473      ISS1:1OF1       p30625_1  17/01/2012  p30625_1.cpl   NO
024  wi00854130      ISS1:1OF1       p30443_1  17/01/2012  p30443_1.cpl   NO
025  wi00875425      ISS1:1OF1       p30943_1  17/01/2012  p30943_1.cpl   NO
026  wi00927678      ISS1:1OF1       p31399_1  17/01/2012  p31399_1.cpl   NO
027  wi00875701      ISS1:1OF1       p30942_1  17/01/2012  p30942_1.cpl   NO
028  wi00853031      ISS1:1OF1       p30531_1  17/01/2012  p30531_1.cpl   NO
029  wi00877367      ISS1:1OF1       p30534_1  17/01/2012  p30534_1.cpl   NO
030  wi00871969      ISS1:1OF1       p30768_1  17/01/2012  p30768_1.cpl   NO
031  wi00886321      ISS1:1OF1       p31009_1  17/01/2012  p31009_1.cpl   NO
032  WI00836334      ISS1:1OF1       p30481_1  17/01/2012  p30481_1.cpl   NO
033  wi00836182      ISS1:1OF1       p30450_1  17/01/2012  p30450_1.cpl   NO
034  wi00858335      ISS1:1OF1       p30819_1  17/01/2012  p30819_1.cpl   NO
035  wi00860279      ISS1:1OF1       p30789_1  17/01/2012  p30789_1.cpl   NO
036  wi00953900      ISS1:1OF1       p31494_1  17/01/2012  p31494_1.cpl   NO
037  wi00854415      ISS1:1OF1       p30593_1  17/01/2012  p30593_1.cpl   NO
038  WI00836292      ISS1:1OF1       p30554_1  17/01/2012  p30554_1.cpl   NO
039  WI00839794      ISS1:1OF1       p28647_1  17/01/2012  p28647_1.cpl   NO
040  wi00824257      ISS1:1OF1       p30447_1  17/01/2012  p30447_1.cpl   NO
041  wi00827950      ISS2:1OF1       p30471_2  17/01/2012  p30471_2.cpl   NO
042  wi00949273      ISS1:1OF1       p31411_1  17/01/2012  p31411_1.cpl   NO
043  WI00854150      ISS1:1OF1       p30468_1  17/01/2012  p30468_1.cpl   NO
044  wi00873382      ISS1:1OF1       p30832_1  17/01/2012  p30832_1.cpl   NO
045  wi00853178      ISS1:1OF1       p30719_1  17/01/2012  p30719_1.cpl   NO
046  wi00869695      ISS1:1OF1       p30654_1  17/01/2012  p30654_1.cpl   NO
047  wi00834382      ISS1:1OF1       p30548_1  17/01/2012  p30548_1.cpl   NO
048  wi00951427      ISS1:1OF1       p31478_1  17/01/2012  p31478_1.cpl   NO
049  wi00946558      ISS1:1OF1       p31358_1  17/01/2012  p31358_1.cpl   NO
050  wi00903369      ISS1:1OF1       p31165_1  17/01/2012  p31165_1.cpl   NO
051  wi00927321      ISS1:1OF1       p31286_1  17/01/2012  p31286_1.cpl   YES
052  wi00923899      ISS1:1OF1       p31270_1  17/01/2012  p31270_1.cpl   NO
053  wi00949627      ISS1:1OF1       p31462_1  17/01/2012  p31462_1.cpl   NO
054  wi00962557      ISS1:1OF1       p31581_1  17/01/2012  p31581_1.cpl   NO
055  wi00865477      ISS1:1OF1       p30894_1  17/01/2012  p30894_1.cpl   YES
056  wi00962211      ISS1:1OF1       p31580_1  17/01/2012  p31580_1.cpl   NO
057  wi00883604      ISS1:1OF1       p30973_1  17/01/2012  p30973_1.cpl   NO
058  wi00898327      ISS1:1OF1       p31136_1  17/01/2012  p31136_1.cpl   NO
059  wi00856410      ISS1:1OF1       p30749_1  17/01/2012  p30749_1.cpl   NO
060  wi00932948      ISS1:1OF1       p31077_1  17/01/2012  p31077_1.cpl   NO
061  wi00905600      ISS1:1OF1       p31201_1  17/01/2012  p31201_1.cpl   NO
062  wi00865477      ISS1:1OF1       p30897_1  17/01/2012  p30897_1.cpl   YES
063  wi00879526      ISS1:1OF1       p31007_1  17/01/2012  p31007_1.cpl   NO
064  wi00962955      ISS1:1OF1       p31585_1  17/01/2012  p31585_1.cpl   NO
065  wi00865477      ISS1:1OF1       p30890_1  17/01/2012  p30890_1.cpl   YES
066  wi00907707      ISS1:1OF1       p31228_1  17/01/2012  p31228_1.cpl   NO
067  wi00857362      ISS1:1OF1       p30782_1  17/01/2012  p30782_1.cpl   NO
068  wi00877442      ISS1:1OF1       p30844_1  17/01/2012  p30844_1.cpl   NO
069  wi00894443      ISS1:1OF1       p31093_1  17/01/2012  p31093_1.cpl   NO
070  wi00942734      ISS1:1OF1       p31409_1  17/01/2012  p31409_1.cpl   NO
071  wi00841273      ISS1:1OF1       p30713_1  17/01/2012  p30713_1.cpl   NO
072  WI00900213      ISS1:1OF1       p30656_1  17/01/2012  p30656_1.cpl   NO
073  wi00948931      ISS1:1OF1       p31407_1  17/01/2012  p31407_1.cpl   NO
074  wi00891626      ISS1:1OF1       p31051_1  17/01/2012  p31051_1.cpl   YES
075  wi00929140      ISS1:1OF1       p31284_1  17/01/2012  p31284_1.cpl   NO
076  wi00925208      ISS1:1OF1       p30986_1  17/01/2012  p30986_1.cpl   NO
077  wi00958776      ISS1:1OF1       p31542_1  17/01/2012  p31542_1.cpl   YES
078  wi00880836      ISS1:1OF1       p30976_1  17/01/2012  p30976_1.cpl   NO
079  WI00927300      ISS1:1OF1       p30999_1  17/01/2012  p30999_1.cpl   NO
080  wi00943172      ISS1:1OF1       p31402_1  17/01/2012  p31402_1.cpl   NO
081  wi00826075      ISS1:1OF1       p30452_1  17/01/2012  p30452_1.cpl   NO
082  wi00881777      ISS1:1OF1       p25747_1  17/01/2012  p25747_1.cpl   NO
083  wi00948274      ISS1:1OF1       p31365_1  17/01/2012  p31365_1.cpl   NO
084  wi00908933      ISS1:1OF1       p31239_1  17/01/2012  p31239_1.cpl   NO
```

```
085  wi00865477      ISS1:1OF1       p30892_1  17/01/2012  p30892_1.cpl   YES
086  wi00867905      ISS1:1OF1       p30640_1  17/01/2012  p30640_1.cpl   NO
087  wi00961267      ISS1:1OF1       p30288_1  17/01/2012  p30288_1.cpl   NO
088  wi00930864      ISS1:1OF1       p31325_1  17/01/2012  p31325_1.cpl   NO
089  wi00898200      ISS1:1of1       p31274_1  17/01/2012  p31274_1.cpl   NO
090  wi00946876      ISS1:1OF1       p31430_1  17/01/2012  p31430_1.cpl   NO
091  wi00936714      ISS1:1OF1       p31379_1  17/01/2012  p31379_1.cpl   NO
092  wi00951925      ISS1:1OF1       p31486_1  17/01/2012  p31486_1.cpl   NO
093  wi00921340      ISS1:1OF1       p31266_1  17/01/2012  p31266_1.cpl   NO
094  wi00956885      ISS1:1OF1       p31489_1  20/02/2012  p31489_1.cpl   NO
095  wi00959854      ISS1:1OF1       p31556_1  17/01/2012  p31556_1.cpl   NO
096  wi00946282      ISS1:1OF1       p31204_1  17/01/2012  p31204_1.cpl   NO
097  wi00840590      ISS1:1OF1       p30767_1  17/01/2012  p30767_1.cpl   NO
098  wi00897082      ISS1:1OF1       p31124_1  17/01/2012  p31124_1.cpl   NO
099  wi00896394      ISS1:1OF1       p30807_1  17/01/2012  p30807_1.cpl   NO
100  wi00909476      ISS1:1OF1       p31340_1  17/01/2012  p31340_1.cpl   NO
101  wi00887744      ISS2:1OF1       p31026_2  17/01/2012  p31026_2.cpl   NO
102  wi00865477      ISS1:1OF1       p30896_1  17/01/2012  p30896_1.cpl   YES
103  wi00957252      ISS1:1OF1       p31530_1  17/01/2012  p31530_1.cpl   NO
104  wi00859123      ISS1:1OF1       p30648_1  17/01/2012  p30648_1.cpl   NO
105  wi00895181      ISS1:1OF1       p31106_1  17/01/2012  p31106_1.cpl   NO
106  wi00938555      ISS1:1OF1       p30881_1  17/01/2012  p30881_1.cpl   YES
107  wi00941500      ISS1:1OF1       p31394_1  17/01/2012  p31394_1.cpl   NO
108  wi00931028      ISS1:1OF1       p31354_1  17/01/2012  p31354_1.cpl   YES
109  wi00907697      ISS1:1OF1       p31227_1  17/01/2012  p31227_1.cpl   NO
110  wi00905660      ISS1:1OF1       p27968_1  17/01/2012  p27968_1.cpl   NO
111  wi00900096      ISS1:1OF1       p31006_1  17/01/2012  p31006_1.cpl   NO
112  wi00900766      ISS1:1OF1       p31159_1  17/01/2012  p31159_1.cpl   NO
113  wi00865477      ISS1:1OF1       p30898_1  17/01/2012  p30898_1.cpl   YES
114  wi00906022      ISS1:1OF1       p31202_1  17/01/2012  p31202_1.cpl   NO
115  wi00856991      ISS1:1OF1       p17588_1  17/01/2012  p17588_1.cpl   NO
116  wi00880386      ISS1:1OF1       p30977_1  17/01/2012  p30977_1.cpl   NO
117  wi00688381      ISS1:1OF1       p30104_1  17/01/2012  p30104_1.cpl   NO
118  wi00908598      ISS1:1OF1       p31235_1  17/01/2012  p31235_1.cpl   NO
119  wi00890475      p30952          p31048_1  17/01/2012  p31048_1.cpl   NO
120  wi00868729      ISS1:1OF1       p31163_1  17/01/2012  p31163_1.cpl   NO
121  wi00952381      ISS1:1OF1       p31410_1  17/01/2012  p31410_1.cpl   NO
122  wi00859499      ISS1:1OF1       p30694_1  17/01/2012  p30694_1.cpl   NO
123  wi00895090      ISS1:1OF1       p31105_1  17/01/2012  p31105_1.cpl   NO
124  wi00869243      ISS1:1OF1       p30848_1  17/01/2012  p30848_1.cpl   NO
125  wi00937119      ISS1:1OF1       p28005_1  17/01/2012  p28005_1.cpl   NO
126  wi00899584      ISS1:1OF1       p30809_1  17/01/2012  p30809_1.cpl   NO
127  wi00932204      ISS2:1OF1       p31305_2  17/01/2012  p31305_2.cpl   NO
128  wi00951837      ISS1:1OF1       p31485_1  17/01/2012  p31485_1.cpl   NO
129  wi00865477      ISS1:1OF1       p30893_1  17/01/2012  p30893_1.cpl   YES
130  wi00946477      ISS1:1OF1       p31426_1  17/01/2012  p31426_1.cpl   NO
131  wi00946681      ISS1:1OF1       p31428_1  17/01/2012  p31428_1.cpl   NO
132  wi00855423      ISS1:1OF1       p31328_1  17/01/2012  p31328_1.cpl   YES
133  wi00900668      ISS1:1OF1       p30456_1  17/01/2012  p30456_1.cpl   NO
134  wi00862574      iss1:1of1       p30870_1  17/01/2012  p30870_1.cpl   NO
135  wi00894243      ISS1:1OF1       p31087_1  17/01/2012  p31087_1.cpl   NO
136  wi00959820      ISS1:1OF1       p31562_1  17/01/2012  p31562_1.cpl   NO
137  WI00889786      ISS1:1OF1       p30750_1  17/01/2012  p30750_1.cpl   NO
138  wi00943748      ISS1:1OF1       p31516_1  17/01/2012  p31516_1.cpl   NO
139  wi00950592      ISS1:1OF1       p31499_1  17/01/2012  p31499_1.cpl   NO
140  WI00928455      ISS1:1OF1       p31297_1  17/01/2012  p31297_1.cpl   NO
141  wi00896680      ISS1:1OF1       p30357_1  17/01/2012  p30357_1.cpl   NO
142  wi00925141      ISS1:1OF1       p30802_1  17/01/2012  p30802_1.cpl   NO
143  wi00865477      ISS1:1OF1       p30891_1  17/01/2012  p30891_1.cpl   YES
144  wi00884699      ISS1:1OF1       p31000_1  17/01/2012  p31000_1.cpl   YES
145  wi00932958      ISS1:1OF1       p31115_1  17/01/2012  p31115_1.cpl   NO
146  wi00921295      ISS1:1OF1       p31265_1  17/01/2012  p31265_1.cpl   NO
147  wi00906163      ISS1:1OF1       p31205_1  17/01/2012  p31205_1.cpl   NO
148  wi00903437      ISS1:1OF1       p31167_1  17/01/2012  p31167_1.cpl   NO
149  wi00960133      ISS2:1OF1       p31557_2  17/01/2012  p31557_2.cpl   NO
150  wi00879322      ISS1:1OF1       p30954_1  17/01/2012  p30954_1.cpl   NO
151  wi00896420      ISS1:1OF1       p30867_1  17/01/2012  p30867_1.cpl   NO
152  wi00903085      ISS1:1OF1       p31164_1  17/01/2012  p31164_1.cpl   NO
153  wi00877592      ISS1:1OF1       p30880_1  17/01/2012  p30880_1.cpl   NO
154  wi00958682      ISS1:1OF1       p31540_1  17/01/2012  p31540_1.cpl   NO
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155  wi00882293      ISS1:1OF1       p31010_1  17/01/2012  p31010_1.cpl   NO
156  wi00905297      ISS1:1OF1       p31195_1  17/01/2012  p31195_1.cpl   NO
157  wi00833910      ISS2:1OF1       p30492_2  17/01/2012  p30492_2.cpl   NO
158  wi00865477      ISS1:1OF1       p30895_1  17/01/2012  p30895_1.cpl   YES
159  wi00897096      ISS1:1OF1       p30676_1  17/01/2012  p30676_1.cpl   NO
160  wi00945533      ISS1:1OF1       p31421_1  17/01/2012  p31421_1.cpl   YES
MDP>LAST SUCCESSFUL MDP REFRESH :2012-01-17 13:01:58(Local Time)
MDP>USING DEPLIST ZIP FILE DOWNLOADED :2012-01-11 11:07:13(est)
```

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
0       p30253 1   Yes          17/01/12  NO       FRU    cs1000-pi-control-1.00.00.00-00.noarch

In System service updates: 19
PATCH#  IN SERVICE   DATE       SPECINS   REMOVABLE   NAME
4       Yes          18/04/11   NO        YES         cs1000-dbcom-7.50.17-02.i386.000
9       Yes          17/01/12   NO        YES         cs1000-patchWeb-7.50.17.16-2.i386.000
10      Yes          17/01/12   NO        yes         cs1000-sps-7.50.17.16-01.i386.000
11      Yes          17/01/12   NO        YES         cs1000-baseWeb-7.50.17.16-1.i386.001
12      Yes          17/01/12   NO        YES         cs1000-shared-pbx-7.50.17.16-1.i386.000
13      Yes          17/01/12   NO        YES         cs1000-kcv-7.50.17.16-1.i386.000
14      Yes          17/01/12   NO        YES         cs1000-dmWeb-7.50.17.16-1.i386.000
15      Yes          17/01/12   NO        YES         cs1000-ipsec-7.50.17.16-1.i386.000
16      Yes          17/01/12   NO        YES         cs1000-ftrpkg-7.50.17.16-5.i386.000
17      Yes          17/01/12   NO        YES         cs1000-tps-7.50.17.16-8.i386.000
18      Yes          17/01/12   NO        YES         cs1000-csmWeb-7.50.17.16-2.i386.000
19      Yes          17/01/12   NO        YES         ipsec-tools-0.6.5-14.el5.3_avaya_1.i386.000
20      Yes          17/01/12   NO        YES         spiritAgent-6.1-1.0.0.108.208.i386.000
21      Yes          17/01/12   NO        YES         cs1000-EmCentralLogic-7.50.17.16-1.i386.000
22      Yes          17/01/12   NO        YES         cs1000-Jboss-Quantum-7.50.17.16-8.i386.000
23      Yes          17/01/12   NO        YES         cs1000-bcc-7.50.17.16-31.i386.000
24      Yes          17/01/12   NO        YES         cs1000-emWeb_6-0-7.50.17.16-9.i386.000
25      Yes          17/01/12   NO        YES         cs1000-linuxbase-7.50.17.16-5.i386.000
26      Yes          17/01/12   NO        YES         cs1000-vtrk-7.50.17.16-26.i386.000
```

Communication Server 1000E system software

```
Product Release: 7.50.17.00
Base Applications
   base                         7.50.17     [patched]
   NTAFS                        7.50.17
   sm                           7.50.17
   cs1000-Auth                  7.50.17
   Jboss-Quantum                7.50.17     [patched]
   lhmonitor                    7.50.17
   baseAppUtils                 7.50.17     [patched]
   dfoTools                     7.50.17
   nnnm                         7.50.17
   cppmUtil                     7.50.17
   oam-logging                  7.50.17     [patched]
   dmWeb                        n/a         [patched]
   baseWeb                      n/a         [patched]
   ipsec                        n/a         [patched]
   Snmp-Daemon-TrapLib          7.50.17
   ISECSH                       7.50.17
   patchWeb                     n/a         [patched]
   EmCentralLogic               n/a         [patched]
Application configuration: CS+SS+EM
Packages:
CS+SS+EM
Configuration version:     7.50.17-00
   cs                           7.50.17
   dbcom                        7.50.17     [patched]
   cslogin                      7.50.17
   sigServerShare               7.50.17     [patched]
```

```
   csv                          7.50.17
   tps                          7.50.17.16  [patched]
   vtrk                         7.50.17.16  [patched]
   pd                           7.50.17
   sps                          7.50.17.16  [patched]
   ncs                          7.50.17
   gk                           7.50.17
   EmConfig                     7.50.17
   emWeb_6-0                    7.50.17     [patched]
   emWebLocal_6-0               7.50.17
   csmWeb                       7.50.17     [patched]
   bcc                          7.50.17     [patched]
   ftrpkg                       7.50.17     [patched]
   cs1000WebService_6-0         7.50.17
   managedElementWebService     7.50.17
   mscAnnc                      7.50.17
   mscAttn                      7.50.17
   mscConf                      7.50.17
   mscMusc                      7.50.17
   mscTone                      7.50.17
```

Please e-mail any questions or comments pertaining to these Application Notes along with the full title name and filename, located in the lower right corner, directly to the Avaya DevConnect Program at devconnect@avaya.com.