Avaya Solution & Interoperability Test Lab

Configuring Avaya Communication Server 1000E, Avaya Aura® Session Manager and Avaya Session Border Controller for Enterprise to support Vodafone Netherlands Office Voice and Vodafone Netherlands OneVoice Corporate SIP Trunk Services - Issue 1.0

Abstract

These Application Notes describe the steps to configure Session Initiation Protocol (SIP) trunking between Vodafone Netherlands Office Voice, Vodafone Netherlands OneVoice Corporate SIP Trunk Services and an Avaya SIP enabled enterprise solution. The Vodafone Netherlands Office Voice trunk is used for calls to and from fixed line PSTN locations. The Vodafone Netherlands OneVoice Corporate trunk is used for calls to and from mobile telephone numbers as well as providing the ability for enterprise users to reach Vodafone mobile telephone numbers assigned to their account by dialing a four digit short code. The Avaya solution consists of Avaya Session Border Controller for Enterprise, Avaya Aura® Session Manager and Avaya Communication Server 1000E. Vodafone Netherlands 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 to configure Session Initiation Protocol (SIP) trunking between Vodafone Netherlands and an Avaya SIP enabled enterprise solution using Vodafone Netherlands Office Voice and Vodafone Netherlands OneVoice Corporate SIP Trunk Services. These services are offerred in conjunction with each other as a total solution, for clarity theses services will be collectivly refrered to in this document as Vodafone Netherlands SIP Trunk Solution. The Avaya solution consists of Avaya Session Border Controller for Enterprise (Avaya SBCE), Avaya Aura® Session Manager and Avaya Communication Server 1000E (CS1000E). Customers using this Avaya SIP enabled Enterprise solution with Vodafone Netherlands SIP Trunk Solution are able to place and receive calls via standards-based SIP trunks as an alternative to legacy analogue or digital trunks.

The Vodafone Netherlands SIP Trunk Solution referenced within these Application Notes is designed for business customers. The solution provides two connections to the enterprise, Vodafone Netherlands Office Voice is a fixed line SIP trunk and Vodafone Netherlands OneVoice Corporate is a mobile SIP trunk. The Vodafone Netherlands Office Voice trunk is used for calls to and from fixed line PSTN locations, Vodafone Netherlands OneVoice Corporate trunk is used for calls to and from mobile telephone numbers as well as providing the ability for enterprise users to reach Vodafone mobile telephone numbers assigned to their account by dialing a four digit short code.

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 Avaya SBCE. The enterprise site was configured to use the SIP Trunk Solution provided by Vodafone Netherlands.

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 and Fixed short dial numbers assigned by Vodafone NL. All inbound PSTN calls were routed to the enterprise across the SIP trunk from the Service Provider.
- Outgoing calls from the enterprise site were completed via Vodafone NL to PSTN and Vodafone Mobile destinations using short dial and full number. Outgoing calls from the enterprise to the PSTN were made from SIP, Unistim and Digital telephones.
- Inbound and outbound PSTN calls to/from the Avaya one-X® Communicator soft phone.
- G.729 annex b (silence suppression) is not supported by Vodafone NL SIP IP Trunk Service and thus was not tested.

- Calls using G.729, G.711A and G.711Mu codec's.
- Fax calls to/from a group 3 fax machine to a PSTN connected fax machine using T.38 mode.
- DTMF transmission using RFC 2833 with successful menu 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.
- Transmission and response of SIP OPTIONS messages sent by Vodafone Netherlands requiring Avaya response.

2.2. Test Results

Interoperability testing of the sample configuration was completed with successful results for the Vodafone Netherlands 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
- Mobile-X handoff works from twinned desk phone with patch p30260_1.ntl loaded on the CS1000E. An INVITE sent to PSTN mobile contains no SDP information without the patch loaded, Vodafone does not support an INVITE with no SDP.

2.3. Support

For technical support on the Avaya products described in these Application Notes visit http://support.avaya.com.

For technical support on Vodafone Netherlands SIP trunk services, contact Vodafone Netherlands support at http://www.vodafone.nl/zakelijk/totaal_oplossingen/vast_en_mobiel/.

3. Reference Configuration

Figure 1 illustrates the test configuration. The test configuration shows an enterprise site connected to the Vodafone Netherlands SIP Trunk Solution. The Vodafone Netherlands Office Voice connection is represented in **Figure 1** as (Fixed) and the Vodafone Netherlands OneVoice Corporate connection is represented in **Figure 1** as (Mobile). Located at the enterprise site are Session Manager, Avaya SBCE and a Communication Server 1000E. 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.

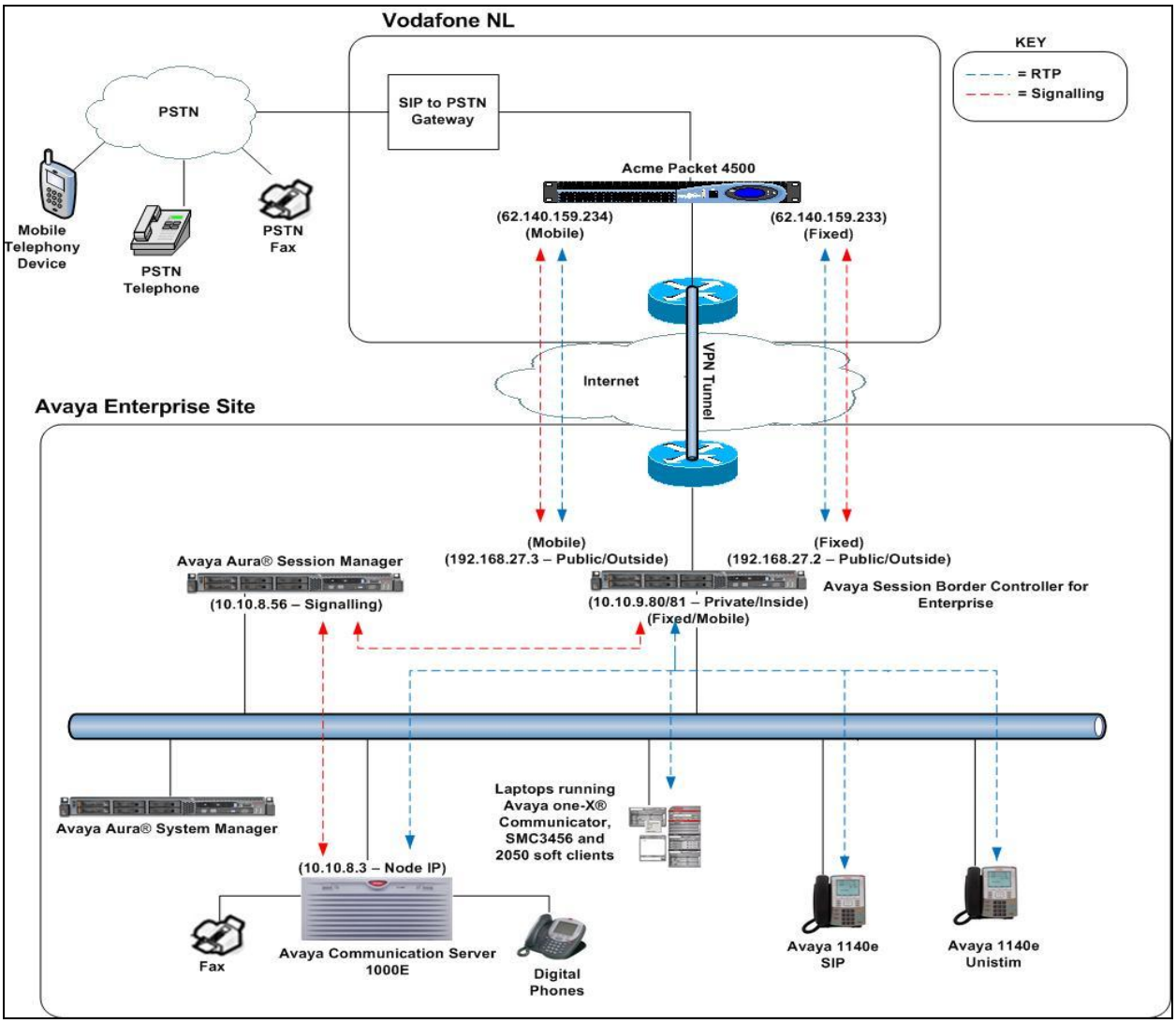


Figure 1: Avaya SIP Telephony Solution using Vodafone Netherlands Office Voice and Vodafone Netherlands OneVoice Corporate services

4. Equipment and Software Validated

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

Equipment/Software	Release/Version
Avaya	
Avaya S8800 server running Avaya Aura® Session Manager	6.1.6.0.616008
Avaya S8800 server running Avaya Aura® System Manager	6.1.10.1.1806
Avaya Communication Server 1000E running on CP+PM server as co-resident configuration	V 7.50.17 Deplist: CPL_X21_07_50Q All CS1000E patches listed in **Appendix A**
Avaya Session Border Controller for Enterprise running on Dell R210 Server	R4.0.5.Q19
Avaya Communication Server 1000E Media Gateway	CSP Version: MGCC CD02 MSP Version: MGCM AB01 APP Version: MGCA BA07 FPGA Version: MGCF AA18 BOOT Version: MGCB BA15 DSP1 Version: DSP1 AB04
Avaya 1140e and 1230 Unistim Telephones	FW 1140e: 0625C8G FW 1230e: 062AC8G
Avaya 1140e and 1230 SIP Telephones	FW: 04.03.09.00.bin
Avaya SMC 3456	Version 2.6 build 57666
Avaya one-X® Communicator	Version cs6.1.0.25
Avaya 2050 IP Soft phone	Version 4.02.0062
Avaya Analogue Telephone	N/A
Avaya M3904 Digital Telephone	N/A
Vodafone NL	
Vodafone Office Voice	1.0
Vodafone OneVoice Corporate	1.0
Cisco UBE	15.2.3
Acme Packet Net-Net 4500	SCX6.2.0 MR-6 Patch 2 (Build 876)

5. Configure Avaya Communication Server 1000E

This section describes the steps required to configure Communication Server 1000E for SIP Trunking and also the necessary configuration for terminals (Analogue, SIP and IP phones). SIP trunks are established between Communication Server 1000E and Session Manager. These SIP trunks carry SIP signaling associated with Vodafone Netherlands SIP Trunk Service. For incoming calls, the Session Manager receives SIP messages from the AVAYA SBCE, through which directs incoming SIP messages to Communication Server 1000E (see **Figure 1**). Once 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. Once Communication Server 1000E selects a SIP trunk, the SIP signaling is routed to the Session Manager. The Session Manager directs the outbound SIP messages to the SBC and on to Vodafone's network. Specific Communication Server 1000E configuration as 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** (not shown), this will take the user into the vxworks shell of the call server. Type **logi** (not shown). 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 Vodafone Germany'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.

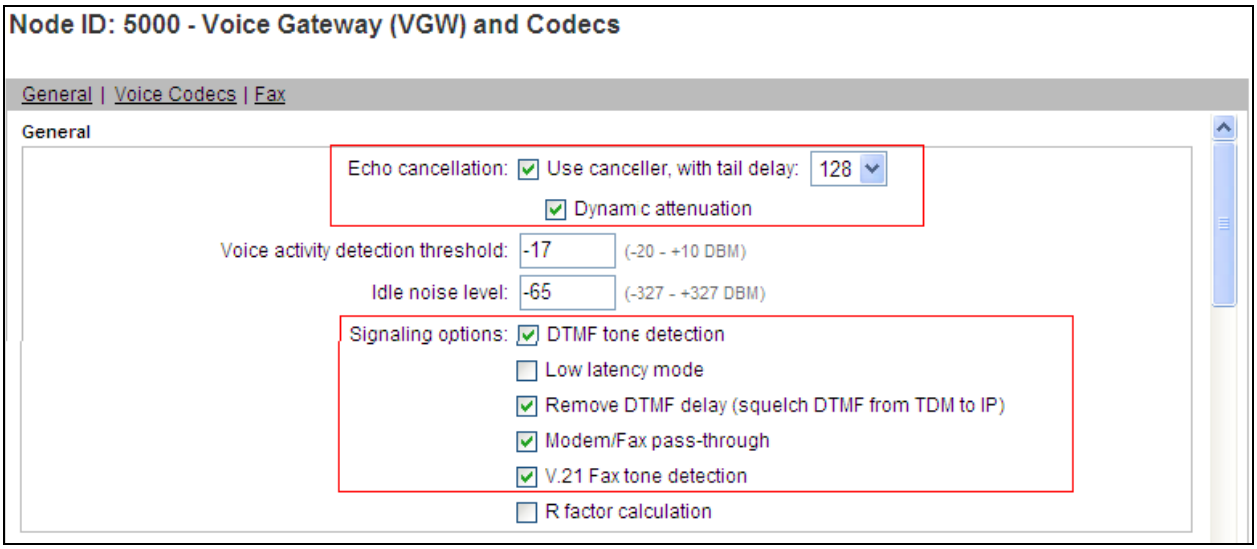
```
System type is - Communication Server 1000E/CPPM Linux
CPPM - Pentium M 1.4 GHz

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 (see below).

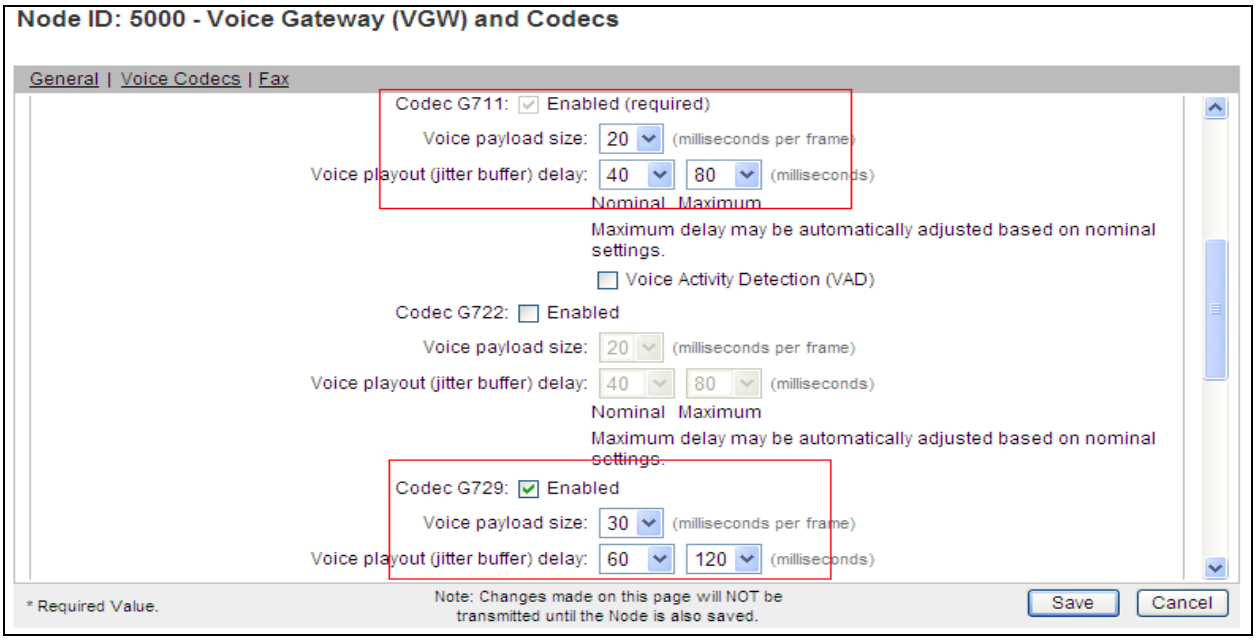
```
REQ: prt
TYPE: net
TYPE NET_DATA
CUST 0

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

5.3. Configure Codec's for Voice and FAX operation

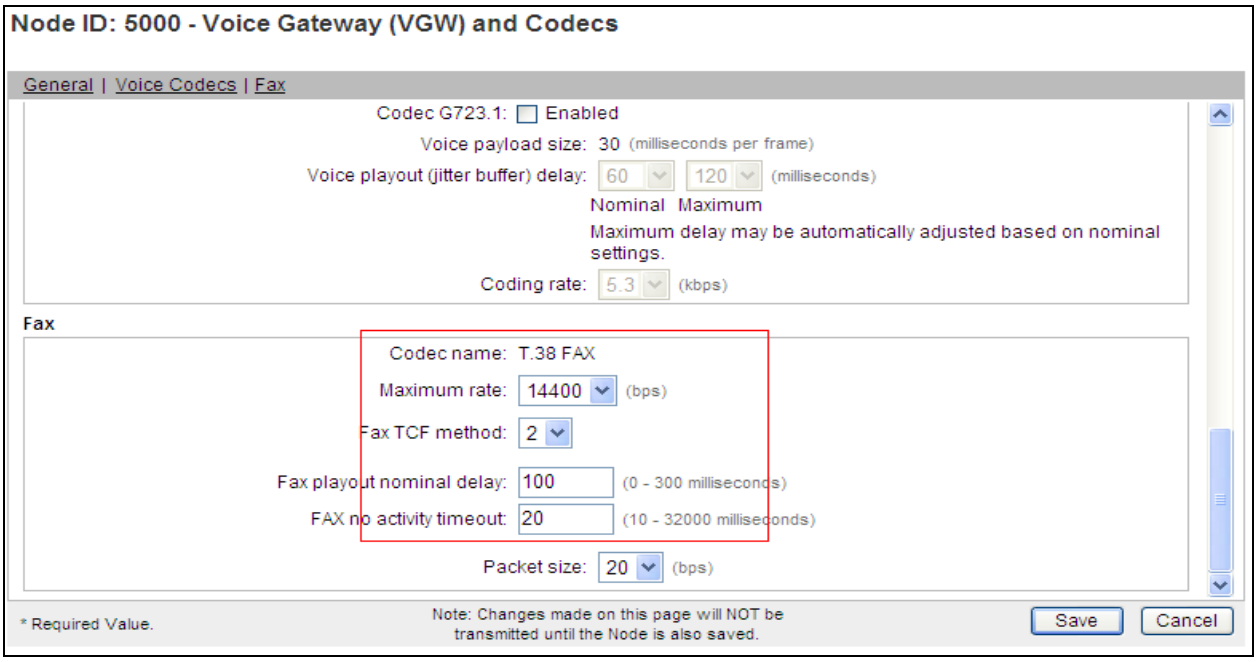
Vodafone Netherland SIP Trunk service supports G.711A/G.729A voice codec's transmissions. Using the Communication Server 1000E element manager sidebar, navigate to the **IP Network → IP Telephony Nodes → Node Details → Voice Gateway VGW and Codecs** property page and configure the Communication Server 1000E General codec settings as in the next screenshot. The values highlighted below are system defaults but are required for correct operation.



Scrolling down the page, configure **G.711** and **G.729** codec settings. G.711 is enabled as default and cannot be disabled or enabled on the CS1000E. However, G.729 can be enabled or disabled, in this test G.729 was enabled and system defaults were used for payload size, jitter and delay. The relevant settings are highlighted in the following screenshot.

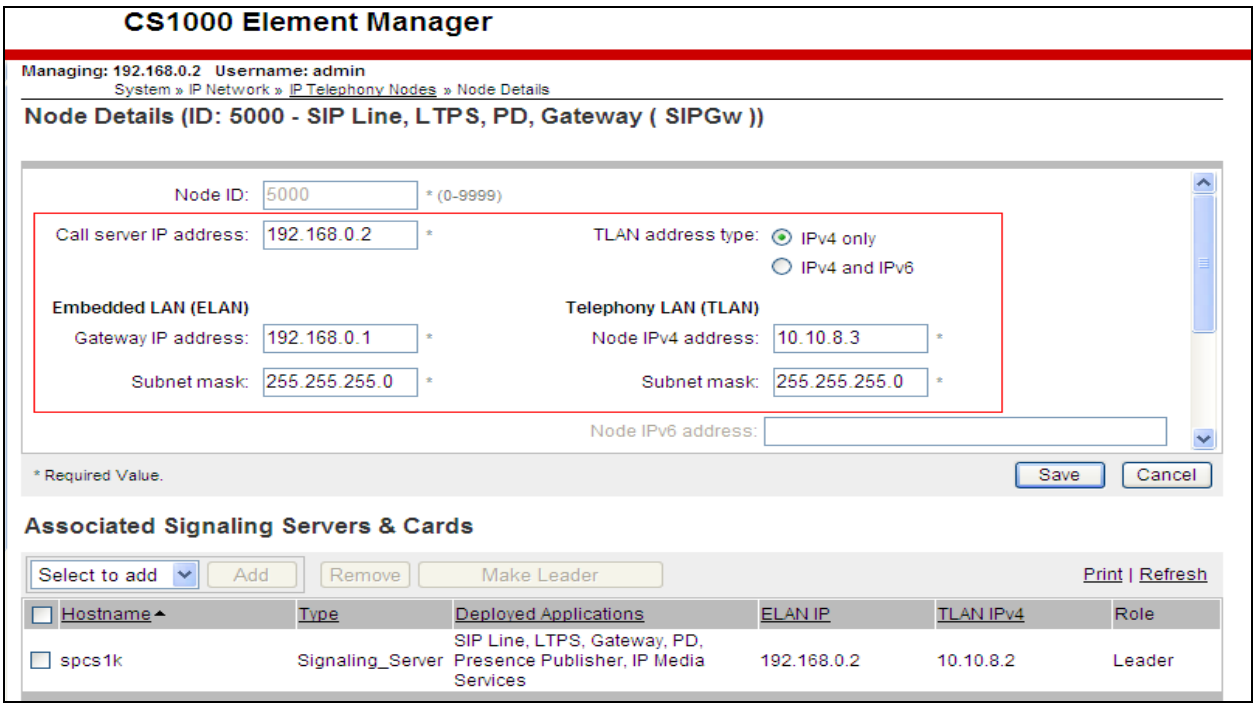


Finally configure **Fax** settings as highlighted in the screenshot below. System defaults were used. Please note T.38 cannot be disabled or enabled at the Node level and by default is enabled. Turning T.38 on or off is done at the endpoint level, by using different class of service as shown in **Section 5.7 Configure Analogue, Digital and IP Telephones**.



5.4. Virtual Trunk Gateway Configuration

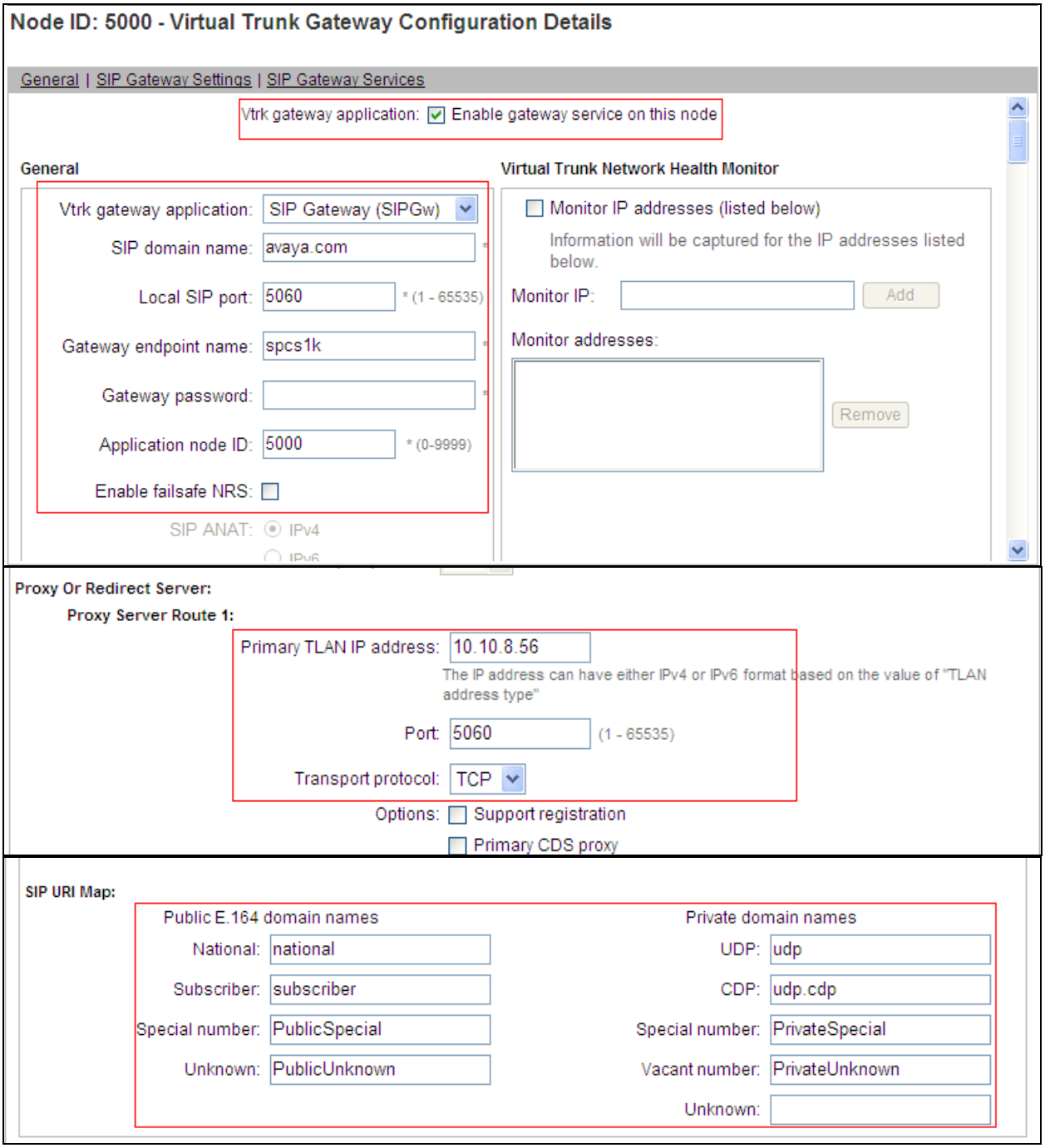
Use Communication Server 1000E Element Manager to configure the system node properties. Navigate to the **System → IP Networks → IP Telephony Nodes → Node Details** and verify the highlighted section is completed with the correct IP addresses and subnet masks of the Node. At this stage the call server has an ip address and so too does the signaling server. The Node ip is the ip address that the IP phones use to register. 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, in this case **avaya.com**. The SIP Domain Name configured in the Signaling Server properties must match the Service Domain name configured in the Session Manager, see **Section 6.2**.
- **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**.

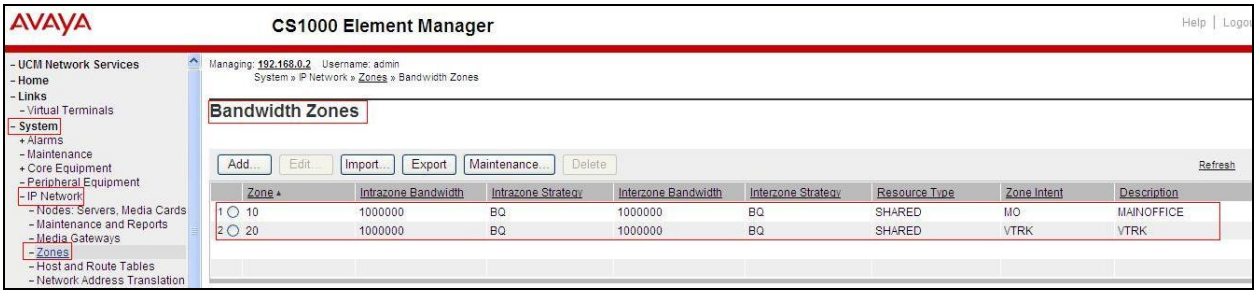
- **Proxy or Redirect Server: Primary TLAN IP** address is the SIP signaling interface ip address of the Session Manager. The **Transport protocol** used for SIP, in this case is **TCP**.
- **SIP URI Map: Public E.164 - Private - Unknown** is left blank. All other fields in the SIP URI Map are left with 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 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. In the sample configuration SIP trunks use zone 20 and IP Telephones use zone 10, system defaults were used for each zone other than the parameter configured for **Zone Intent**. For SIP Trunks (zone 20), **VTRK** is configured for **Zone Intent**. For IP Telephones (zone 10), **MO** is configured for **Zone Intent**.

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 Vodafone Netherland'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.

```
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**, which is zone 20. 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 0020
PCID SIP
CRID NO
NODE 11
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  NO
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 **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 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 Digit Manipulation Index (DMI) in overlay 87. Load **Overlay 87** at the system terminal and type **new**, at the **FEAT** prompt type **dgt** and at the **DMI** prompt set this to a unique **DMI** value. **DMI 1** is used for all traffic outgoing to the PSTN. No digits were deleted as the **DEL** prompt is set to **0**. Call type (**CTYP**) set to **NPA**.

```
Overlay 87
REQ  new
FEAT dgt
DMI  1
DEL  0
ISPN NO
CTYP NPA
```

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. This RLB was defined for international traffic and uses the **DMI 1**as previously entered in overlay 87.

```
Overlay 86
new
CUST 0
FEAT rlb
RLI  66
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  1
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 Trunk Steering Codes(s) (TSC) which users will dial to reach PSTN numbers. Use the Communication Server 1000E system terminal and overlay 87. The following are some example TSC 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.

```
TSC  00
FLEN 14
ITOH NO
RLI  66
```

```
TSC  06
FLEN 10
ITOH NO
RLI  66
```

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 same value used in **Section 5.5** for **VIRTUALSETS**, which is zone 10.

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

```
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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 9074 0     MARP
        CPND
          CPND_LANG ROMAN
            NAME IP1140
            XPLN 10
            DISPLAY_FMT FIRST,LAST
     01 MCR 9074 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 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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MLNG ENG
DNDR 0
KEY  00 MCR 9072 0     MARP
        CPND
          CPND_LANG ROMAN
            NAME Digital Set
            XPLN 10
            DISPLAY_FMT FIRST,LAST
     01 MCR 9072 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 **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**, this is the extension number. In the class of service (**CLS**) field **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   9071
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
```

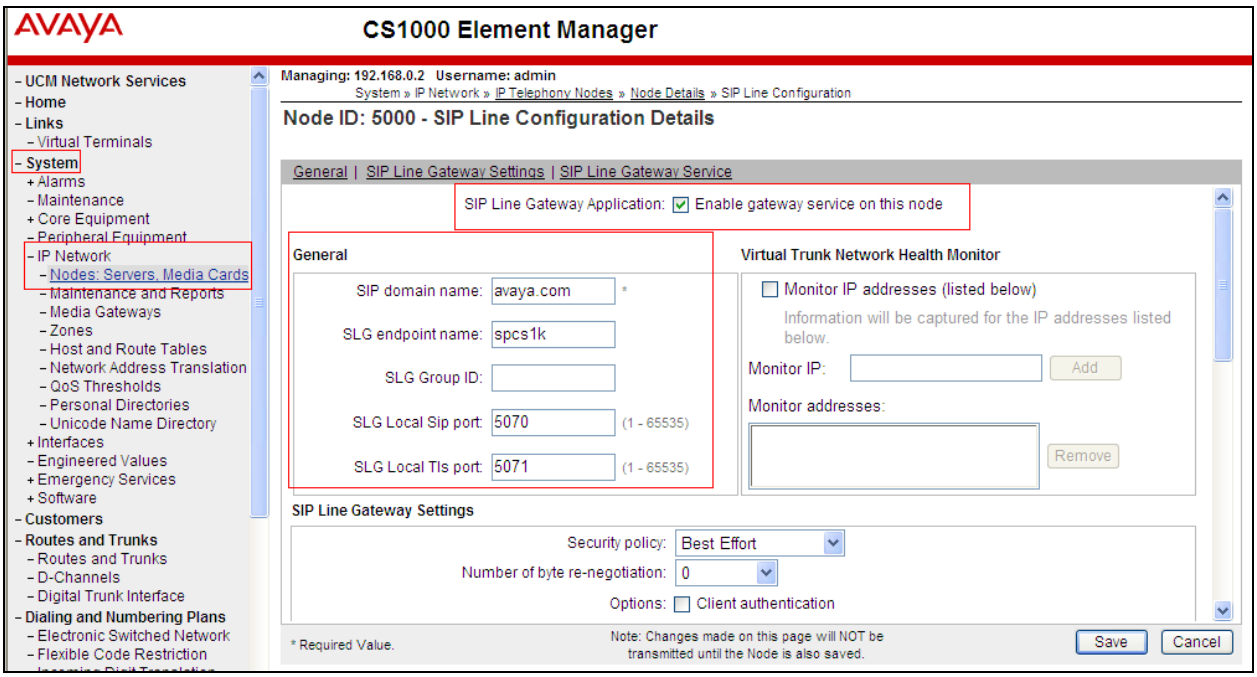
5.8. Configure the SIP Line Gateway Service

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 7. 1**.

- **SIP line Gateway Application**: Enable the SIP line service on the Node, check the box to enable.
- **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 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 **MAINOFFICE** in **Section 5.5** 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 9079
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
```

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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 9079 0     MARP
        CPND
          CPND_LANG ROMAN
            NAME Sigma 1140
            XPLN 11
            DISPLAY_FMT FIRST,LAST*
     01 HOT U 789079 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
```
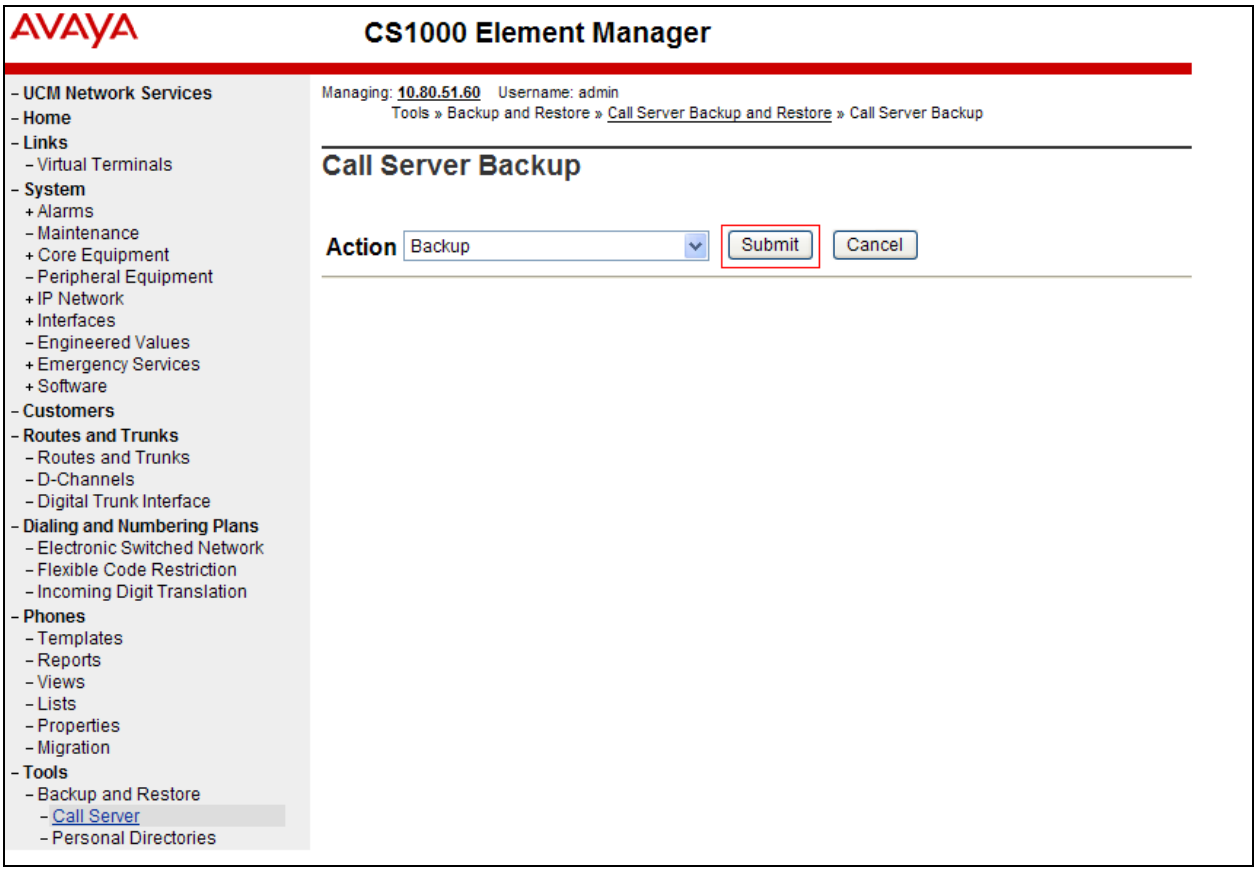

5.10. Save Configuration

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. 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.

c



Configuration of Communication Server 1000E is complete.

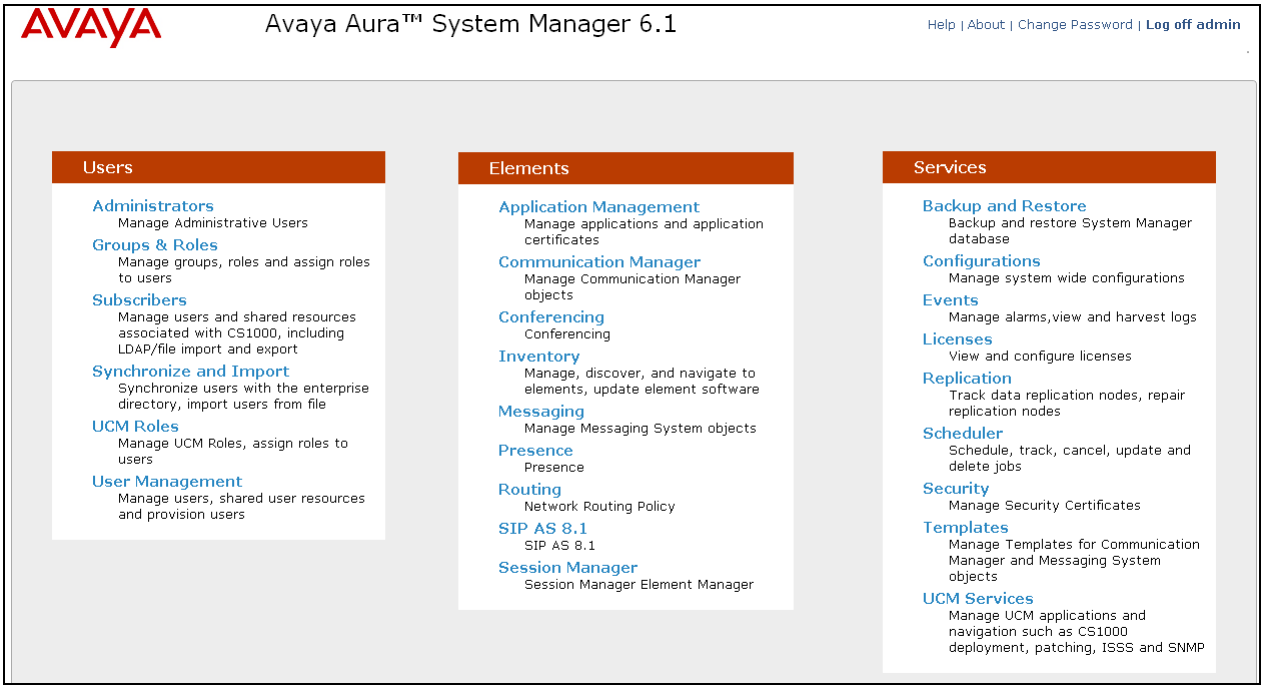
6. Configuring Avaya Aura® Session Manager

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
- 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.

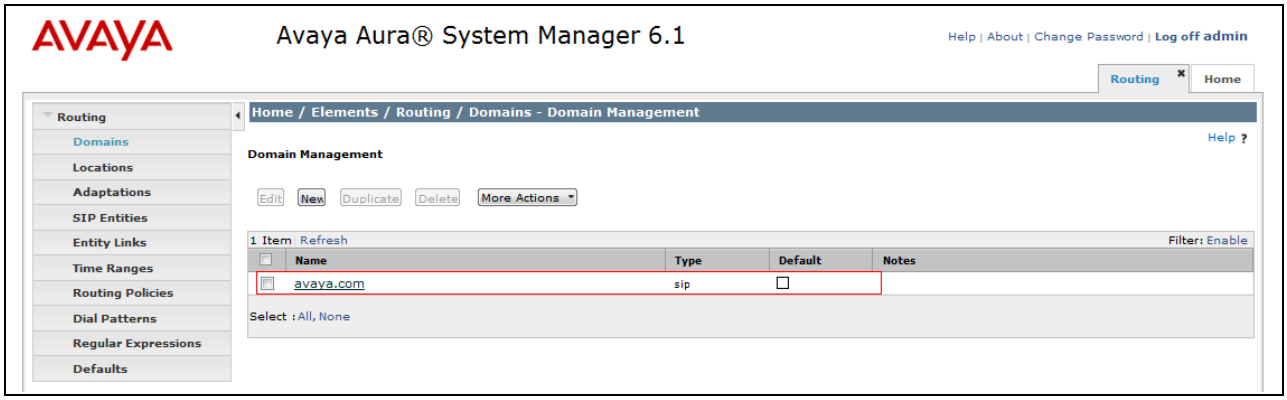


6.2. Define SIP Domain

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

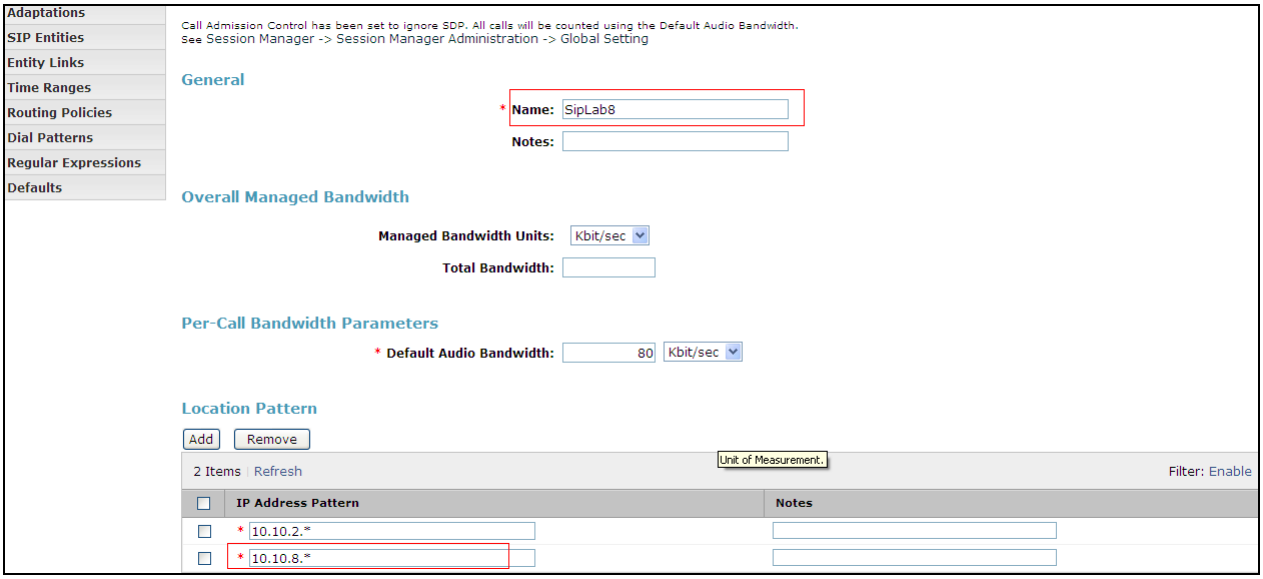
Locations are used to identify logical and/or physical locations where SIP Entities reside, for purposes of bandwidth management or location-based routing. Expand **Elements → Routing** and select **Locations** from the left navigational menu. Click **New** (not shown). In the **General** section**,** 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** to save. The screenshot below shows the Location defined for Communication Server 1000E in the sample configuration.



6.4. Configure Adaptation Module

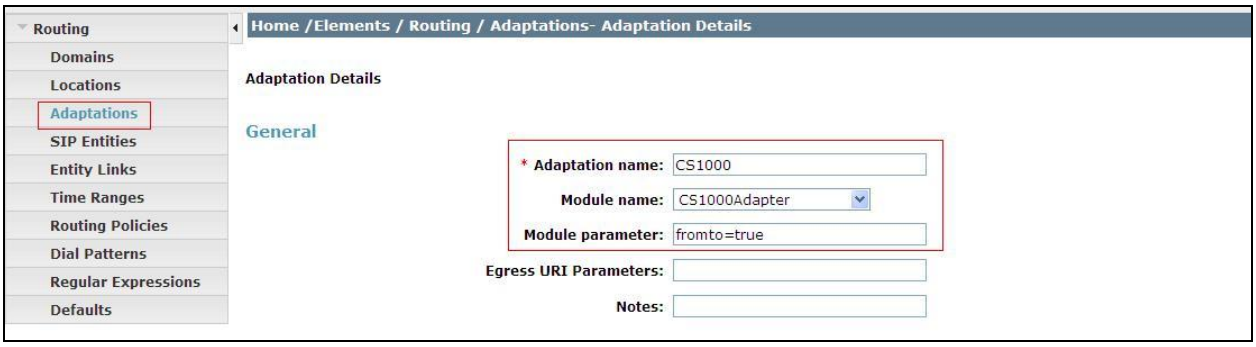
Session Manager can be configured to use an Adaptation Module designed for Avaya Communication Server 1000E to convert SIP headers in messages sent by Avaya Communication Server to the format used by other Avaya products and endpoints.

6.4.1. Adaptation for Avaya Communication Server 1000E Entity

This adaptation is used to change incoming digits received from the PSTN (DDIs) to extensions on the CS1000E and conversely to match outgoing calls from extension on the CS1000E to DDI numbers that are going to be presented to the PSTN.

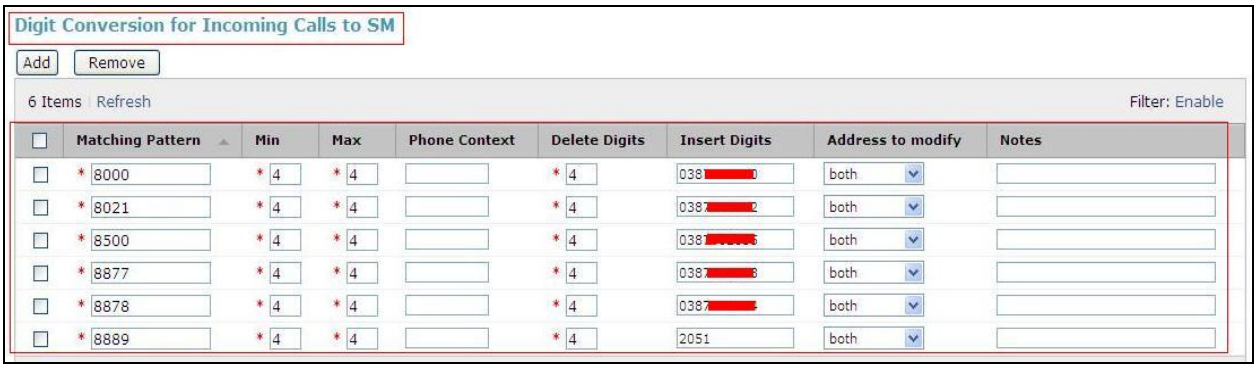
Select **Adaptations** from the left navigational menu. Click **New (**not shown**).** In the **General** section, enter the following values and use default values for remaining fields**.**

- **Adaptation Name:** Enter an identifier for the Adaptation Module (e.g., "CS1000")
- **Module Name:** Select "**CS1000Adapter**" from drop-down menu (or add an adapter with name "CS1000Adapter" if not previously defined)
- **Module Parameter:** Enter "fromto=true" to allow the From and To headers to be modified by Session Manager (i.e., in addition to other headers such as the P-Asserted-Identity and Request-URI headers).



Scrolling down, in the **Digit Conversion for Incoming Calls to SM** section, click **Add** to configure entries for calls from CS1000E users to Vodafone NL. The text below and the screen example that follows explain how to use Session Manager to convert between CS1000E directory numbers and the corresponding Vodafone NL DID numbers.

- **Matching Pattern:** Enter Avaya CS1000E extensions (or extension ranges via wildcard pattern matching)
- **Min:** Enter minimum number of digits (e.g., 4)
- **Max:** Enter maximum number of digits (e.g., 4)
- **Delete Digits:** Enter "**4**", unless digits should not be removed from dialed number before routing by Session Manager
  Insert Digits: Enter the Vodafone NL DID corresponding to the matched extension. DID is masked for security
- **Address to modify:** Select **"both"**



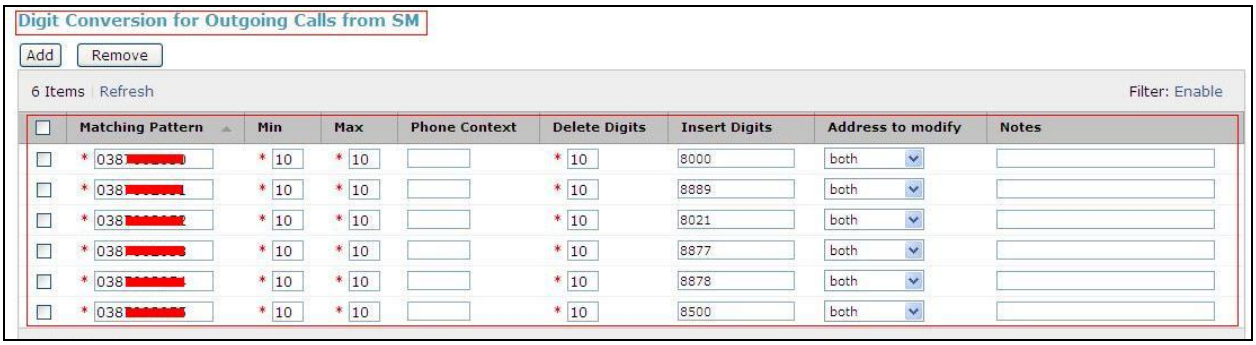
Digit Conversion for Incoming Calls to SM

Add Remove

6 Items Refresh Filter: Enable

Matching Pattern	Min	Max	Phone Context	Delete Digits	Insert Digits	Address to modify	Notes
* 8000	* 4	* 4		* 4	038[redacted]0	both	
* 8021	* 4	* 4		* 4	0387[redacted]2	both	
* 8500	* 4	* 4		* 4	0387[redacted]	both	
* 8877	* 4	* 4		* 4	0387[redacted]8	both	
* 8878	* 4	* 4		* 4	0387[redacted]	both	
* 8889	* 4	* 4		* 4	2051	both	

Scroll down and make corresponding changes in the **Digit Conversion for Outgoing Calls from SM** section for calls from Vodafone NL to CS1000E users. DID masked for security purposes.



Digit Conversion for Outgoing Calls from SM

Add Remove

6 Items Refresh Filter: Enable

Matching Pattern	Min	Max	Phone Context	Delete Digits	Insert Digits	Address to modify	Notes
* 038[redacted]0	* 10	* 10		* 10	8000	both	
* 038[redacted]1	* 10	* 10		* 10	8889	both	
* 038[redacted]2	* 10	* 10		* 10	8021	both	
* 038[redacted]	* 10	* 10		* 10	8877	both	
* 038[redacted]	* 10	* 10		* 10	8878	both	
* 038[redacted]	* 10	* 10		* 10	8500	both	

Click **Commit** to save.

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 fields will need to be populated for each SIP Entity.

Under **General:**

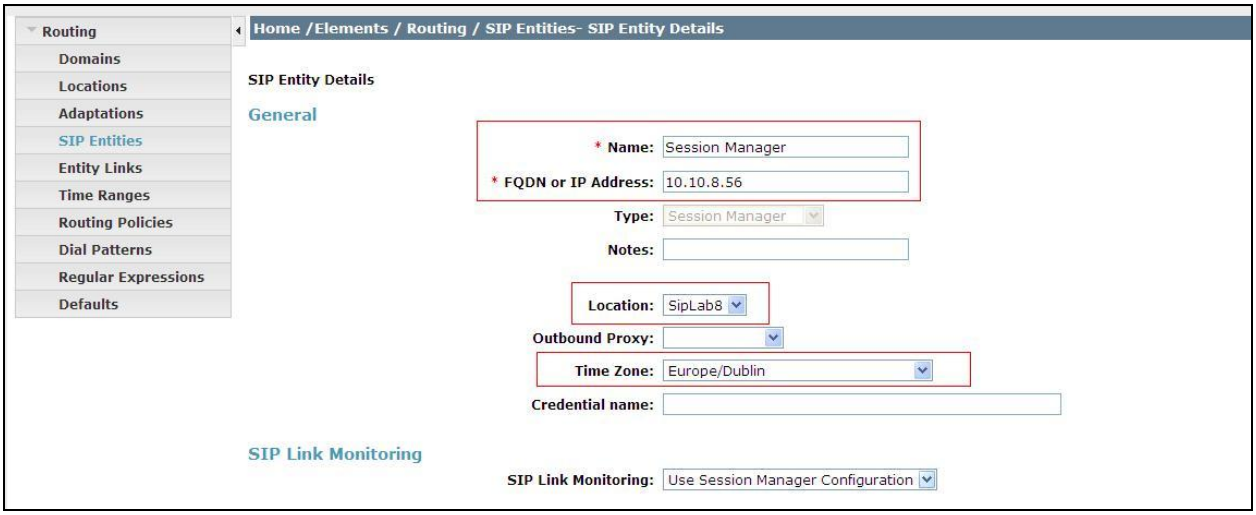
- In the **Name** field enter an informative name.
- In the **FQDN or IP Address** field enter the IP address of Session Manager or the signaling interface on the connecting system.
- In the **Type** field use **Session Manager** for a Session Manager SIP entity, **Other** for CS1000E SIP entity and **Gateway** for the Avaya SBCE SIP entity.
- In the adaptation field select the created adapatation in **Section 6.4** for the CS1000E.
- 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.

- Session Manager SIP Entity
- Communication Server 1000E SIP Entity
- Session Border Controller SIP Entity

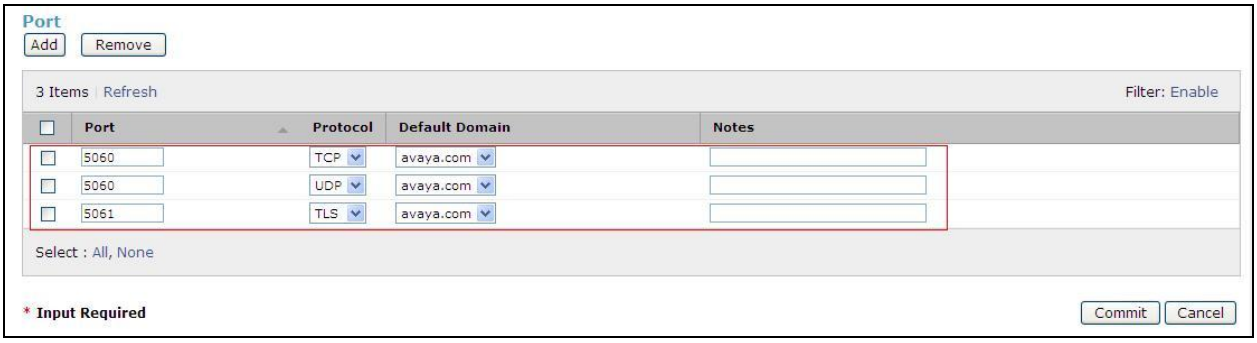
6.5.1. Avaya Aura® Session Manager SIP Entity

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.



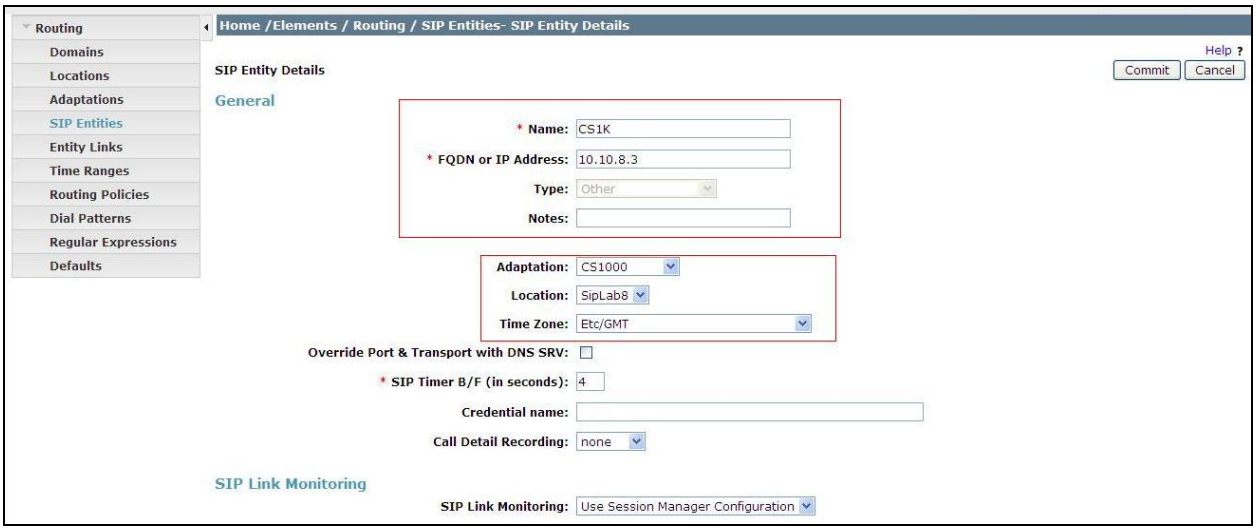
The Session Manager must be configured with the port numbers on the protocols that will be used by the other SIP entities. To configure these scroll to the bottom of the page and under **Port**, click **Add,** then edit the fields in the resulting new row.

- 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.



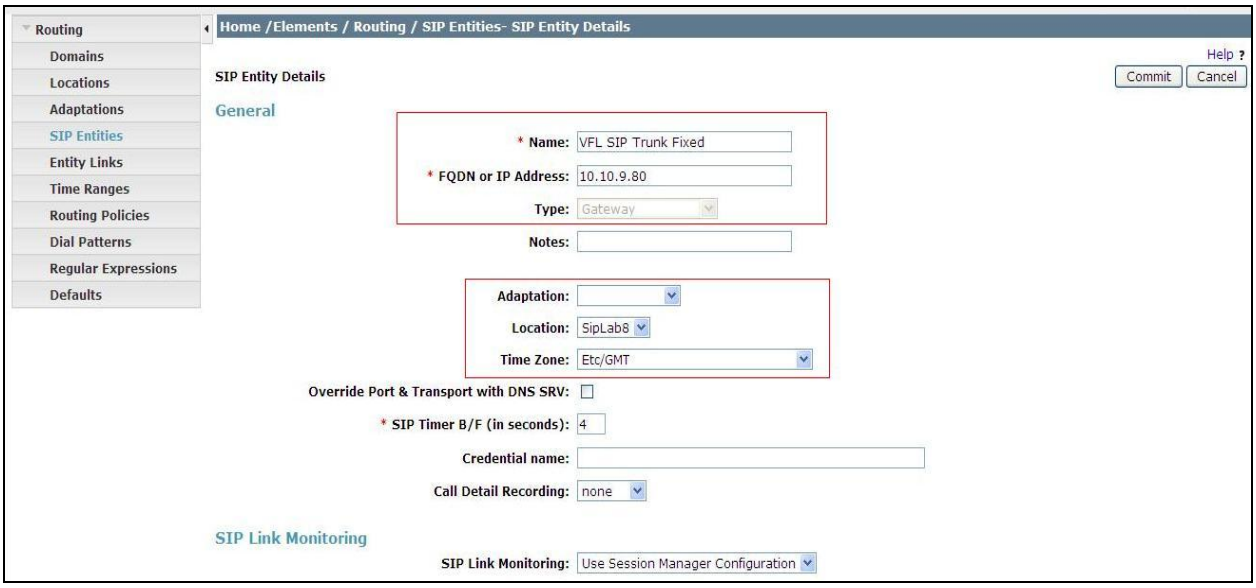
6.5.2. Avaya Communication Server 1000E SIP Entity

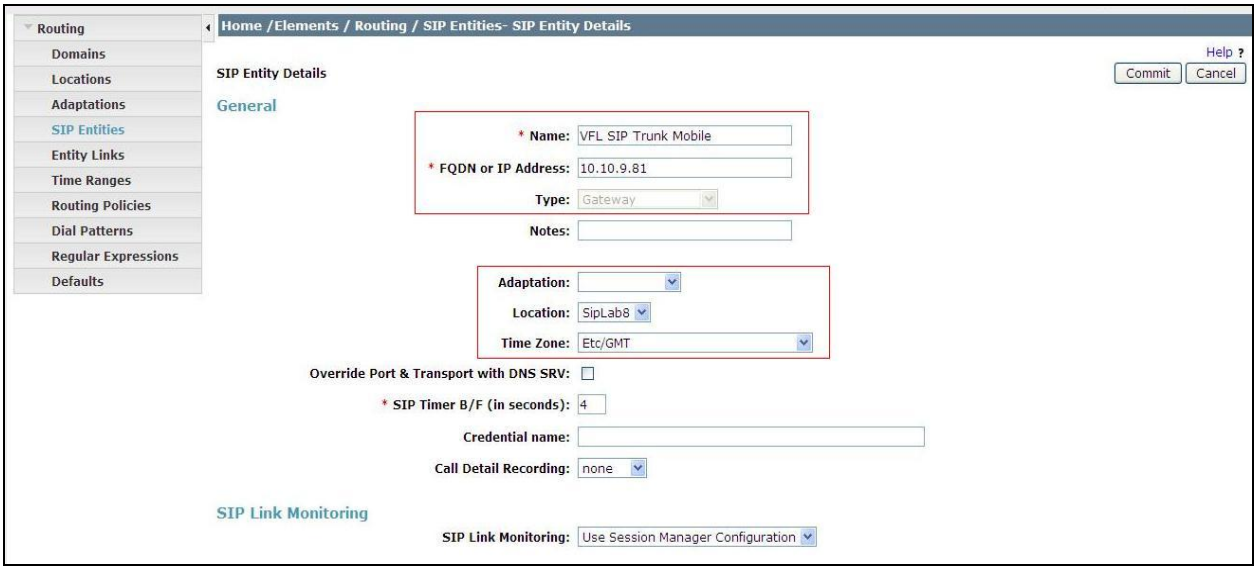
The following screen shows the SIP entity for Communication Server 1000E. The **FQDN or IP Address** field is set to the Node IP address of the interface on CS1000E that will be providing SIP signaling, as shown in **Section 5.4**. Note the adaptation created in **Section 6.4** is applied to this entity link.



6.5.3. Avaya Session Border Controller for Enterprise SIP Entities

The following screen shows the SIP entity for the Avaya Session Border Controller for Enterprise used for routing Fixed and Mobile calls. The **FQDN or IP Address** field is set to the IP address of the private interfaces administered in **Section 7** of this document.



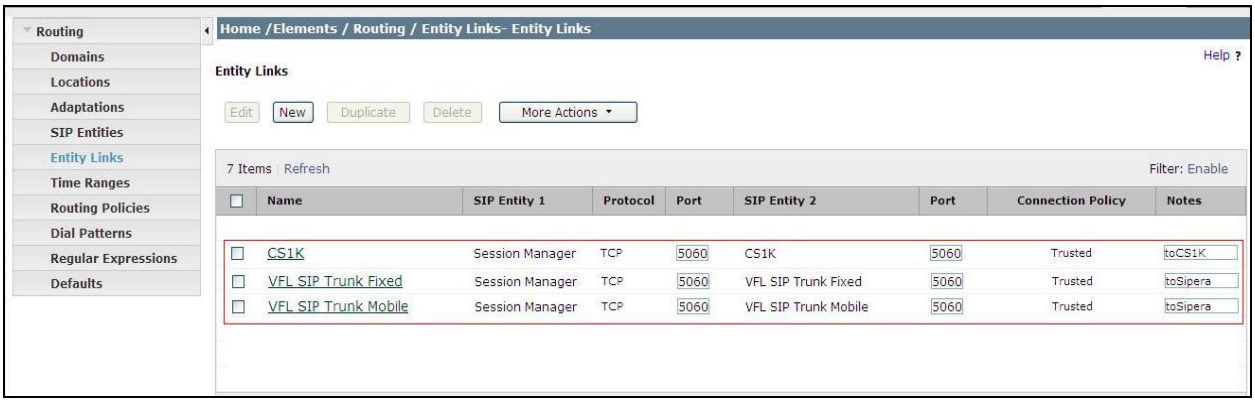


6.6. Define Entity Links

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 and in the resulting screen 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 the SIP Entity for SessionManager i.e. **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 (not shown). The following screen shows the Entity Links used in this configuration.



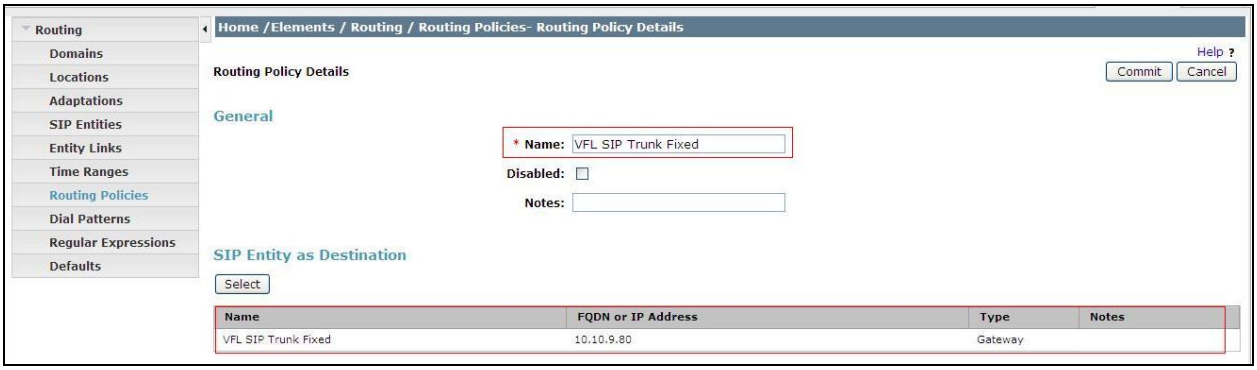
6.7. Define Routing Policies

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**, and then select the appropriate SIP entity to which this routing policy applies.

The following screen shows the routing policy for Communication Server 1000E

The following screen shows the routing policy for Avaya Session Border Controller for Enterprise Fixed:



The following screen shows the routing policy for Avaya Session Border Controller for Enterprise Mobile:

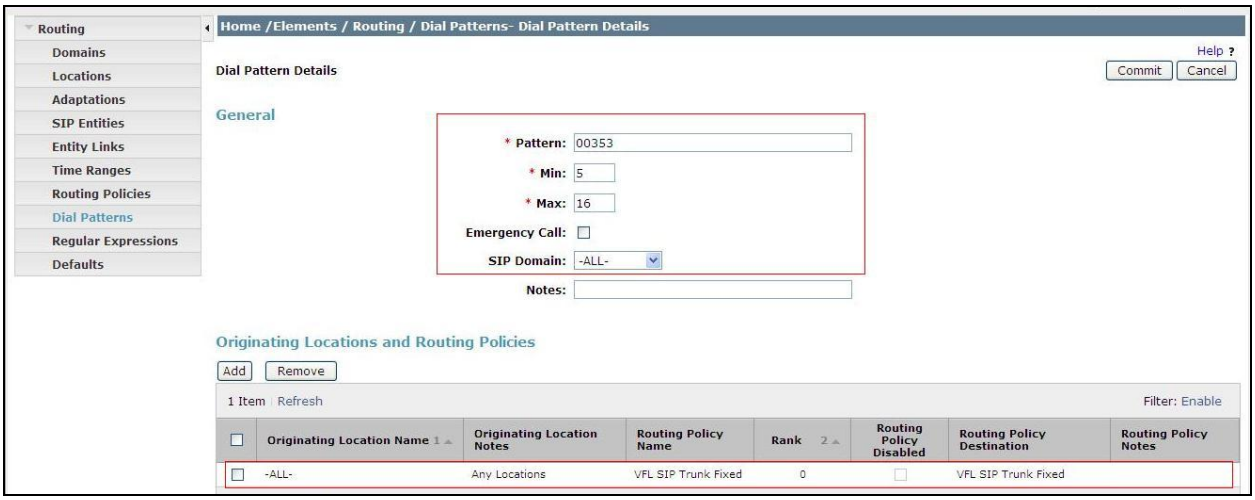
6.8. Define Dial Patterns

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

Under **General**:

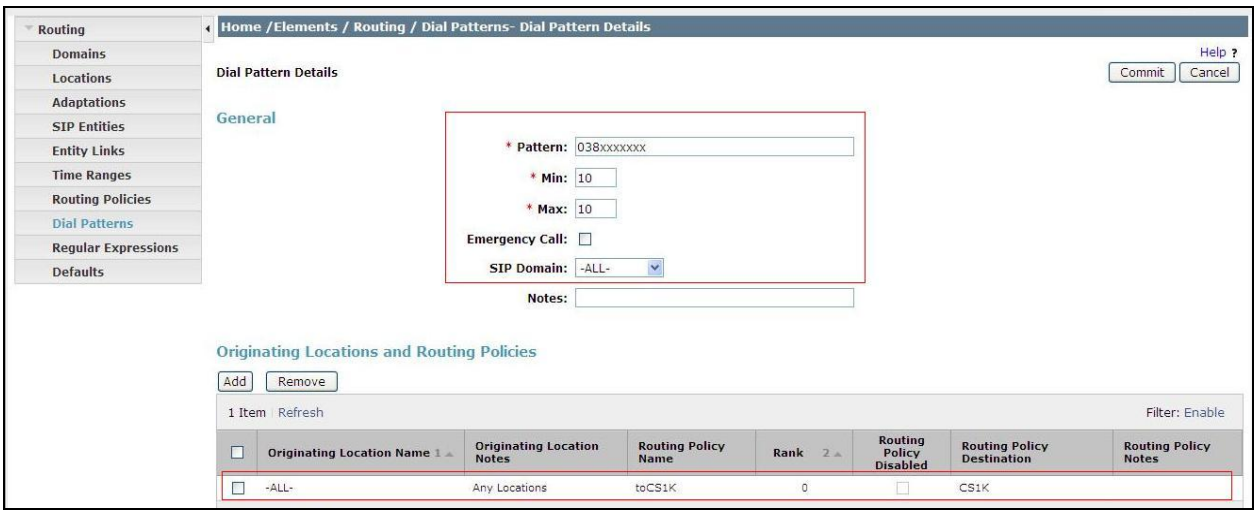
- In the **Pattern** field enter a dialed number or prefix to be matched
- In the **Min** field enter the minimum length of the dialed number
- In the **Max** field enter the maximum length of the dialed number
- In the **SIP Domain** field select the domain configured in **Section 6.2** or select **ALL**

Under **Originating Locations and Routing Policies**. Click **Add**, in the resulting screen (not shown) under **Originating Location** select **Locations** created in **Section 6.3** and under **Routing Policies** select one of the routing policies defined in **Section 6.7.** Click **Select** button to save (not shown). The following screen shows an example dial pattern configured for Vodafone NL SIP Trunk Service Fixed.



The following screen shows an example dial pattern configured for Vodafone NL SIP Trunk Service Mobile.

The following screen shows an example dial pattern configured for Communication Server 1000E.



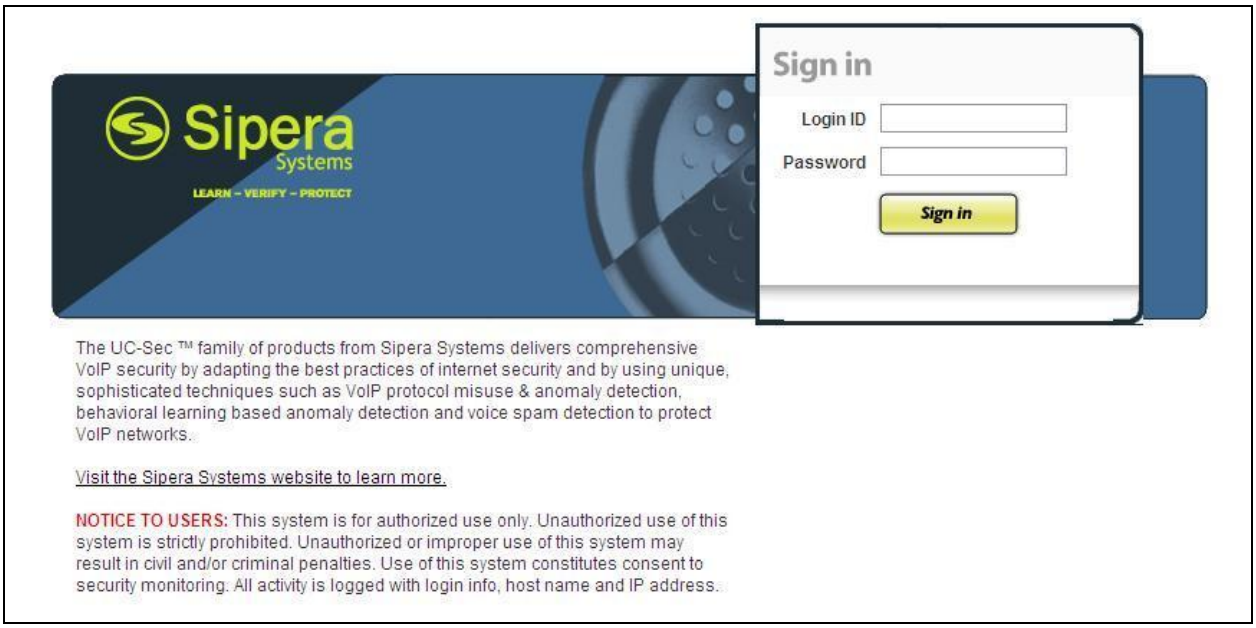
7. Avaya Session Border Controller for Enterprise Configuration

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 E-SBC).

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



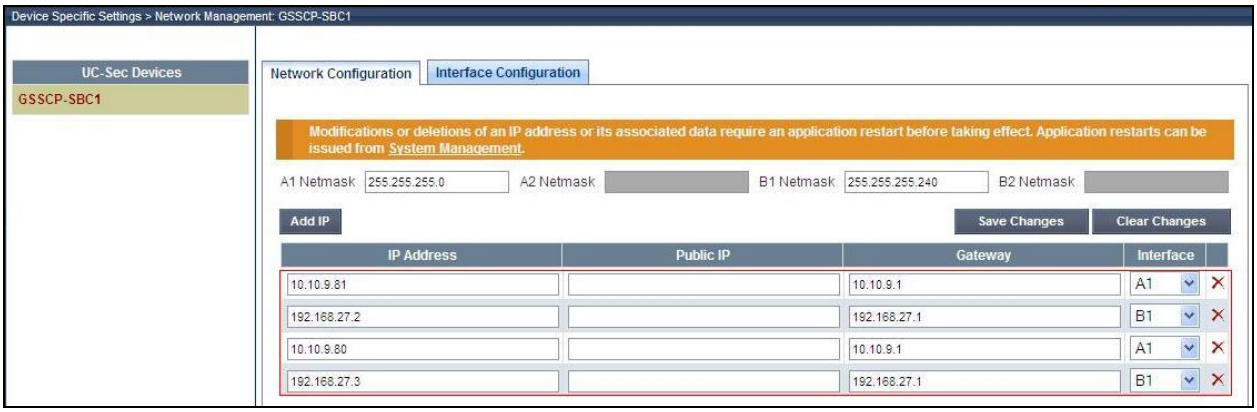
7.2. Define Network Information

Network information is required on the Avaya SBCE to allocate IP addresses and masks to the interfaces. Note that only the **A1** and **B1** interfaces are used, typically the **A1** interface is used for the internal side and **B1** is used for external. Each side of the Avaya SBCE can have only one interface assigned. Two internal interface addresses and two external interface addresses are required for Vodafone NL fixed and mobile networks.

To define the network information, navigate to **Device Specific Settings → Network Management** in the **UC-Sec Control Center** menu on the left hand side and click on **Add IP**. Enter details in the blank box that appears at the end of the list

- Define the internal IP addresses with screening mask and assign to interface **A1**
- Select **Save** (not shown) to save the information
- Click on **Add IP**
- Define the external IP addresses with screening mask and assign to interface **B1**
- Select **Save** (not shown) to save the information
- Select the **Network Configuration** tab and change the state of interfaces **A1** and **B1** to **Enabled** (not shown)
- Click on **System Management** in the main menu
- Select **Restart Application** indicated by an icon in the status bar

Note: Multiple IP addresses defined on a single interface must be in the same subnet.



Select the **Interface Configuration** tab and click on **Toggle State** to enable the interfaces.

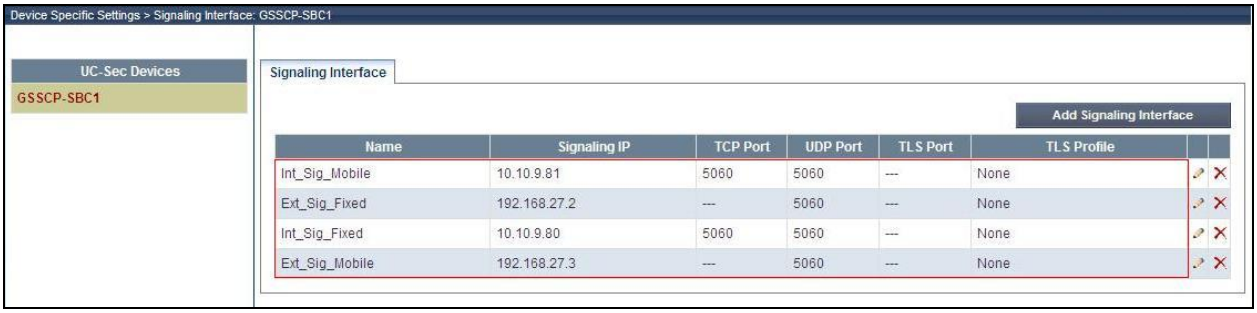
7.3. Define Interfaces

When the IP addresses and masks are assigned to the interfaces, these are then configured as signaling and media interfaces.

7.3.1. Signaling Interfaces

To define the signaling interfaces on the Avaya SBCE, navigate to **Device Specific Settings → Signaling Interface** in the **UC-Sec Control Center** menu on the left hand side. Details of transport protocol and ports for the internal and external SIP signaling are entered here

- Select **Add Signaling Interface** and enter details in the pop-up menu
- In the **Name** field enter a descriptive name for the internal signaling interface for the Vodafone NL fixed network
- Select an **internal** interface IP address defined in **Section 7.2**
- Select **UDP** and **TCP** port numbers, **5060** is used for Vodafone NL
- Select **Add Signaling Interface** and enter details in the pop-up menu
- In the **Name** field enter a descriptive name for the external signaling interface for the Vodafone NL fixed network
- Select an **external** interface IP address (not shown) defined in **Section 7.2**
- Select **UDP** numbers only, **5060** is used for Vodafone NL
- Repeat this process for the internal and external signaling interfaces for the Vodafone NL mobile network.

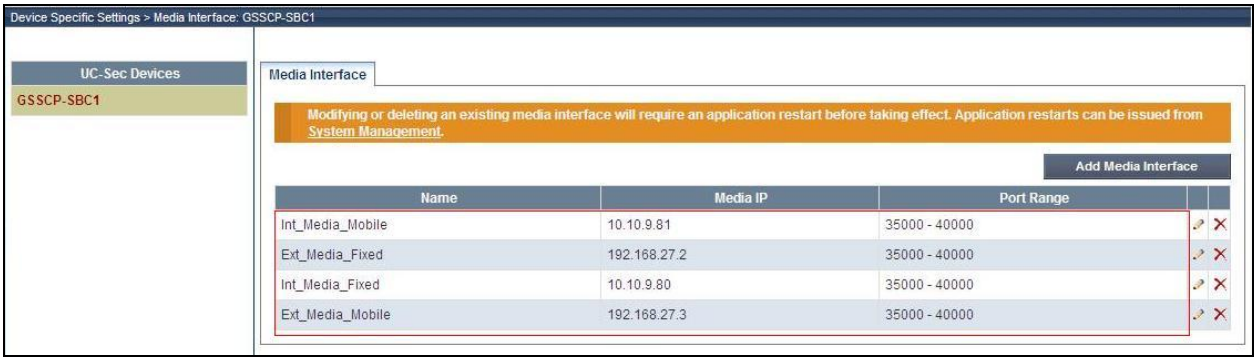


Name	Signaling IP	TCP Port	UDP Port	TLS Port	TLS Profile
Int_Sig_Mobile	10.10.9.81	5060	5060	---	None
Ext_Sig_Fixed	192.168.27.2	---	5060	---	None
Int_Sig_Fixed	10.10.9.80	5060	5060	---	None
Ext_Sig_Mobile	192.168.27.3	---	5060	---	None

7.3.2. Media Interfaces

To define the media interfaces on the Avaya SBCE, navigate to **Device Specific Settings → Signaling Interface** in the **UC-Sec Control Center** menu on the left hand side. Details of the RTP and SRTP port ranges for the internal and external media streams are entered here. The IP addresses for media can be the same as those used for signaling.

- Select **Add Media Interface** and enter details in the pop-up menu
- In the **Name** field enter a descriptive name for the internal media interface for the Vodafone NL fixed network
- Select an **internal** interface IP address defined in **Section 7.2**
- Select **RTP port** ranges for the media path with the enterprise end-points
- Select **Add Media Interface** and enter details in the pop-up menu
- In the **Name** field enter a descriptive name for the external media interface for the Vodafone NL fixed network
- Select an **external** interface IP address (not shown) defined in **Section 7.2**
- Select **RTP port** ranges for the media path with the Vodafone NL SBC
- Repeat this process for the internal and external signaling interfaces for the Vodafone NL mobile network.

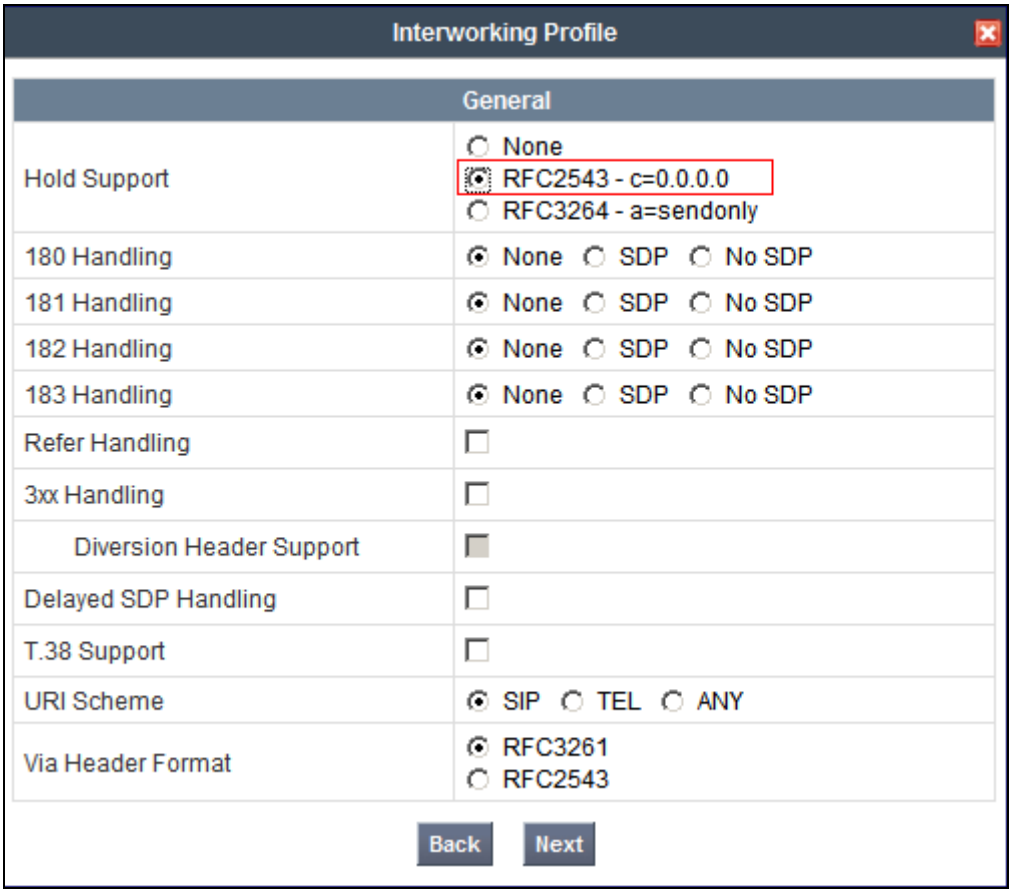


7.4. Define Server Interworking

Server interworking is defined for each server connected to the Avaya SBCE. In this case, the Vodafone NL SBC is connected as the Trunk Server and the Session Manager is connected as the Call Server. To define server interworking on the Avaya SBCE, navigate to **Global Profiles → Server interworking** in the **UC-Sec Control Center** menu on the left hand side. To define Server Interworking for the Session Manager, highlight the **avaya-ru** profile which is a factory setting appropriate for Avaya equipment and select **Clone Profile**. A pop-up menu is generated headed **Clone Profile** (not shown)

- In the **Clone Name** field enter a descriptive name for the Session Manager and click **Finish** – in test **SM9_Call_Server** was used
- Select **Edit** and enter details in the pop-up menu.
- Check the **T.38** box

Change the **Hold Support** RFC to **RFC2543** then click **Next** and **Finish**



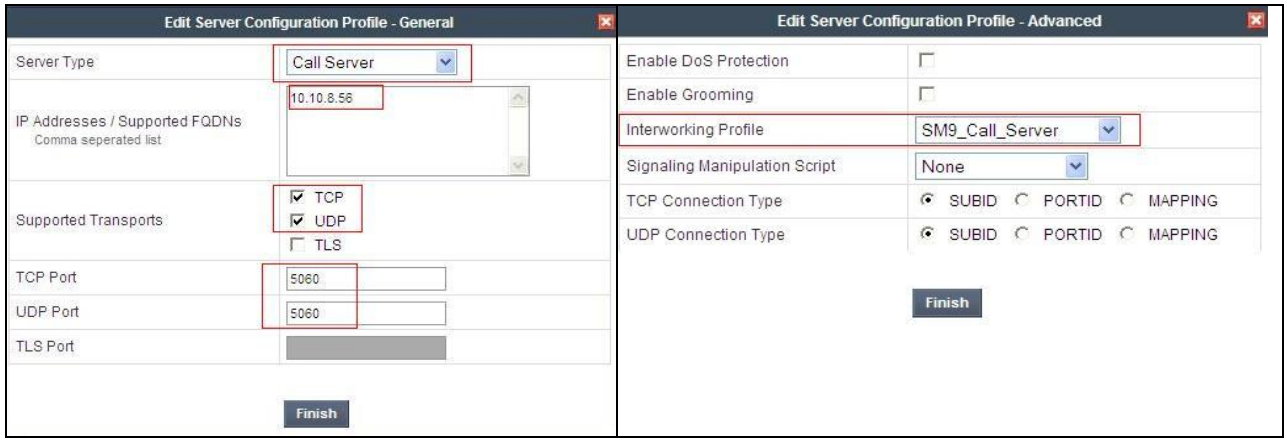
To define Server Interworking for the Vodafone Netherlands SBC, highlight the previously defined profile for the Session Manager and select **Clone Profile**. A pop-up menu is generated headed **Clone Profile**

- In the **Clone Name** field enter a descriptive name for server interworking profile for the Vodafone SBC and click **Finish** – in test **SP_Trunk** was used
- Select **Edit** and enter details in the pop-up menu
- Check the **T.38** box
- Select **Next** three times and **Finish**

7.5. Define Servers

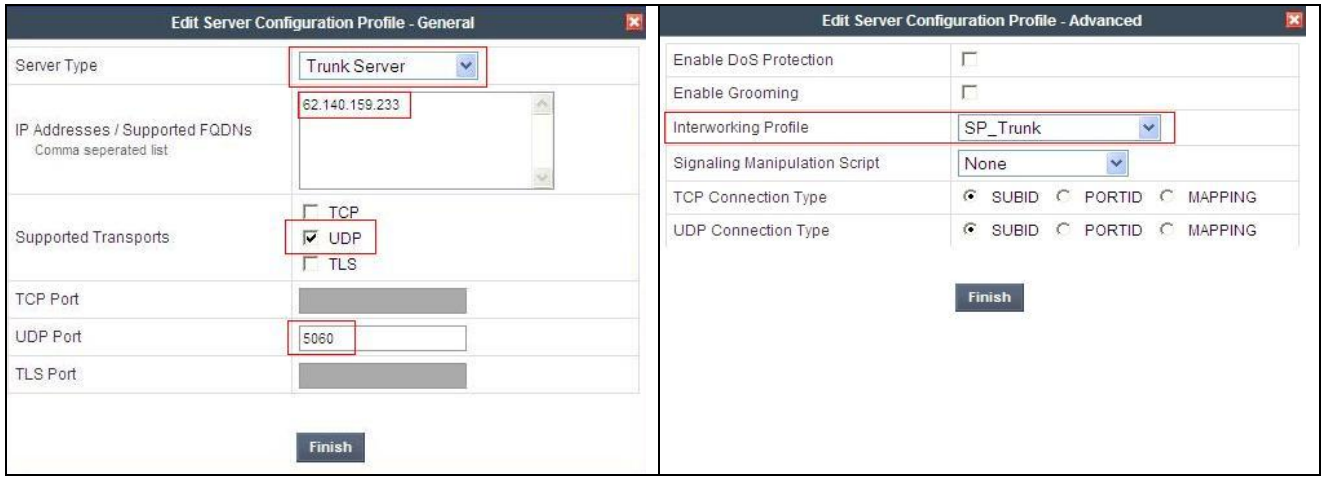
Servers are defined for each server connected to the Avaya SBCE. In this case, the Vodafone NL SBC is connected as the Trunk Server and the Session Manager is connected as the Call Server. To define the Session Manager, navigate to **Global Profiles → Server Configuration** in the **UC-Sec Control Center** menu on the left hand side. Click on **Add Profile** and enter details in the pop-up menu

- In the **Profile Name** field enter a descriptive name for the Session Manager and click **Next**
- In the **Server Type** drop down menu, select **Call Server**
- In the **IP Addresses / Supported FQDNs** box, type the Session Manager SIP interface address which is the same as that defined on the Communication Manager in **Section 5.2**
- Check **TCP** and **UDP** in **Supported Transports**
- Define the **TCP** and **UDP** ports for SIP signaling, **5060** is used for Vodafone NL
- Click **Next** three times then select the **Interworking Profile** for the Session Manager defined in **Section 7.4** from the drop down menu

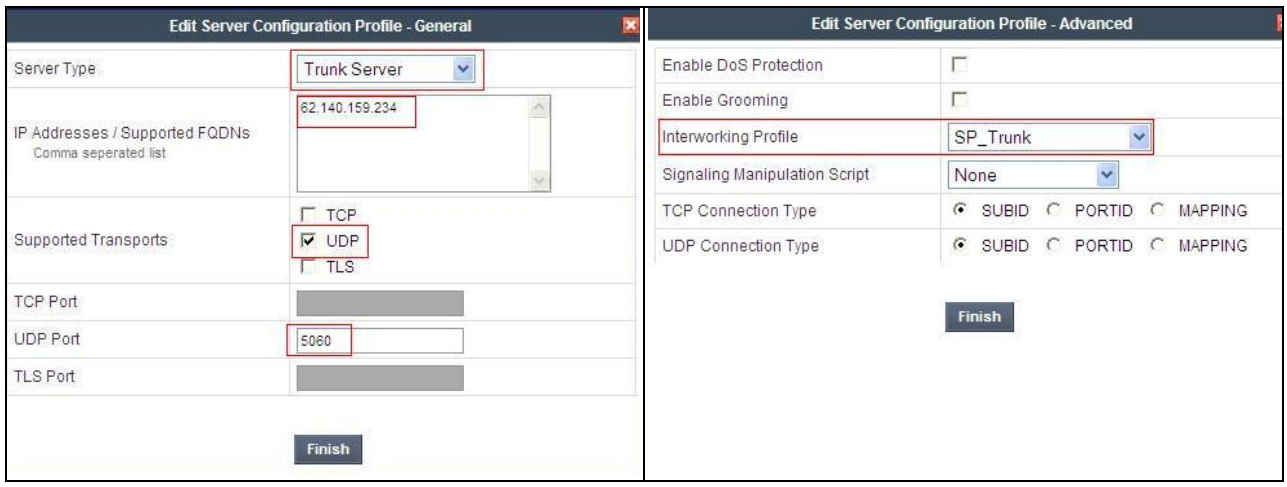


To define the Vodafone NL SBC as two separate Trunk Servers for the fixed and mobile networks, navigate to **Global Profiles → Server Configuration** in the **UC-Sec Control Center** menu on the left hand side. Click on **Add Profile** and enter details in the pop-up menu

- In the **Profile Name** field enter a descriptive name for the Vodafone NL SBC and click Next
- In the **Server Type** drop down menu, select **Trunk Server**
- In the **IP Addresses / Supported FQDNs** box, type the IP address of the Vodafone NL SBC that's to be used for the fixed network
- Check **UDP** in **Supported Transports**
- Define the **UDP** port for SIP signaling, **5060** is used for Vodafone NL
- Click **Next** three times then select the **Interworking Profile** for the Vodafone NL SBC defined in **Section 7.4** from the drop down menu



Repeat the process for the mobile Trunk Server and in the **IP Addresses / Supported FQDNs** box, type the IP address of the Vodafone NL SBC that's to be used for the mobile network



7.6. Define Routing

Routing information is required for routing to the Session Manager on the internal side and the Vodafone NL SBC fixed and mobile addresses on the external side. The IP addresses and ports defined here will be used as the destination addresses for signaling. If no port is specified in the **Next Hop IP Address**, default 5060 is used. To define routing to the Communication Manager, navigate to **Global Profiles → Routing** in the **UC-Sec Control Center** menu on the left hand side. Click on **Add Profile** and enter details in the **Routing Profile** pop-up menu.

- In the **Profile Name** field enter a descriptive name for the Session Manager and click **Next**
- Enter the Session Manager SIP interface address and port in the **Next Hop Server 1** field
- Select **TCP** for the **Outgoing Transport**
- Click **Finish**

Note: Unless default port 5060 is used, this must be included in the next hop IP address.

To define routing to the Vodafone NL SBC for the fixed network, navigate to **Global Profiles Routing** in the **UC-Sec Control Center** menu on the left hand side. Click on **Add Profile** and enter details in the **Routing Profile** pop-up menu.

- In the **Profile Name** field enter a descriptive name for the Vodafone NL SBC fixed address and click **Next**
- Enter the SBC IP address for the fixed network and port in the **Next Hop Server 1** field
- Select **UDP** for the **Outgoing Transport**
- Click **Finish**

To define routing to the Vodafone NL SBC for the mobile network, navigate to **Global Profiles Routing** in the **UC-Sec Control Center** menu on the left hand side. Click on **Add Profile** and enter details in the **Routing Profile** pop-up menu.

- In the **Profile Name** field enter a descriptive name for the Vodafone NL SBC mobile address and click **Next**
- Enter the SBC IP address for the fixed network and port in the **Next Hop Server 1** field
- Select **UDP** for the **Outgoing Transport**
- Click **Finish**

7.7. Topology Hiding

Topology hiding is used to hide local information such as private IP addresses and local domain names. The local information can be overwritten or next hop IP addresses can be used. As IP addressing was used in test instead of domain names, there was little requirement for topology hiding. IP addresses are translated to the Avaya SBCE external addresses using NAT. To define Topology Hiding for the Session Manager, navigate to **Global Profiles → Topology Hiding** in the **UC-Sec Control Center** menu on the left hand side. Click on **Add Profile** and enter details in the **Topology Hiding Profile** pop-up menu.

- In the **Profile Name** field enter a descriptive name for the Session Manager and click **Next**
- If the required Header is not shown, click on **Add Header**
- Select **Request-Line** as the required header from the **Header** drop down menu
- Select the required action from the **Required Action** drop down menu, **Next Hop** was used for test

Note: The use of **Next Hop** results in the IP address being inserted in the host portion of the Request-URI as opposed to a domain name. If a domain name is required, the action **Overwrite** must be used for the **Request-Line** header with the required domain names entered in the **Overwrite Value** field. Different domain names could be used for the enterprise and the Vodafone NL network.

To define Topology Hiding for the Vodafone NL SBC, navigate to **Global Profiles → Topology Hiding** in the **UC-Sec Control Center** menu on the left hand side. Click on **Add Profile** and enter details in the **Topology Hiding Profile** pop-up menu.

- In the **Profile Name** field enter a descriptive name for the Vodafone NL SBC and click **Next**
- If the required Header is not shown, click on **Add Header**
- Select **Request-Line** as the required header from the **Header** drop down menu
- Select the required action from the **Required Action** drop down menu, **Next Hop** was used for test

7.8. Server Flows

Server Flows combine the previously defined profiles into outgoing flows from the Session Manager to the Vodafone NL SBC and incoming flows from the Vodafone NL SBC to the Session Manager. This configuration ties all the previously entered information together so that calls can be routed from the Session Manager to the Vodafone NL SBC for both fixed and mobile calls and vice versa. The following screenshot shows all flows:

To define an outgoing Server Flow for the fixed network, navigate to **Device Specific Settings → End Point Flows**.

- Click on the **Server Flows** tab
- Select **Add Flow** and enter details in the pop-up menu
- In the **Name** field enter a descriptive name for the outgoing server flow to the Vodafone NL SBC for the fixed network
- In the **Received Interface** drop-down menu, select the internal SIP signaling interface defined in **Section 7.3**
- In the **Signaling Interface** drop-down menu, select the external SIP signaling interface defined in **Section 7.3**
- In the **Media Interface** drop-down menu, select the external media interface defined in **Section 7.3**
- In the **Routing Profile** drop-down menu, select the routing profile of the Session Manager defined in **Section 7.6**
- In the **Topology Hiding Profile** drop-down menu, select the topology hiding profile of the Vodafone NL SBC defined in **Section 7.7** and click **Finish**

Server Configuration: Trunk_Server_Fixed

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	SP_Trunk_Server_Fixed	*	*	*	Int_Sig_Fixed	Ext_Sig_Fixed	Ext_Media_Fixed	default-low	SM9_Call_Server	SP_Trunk	None

Repeat the process for an outgoing Server Flow for the mobile network. In the **Name** field enter a descriptive name for the outgoing server flow to the Vodafone NL SBC for the mobile network.

Server Configuration: Trunk_Server_Mobile

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	SP_Trunk_Server_Mobile	*	*	*	Int_Sig_Mobile	Ext_Sig_Mobile	Ext_Media_Mobile	default-low	SM9_Call_Server	SP_Trunk	None

The incoming Server Flows are defined as a reversal of the outgoing Server Flows

- Click on the **Server Flows** tab
- Select **Add Flow** and enter details in the pop-up menu
- In the **Name** field enter a descriptive name for the incoming server flow to the Session Manager
- In the **Received Interface** drop-down menu, select the external SIP signaling interface defined in **Section 7.3**
- In the **Signaling Interface** drop-down menu, select the internal SIP signaling defined in **Section 7.3**
- In the **Media Interface** drop-down menu, select the internal media interface defined in **Section 7.3**
- In the **Routing Profile** drop-down menu, select the routing profile of the Vodafone NL SBC defined in **Section 7.6**
- In the **Topology Hiding Profile** drop-down menu, select the topology hiding profile of the Session Manager defined in **Section 7.7** and click **Finish**

Server Configuration: SM9_Call_Server

Update Order

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	SM9_Call_Server_Fixed	*	*	*	Ext_Sig_Fixed	Int_Sig_Fixed	Int_Media_Fixed	default-low	Trunk_Server_Fixed	SM9_CS	None
2	SM9_Call_Server_Mobile	*	*	*	Ext_Sig_Mobile	Int_Sig_Mobile	Int_Media_Mobile	default-low	Trunk_Server_Mobile	SM9_CS	None

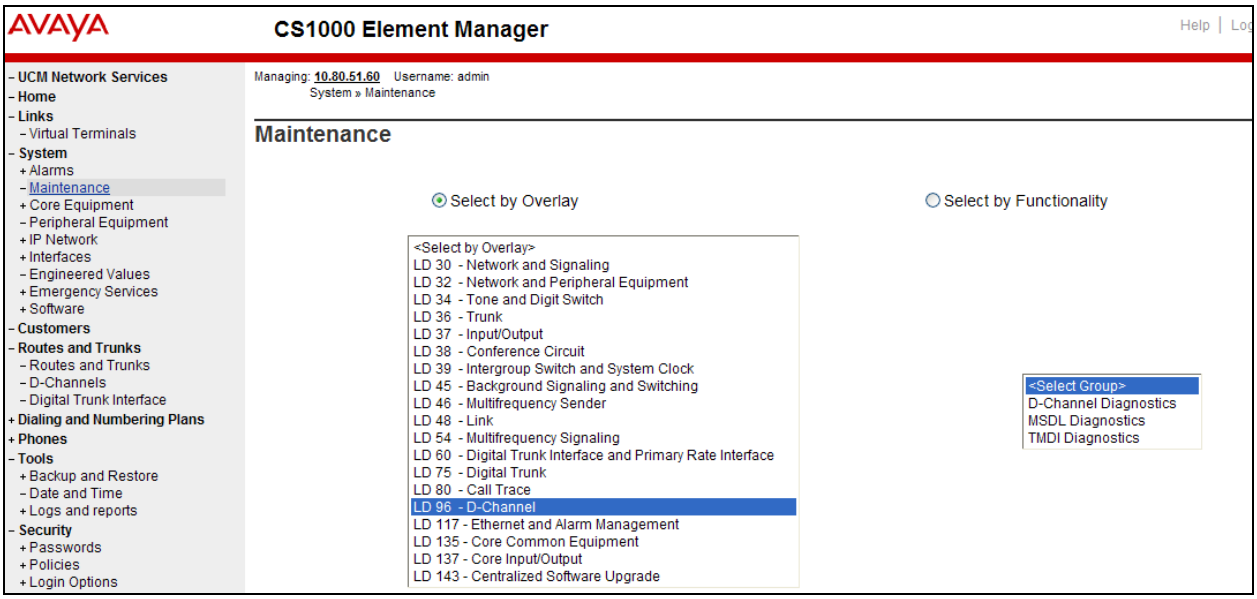
8. Vodafone NL Configuration

The configuration required by Vodafone NL to allow the tests to be carried out are not covered in this document and any further information required should be obtained through the local Vodafone NL representative.

9. Verification Steps

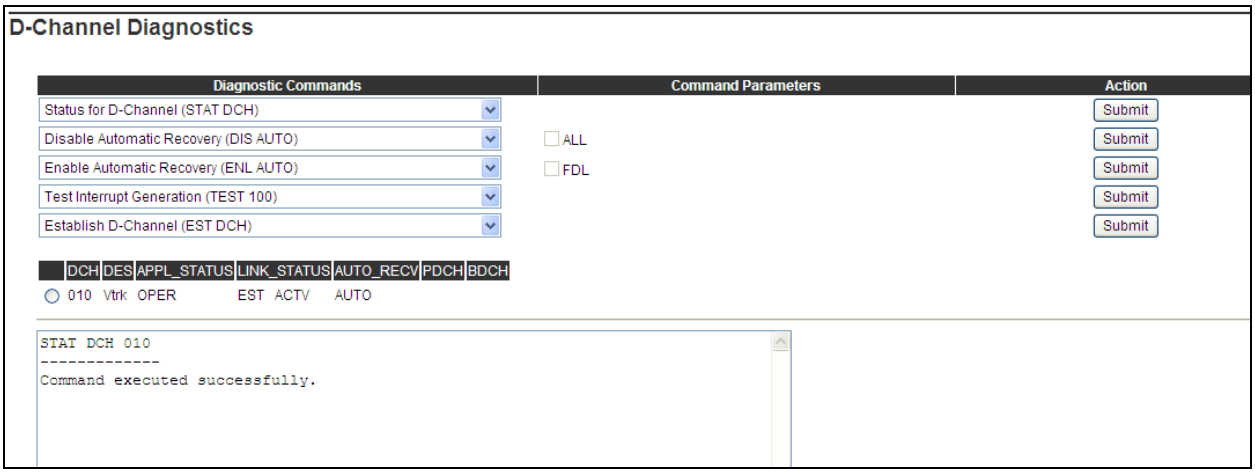
9.1. Verify Avaya Communication Server 1000E Operational Status

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:

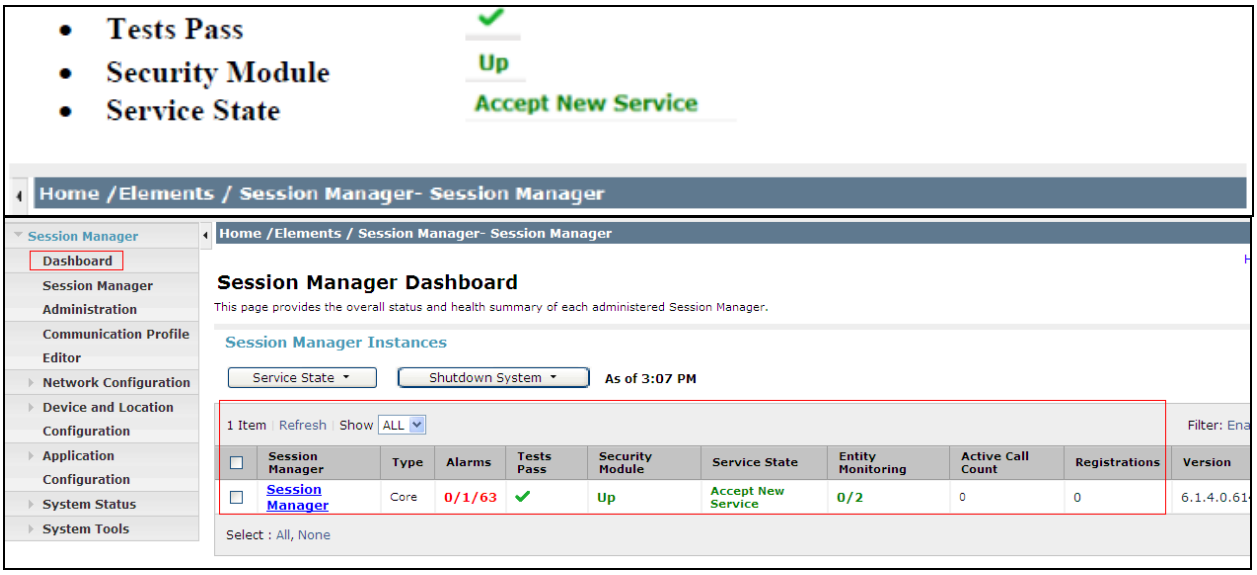
- **Appl_Status** Verify status is **OPER**
- **Link_Status** Verify status is **EST ACTV**



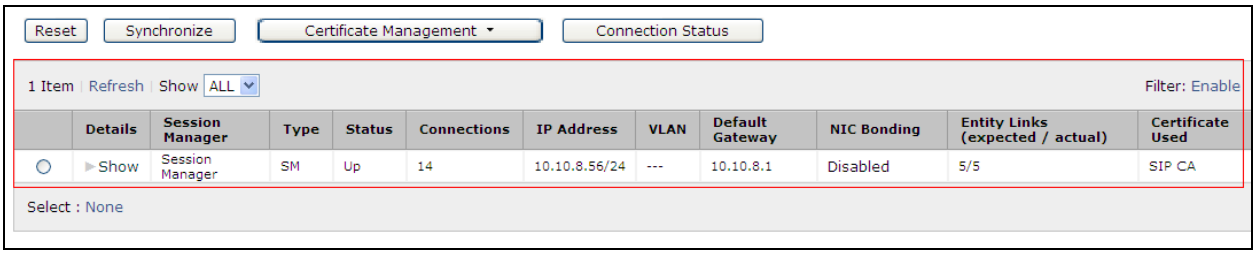
9.2. Verify Avaya Aura® Session Manager Operational Status

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.

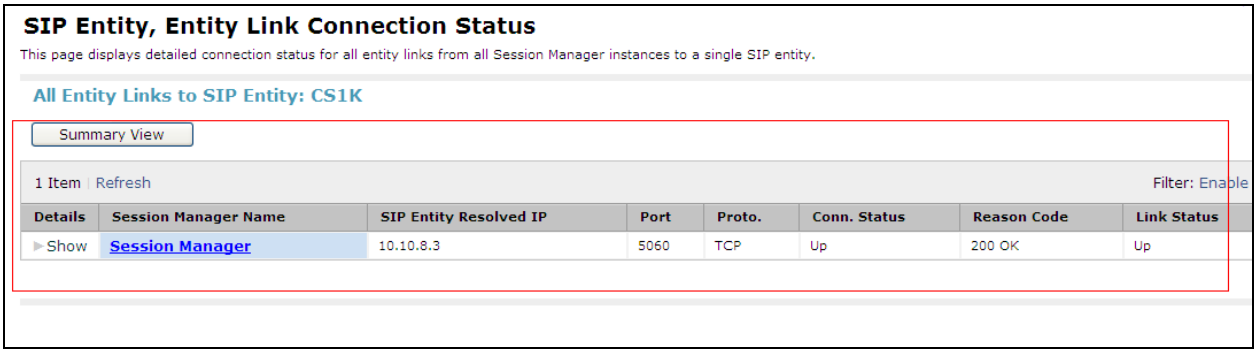


Navigate to **Elements → Session Manager → System Status → Security Module Status** (not shown) to view more detailed status information on the status of Security Module for the specific Session Manager. Verify the **Status** column displays **Up** as shown below.



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 1000Efrom 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 Avaya SBCE by going through the same process as outlined above but selecting the SIP Entity for the Avaya SBCE in the **All Monitored SIP Entities** table (not shown).

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 Vodafone Netherlands SIP Trunk Solution comprised of Vodafone Office Voice and Vodafone OneVoice Corporate. Vodafone Netherlands SIP Trunk Solution is a SIP-based Voice over IP solution providing businesses a flexible, cost-saving alternative to traditional hardwired telephony trunks. Vodafone Netherlands SIP Trunk Solution comprising of Vodafone Office Voice and Vodafone OneVoice Corporate passed compliance testing successfully. Please refer to **Section 2.2** for any observations or workarounds relating the testing covered by these Application Notes.

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.

[2] Installing and Configuring Avaya Aura® Session Manager.

[3] Avaya Aura® Session Manager Case Studies.

[4] Maintaining and Troubleshooting Avaya Aura® Session Manager, Doc ID 03-603325. Administering Avaya Aura® Session Manager, Doc ID 03-603324.

[5] IP Peer Networking Installation and Commissioning, Release 7.5, Document Number NN43001-313.

[6] Unified Communications Management Common Services Fundamentals, Avaya Communication Server 1000E Release 7.5, Document Number NN43001-116.

[7] Co-resident Call Server and Signaling Server Fundamentals, Avaya Communication Server 1000E Release 7.5, Document Number NN43001-509.

[8] Signaling Server and IP Line Fundamentals, Avaya Communication Server 1000E Release 7.5, Document Number NN43001-125.

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

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

Additional Vodafone product documentation is available at http://www.vodafone.nl/zakelijk/totaal_oplossingen/vast_en_mobiel/

Appendix A – Avaya Communication Server 1000E Software

Communication Server 1000E call server patches and plug ins

```
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: 2011-09-13 15:12:45 (est))

MDP>LAST SUCCESSFUL MDP REFRESH :2011-10-11 13:28:54(Local Time)
MDP>USING DEPLIST ZIP FILE DOWNLOADED :2011-09-21 10:45:48(est)
SYSTEM HAS NO USER SELECTED PEPS IN-SERVICE


LOADWARE VERSION: PSWV 100+

INSTALLED LOADWARE PEPS : 3
PAT#  CR #            PATCH REF #     NAME            DATE        FILENAME
00    wi00890367      ISS1:1OF1       MGCCCD02        24/04/2012  MGCCCD02.LW
01    wi00832543      ISS1:1OF1       DSP1AB04        24/04/2012  DSP1AB04.LW
02    wi00946113      ISS1:1OF1       MGCBBA15        24/04/2012  MGCBBA15.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: 2012-05-16 12:51:18 (est))

IN-SERVICE PEPS
PAT# CR #            PATCH REF #     NAME      DATE        FILENAME       SPECINS
000  wi00832106      ISS1:1OF1       p30550 1  18/06/2012  p30550 1.cpl   NO
001  wi00835294      ISS1:1OF1       p30565_1  18/06/2012  p30565_1.cpl   NO
002  wi00897176      ISS1:1OF1       p30418_1  18/06/2012  p30418_1.cpl   NO
003  wi00925218      ISS1:1OF1       p30675_1  18/06/2012  p30675_1.cpl   NO
004  wi00839821      ISS1:1OF1       p30619_1  18/06/2012  p30619_1.cpl   NO
005  wi00937672      ISS1:1OF1       p31276_1  18/06/2012  p31276_1.cpl   NO
006  wi00842409      ISS1:1OF1       p30621 1  18/06/2012  p30621 1.cpl   NO
007  wi00838073      ISS1:1OF1       p30588_1  18/06/2012  p30588_1.cpl   NO
008  wi00937114      ISS1:1OF1       p31310_1  18/06/2012  p31310_1.cpl   NO
009  wi00841980      ISS1:1OF1       p30618_1  18/06/2012  p30618_1.cpl   NO
010  wi00955753      ISS1:1OF1       p31733_1  18/06/2012  p31733_1.cpl   NO
011  wi00839255      ISS1:1OF1       p30591_1  18/06/2012  p30591_1.cpl   NO
012  wi00843623      ISS1:1OF1       p30731 1  18/06/2012  p30731 1.cpl   YES
013  WI00843571      ISS1:1OF1       p30627_1  18/06/2012  p30627_1.cpl   NO
014  wi00871739      ISS1:1OF1       p30856_1  18/06/2012  p30856_1.cpl   NO
015  wi00852365      ISS1:1OF1       p30707_1  18/06/2012  p30707_1.cpl   NO
016  wi00852389      ISS1:1OF1       p30641_1  18/06/2012  p30641_1.cpl   NO
017  wi00839134      ISS1:1OF1       p30698_1  18/06/2012  p30698_1.cpl   YES
```

018	wi00856702	ISS1:1OF1	p30573_1	18/06/2012	p30573_1.cpl	NO
019	wi00857566	ISS1:1OF1	p30766_1	18/06/2012	p30766_1.cpl	NO
020	wi00850521	ISS1:1OF1	p30709_1	18/06/2012	p30709_1.cpl	YES
021	wi00903381	ISS1:1OF1	p30421_1	18/06/2012	p30421_1.cpl	NO
022	wi00863876	ISS1:1OF1	p30787_1	18/06/2012	p30787_1.cpl	NO
023	WI00853473	ISS1:1OF1	p30625_1	18/06/2012	p30625_1.cpl	NO
024	wi00854130	ISS1:1OF1	p30443_1	18/06/2012	p30443_1.cpl	NO
025	wi00875425	ISS1:1OF1	p30943_1	18/06/2012	p30943_1.cpl	NO
026	wi00978883	ISS1:1OF1	p31770_1	18/06/2012	p31770_1.cpl	NO
027	wi00875701	ISS1:1OF1	p30942_1	18/06/2012	p30942_1.cpl	NO
028	wi00936935	ISS1:1OF1	p31362_1	18/06/2012	p31362_1.cpl	NO
029	wi00877367	ISS1:1OF1	p30534_1	18/06/2012	p30534_1.cpl	NO
030	wi00871969	ISS1:1OF1	p30768_1	18/06/2012	p30768_1.cpl	NO
031	wi00886321	ISS1:1OF1	p31009_1	18/06/2012	p31009_1.cpl	NO
032	WI00836334	ISS1:1OF1	p30481_1	18/06/2012	p30481_1.cpl	NO
033	wi00836182	ISS1:1OF1	p30450_1	18/06/2012	p30450_1.cpl	NO
034	wi00858335	ISS1:1OF1	p30819_1	18/06/2012	p30819_1.cpl	NO
035	wi00860279	ISS1:1OF1	p30789_1	18/06/2012	p30789_1.cpl	NO
036	wi00953900	ISS1:1OF1	p31494_1	18/06/2012	p31494_1.cpl	NO
037	wi00854415	ISS1:1OF1	p30593_1	18/06/2012	p30593_1.cpl	NO
038	WI00836292	ISS1:1OF1	p30554_1	18/06/2012	p30554_1.cpl	NO
039	WI00839794	ISS1:1OF1	p28647_1	18/06/2012	p28647_1.cpl	NO
040	wi00824257	ISS1:1OF1	p30447_1	18/06/2012	p30447_1.cpl	NO
041	wi00827950	ISS2:1OF1	p30471_2	18/06/2012	p30471_2.cpl	NO
042	wi00949273	ISS1:1OF1	p31411_1	18/06/2012	p31411_1.cpl	NO
043	WI00854150	ISS1:1OF1	p30468_1	18/06/2012	p30468_1.cpl	NO
044	wi00873382	ISS1:1OF1	p30832_1	18/06/2012	p30832_1.cpl	NO
045	wi00853178	ISS1:1OF1	p30719_1	18/06/2012	p30719_1.cpl	NO
046	wi00869695	ISS1:1OF1	p30654_1	18/06/2012	p30654_1.cpl	NO
047	wi00834382	ISS1:1OF1	p30548_1	18/06/2012	p30548_1.cpl	NO
048	wi00951427	ISS1:1OF1	p31478_1	18/06/2012	p31478_1.cpl	NO
049	wi00946558	ISS1:1OF1	p31358_1	18/06/2012	p31358_1.cpl	NO
050	wi00903369	ISS1:1OF1	p31165_1	18/06/2012	p31165_1.cpl	NO
051	wi00927321	ISS1:1OF1	p31286_1	18/06/2012	p31286_1.cpl	YES
052	wi00923899	ISS1:1OF1	p31270_1	18/06/2012	p31270_1.cpl	NO
053	wi00949627	ISS1:1OF1	p31462_1	18/06/2012	p31462_1.cpl	NO
054	wi00990993	ISS1:1OF1	p31825_1	18/06/2012	p31825_1.cpl	NO
055	wi00865477	ISS1:1OF1	p30894_1	18/06/2012	p30894_1.cpl	YES
056	wi00962211	ISS1:1OF1	p31580_1	18/06/2012	p31580_1.cpl	NO
057	wi00883604	ISS1:1OF1	p30973_1	18/06/2012	p30973_1.cpl	NO
058	wi00898327	ISS1:1OF1	p31136_1	18/06/2012	p31136_1.cpl	NO
059	wi00856410	ISS1:1OF1	p30749_1	18/06/2012	p30749_1.cpl	NO
060	wi00932948	ISS1:1OF1	p31077_1	18/06/2012	p31077_1.cpl	NO
061	wi00905600	ISS1:1OF1	p31201_1	18/06/2012	p31201_1.cpl	NO
062	wi00979591	ISS1:1OF1	p31746_1	18/06/2012	p31746_1.cpl	NO
063	wi00879526	ISS1:1OF1	p31007_1	18/06/2012	p31007_1.cpl	NO
064	wi00962955	ISS1:1OF1	p31585_1	18/06/2012	p31585_1.cpl	NO
065	wi00984178	ISS1:1OF1	p31786_1	18/06/2012	p31786_1.cpl	NO
066	wi00907707	ISS1:1OF1	p31228_1	18/06/2012	p31228_1.cpl	NO
067	wi00857362	ISS1:1OF1	p30782_1	18/06/2012	p30782_1.cpl	NO
068	wi00974635	ISS1:1OF1	p31695_1	18/06/2012	p31695_1.cpl	YES
069	wi00894443	ISS1:1OF1	p31093_1	18/06/2012	p31093_1.cpl	NO
070	wi00942734	ISS1:1OF1	p31409_1	18/06/2012	p31409_1.cpl	NO
071	wi00841273	ISS1:1OF1	p30713_1	18/06/2012	p30713_1.cpl	NO
072	wi00974272	ISS1:1OF1	p31690_1	18/06/2012	p31690_1.cpl	YES
073	wi00948931	ISS1:1OF1	p31407_1	18/06/2012	p31407_1.cpl	NO
074	wi00891626	ISS1:1OF1	p31051_1	18/06/2012	p31051_1.cpl	YES
075	wi00929140	ISS1:1OF1	p31284_1	18/06/2012	p31284_1.cpl	NO
076	wi00925208	ISS1:1OF1	p30986_1	18/06/2012	p30986_1.cpl	NO
077	wi00958776	ISS1:1OF1	p31542_1	18/06/2012	p31542_1.cpl	YES
078	wi00880836	ISS1:1OF1	p30976_1	18/06/2012	p30976_1.cpl	NO
079	WI00927300	ISS1:1OF1	p30999_1	18/06/2012	p30999_1.cpl	NO
080	wi00943172	ISS1:1OF1	p31402_1	18/06/2012	p31402_1.cpl	NO
081	wi00826075	ISS1:1OF1	p30452_1	18/06/2012	p30452_1.cpl	NO
082	wi00881777	ISS1:1OF1	p25747_1	18/06/2012	p25747_1.cpl	NO
083	wi00948274	ISS1:1OF1	p31365_1	18/06/2012	p31365_1.cpl	NO
084	wi00908933	ISS1:1OF1	p31239_1	18/06/2012	p31239_1.cpl	NO
085	wi00865477	ISS1:1OF1	p30892_1	18/06/2012	p30892_1.cpl	YES
086	wi00968531	ISS1:1OF1	p31645_1	18/06/2012	p31645_1.cpl	NO
087	wi00961267	ISS1:1OF1	p30288_1	18/06/2012	p30288_1.cpl	NO
088	wi00930864	ISS1:1OF1	p31325_1	18/06/2012	p31325_1.cpl	NO

089	wi00898200	ISS1:1of1	p31274_1	18/06/2012	p31274_1.cpl	NO
090	wi00946876	ISS1:1OF1	p31430_1	18/06/2012	p31430_1.cpl	NO
091	wi00936714	ISS1:1OF1	p31379_1	18/06/2012	p31379_1.cpl	NO
092	wi00959457	ISS1:1OF1	p31551_1	18/06/2012	p31551_1.cpl	NO
093	wi00969581	ISS1:1OF1	p31661_1	18/06/2012	p31661_1.cpl	YES
094	wi00956885	ISS1:1OF1	p31489_1	18/06/2012	p31489_1.cpl	NO
095	wi00973241	ISS1:1OF1	p31715_1	18/06/2012	p31715_1.cpl	NO
096	wi00946282	ISS1:1OF1	p31204_1	18/06/2012	p31204_1.cpl	NO
097	wi00840590	ISS1:1OF1	p30767_1	18/06/2012	p30767_1.cpl	NO
098	wi00897082	ISS1:1OF1	p31124_1	18/06/2012	p31124_1.cpl	NO
099	wi00896394	ISS1:1OF1	p30807_1	18/06/2012	p30807_1.cpl	NO
100	wi00909476	ISS1:1OF1	p31340_1	18/06/2012	p31340_1.cpl	NO
101	wi00887744	ISS2:1OF1	p31026_2	18/06/2012	p31026_2.cpl	NO
102	wi00865477	ISS1:1OF1	p30896_1	18/06/2012	p30896_1.cpl	YES
103	wi00957252	ISS1:1OF1	p31530_1	18/06/2012	p31530_1.cpl	NO
104	wi00859123	ISS1:1OF1	p30648_1	18/06/2012	p30648_1.cpl	NO
105	wi00895181	ISS1:1OF1	p31106_1	18/06/2012	p31106_1.cpl	NO
106	wi00938555	ISS1:1OF1	p30881_1	18/06/2012	p30881_1.cpl	YES
107	wi00993648	ISS1:1OF1	p31867_1	18/06/2012	p31867_1.cpl	NO
108	wi00931028	ISS1:1OF1	p31354_1	18/06/2012	p31354_1.cpl	YES
109	wi00907697	ISS1:1OF1	p31227_1	18/06/2012	p31227_1.cpl	NO
110	wi00905660	ISS1:1OF1	p27968_1	18/06/2012	p27968_1.cpl	NO
111	wi00900096	ISS1:1OF1	p31006_1	18/06/2012	p31006_1.cpl	NO
112	wi00900766	ISS1:1OF1	p31159_1	18/06/2012	p31159_1.cpl	NO
113	wi00865477	ISS1:1OF1	p30898_1	18/06/2012	p30898_1.cpl	YES
114	wi00906022	ISS1:1OF1	p31202_1	18/06/2012	p31202_1.cpl	NO
115	wi00856991	ISS1:1OF1	p17588_1	18/06/2012	p17588_1.cpl	NO
116	wi00880386	ISS1:1OF1	p30977_1	18/06/2012	p30977_1.cpl	NO
117	wi00688381	ISS1:1OF1	p30104_1	18/06/2012	p30104_1.cpl	NO
118	wi00908598	ISS1:1OF1	p31235_1	18/06/2012	p31235_1.cpl	NO
119	wi00890475	p30952	p31048_1	18/06/2012	p31048_1.cpl	NO
120	wi00868729	ISS1:1OF1	p31163_1	18/06/2012	p31163_1.cpl	NO
121	wi00956788	ISS1:1OF1	p31638_1	18/06/2012	p31638_1.cpl	NO
122	wi00859499	ISS1:1OF1	p30694_1	18/06/2012	p30694_1.cpl	NO
123	wi00895090	ISS1:1OF1	p31105_1	18/06/2012	p31105_1.cpl	NO
124	wi00869243	ISS1:1OF1	p30848_1	18/06/2012	p30848_1.cpl	NO
125	wi00930649	ISS1:1OF1	p31570_1	18/06/2012	p31570_1.cpl	NO
126	wi00899584	ISS1:1OF1	p30809_1	18/06/2012	p30809_1.cpl	NO
127	wi00932204	ISS2:1OF1	p31305_2	18/06/2012	p31305_2.cpl	NO
128	wi00951837	ISS1:1OF1	p31485_1	18/06/2012	p31485_1.cpl	NO
129	wi00865477	ISS1:1OF1	p30893_1	18/06/2012	p30893_1.cpl	YES
130	wi00946477	ISS1:1OF1	p31426_1	18/06/2012	p31426_1.cpl	NO
131	wi00959284	ISS1:1OF1	p31531_1	18/06/2012	p31531_1.cpl	NO
132	wi00855423	ISS1:1OF1	p31328_1	18/06/2012	p31328_1.cpl	YES
133	wi00900668	ISS1:1OF1	p30456_1	18/06/2012	p30456_1.cpl	NO
134	wi00862574	iss1:1of1	p30870_1	18/06/2012	p30870_1.cpl	NO
135	wi00894243	ISS1:1OF1	p31087_1	18/06/2012	p31087_1.cpl	NO
136	wi00959820	ISS1:1OF1	p31562_1	18/06/2012	p31562_1.cpl	NO
137	WI00889786	ISS1:1OF1	p30750_1	18/06/2012	p30750_1.cpl	NO
138	wi00943748	ISS1:1OF1	p31516_1	18/06/2012	p31516_1.cpl	NO
139	wi00959463	ISS1:1OF1	p31528_1	18/06/2012	p31528_1.cpl	NO
140	WI00928455	ISS1:1OF1	p31297_1	18/06/2012	p31297_1.cpl	NO
141	wi00896680	ISS1:1OF1	p30357_1	18/06/2012	p30357_1.cpl	NO
142	wi00925141	ISS1:1OF1	p30802_1	18/06/2012	p30802_1.cpl	NO
143	wi00968157	ISS1:1OF1	p31637_1	18/06/2012	p31637_1.cpl	NO
144	wi00884699	ISS1:1OF1	p31000_1	18/06/2012	p31000_1.cpl	YES
145	wi00932958	ISS1:1OF1	p31115_1	18/06/2012	p31115_1.cpl	NO
146	wi00921295	ISS1:1OF1	p31265_1	18/06/2012	p31265_1.cpl	NO
147	wi00906163	ISS1:1OF1	p31205_1	18/06/2012	p31205_1.cpl	NO
148	wi00903437	ISS1:1OF1	p31167_1	18/06/2012	p31167_1.cpl	NO
149	wi00960133	ISS2:1OF1	p31557_2	18/06/2012	p31557_2.cpl	NO
150	wi00879322	ISS1:1OF1	p30954_1	18/06/2012	p30954_1.cpl	NO
151	wi00896420	ISS1:1OF1	p30867_1	18/06/2012	p30867_1.cpl	NO
152	wi00924886	ISS1:1OF1	p31062_1	18/06/2012	p31062_1.cpl	YES
153	wi00877592	ISS1:1OF1	p30880_1	18/06/2012	p30880_1.cpl	NO
154	wi00981711	ISS1:1OF1	p31766_1	18/06/2012	p31766_1.cpl	NO
155	wi00882293	ISS1:1OF1	p31010_1	18/06/2012	p31010_1.cpl	NO
156	wi00905297	ISS1:1OF1	p31195_1	18/06/2012	p31195_1.cpl	NO
157	wi00968353	ISS1:1OF1	p31412_1	18/06/2012	p31412_1.cpl	NO
158	wi00975133	ISS1:1OF1	p31731_1	18/06/2012	p31731_1.cpl	NO
159	wi00897096	ISS1:1OF1	p30676_1	18/06/2012	p30676_1.cpl	NO

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160  wi00969890      ISS1:1OF1       p31664_1  18/06/2012  p31664_1.cpl   YES
161  wi00967510      ISS1:1OF1       p31147_1  18/06/2012  p31147_1.cpl   NO
162  wi00891621      ISS1:1OF1       p31037_1  18/06/2012  p31037_1.cpl   NO
163  wi00968448      ISS1:1OF1       p31648_1  18/06/2012  p31648_1.cpl   YES
164  wi00945997      ISS1:1OF1       p31641_1  18/06/2012  p31641_1.cpl   NO
165  wi00967509      ISS1:1OF1       p31294_1  18/06/2012  p31294_1.cpl   NO
166  wi00969208      ISS1:1OF1       p31656_1  18/06/2012  p31656_1.cpl   NO
167  wi00976209      ISS1:1OF1       p31717_1  18/06/2012  p31717_1.cpl   YES
168  wi00969039      ISS1:1OF1       p31643_1  18/06/2012  p31643_1.cpl   NO
169  wi00977436      ISS1:1OF1       p31834_1  18/06/2012  p31834_1.cpl   NO
170  wi00950575      ISS1:1OF1       p31724_1  18/06/2012  p31724_1.cpl   NO
171  wi00975659      ISS1:1OF1       p31707_1  18/06/2012  p31707_1.cpl   NO
172  wi00949410      ISS1:1OF1       p31248_1  18/06/2012  p31248_1.cpl   NO
173  wi00977978      ISS1:1OF1       p31831_1  18/06/2012  p31831_1.cpl   NO
174  wi00965285      ISS1:1OF1       p31476_1  18/06/2012  p31476_1.cpl   NO
175  wi00979414      ISS1:1OF1       p31748_1  18/06/2012  p31748_1.cpl   YES
176  wi00982243      ISS1:1OF1       p31797_1  18/06/2012  p31797_1.cpl   NO
177  wi00960809      ISS1:1OF1       p31564_1  18/06/2012  p31564_1.cpl   NO
178  wi00964006      ISS1:1OF1       p31595_1  18/06/2012  p31595_1.cpl   YES
179  wi00965838      ISS1:1OF1       p31623_1  18/06/2012  p31623_1.cpl   NO
180  wi00977393      ISS1:1OF1       p31744_1  18/06/2012  p31744_1.cpl   YES
181  wi00994044      ISS1:1OF1       p31871_1  18/06/2012  p31871_1.cpl   NO
182  wi00988285      ISS1:1OF1       p31824_1  18/06/2012  p31824_1.cpl   NO
183  wi00982566      ISS1:1OF1       p31774_1  18/06/2012  p31774_1.cpl   NO
184  wi00906350      ISS1:1OF1       p31219_1  18/06/2012  p31219_1.cpl   NO
185  wi00983007      ISS1:1OF1       p31778_1  18/06/2012  p31778_1.cpl   YES
186  wi00998121      ISS1:1OF1       p31897_1  18/06/2012  p31897_1.cpl   NO
187  wi01003999      ISS1:1OF1       p31946_1  18/06/2012  p31946_1.cpl   YES
188  wi00973270      ISS1:1OF1       p31751_1  18/06/2012  p31751_1.cpl   NO
189  wi00992974      ISS1:1OF1       p31889_1  18/06/2012  p31889_1.cpl   NO
190  wi00989828      ISS1:1OF1       p31836_1  18/06/2012  p31836_1.cpl   NO
191  wi00985153      ISS1:1OF1       p31859_1  18/06/2012  p31859_1.cpl   NO
192  wi00996639      ISS1:1OF1       p31886_1  18/06/2012  p31886_1.cpl   NO
193  wi00944019      ISS1:1OF1       p31874_1  18/06/2012  p31874_1.cpl   NO
194  wi00971029      ISS1:1OF1       p31794_1  18/06/2012  p31794_1.cpl   NO
195  wi00971209      ISS1:1OF1       p31750_1  18/06/2012  p31750_1.cpl   NO
196  wi00986337      ISS1:1OF1       p31803_1  18/06/2012  p31803_1.cpl   NO
197  wi00991892      ISS1:1OF1       p31853_1  18/06/2012  p31853_1.cpl   NO
198  wi00983505      ISS1:1OF1       p31758_1  18/06/2012  p31758_1.cpl   NO
199  wi00996630      ISS1:1OF1       p31789_1  18/06/2012  p31789_1.cpl   NO
200  wi00984652      ISS1:1OF1       p31792_1  18/06/2012  p31792_1.cpl   NO
201  wi00974856      ISS1:1OF1       p31823_1  18/06/2012  p31823_1.cpl   NO
202  wi00967512      ISS1:1OF1       p31384_1  18/06/2012  p31384_1.cpl   NO
203  wi00957235      ISS1:1OF1       p31798_1  18/06/2012  p31798_1.cpl   NO
204  wi00991523      ISS1:1OF1       p31603_1  18/06/2012  p31603_1.cpl   NO
205  wi00984888      ISS1:1OF1       p31795_1  18/06/2012  p31795_1.cpl   NO
206  wi00997559      ISS1:1OF1       p31898_1  18/06/2012  p31898_1.cpl   NO
207  wi00980476      ISS1:1OF1       p31387_1  18/06/2012  p31387_1.cpl   NO
208  wi00987089      ISS1:1OF1       p31809_1  18/06/2012  p31809_1.cpl   NO
209  wi00985760      ISS1:1OF1       p31913_1  18/06/2012  p31913_1.cpl   NO
210  wi00981928      ISS1:1OF1       p31869_1  18/06/2012  p31869_1.cpl   NO
211  wi00987424      ISS1:1OF1       p31815_1  18/06/2012  p31815_1.cpl   NO
212  wi00992921      ISS1:1OF1       p31878_1  18/06/2012  p31878_1.cpl   NO
213  wi00993377      ISS1:1OF1       p31860_1  18/06/2012  p31860_1.cpl   NO
214  wi00978064      ISS1:1OF1       p31760_1  18/06/2012  p31760_1.cpl   NO
MDP>LAST SUCCESSFUL MDP REFRESH :2012-06-06 15:58:07(Local Time)
MDP>USING DEPLIST ZIP FILE DOWNLOADED :2012-06-06 11:11:47(est)
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Communication Server 1000E signaling server service updates

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Product Release: 7.50.17.00
In system patches: 1
PATCH#  NAME       IN_SERVICE   DATE      SPECINS  TYPE   RPM
2       p30260_1   Yes          15/06/12  NO       FRU    cs1000-pi-control-1.00.00.00-00.noarch

In System service updates: 26
PATCH#  IN_SERVICE   DATE       SPECINS   REMOVABLE   NAME
0       No           06/06/12   NO        YES         cs1000-tps-7.50.17.16-19.i386.000
1       Yes          27/03/12   NO        YES         cs1000-ftrpkg-7.50.17.16-9.i386.000
3       Yes          01/03/12   NO        YES         cs1000-csmWeb-7.50.17.16-3.i386.000
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4       Yes          18/04/11   NO        YES         cs1000-dbcom-7.50.17-02.i386.000
5       Yes          01/03/12   NO        YES         cs1000-mscAnnc-7.50.17.16-1.i386.000
6       Yes          01/03/12   NO        YES         cs1000-mscTone-7.50.17.16-1.i386.000
7       Yes          01/03/12   NO        YES         cs1000-mscMusc-7.50.17.16-2.i386.000
9       Yes          08/05/12   NO        YES         cs1000-vtrk-7.50.17.16-64.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          27/03/12   NO        YES         cs1000-sps-7.50.17.16-4.i386.000
15      Yes          17/01/12   NO        YES         cs1000-ipsec-7.50.17.16-1.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
23      No           06/06/12   NO        YES         cs1000-pd-7.50.17.16-1.i386.000
24      Yes          06/06/12   NO        YES         cs1000-patchWeb-7.50.17.16-6.i386.000
25      No           06/06/12   NO        YES         cs1000-csmWeb-7.50.17.16-4.i386.000
26      Yes          06/06/12   NO        YES         cs1000-linuxbase-7.50.17.16-10.i386.000
27      Yes          06/06/12   NO        YES         cs1000-ncs-7.50.17.16-1.i386.000
28      Yes          06/06/12   NO        YES         cs1000-bcc-7.50.17.16-62.i386.000
29      Yes          06/06/12   NO        YES         cs1000-dmWeb-7.50.17.16-3.i386.000
30      Yes          06/06/12   NO        YES         cs1000-Jboss-Quantum-7.50.17.16-24.i386.000
31      Yes          06/06/12   NO        YES         cs1000-EmCentralLogic-7.50.17.16-2.i386.000
32      Yes          06/06/12   NO        YES         cs1000-emWeb_6-0-7.50.17.16-27.i386.000
33      Yes          06/06/12   NO        YES         cs1000-emWebLocal_6-0-7.50.17.16-1.i386.000
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Communication Server 1000E system software

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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
   vtrk                        7.50.17.16  [patched]
   pd                          7.50.17.16
   sps                         7.50.17.16  [patched]
   ncs                         7.50.17.16  [patched]
   gk                          7.50.17
   EmConfig                    7.50.17
   emWeb 6-0                   7.50.17     [patched]
   emWebLocal_6-0              7.50.17     [patched]
   csmWeb                      n/a         [patched]
   bcc                         7.50.17     [patched]
   ftrpkg                      7.50.17     [patched]
   cs1000WebService 6-0        7.50.17
   managedElementWebService    7.50.17
   mscAnnc                     7.50.17.16  [patched]
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```
    mscAttn                     7.50.17
    mscConf                     7.50.17
    mscMusc                     7.50.17.16  [patched]
    mscTone                     7.50.17.16  [patched]
```

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.