



## **Avaya Solution & Interoperability Test Lab**

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# **Application Notes for Configuring Avaya Communication Server 1000E R7.6 with Avaya Aura<sup>®</sup> Session Manager R6.3 to support BT Global Services NOAS SIP Trunk - Issue 1.0**

### **Abstract**

These Application Notes describe the steps to configure Session Initiation Protocol (SIP) trunking between the BT Global Services NOAS SIP Trunk service and an Avaya SIP enabled enterprise solution. The Avaya solution consists of Avaya Aura<sup>®</sup> Session Manager and Avaya Communication Server 1000E. BT 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 required to configure Session Initiation Protocol (SIP) trunking between BT NOAS SIP Trunk Service and an Avaya SIP enabled enterprise solution. The Avaya solution consists of Avaya Aura<sup>®</sup> Session Manager and Avaya Communication Server 1000E connected by TCP to the BT SIP Trunk Service. Customers using this Avaya SIP-enabled enterprise solution with the BT SIP Trunk Service are able to place and receive PSTN calls via a dedicated Internet connection and the SIP protocol. This converged network solution is an alternative to traditional PSTN trunks. This approach normally results in lower cost for the enterprise.

## 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 Avaya Aura<sup>®</sup> Session Manager and Avaya Communication Server 1000E. The enterprise site was configured to use the SIP Trunk Service provided by BT, with all incoming and outgoing PSTN calls via the BT SIP Trunk Service.

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

### 2.1. Interoperability Compliance Testing

The interoperability test included the following:

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

## 2.2. Test Results

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

- During testing it was observed that when BT NOAS initiates a call-hold, BT NOAS send a reINVITE with the attribute “SendOnly” in the SDP. The CS1000E correctly responds with 200OK with the attribute “RecvOnly” in the SDP and RTP is only sent in one direction, in this case from BT NOAS to the Avaya 11xx/12xx series SIP Phoneset. However, once call-hold is initiated, RTCP is just sent in one direction from BT NOAS to the 11xx/12xx series SIP Phoneset. Avaya 11xx/12xx series SIP phonesets do not send RTCP packets when BT NOAS initiated call-hold using the Media attribute “SendOnly” in the SDP. BT NOAS expect to receive RTCP from the 11xx/12xx series SIP Phonesets and have 25 second RTCP timers configured on their SIP MGW. As BT NOAS don’t receive any RTCP from the 11xx/12xx SIP Phoneset, after 25 seconds, BT NOAS issue a BYE and the call is torn down. There is currently no fix planned for this issue.
- Avaya 11xx and 12xx Series phonesets running SIP firmware are not supported.
- As BT does not support SIP UPDATE, the CS1000E default configuration will not allow a blind transfer to be executed if the parties involved do not support the SIP UPDATE method. With the installation of plugin 501 on the CS1000E, the blind transfer will be allowed and the call will be completed. The limitation of this plugin is that no ringback is provided to the originator of the call for the duration that the destination set is ringing. In addition to plugin 501, it is required that **VTRK SU version “cs1000-vtrk-7.65.17.16-15.i386.000.ntl”** or higher be used on all SSG signaling servers to ensure proper operation of the blind transfer feature. The use of plugin 501 does not restrict the use of the SIP UPDATE method of blind transfer to other parties that do happen to support the UPATE method, but rather extend support to those parties that do not
- Inbound call hold and resume from PSTN was not tested as the PSTN was unable to initiate the call-hold due to their environment set-up.
- PSTN called party hangup during an active call did not cause the call to drop. The Communication Server 1000E caller must hangup first, or wait for the PSTN T2ISUP timer to expire.
- Calls to/from SMC 3456 soft clients using unsupported codecs failed, most likely because the call server was unable to determine the set capabilities, and the SMC 3456 not correctly handling the calls.
- No inbound toll free numbers were tested as none were available from the Service Provider
- No Emergency Services numbers tested as test calls to these numbers should be pre-arranged with the Operator
- All unwanted MIME was stripped on outbound calls using the Adaptation Module in Session Manager

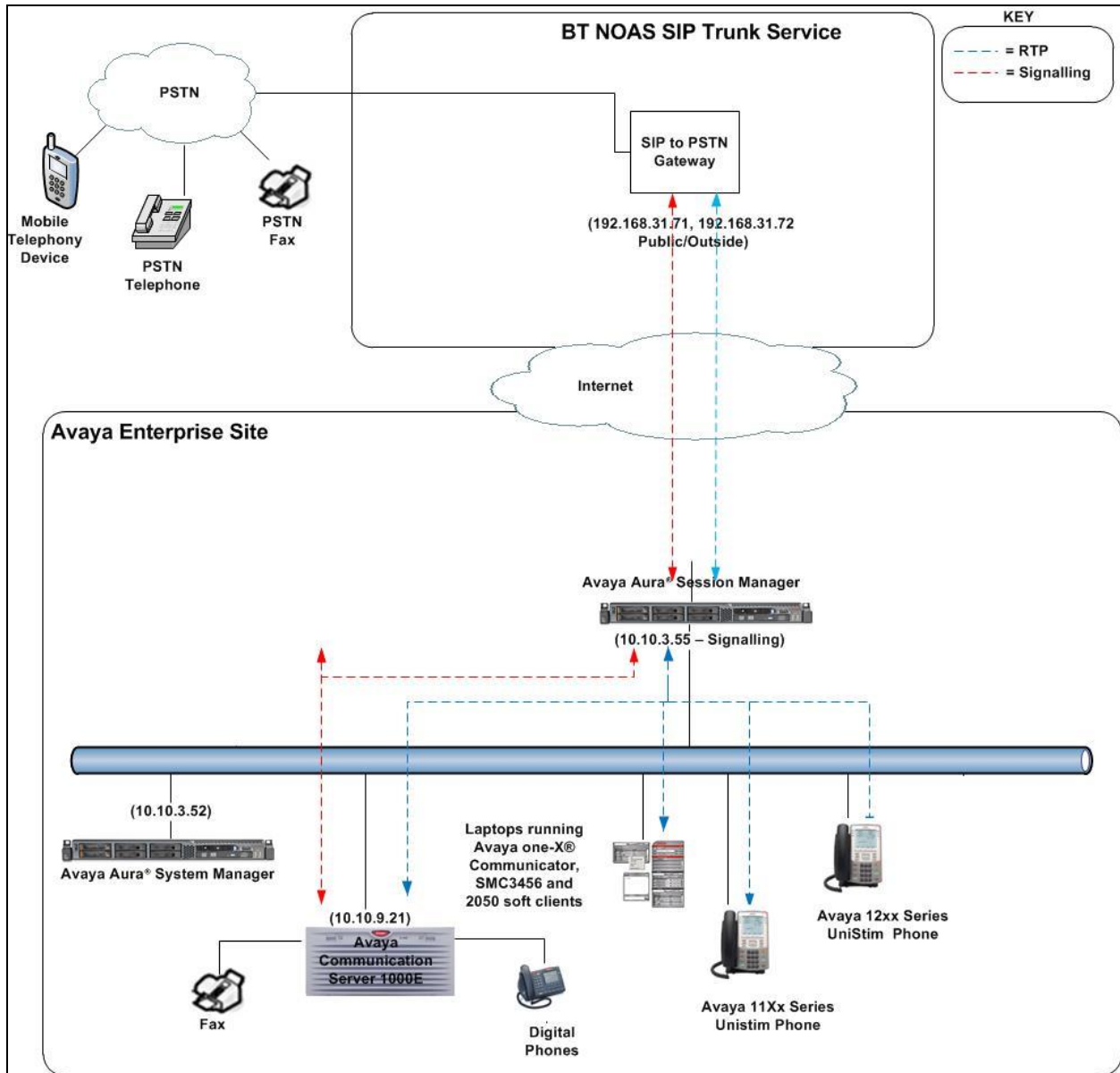
## 2.3. Support

For technical support on BT products please use the following web link.

<http://btbusiness.custhelp.com/app/contact>

### 3. Reference Configuration

**Figure 1** illustrates the tested configuration. The test configuration shows an Avaya enterprise site connected to the BT SIP Trunk Service. Located at the enterprise site are a Session Manager and Communication Server 1000E. Endpoints are Avaya UNISTim 11xx and 12xx series IP telephones, Avaya IP Softphones (SMC3456, 2050 and Avaya one-X® Communicator), Avaya Digital 3904 series telephone, Analog telephone and fax machine. For security purposes, any public IP addresses or PSTN routable phone numbers used in the compliance test are not shown in these Application Notes.



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

## 4. Equipment and Software Validated

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

<b>Equipment</b>	<b>Software</b>
Avaya S8800 Server running Session Manager	Avaya Aura® Session Manager R6.3 Version – 6.3.3.0.633004
Avaya S8800 Server running System Manager	Avaya Aura® System Manager R6.3.3.3 Build No. – 6.3.0.8.5682 – 6.3.8.1814
Avaya Communication Server 1000E running on CP+PM server as co-resident configuration	Avaya Communication Server 1000E R7.6 Version 7.65.P Deplist: CPL_X21_07_65P All CS1000E patches listed in <b>Appendix A</b>
Avaya Communication Server 1000E Media Gateway	CSP Version: MGCC DC01 MSP Version: MGCM AB02 APP Version: MGCA BA18 FPGA Version: MGCF AA22 BOOT Version: MGCB BA18 DSP1 Version: DSP2 AB07
Avaya 11xx Series and 12xx Series Unistim Telephones	FW: 0625C8A
Avaya SMC 3456	Version 2.6 build 53715
Avaya 2050PC	Release 4.3.0081
Avaya Analogue Telephone	N/A
Avaya M3904 Digital Telephone	N/A
<b>BT Equipment</b>	<b>Software</b>
Acme Packet Net-Net 4250 Session border Controller	SC6.1.0 MR-11 patch 1 (build 1036)

## 5. Configure Avaya Communication Server 1000E

This section describes the steps required to configure the Avaya Communication Server 1000E for SIP Trunking service and also the necessary configuration for terminals (digital, analog and IP phones). SIP trunks are established between Communication Server 1000E and Session Manager. These SIP trunks carry SIP Signaling associated with BT SIP Trunk Service. For incoming calls, Session Manager receives SIP messages from the BT Global Services NOAS SIP Trunk router, through which the BT Global Services NOAS SIP Trunk service 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 Session Manager. Session Manager directs the outbound SIP messages to the Avaya Enterprise router and on to the BT network. Specific Communication Server 1000E configuration was performed using Element Manager and the system terminal interface.

Specific CS1000E configuration was performed using Element Manager and the system terminal interface. The general installation of the CS1000E, System Manager and Session Manager is presumed to have been previously completed and is not discussed here. Configuration details will be provided as required to draw attention to changes in default system configurations.

### 5.1. Logging into the Avaya Communication Server 1000E

Configuration on the CS1000E will be performed by using both an SSH Putty session and the Avaya Unified Communications Management GUI.

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

Log in using the web based Avaya Unified Communications Management GUI. The Avaya Unified Communications Management GUI may be launched directly via <http://<ipaddress>> where the relevant <ipaddress> is the TLAN IP address of the CS1000E.

The following screen shows the login screen. Login with the appropriate credentials.

Use this page to access the server by IP address. You will need to log in again when switching to another server, even if it is in the same security domain.

Important: Only accounts which have been previously created in the primary security server are allowed. Expired or reset passwords that normally must be changed during login will fail authentication in this mode (use the link to manual password change instead). Local OS-authenticated User IDs cannot be used.

User ID:

Password:

[Change Password](#)

[Go to central login for Single Sign-On](#)

The Avaya Unified Communications Management **Elements** page will be used for configuration. Click on the Element Name corresponding to CS1000E in the Element Type column. In the abridged screen below, the user would click on the Element Name **EM on cs1kv19**.

Host Name: 10.10.9.57    User Name: admin

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### Elements

New elements are registered into the security framework, or may be added as simple hyperlinks. Click an element name to launch its management service. You can optionally filter the list by entering a search term.

<input type="checkbox"/>	Element Name	Element Type ▲	Release	Address	Description ▲
1	<a href="#">smgrv9.avaya.com (primary)</a>	Base OS	7.6	10.10.9.57	Base OS element.
2	<a href="#">EM on cs1kv19</a>	CS1000	7.6	192.168.27.2	New element.
3	<a href="#">cs1kv19.avaya.com (member)</a>	Linux Base	7.6	86.47.122.35	Base OS element.
4	<a href="#">192.168.27.3</a>	Media Gateway Controller	7.6	192.168.27.3	New element.
5	<a href="#">NRSRM on cs1kv19</a>	Network Routing Service	7.6	192.168.27.2	New element.

## 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 CS1000E system terminal and manually load **overlay 22** to print the System Limits (the required command is **SLT**), and verify that the number of SIP Access Ports reported by the system is sufficient for the combination of trunks to the BT network, and any other SIP trunks needed. See the following screenshot for a typical System Limits printout. The value of **SIP ACCESS PORTS** defines the maximum number of SIP trunks for the CS1000E.

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

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

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

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

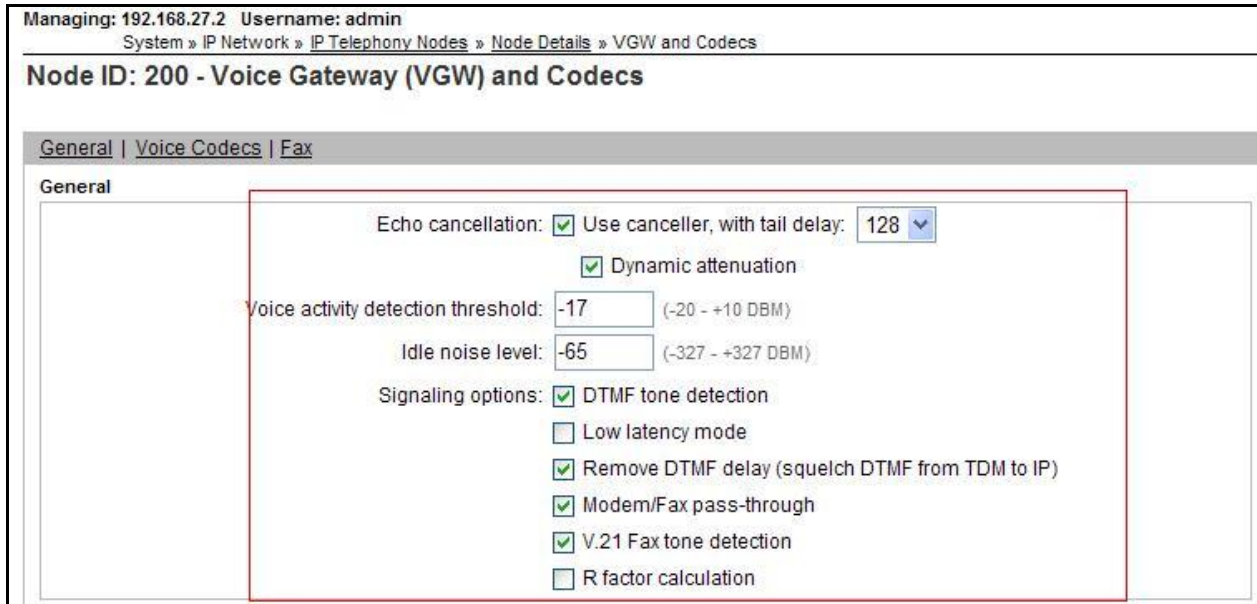
```
REQ: prt
TYPE: net
TYPE NET_DATA
CUST 0

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

The BT Global Services NOAS SIP Trunk service supports G.711A and G.729A voice codecs and T.38 FAX transmissions. Using the CS1000E element manager sidebar, select **Nodes, Servers, Media Cards**. Navigate to the **IP Network → IP Telephony Nodes → Node Details → VGW and Codecs** property page and configure the CS1000E General codec settings as in the following screenshots. The values highlighted are required for correct operation. The following screenshot shows the necessary **General** settings.



Managing: 192.168.27.2 Username: admin  
System » IP Network » IP Telephony Nodes » Node Details » VGW and Codecs

#### Node ID: 200 - Voice Gateway (VGW) and Codecs

General | Voice Codecs | Fax

General

Echo cancellation:  Use canceller, with tail delay: 128

Dynamic attenuation

Voice activity detection threshold: -17 (-20 - +10 DBM)

Idle noise level: -65 (-327 - +327 DBM)

Signaling options:  DTMF tone detection

Low latency mode

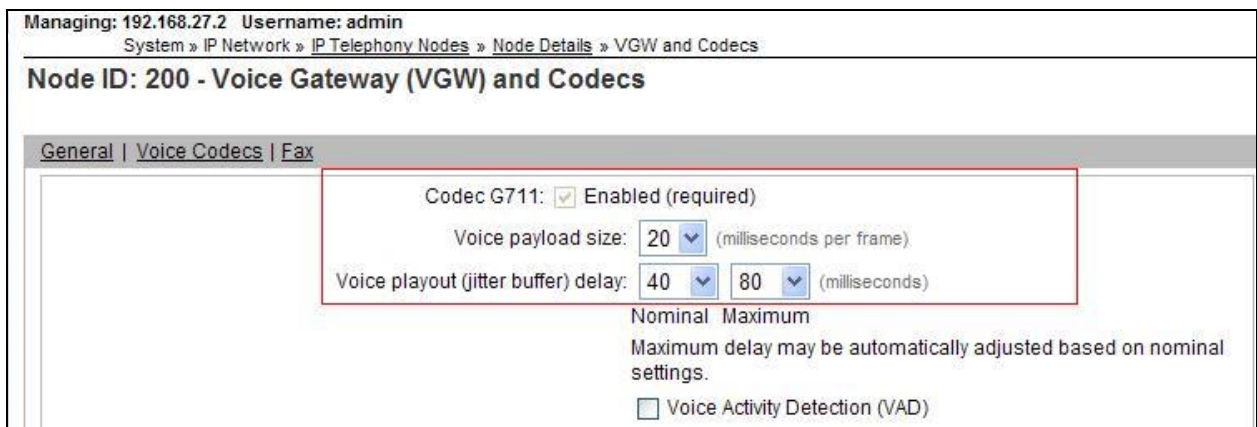
Remove DTMF delay (squelch DTMF from TDM to IP)

Modem/Fax pass-through

V.21 Fax tone detection

R factor calculation

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



Managing: 192.168.27.2 Username: admin  
System » IP Network » IP Telephony Nodes » Node Details » VGW and Codecs

#### Node ID: 200 - Voice Gateway (VGW) and Codecs

General | Voice Codecs | Fax

Codec G711:  Enabled (required)

Voice payload size: 20 (milliseconds per frame)

Voice playout (jitter buffer) delay: 40 80 (milliseconds)

Nominal Maximum

Maximum delay may be automatically adjusted based on nominal settings.

Voice Activity Detection (VAD)

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

Managing: 192.168.27.2 Username: admin  
System » IP Network » IP Telephony Nodes » Node Details » VGW and Codecs

### Node ID: 200 - Voice Gateway (VGW) and Codecs

General | **Voice Codecs** | Fax

Codec G729:  Enabled

Voice payload size: 20 (milliseconds per frame)

Voice playout (jitter buffer) delay: 40 80 (milliseconds)

Nominal Maximum

Maximum delay may be automatically adjusted based on nominal settings.

Voice Activity Detection (VAD)

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

Fax

Codec name: T.38 FAX

Maximum rate: 14400 (bps)

Fax TCF method: 2

Fax playout nominal delay: 100 (0 - 300 milliseconds)

FAX no activity timeout: 20 (10 - 32000 milliseconds)

Packet size: 30 (bps)

## 5.4. Virtual Trunk Gateway Configuration

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

Managing: 192.168.27.2 Username: admin  
System » IP Network » IP Telephony Nodes » Node Details

### Node Details (ID: 200 - SIP Line, LTPS, PD, Gateway ( SIPGw ))

Node ID:	<input type="text" value="200"/> *	(0-9999)	
Call server IP address:	<input type="text" value="192.168.27.2"/> *		TLAN address type: <input checked="" type="radio"/> IPv4 only <input type="radio"/> IPv4 and IPv6
<b>Embedded LAN (ELAN)</b>		<b>Telephony LAN (TLAN)</b>	
Gateway IP address:	<input type="text" value="192.168.27.1"/> *	Node IPv4 address:	<input type="text" value="10.10.9.21"/> *
Subnet mask:	<input type="text" value="255.255.255.0"/> *	Subnet mask:	<input type="text" value="255.255.255.0"/> *
		Node IPv6 address:	<input type="text"/>

\* Required Value. Save Cancel

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

- **Vtrk gateway application:** Provides option to select Gateway applications. The three supported modes are **SIP Gateway (SIPGw)**, **H.323Gw**, and **SIPGw and H.323Gw**
- **SIP domain name:** The SIP Domain Name is the SIP Service Domain. The SIP Domain Name configured in the Signaling Server properties must match the SIP Domain configured in Session Manager, in this case **avaya.com**
- **Local SIP port:** The Local SIP Port is the port on 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 Session Manager is used so any value can be put in here as it 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 **200**
- **Proxy or Redirect Server:** Primary TLAN IP address is the Security Module IP address of Session Manager. The **Transport protocol** used for **SIP**, in this case is **TCP**
- **SIP URI Map: Public E.164 - National and Private - Unknown** are left blank. All other fields in the SIP URI Map are left with default values

Managing: 192.168.27.2 Username: admin  
System » IP Network » IP Telephony Nodes » Node Details » Virtual Trunk Gateway Configuration

### Node ID: 200 - Virtual Trunk Gateway Configuration Details

General | SIP Gateway Settings | SIP Gateway Services

Vtrk gateway application:  Enable gateway service on this node

**General**

Vtrk gateway application: SIP Gateway (SIPGw) ▼

SIP domain name: avaya.com \*

Local SIP port: 5060 \* (1 - 65535)

Gateway endpoint name: cs1kv9 \*

Gateway password: \*

Application node ID: 200 \* (0-9999)

Enable failsafe NRS:

Note: FailSafe NRS cannot be enabled, if all servers in the node have NRS application deployed.

**Virtual Trunk Network Health Monitor**

Monitor IP addresses (listed below)  
Information will be captured for the IP addresses listed below.

Monitor IP:  Add

Monitor addresses:  
 Remove

**Proxy Or Redirect Server:**  
**Proxy Server Route 1:**

Primary TLAN IP address:   
The IP address can have either IPv4 or IPv6 format based on the value of "TLAN address type"

Port:  (1 - 65535)

Transport protocol:  ▼

Options:  Support registration  
 Primary CDS proxy

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**SIP URI Map:**

Public E.164 domain names		Private domain names	
National:	<input type="text"/>	UDP:	<input type="text" value="udp"/>
Subscriber:	<input type="text" value="subscriber"/>	CDP:	<input type="text" value="cdp.udp"/>
Special number:	<input type="text" value="PublicSpecial"/>	Special number:	<input type="text" value="PrivateSpecial"/>
Unknown:	<input type="text" value="PublicUnknown"/>	Vacant number:	<input type="text" value="PrivateUnknown"/>
		Unknown:	<input type="text"/>

## 5.5. Configure Bandwidth Zones

Bandwidth Zones are used for alternate call routing between IP stations and for Bandwidth Management. SIP trunks require a unique zone, not shared with other resources and best practice dictates that IP telephones and Media Gateways are all placed in separate zones. In the sample configuration, SIP trunks use zone 01, IP Telephones use zone 02, and system defaults were used for each zone other than the parameter configured for **Zone Intent**. For SIP Trunks (zone 01), **VTRK** is configured for **Zone Intent**. For IP Telephones (zone 02), **MO** is configured for **Main Office**.

Use Element Manager to define bandwidth zones as in the following highlighted example. Navigate to **System → IP Network → Zones → Bandwidth Zones** and add new zones as required.

Managing: 192.168.27.2 Username: admin  
System » IP Network » Zones » Bandwidth Zones

### Bandwidth Zones

Zone ▲	Intrazone Bandwidth	Intrazone Strategy	Interzone Bandwidth	Interzone Strategy	Resource Type	Zone Intent	Description
1 <input type="radio"/>	1000000	BQ	1000000	BQ	SHARED	VTRK	
2 <input type="radio"/>	1000000	BQ	1000000	BQ	SHARED	MO	

## 5.6. Configure Incoming Digit Conversion Table

A limited number of Direct Dial Inwards (DDI) numbers were available. The IDC table was configured to translate incoming PSTN numbers to four digit local telephone extension numbers. The digits of the actual PSTN DDI number are obscured for security reasons. The following screenshot shows the incoming PSTN numbers converted to local extension numbers. These were altered during testing to map to various Analog, Digital or Unistim telephones depending on the particular test case being executed.

Managing: 192.168.27.2 Username: admin  
Dialing and Numbering Plans » Incoming Digit Translation » Customer 00 » Digit Conversion Tree 0 Configuration

### Digit Conversion Tree 0 Configuration

Regular IDC tree  
Send calling party DID disabled

Incoming Digits ▲	Converted Digits	CPND Name
1 <input type="radio"/> 0551150	6000	
2 <input type="radio"/> 0551150	6003	
3 <input type="radio"/> 0551150	6001	

## 5.7. Configure SIP Trunks

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

- Configure a D-Channel Handler (**DCH**); configure using the CS1000E system terminal and **overlay 17**
- Configure a SIP trunk Route Data Block (**RDB**); configure using the CS1000E system terminal and **overlay 16**
- Configure SIP trunk members; configure using the CS1000E system terminal and **overlay 14**
- Configure a Digit Manipulation Data Block (**DGT**), configure using the CS1000E system terminal and **overlay 86**
- Configure a Route List Block (**RLB**); configure using the CS1000E system terminal and **overlay 86**
- Configure Co-ordinated Dialling Plan(s) (**CDP**); configure using the CS1000E system terminal and **overlay 87**

The following is an example DCH configuration for SIP trunks. Load **Overlay 17** at the CS1000E 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 1
  CTYP DCIP
  DES  VIR TRK
  USR  ISLD
  ISLM 4000
  SSRC 3700
  OTBF 32
  NASA YES
  IFC  SL1
  CNEG 1
  RLS  ID 4
  RCAP ND2
  MBGA NO
  H323
  OVLR NO
  OVLS NO
```

Next, configure the SIP trunk Route Data Block (RDB) using the CS1000E 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 **VTRK**. The remaining highlighted values are important for correct SIP trunk operation.

<pre> <b>Overlay 16</b> TYPE: <b>RDB</b> CUST 00 ROUT 1 TYPE RDB CUST 00 <b>ROUT 1</b> DES VIR_TRK <b>TKTP TIE</b> NPID_TBL_NUM 0 ESN NO RPA NO CNVT NO SAT NO RCLS EXT <b>VTRK YES</b> <b>ZONE 00001</b> <b>PCID SIP</b> CRID NO <b>NODE 200</b> DTRK NO <b>ISDN YES</b>   <b>MODE ISLD</b>   <b>DCH 1</b>   <b>IFC SL1</b>   PNI 00000   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 <b>ICOG IAO</b> SRCH LIN TRMB YES STEP </pre>	<pre> <b>ACOD 1111</b> TCPP NO PII NO AUXP NO TARG CLEN 1 BILN NO OABS INST <b>IDC YES</b> 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 </pre>	<pre> 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 </pre>
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Next, configure virtual trunk members using the CS1000E 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 100 0 0 0
DATE
PAGE
DES VIR TRK
TN 100 0 00 00 VIRTUAL
TYPE IPTI
CDEN 8D
CUST 0
XTRK VTRK
ZONE 00001
TIMP 600
BIMP 600
AUTO_BIMP NO
NMUS NO
TRK ANLG
NCOS 0
RTMB 1 1
CHID 1
TGAR 1
STRI/STRO IMM IMM
SUPN YES
AST NO
IAPG 0
CLS UNR DIP CND ECD WTA LPR APN THFD XREP SPCD MSBT
P10 NTC
TKID
AACR NO
```

Next, configure a Digit Manipulation data block (DGT) in overlay 86. Load **Overlay 86** at the system terminal and type **new**. The following example shows the values used. The value for **DMI** is the same as when inputting the **DMI** value during configuration of the Route List Block.

```

Overlay 86
CUST 0
FEAT dgt
DMI 10
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.

```

Overlay 86
CUST 0
FEAT rlb
RLI 10
ELC NO
ENTR 0
LTER NO
ROUT 1
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 10
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
OVL 0
  
```

Next, configure Co-ordinated Dialling Plan(s) (CDP) which users will dial to reach PSTN numbers. Use the CS1000E system terminal and **Overlay 87**. The following are some example CDP 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 00353	TSC 18	TSC 800	TSC 08
FLEN 0	FLEN 0	FLEN 0	FLEN 0
RRPA NO	RRPA NO	RRPA NO	RRPA NO
<b>RLI 10</b>	<b>RLI 10</b>	<b>RLI 10</b>	<b>RLI 10</b>
CCBA NO	CCBA NO	CCBA NO	CCBA NO

## 5.8. Configure Analog, Digital and IP Telephones

A variety of telephone types were used during the testing. The following is the configuration for the Avaya 11xx and 12xx series Unistim IP telephones. Load **Overlay 20** at the system terminal and enter the following values. A unique four digit number is entered for the **KEY 00**. The value for **CFG\_ZONE** is the value used in **Section 5.5** for IP telephones.

```
Load Overlay 20 IP Telephone configuration
DES 1140
TN 100 0 03 0 VIRTUAL
TYPE 1140
CDEEN 8D
CTYP XDLC
CUST 0
NUID
NHTN
CFG_ZONE 00002
CUR_ZONE 00002
ERL 0
ECL 0
FDN 0
TGAR 0
LDN NO
NCOS 0
SGRP 0
RNPG 1
SCI 0
SSU
LNRS 16
XLST
SCPW
SFLT NO
CAC_MFC 0
CLS UNR FBA WTA LPR PUA MTD FNA HTA TDD HFA CRPD
MWA LMPN RMMD SMWD AAD IMD XHD IRD NID OLD VCE DRG1
POD SLKD CCSD SWD LNA CNDA
CFTD SFD MRD DDV CNID CDCA MSID DAPA BFED RCB
ICDA CDMD LLCN MCTD CLB
D 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 EXRO
USMD USRD ULAD CCBD RTDD RBDD RBHD PGND OCB
D 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---
```

---continued from previous page---

```
DVLD CROD CROD
CPND_LANG ENG
RCO 0
HUNT 0
LHK 0
PLEV 02
PUID
DANI NO
AST 00
IAPG 1
AACS NO
ITNA NO
DGRP
MLWU_LANG 0
MLNG ENG
DNDR 0
KEY 00 MCR 6000 0      MARP
      CPND
        CPND_LANG ROMAN
          NAME IP1140
          XPLN 10
          DISPLAY_FMT FIRST, LAST
01 MCR 6000 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 overlay 20; the following is a sample 3904 digital set configuration. Again, a unique number is entered for the **KEY 00** and **KEY 01** values.

```
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 RCBF
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 HBTB AHA IPND DDGA NAMA MIND PRSD NRWD NRCD NROD
DRDD EXR0
USMD USRD ULAD CCBF RTDD RBDD RBHD PGND OCBF FLXD FTTC DNDY DNO3 MCBN
FDSB 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---
```

---continued from previous page---

MLNG ENG

DNDR 0

**KEY 00** MCR 6066 0        MARP

CPND

CPND\_LANG ROMAN

NAME Digital Set

XPLN 10

DISPLAY\_FMT FIRST, LAST

**01** MCR 6066 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

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

```

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

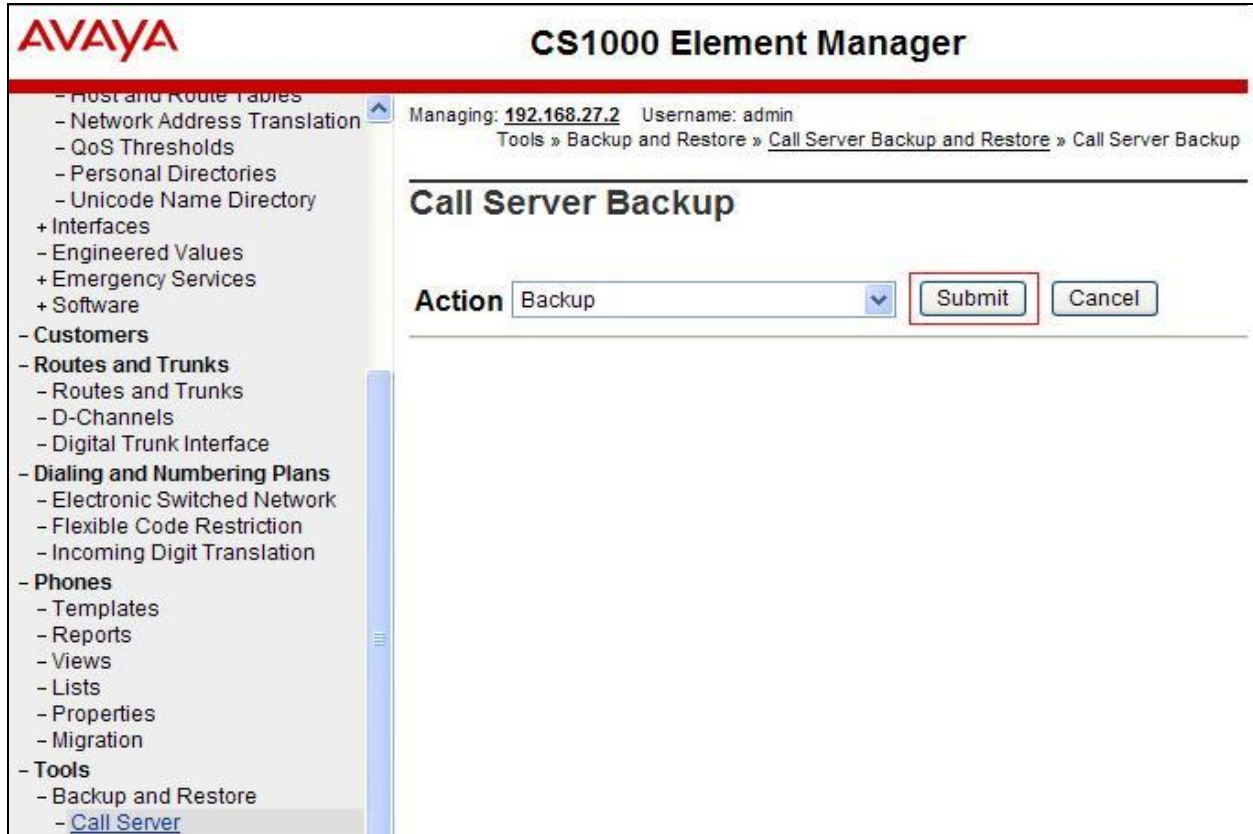
ERL 00000
WRLS NO
DN 52002
AST NO
IAPG 0
HUNT
TGAR 0
LDN NO
NCOS 0
SGRP 0
RNPG 0
XLST
SCI 0
SCPW
SFLT NO
CAC_MFC 0
CLS UNR DTN FBD XFD WTA THFD FND HTD ONS
LPR XRD AGRD CWD SWD MWD RMMD SMWD LPD XHD SLKD CCSD LND TVD
CFTD SFD MRD C6D CNID CLBD AUTU
ICDD CDMD LLCN EHTD MCTD
GPUD DPUD CFXD ARHD OVDD AGTD CLTD LDTD ASCD SDND
MBXD CPFA CPTA UDI RCC HBTD IRGD DDGA NAMA MIND
NRWD NRCN NROD SPKD CRD PRSD MCRD
EXR0 SHL SMSD ABDD CFHD DNDY DNO3
CWND USMD USRD CCBM 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

```

## 5.9. Save Configuration

Expand **Tools** → **Backup and Restore** on the left navigation panel and select **Call Server**. Select **Backup** from the drop-down menu and click **Submit** to save configuration changes as shown below.



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



Configuration of Communication Server 1000E is complete.



## 6. Configuring Avaya Aura® Session Manager

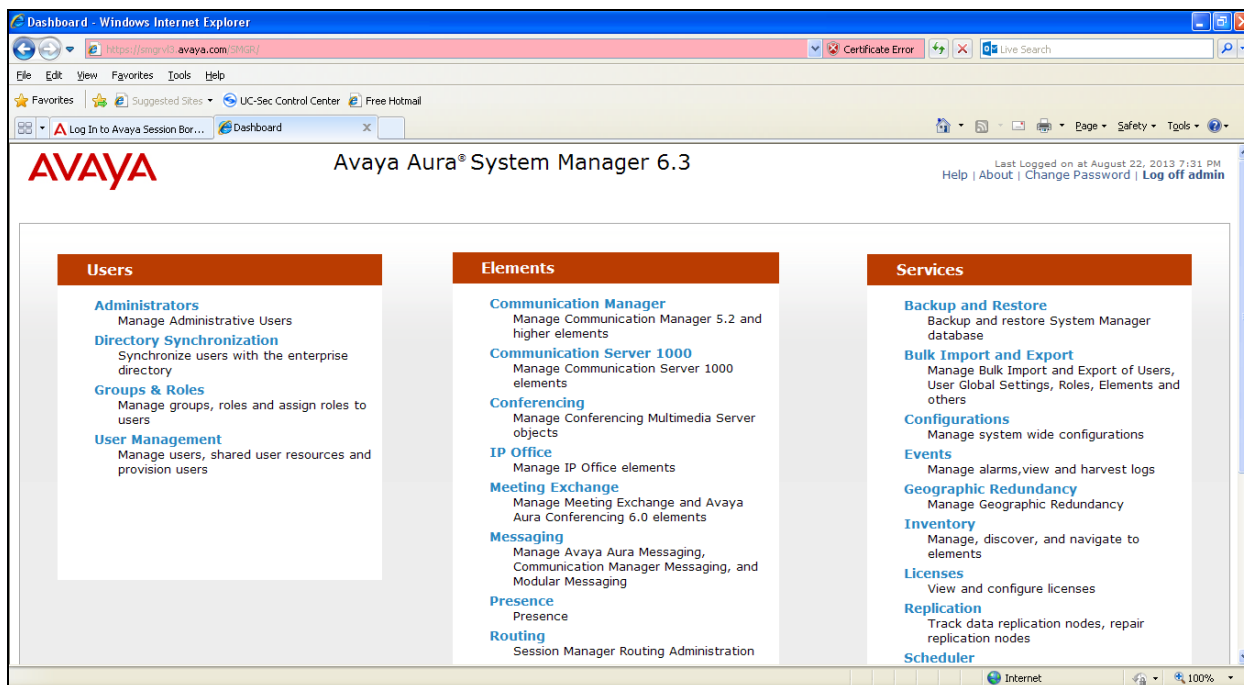
This section provides the procedures for configuring Session Manager. Session Manager is configured via System Manager. The procedures include the following areas:

- Log in to Avaya Aura® System Manager.
- Administer SIP domain.
- Administer SIP Location.
- Administer Adaptations.
- Administer SIP Entities.
- Administer Entity Links.
- Administer Routing Policies.
- Administer Dial Patterns.

It may not be necessary to create all the items above when creating a connection to the service provider since some of these items would have already been defined as part of the initial Session Manager installation. This includes items such as certain SIP domains, locations, SIP entities, and Session Manager itself. However, each item should be reviewed to verify the configuration.

### 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.



Most of the configuration items are performed in the Routing Element. Click on **Routing** in the Elements column shown above to bring up the **Introduction to Network Routing Policy** screen.

**AVAYA** Avaya Aura® System Manager 6.2 Help | About | Change Password | Log o

Routing ✕

Home / Elements / Routing

### Introduction to Network Routing Policy

Network Routing Policy consists of several routing applications like "Domains", "Locations", "SIP Entities", etc.

The recommended order to use the routing applications (that means the overall routing workflow) to configure your network configuration is as follows

- Step 1: Create "Domains" of type SIP (other routing applications are referring domains of type SIP).
- Step 2: Create "Locations"
- Step 3: Create "Adaptations"
- Step 4: Create "SIP Entities"
  - SIP Entities that are used as "Outbound Proxies" e.g. a certain "Gateway" or "SIP Trunk"
  - Create all "other SIP Entities" (Session Manager, CM, SIP/PSTN Gateways, SIP Trunks)
  - Assign the appropriate "Locations", "Adaptations" and "Outbound Proxies"
- Step 5: Create the "Entity Links"
  - Between Session Managers
  - Between Session Managers and "other SIP Entities"
- Step 6: Create "Time Ranges"

## 6.2. Administer SIP Domain

Create a SIP domain for each domain for which Session Manager will need to be aware in order to route calls. Expand **Elements** → **Routing** and select **Domains** from the left navigation menu and click **New** (not shown). Enter the following values and use default values for remaining fields.

- **Name** Enter a Domain Name. 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.

Home / Elements / Routing / Domains Help ?

Domain Management

Edit New Duplicate Delete More Actions ▾

1 Item | Refresh Filter: Enable

<input type="checkbox"/>	Name	Type	Default	Notes
<input type="checkbox"/>	avaya.com	sip	<input type="checkbox"/>	

Select : All, None

### 6.3. Administer Locations

Locations are used to identify logical and/or physical locations where SIP Entities reside, for the Locations can be used to identify logical and/or physical locations where SIP Entities reside for purposes of bandwidth management and call admission control. To add a location, navigate to **Routing → Locations** in the left-hand navigation pane and click the **New** button in the right pane (not shown). In the **General** section, enter the following values. Use default values for all remaining fields:

- **Name:** Enter a descriptive name for the location.
- **Notes:** Add a brief description (optional).

The Location Pattern is used to identify call routing based on IP address. Session Manager matches the IP address against the patterns defined in this section. If a call is from a SIP Entity that does not match the IP address pattern, then Session Manager uses the location administered for the SIP Entity.

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

- **IP Address Pattern** Enter the logical pattern used to identify the location.
- **Notes** Add a brief description [Optional].

Click **Commit** to save. The screenshot below shows the Location **SMGRVL3** defined for the compliance testing.

Home / Elements / Routing / Locations - Location Details

Location Details Help ? Commit Cancel

**General**

\* Name:

Notes:

**Overall Managed Bandwidth**

Managed Bandwidth Units:

Total Bandwidth:

Multimedia Bandwidth:

Audio Calls Can Take Multimedia Bandwidth:

**Per-Call Bandwidth Parameters**

Maximum Multimedia Bandwidth (Intra-Location):  Kbit/Sec

Maximum Multimedia Bandwidth (Inter-Location):  Kbit/Sec

Minimum Multimedia Bandwidth:  Kbit/Sec

\* Default Audio Bandwidth:  Kbit/sec

**Location Pattern**

Add Remove

3 Items Refresh Filter: Enable

<input type="checkbox"/>	IP Address Pattern	Notes
<input type="checkbox"/>	*10.10.3.*	<input type="text"/>
<input type="checkbox"/>	*10.10.9.*	<input type="text"/>
<input type="checkbox"/>	*10.10.8.*	<input type="text"/>

Select : All, None

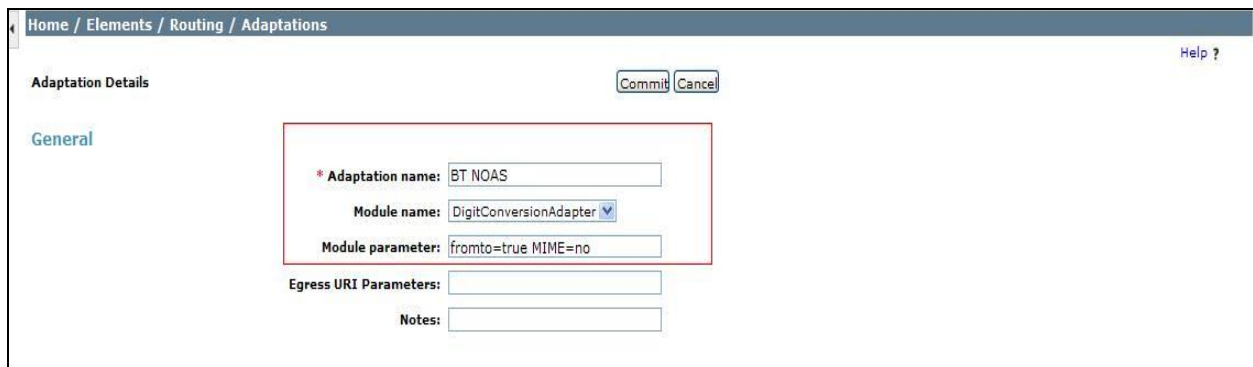
\* Input Required Commit Cancel

## 6.4. Administer Adaptations

Adaptations can be used to modify the called and calling party numbers to meet the requirements of the service. The called party number present in the SIP INVITE Request URI is modified by the **Digit Conversion** in the Adaptation. The example below was applied to the BT NOAS SBC SIP Entities and was used in test to convert numbers being passed between BT NOAS SBC's and Session Manager.

To add an adaptation, under the **Routing** tab select **Adaptations** on the left hand menu and then click on the **New** button (not shown). Under **Adaption Details** → **General**:

- In the **Adaptation name** field enter an informative name.
- In the **Module name** field click on the down arrow and then select the **<click to add module>** entry from the drop down list and type **DigitConversionAdapter** in the resulting **New Module Name** field.
- **Module parameter** **MIME =no** Strips MIME message bodies on egress from Session Manager  
**fromto=true** → Modifies SIP From and To headers of a message



Home / Elements / Routing / Adaptations

Adaptation Details Commit Cancel Help ?

General

\* Adaptation name:

Module name:

Module parameter:

Egress URI Parameters:

Notes:

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

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

Digit Conversion for Incoming Calls to SM

Add Remove

1 Item Filter: Enable

<input type="checkbox"/>	Matching Pattern	Min	Max	Phone Context	Delete Digits	Insert Digits	Address to modify	Adaptation Data	Notes
<input type="checkbox"/>	*+44	*3	*36		*3		both		

Select : All, None

This will ensure any incoming numbers will have the + symbol and international dialing code removed before being presented to the Communication Server 1000E.

In the **Digit Conversion for Outgoing Calls to SM** section, click **Add** and enter the following values.

- **Matching Pattern** Enter dialed prefix for calls to SIP endpoints registered to Session Manager
- **Min** Enter minimum number of digits that must be dialed
- **Max** Enter maximum number of digits that may be dialed
- **Delete Digits** Enter number of digits that may be deleted
- **Insert Digits** Enter number of digits to be added before the dialed number
- **Address to Modify** Select **both**

Digit Conversion for Outgoing Calls from SM

Add Remove

1 Item Refresh Filter: Enable

<input type="checkbox"/>	Matching Pattern	Min	Max	Phone Context	Delete Digits	Insert Digits	Address to modify	Adaptation Data	Notes
<input type="checkbox"/>	*6	*1	*4		*4	055115XXX	both		

Select : All, None

Commit Cancel

This will ensure any destination numbers beginning with **6** with have a specified CLID presented on outbound calls.

## 6.5. Administer SIP Entities

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

Under **General**:

- In the **Name** field, enter an informative name
- In the **FQDN or IP Address** field, enter the IP address of Session Manager or the signalling interface on the connecting system
- In the **Type** field, use **Session Manager** for a Session Manager SIP entity, **Other** for a Communication Server 1000E SIP entity, and **SIP Trunk** for the Session Border Controller SIP entity
- In the **Adaptation** field (not available for the Session Manager SIP Entity), select the appropriate Adaptation from the drop down menu
- In the **Location** field, select the appropriate location from the drop down menu
- In the **Time Zone** field, enter the time zone for the SIP Entity

In this configuration there are three SIP Entities:

- Avaya Aura® Session Manager SIP Entity
- Avaya Communication Server 1000E SIP Entity
- BT NOAS SBC SIP Entities

### 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 screenshot displays the configuration page for a SIP Entity. The breadcrumb trail at the top reads "Home / Elements / Routing / SIP Entities". The page title is "SIP Entity Details". In the top right corner, there are "Commit" and "Cancel" buttons, and a "Help ?" link. The "General" tab is selected. The form contains the following fields:

- Name:** Session Manager
- FQDN or IP Address:** 10.10.3.55
- Type:** Session Manager (dropdown menu)
- Notes:** (empty text field)
- Location:** SMGRVL3 (dropdown menu)
- Outbound Proxy:** (empty dropdown menu)
- Time Zone:** Europe/Dublin (dropdown menu)
- Credential name:** (empty text field)
- SIP Link Monitoring:** Use Session Manager Configuration (dropdown menu)

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

**Port**

TCP Failover port:

TLS Failover port:

---

3 Items Refresh Filter: Enable

<input type="checkbox"/>	Port	Protocol	Default Domain	Notes
<input type="checkbox"/>	5060	TCP	avaya.com	
<input type="checkbox"/>	5060	UDP	avaya.com	
<input type="checkbox"/>	5061	TLS	avaya.com	

Select : All, None

### 6.5.2. Avaya Communication Server 1000E SIP Entity

The following screen shows the SIP entity for Communication Server 1000E. The **FQDN or IP Address** field is set to the Node IP address of the interface on CS1000E that will be providing SIP signalling as shown in **Section 5.4**. The entity **Type** is set to **Other**. Set the **Location** to that defined in **Section 6.3** and the **Time Zone** to the appropriate time zone.

Home / Elements / Routing / SIP Entities Help ?

**SIP Entity Details**

**General**

\* Name: CS1K\_7.6

\* FQDN or IP Address: 10.10.9.21

Type: Other

Notes:

Adaptation:

Location: SMGRVL3

Time Zone: Europe/Dublin

Override Port & Transport with DNS SRV:

\* SIP Timer B/F (in seconds): 4

Credential name:

Call Detail Recording: none

CommProfile Type Preference:

**Loop Detection**

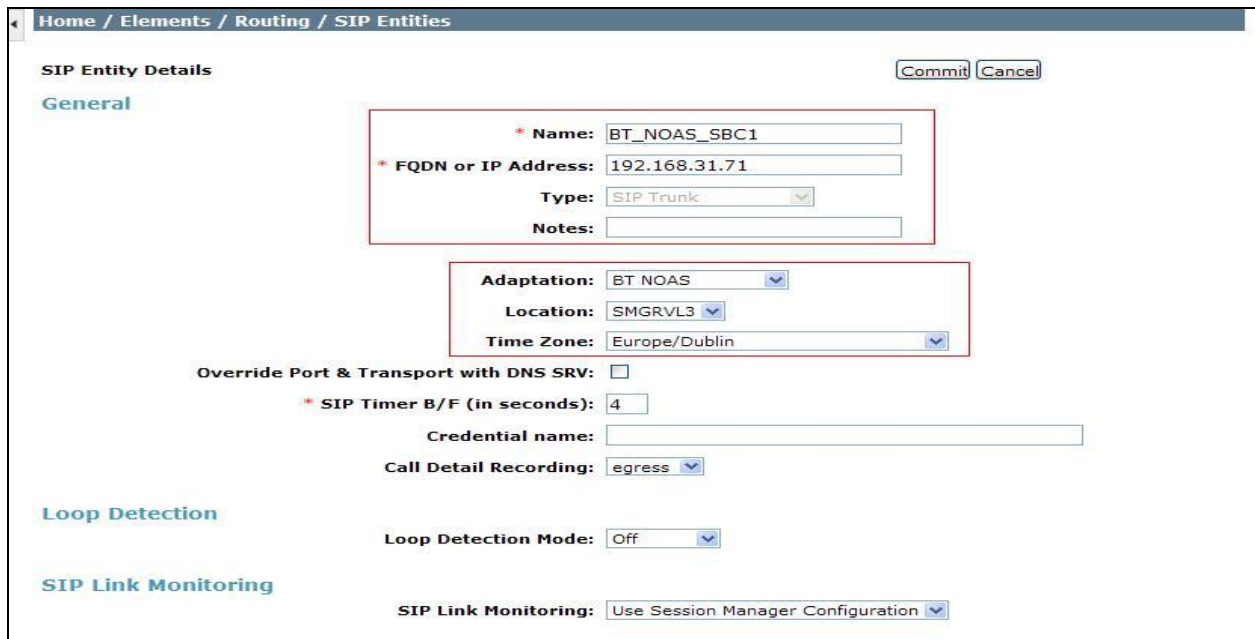
Loop Detection Mode: Off

**SIP Link Monitoring**

SIP Link Monitoring: Use Session Manager Configuration

### 6.5.3. BT NOAS SBC SIP Entities

The following screenshots display the SIP entities for BT NOAS used for routing calls. Two SIP Entities were used for the two interfaces established so that routing could take place to both BT NOAS SBCs. The **FQDN or IP Address** field is set to the IP addresses of the BT NOAS SBC's. Set **Type** to **SIP Trunk**. Set **Adaptation** to the one created in **Section 6.4**. Set the location to that defined in **Section 6.3** and the **Time Zone** to the appropriate time zone.



Home / Elements / Routing / SIP Entities

SIP Entity Details Commit Cancel

**General**

\* Name: BT\_NOAS\_SBC1  
\* FQDN or IP Address: 192.168.31.71  
Type: SIP Trunk  
Notes:

Adaptation: BT NOAS  
Location: SMGRVL3  
Time Zone: Europe/Dublin

Override Port & Transport with DNS SRV:

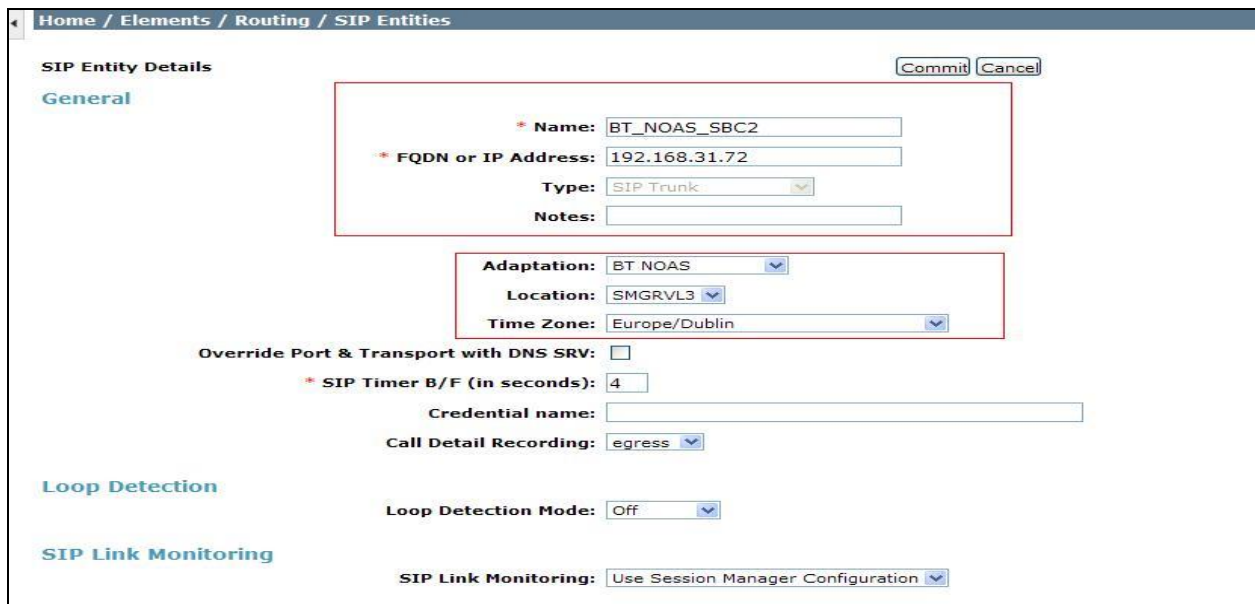
\* SIP Timer B/F (in seconds): 4  
Credential name:  
Call Detail Recording: egress

**Loop Detection**

Loop Detection Mode: Off

**SIP Link Monitoring**

SIP Link Monitoring: Use Session Manager Configuration



Home / Elements / Routing / SIP Entities

SIP Entity Details Commit Cancel

**General**

\* Name: BT\_NOAS\_SBC2  
\* FQDN or IP Address: 192.168.31.72  
Type: SIP Trunk  
Notes:

Adaptation: BT NOAS  
Location: SMGRVL3  
Time Zone: Europe/Dublin

Override Port & Transport with DNS SRV:

\* SIP Timer B/F (in seconds): 4  
Credential name:  
Call Detail Recording: egress

**Loop Detection**

Loop Detection Mode: Off

**SIP Link Monitoring**

SIP Link Monitoring: Use Session Manager Configuration



## 6.6. Administer Entity Links

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

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

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

Home / Elements / Routing / Entity Links

Entity Links

Commit Cancel

1 Item Refresh Filter: Enable

Name	SIP Entity 1	Protocol	Port	SIP Entity 2	Port	Connection Policy	Deny New Service	Notes
*Session Manager	*Session Manager	TCP	*5060	*CS1K_7.6	*5060	trusted	<input type="checkbox"/>	

Select : All, None

Commit Cancel

Home / Elements / Routing / Entity Links

Entity Links

Commit Cancel

1 Item Refresh Filter: Enable

Name	SIP Entity 1	Protocol	Port	SIP Entity 2	Port	Connection Policy	Deny New Service	Notes
*Session Manager	*Session Manager	TCP	*5060	*BT_NOAS_SBC1	*5060	trusted	<input type="checkbox"/>	

Select : All, None

Home / Elements / Routing / Entity Links

Entity Links

Commit Cancel

1 Item Refresh Filter: Enable

Name	SIP Entity 1	Protocol	Port	SIP Entity 2	Port	Connection Policy	Deny New Service	Notes
*Session Manager	*Session Manager	TCP	*5060	*BT_NOAS_SBC2	*5060	trusted	<input type="checkbox"/>	

Select : All, None

## 6.7. Administer Routing Policies

Routing policies must be created to direct how calls will be routed to a system. To add a routing policy, select **Routing Policies** on the left panel menu 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 screenshot shows the 'Routing Policy Details' form for a policy named 'toCS1K\_7.6'. The 'General' section includes fields for Name, Disabled, Retries, and Notes. The 'SIP Entity as Destination' section has a 'Select' button and a table with one entry: CS1K\_7.6, 10.10.9.21, Other. The 'Time of Day' section has 'Add', 'Remove', and 'View Gaps/Overlaps' buttons, and a table with one entry: 0, 24/7, with checkboxes for all days and a time range of 00:00 to 23:59.

Name	FQDN or IP Address	Type	Notes
CS1K_7.6	10.10.9.21	Other	

Ranking	Name	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Start Time	End Time	Notes
0	24/7	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	00:00	23:59	Time Range 24/7

The following screenshots display the routing policies for the BT NOAS SBC's:

The screenshot shows the 'Routing Policy Details' form for a policy named 'BTNOAS\_SBC1'. The 'General' section includes fields for Name, Disabled, Retries, and Notes. The 'SIP Entity as Destination' section has a 'Select' button and a table with one entry: BT\_NOAS\_SBC1, 192.168.31.71, SIP Trunk. The 'Time of Day' section has 'Add', 'Remove', and 'View Gaps/Overlaps' buttons, and a table with one entry: 0, 24/7, with checkboxes for all days and a time range of 00:00 to 23:59.

Name	FQDN or IP Address	Type	Notes
BT_NOAS_SBC1	192.168.31.71	SIP Trunk	

Ranking	Name	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Start Time	End Time	Notes
0	24/7	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	00:00	23:59	Time Range 24/7

Home / Elements / Routing / Routing Policies Help ?

**Routing Policy Details** Commit Cancel

**General**

\* Name:

Disabled:

\* Retries:

Notes:

**SIP Entity as Destination**

Name	FQDN or IP Address	Type	Notes
BT_NOAS_SBC2	192.168.31.72	SIP Trunk	

**Time of Day**

1 Item Refresh										Filter: Enable		
<input type="checkbox"/>	Ranking	Name	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Start Time	End Time	Notes
<input type="checkbox"/>	0	24/7	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	00:00	23:59	Time Range 24/7

Select : All, None

## 6.8. Administer Dial Patterns

A dial pattern must be defined to direct calls to the appropriate telephony system. To configure a dial pattern select **Dial Patterns** on the left panel menu 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 **-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 the **Select** button to save (not shown).

The following screen shows an example dial pattern configuration which will route the calls out to the PSTN via the BT NOAS SIP Trunk service.

The screenshot displays the 'Dial Pattern Details' configuration page. The 'General' section includes fields for Pattern (0044), Min (4), Max (36), Emergency Call (unchecked), Emergency Priority (1), Emergency Type, SIP Domain (-ALL-), and Notes. The 'Originating Locations and Routing Policies' section shows a table with two entries for SMGRVL3, each associated with a different routing policy (BTNOAS\_SBC1 and BTNOAS\_SBC2) and a rank of 0. The routing policy disabled checkboxes are unchecked.

Originating Location Name	Originating Location Notes	Routing Policy Name	Rank	Routing Policy Disabled	Routing Policy Destination	Routing Policy Notes
<input type="checkbox"/> SMGRVL3		BTNOAS_SBC1	0	<input type="checkbox"/>	BT_NOAS_SBC1	
<input type="checkbox"/> SMGRVL3		BTNOAS_SBC2	0	<input type="checkbox"/>	BT_NOAS_SBC2	

The following screen shows an example dial pattern configured for the CS1000E. This dial pattern will route the calls to the CS1000E endpoints.

Home / Elements / Routing / Dial Patterns Help ?

Dial Pattern Details Commit Cancel

**General**

\* Pattern:

\* Min:

\* Max:

Emergency Call:

Emergency Priority:

Emergency Type:

SIP Domain:

Notes:

**Originating Locations and Routing Policies**

1 Item Refresh Filter: Enable

<input type="checkbox"/>	Originating Location Name	Originating Location Notes	Routing Policy Name	Rank	Routing Policy Disabled	Routing Policy Destination	Routing Policy Notes
<input type="checkbox"/>	SMGRVLS		toCS1K_7.6	0	<input type="checkbox"/>	CS1K_7.6	

Select : All, None

## 7. BT NOAS Configuration

The configuration of the BT NOAS equipment used to support the BT NOAS SIP Trunk service is outside of the scope of these Application Notes and will not be covered. To obtain further information on BT equipment and system configuration please contact an authorized BT representative.

## 8. Verification Steps

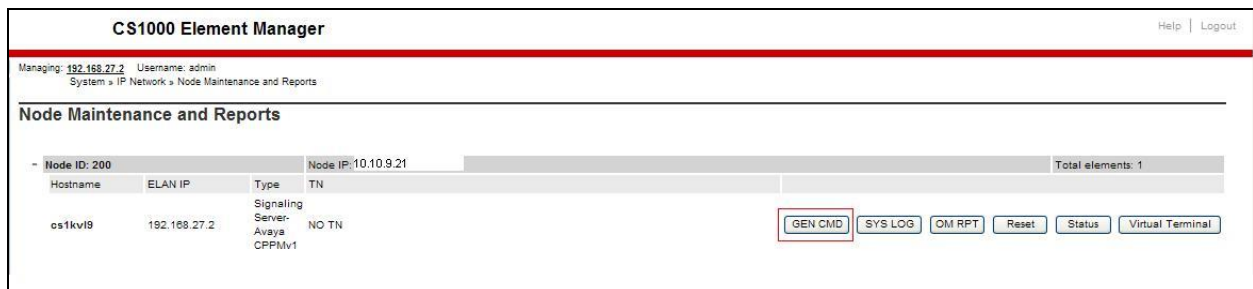
This section provides verification steps that may be performed in the field to verify that the solution is configured properly.

### 8.1. Avaya Communication Server 1000E Verification

This section illustrates sample verifications that may be performed using the Avaya CS1000E Element Manager GUI.

#### 8.1.1. IP Network Maintenance and Reports Commands

From Element Manager, navigate to **System** → **IP Network** → **Maintenance and Reports** as shown below. In the resultant screen on the right, click the **Gen CMD** button.



The **General Commands** page is displayed. A variety of commands are available by selecting an appropriate **Group** and **Command** from the drop-down menus, and selecting **Run**.

To check the status of the SIP Gateway to Session Manager in the sample configuration, select **Sip** from the **Group** menu and **SIPGwShow** from the **Command** menu. Click **Run**. The example output below shows that Session Manager (10.10.3.55, port 5060, TCP) has **SIPNPM Status "Active"**.

Managing: 192.168.27.2 Username: admin  
System > IP Network > Node Maintenance and Reports > General Commands

### General Commands

Element IP : 192.168.27.2 Element Type : Signaling Server-Avaya CPPMv1

Group: Sip Command: SIPGwShow SIP: RUN

IP address: 192.168.27.2 Number of pings: 3 PING

```

SIPNPM Status      : Active
Primary Proxy IP address : 10.10.3.55
Primary Proxy port      : 5060
Primary Proxy Transport : TCP
Secondary Proxy IP address : 0.0.0.0
Secondary Proxy port     : 5060
Secondary Proxy Transport : TCP
Primary Proxy2 IP address : 10.10.3.55
Primary Proxy2 port      : 5060
Primary Proxy2 Transport : TCP
Active Proxy           : Primary :Register Not Supported
Time To Next Registration : 0 Seconds
Channels Busy / Idle / Total : 0 / 34 / 34
Stack version           : 5.5.0.13
TLS Security Policy     : Security Disabled
  
```

The following screen shows a means to view IP UniStim telephones. The screen shows the output of the **Command isetShow** in **Group Iset**.

Managing: 192.168.27.2 Username: admin  
System > IP Network > Node Maintenance and Reports > General Commands

### General Commands

Element IP : 192.168.27.2 Element Type : Signaling Server-Avaya CPPMv1

Group: Iset Command: isetShow Range: 0 500 RUN

IP address: 192.168.27.2 Number of pings: 3 PING

```

Set Information
-----
IP Address   NAT  Model Name           Type   RegType  State   Up
-----
10.10.9.200  1230 IP Deskphone         1230   Regular  online  13
10.10.9.201  1140E IP Deskphone         1140   Regular  online  13

Total sets = 2
  
```

## 8.2. 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 by Functionality** table as shown below.

The screenshot shows the AVAYA CS1000 Element Manager interface. The left navigation pane is expanded to 'System' > 'Maintenance'. The main area displays the 'Maintenance' page with two selection options: 'Select by Overlay' (selected) and 'Select by Functionality'. A table titled '<Select by Overlay>' lists various LDs, with 'LD 96 - D-Channel' highlighted. A '<Select Group>' dropdown menu is also visible, showing options like 'D-Channel Diagnostics', 'MSDL Diagnostics', and 'TMDI Diagnostics'.

Select the **Status for D-Channel (STAT DCH)** command and click **Submit** to verify status of the 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**

The screenshot shows the AVAYA CS1000 Element Manager interface with the 'D-Channel Diagnostics' page. The 'Diagnostic Commands' table is visible, with 'Status for D-Channel (STAT DCH)' selected. The 'Command Parameters' section shows 'ALL' and 'FDL' checkboxes. The 'Action' column has 'Submit' buttons. Below the table, a summary table shows the status of various fields: DCH, DES, APPL\_STATUS (OPER), LINK\_STATUS (EST ACTV), AUTO\_RECVP, PDCH, and BDCH. The 'STAT DCH' command output is displayed in a text area, showing 'Command executed successfully.'

Diagnostic Commands	Command Parameters	Action
Status for D-Channel (STAT DCH)		Submit
Disable Automatic Recovery (DIS AUTO)	<input type="checkbox"/> ALL	Submit
Enable Automatic Recovery (ENL AUTO)	<input type="checkbox"/> FDL	Submit
Test Interrupt Generation (TEST 100)		Submit
Establish D-Channel (EST DCH)		Submit

DCH	DES	APPL_STATUS	LINK_STATUS	AUTO_RECVP	PDCH	BDCH
C 001	SIP_DCH	OPER	EST ACTV	AUTO		

```

STAT DCH
-----
Command executed successfully.
    
```



## 8.3. Verify Avaya Aura® Session Manager Operational Status

### 8.3.1. Verify Avaya Aura® Session Manager is Operational

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

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

Home / Elements / Session Manager- Session Manager

Session Manager

- Dashboard
- Session Manager
- Administration
- Communication Profile Editor
- Network Configuration
- Device and Location Configuration
- Application Configuration
- System Status
- System Tools

Home / Elements / Session Manager- Session Manager Help ?

### Session Manager Dashboard

This page provides the overall status and health summary of each administered Session Manager.

Session Manager Instances

Service State ▾
Shutdown System ▾
As of 11:56 AM

	Session Manager	Type	Alarms	Tests Pass	Security Module	Service State	Entity Monitoring	Active Call Count	Registrations	Version
<input type="checkbox"/>	<a href="#">Session Manager</a>	Core	0/0/2	✓	Up	Accept New Service	0/3	1	0	6.1.0.0.610023

Select : All, None

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

Reset
Synchronize
Certificate Management ▾
Connection Status

1 Item | Refresh | Show ALL ▾
Filter: Enable

	Details	Session Manager	Type	Status	Connections	IP Address	VLAN	Default Gateway	NIC Bonding	Entity Links (expected / actual)	Certificate Used
<input type="checkbox"/>	<a href="#">Show</a>	Session Manager	SM	Up	6	10.10.3.55/24	---	10.10.3.1	Disabled	3/3	SIP CA

Select : None

### 8.3.2. 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 or more of the SIP Entity Links. Select the SIP Entity for CS1000E from the **All Monitored SIP Entities** table (not shown) to open the **SIP Entity, Entity Link Connection Status** page. In the **All Entity Links to SIP Entity: CS1K** table, verify the **Conn. Status** for the link is **Up** as shown below.

<b>SIP Entity, Entity Link Connection Status</b>							
This page displays detailed connection status for all entity links from all Session Manager instances to a single SIP entity.							
<b>All Entity Links to SIP Entity: CS1K</b>							
Summary View							
1 Item Refresh							Filter: Enable
Details	Session Manager Name	SIP Entity Resolved IP	Port	Proto.	Conn. Status	Reason Code	Link Status
► Show	<a href="#">Session Manager</a>	10.10.3.6	5060	TCP	Up	200 OK	Up

Verify the status of the SIP Entity Link is up between the Session Manager and the BT NOAS by going through the same process as outlined above but selecting the SIP Entity for BT NOAS in the **All Monitored SIP Entities**: table.

<b>SIP Entity, Entity Link Connection Status</b>							
This page displays detailed connection status for all entity links from all Session Manager instances to a single SIP entity.							
<b>All Entity Links to SIP Entity: Siperu</b>							
Summary View							
1 Item Refresh							Filter: Enable
Details	Session Manager Name	SIP Entity Resolved IP	Port	Proto.	Conn. Status	Reason Code	Link Status
► Show	<a href="#">Session Manager</a>	10.10.3.30	5060	TCP	Up	200 OK	Up

### 8.3.3. Verify Avaya Aura® Session Manager Instance

The creation of a Session Manager Instance provides the linkage between System Manager and Session Manager. This was most likely done as part of the initial Session Manager installation. To add a Session Manager, navigate to **Elements → Session Manager → Session Manager Administration** in the left-hand navigation pane and click on the **new** button in the right pane (not shown). If the Session Manager instance already exists, click **View** (not shown) to view the configuration. Enter/verify the data as described below and shown in the following screen:

In the **General** section, enter the following values:

- **SIP Entity Name:** Select the SIP Entity created for Session Manager
- **Description:** Add a brief description (optional)
- **Management Access Point Host Name/IP:** Enter the IP address of the Session Manager management interface

The following screen shows the Session Manager values used for the compliance test.

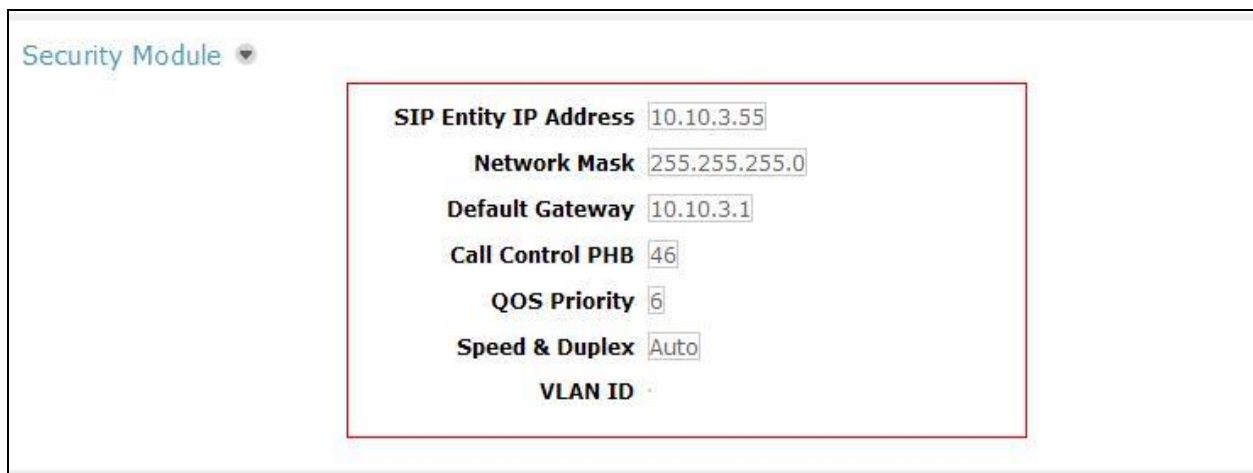
The screenshot displays the 'View Session Manager' configuration page. The breadcrumb trail at the top reads: Home / Elements / Session Manager / Session Manager Administration - Session Manager Administration. A 'Help ?' link is visible in the top right corner. Below the breadcrumb trail, there is a 'Return' button. The main content area is titled 'View Session Manager' and includes a navigation menu with options: General | Security Module | NIC Bonding | Monitoring | CDR | Personal Profile Manager (PPM) - Connection Settings | Event Server | Expand All | Collapse All. The 'General' section is expanded, showing a form with the following fields and values:

SIP Entity Name	Session Manager
Description	Session Manager
Management Access Point Host Name/IP	10.10.3.54
Direct Routing to Endpoints	Enable

In the **Security Module** section, enter the following values:

- **SIP Entity IP Address:** Should be filled in automatically based on the SIP Entity Name. Otherwise, enter IP address of the Session Manager signaling interface
- **Network Mask:** Enter the network mask corresponding to the IP address of Session Manager
- **Default Gateway:** Enter the IP address of the default gateway for Session Manager

Use default values for the remaining fields. Click **Save** (not shown) to add this Session Manager. The following screen shows the remaining Session Manager values used for the compliance test.



The screenshot displays the configuration interface for the Security Module. A red box highlights the following fields and their values:

SIP Entity IP Address	10.10.3.55
Network Mask	255.255.255.0
Default Gateway	10.10.3.1
Call Control PHB	46
QOS Priority	6
Speed & Duplex	Auto
VLAN ID	

## 9. Conclusion

These Application Notes describe the configuration necessary to connect Avaya Aura® Communication Server 1000E R7.6 and Avaya Aura® Session Manager R6.3 to BT NOAS SIP Trunk service. BT NOAS SIP Trunk service is a SIP-based Voice over IP solution providing businesses a flexible, cost-saving alternative to traditional hardwired telephony trunks. The service was successfully tested with a number of observations listed in **Section 2.2**.

## 10. References

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

- [1] *Implementing Avaya Aura® Session Manager*, Release 6.3
- [2] *Installing Service Packs for Avaya Aura® Session Manager*, Release 6.3
- [3] *Upgrading Avaya Aura® Session Manager*, Release 6.3
- [4] *Maintaining and Troubleshooting Avaya Aura® Session Manager Release 6.3*
- [5] *Installing and Configuring Avaya Aura® System Platform Release 6.3*, June 2013
- [6] *Implementing Avaya Aura® System Manager Release 6.3*, June 2013
- [7] *Upgrading Avaya Aura® System Manager to 6.3.2*, July 2013
- [8] *Avaya Communication Server 1000E Installation and Commissioning*, April 2012, Document Number NN43041-310.
- [9] *Feature Listing Reference Avaya Communication Server 1000*, November 2010, Document Number NN43001-111, 05.01.
- [10] *Linux Platform Base and Applications Installation and Commissioning Avaya Communication Server 1000*, April 2013, Document Number NN43001-315
- [11] *Unified Communications Management Common Servers Fundamentals Avaya Communication Server 1000*, February 2013, Document Number NN43001-116
- [12] *Software Input Output Reference – Maintenance Avaya Communication Server 1000*, April 2012, Document Number NN43001-711
- [13] *Signaling Server IP Line Applications Fundamentals Avaya Communication Server 1000*, October 2011, Document Number NN43001-125
- [14] *SIP Software for Avaya 1100 Series IP Deskphones-Administration*, December 2011, Document Number NN43170-600
- [15] RFC 3261 SIP: Session Initiation Protocol, <http://www.ietf.org/>

## Appendix A – Communication Server 1000 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 65 P +
IDLE SET DISPLAY NORTEL
DepList 1: core Issue: 01(created: 2013-05-28 04:19:50 (est))

MDP>LAST SUCCESSFUL MDP REFRESH :2013-09-12 14:50:17(Local Time)
MDP>USING DEPLIST ZIP FILE DOWNLOADED :2013-05-28 04:30:29(est)
SYSTEM HAS NO USER SELECTED PEPS IN-SERVICE

LOADWARE VERSION: PSWV 100+

INSTALLED LOADWARE PEPS : 1
PAT#  CR #          PATCH REF #      NAME          DATE          FILENAME
00    wi01057886      ISS1:10F1      DSP2AB07      13/09/2013   DSP2AB07.LW

ENABLED PLUGINS : 2

PLUGIN      STATUS      PRS/CR NUM      MPLR NUM      DESCRIPTION
-----
201         ENABLED     Q00424053      MPLR08139     PI:Cant XFER OUTG TRK TO OUTG TRK
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 65 P +
DepList 1: core Issue: 01 (created: 2013-05-28 04:19:50 (est))

IN-SERVICE PEPS
PAT#  CR #          PATCH REF #      NAME          DATE          FILENAME          SPECINS
000   wi01058359      ISS1:10F1      p32331_1      22/10/2013   p32331_1.cpl     NO
001   wi01064599      iss1:10f1      p32580_1      22/10/2013   p32580_1.cpl     NO
002   wi01056067      ISS1:10F1      p32457_1      22/10/2013   p32457_1.cpl     NO
003   wi01063263      ISS1:10F1      p32573_1      22/10/2013   p32573_1.cpl     NO
004   wi01065842      ISS1:10F1      p32478_1      22/10/2013   p32478_1.cpl     NO
005   wi01062607      ISS1:10F1      p32503_1      22/10/2013   p32503_1.cpl     NO
006   wi01070756      ISS1:10F1      p32444_1      22/10/2013   p32444_1.cpl     NO
007   wi01039280      ISS1:10F1      p32423_1      22/10/2013   p32423_1.cpl     NO
008   wi01087543      ISS1:10F1      p32662_1      22/10/2013   p32662_1.cpl     NO
009   wi00933195      ISS1:10F1      p32491_1      22/10/2013   p32491_1.cpl     NO
010   wi01071379      ISS1:10F1      p32522_1      22/10/2013   p32522_1.cpl     NO
011   wi01068669      ISS1:10F1      p32333_1      22/10/2013   p32333_1.cpl     NO
012   wi01066991      ISS1:10F1      p32449_1      22/10/2013   p32449_1.cpl     NO
013   wi01070474      iss1:10f1      p32407_1      22/10/2013   p32407_1.cpl     NO
016   wi00836182      ISS1:10F1      p30450_1      19/02/2012   p30450_1.cpm     NO
017   wi00826075      ISS1:10F1      p30452_1      19/02/2012   p30452_1.cpm     NO
```

014	WI0110261	ISS1:10F1	p32758_1	22/10/2013	p32758_1.cpl	NO
015	wi01094305	ISS1:10F1	p32640_1	22/10/2013	p32640_1.cpl	NO
016	wi01047890	ISS1:10F1	p32697_1	22/10/2013	p32697_1.cpl	NO
017	wi01055300	ISS1:10F1	p32543_1	22/10/2013	p32543_1.cpl	NO
018	wi01082456	ISS1:10F1	p32596_1	22/10/2013	p32596_1.cpl	NO
019	wi01058621	ISS1:10F1	p32339_1	22/10/2013	p32339_1.cpl	NO
020	wi01061484	ISS1:10F1	p32576_1	22/10/2013	p32576_1.cpl	NO
021	wi01078723	ISS1:10F1	p32532_1	22/10/2013	p32532_1.cpl	NO
022	wi01048457	ISS1:10F1	p32581_1	22/10/2013	p32581_1.cpl	NO
023	wi01075355	ISS1:10F1	p32594_1	22/10/2013	p32594_1.cpl	NO
024	wi01053597	ISS1:10F1	p32304_1	22/10/2013	p32304_1.cpl	NO
025	wi01045058	ISS1:10F1	p32214_1	22/10/2013	p32214_1.cpl	NO
026	wi01075359	ISS1:10F1	p32671_1	22/10/2013	p32671_1.cpl	NO
027	wi01025156	ISS1:10F1	p32136_1	22/10/2013	p32136_1.cpl	NO
028	wi01061481	ISS1:10F1	p32382_1	22/10/2013	p32382_1.cpl	NO
029	wi01035976	ISS1:10F1	p32173_1	22/10/2013	p32173_1.cpl	NO
030	wi01088775	ISS1:10F1	p32659_1	22/10/2013	p32659_1.cpl	NO
031	wi01070465	iss1:10f1	p32562_1	22/10/2013	p32562_1.cpl	NO
032	wi01088585	ISS1:10F1	p32656_1	22/10/2013	p32656_1.cpl	NO
033	wi01063864	ISS1:10F1	p32410_1	22/10/2013	p32410_1.cpl	YES
034	wi01034961	ISS1:10F1	p32144_1	22/10/2013	p32144_1.cpl	NO
035	wi01055480	ISS1:10F1	p32712_1	22/10/2013	p32712_1.cpl	NO
036	wi01034307	ISS1:10F1	p32615_1	22/10/2013	p32615_1.cpl	NO
037	wi01065118	ISS1:10F1	p32397_1	22/10/2013	p32397_1.cpl	NO
038	wi01075360	iss1:10f1	p32602_1	22/10/2013	p32602_1.cpl	NO
039	wi00884716	ISS1:10F1	p32517_1	22/10/2013	p32517_1.cpl	NO
040	wi01068851	ISS1:10F1	p32439_1	22/10/2013	p32439_1.cpl	NO
041	wi01053314	ISS1:10F1	p32555_1	22/10/2013	p32555_1.cpl	NO
042	wi01059388	iss1:10f1	p32628_1	22/10/2013	p32628_1.cpl	NO
043	wi01087528	ISS1:10F1	p32700_1	22/10/2013	p32700_1.cpl	NO
044	wi01072027	ISS1:10F1	p32689_1	22/10/2013	p32689_1.cpl	NO
045	wi01052428	ISS1:10F1	p32606_1	22/10/2013	p32606_1.cpl	NO
046	wi01053920	ISS1:10F1	p32303_1	22/10/2013	p32303_1.cpl	NO
047	wi01070468	iss1:10f1	p32418_1	22/10/2013	p32418_1.cpl	NO
048	wi01067822	ISS1:10F1	p32466_1	22/10/2013	p32466_1.cpl	YES
049	wi01060826	ISS1:10F1	p32379_1	22/10/2013	p32379_1.cpl	NO
050	wi01075352	ISS1:10F1	p32603_1	22/10/2013	p32603_1.cpl	NO
051	wi01043367	ISS1:10F1	p32232_1	22/10/2013	p32232_1.cpl	NO
052	wi01083584	ISS1:10F1	p32619_1	22/10/2013	p32619_1.cpl	NO
053	wi01060241	ISS1:10F1	p32381_1	22/10/2013	p32381_1.cpl	NO
054	wi01053195	ISS1:10F1	p32297_1	22/10/2013	p32297_1.cpl	NO
055	wi00897254	ISS1:10F1	p31127_1	22/10/2013	p31127_1.cpl	NO
056	wi01061483	ISS1:10F1	p32359_1	22/10/2013	p32359_1.cpl	NO
057	wi01085855	ISS1:10F1	p32658_1	22/10/2013	p32658_1.cpl	NO
058	wi01075353	ISS1:10F1	p32613_1	22/10/2013	p32613_1.cpl	NO
059	wi01070471	ISS1:10F1	p32415_1	22/10/2013	p32415_1.cpl	NO
060	wi01074003	ISS1:10F1	p32421_1	22/10/2013	p32421_1.cpl	NO
061	wi01060382	iss1:10f1	p32623_1	22/10/2013	p32623_1.cpl	YES
062	wi01068042	ISS1:10F1	p32669_1	22/10/2013	p32669_1.cpl	NO
063	wi01072023	ISS1:10F1	p32130_1	22/10/2013	p32130_1.cpl	YES
064	wi01065922	ISS1:10F1	p32516_1	22/10/2013	p32516_1.cpl	NO
065	wi01057403	ISS1:10F1	p32591_1	22/10/2013	p32591_1.cpl	NO
066	wi01069441	ISS1:10F1	p32097_1	22/10/2013	p32097_1.cpl	NO
067	wi01070473	ISS1:10F1	p32413_1	22/10/2013	p32413_1.cpl	NO
068	wi01056633	ISS1:10F1	p32322_1	22/10/2013	p32322_1.cpl	NO
069	wi01052968	ISS1:10F1	p32540_1	22/10/2013	p32540_1.cpl	NO
070	wi01072032	ISS1:10F1	p32448_1	22/10/2013	p32448_1.cpl	NO
071	wi01073100	ISS1:10F1	p32599_1	22/10/2013	p32599_1.cpl	NO
072	wi01035980	ISS1:10F1	p32558_1	22/10/2013	p32558_1.cpl	NO
073	wi01041453	ISS1:10F1	p32587_1	22/10/2013	p32587_1.cpl	NO
074	wi01032756	ISS1:10F1	p32673_1	22/10/2013	p32673_1.cpl	NO
075	wi01092300	ISS1:10F1	p32692_1	22/10/2013	p32692_1.cpl	NO
076	wi00996734	ISS1:10F1	p32550_1	22/10/2013	p32550_1.cpl	NO
077	wi01022599	ISS1:10F1	p32080_1	22/10/2013	p32080_1.cpl	NO
078	wi01060341	ISS1:10F1	p32578_1	22/10/2013	p32578_1.cpl	NO
079	wi01091447	ISS1:10F1	p32675_1	22/10/2013	p32675_1.cpl	NO
080	wi01070580	ISS1:10F1	p32380_1	22/10/2013	p32380_1.cpl	NO
081	wi01089519	ISS1:10F1	p32665_1	22/10/2013	p32665_1.cpl	NO
082	WI01077073	ISS1:10F1	p32534_1	22/10/2013	p32534_1.cpl	NO
083	wi01080753	ISS1:10F1	p32518_1	22/10/2013	p32518_1.cpl	NO

```
084 wi01065125 ISS1:10F1 p32416 1 22/10/2013 p32416 1.cpl NO
MDP>LAST SUCCESSFUL MDP REFRESH :2013-09-12 14:50:17 (Local Time)
MDP>USING DEPLIST ZIP FILE DOWNLOADED :2013-05-28 04:30:29 (est)
```

## Communication Server 1000E signaling server service updates

Product Release: 7.65.16.00

In system patches: 1

PATCH#	NAME	IN_SERVICE	DATE	SPECINS	TYPE	RPM
37	p31484 1	Yes	02/10/13	NO	FRU	cs1000-shared-general-7.65.16-00.i386

In System service updates: 29

PATCH#	IN_SERVICE	DATE	SPECINS	REMOVABLE	NAME
0	Yes	02/10/13	NO	YES	cs1000-patchWeb-7.65.16.21-06.i386.000
1	Yes	02/10/13	NO	yes	cs1000-cppmUtil-7.65.16.21-01.i686.000
2	Yes	27/09/13	NO	YES	cs1000-dmWeb-7.65.16.21-01.i386.000
4	Yes	27/09/13	NO	YES	cs1000-nrsm-7.65.16.00-03.i386.000
5	Yes	27/09/13	NO	YES	cs1000-oam-logging-7.65.16.01-01.i386.000
6	Yes	27/09/13	NO	yes	cs1000-cs1000WebService_6-0-7.65.16.21-386.000
8	Yes	27/09/13	NO	YES	cs1000-pd-7.65.16.21-00.i386.000
9	Yes	27/09/13	NO	YES	cs1000-shared-carardtct-7.65.16.21-01.i386.000
10	Yes	27/09/13	NO	YES	cs1000-shared-tpsselect-7.65.16.21-01.i386.000
11	Yes	27/09/13	NO	YES	cs1000-emWebLocal_6-0-7.65.16.21-01.i386.000
12	Yes	27/09/13	NO	yes	cs1000-dbcom-7.65.16.21-00.i386.000
14	Yes	27/09/13	NO	YES	cs1000-shared-xmsg-7.65.16.21-00.i386.000
17	Yes	27/09/13	NO	YES	cs1000-mscAnnc-7.65.16.21-02.i386.001
18	Yes	27/09/13	NO	YES	cs1000-mscAttn-7.65.16.21-04.i386.001
19	Yes	27/09/13	NO	YES	cs1000-mscConf-7.65.16.21-02.i386.001
20	Yes	27/09/13	NO	YES	cs1000-mscMusc-7.65.16.21-02.i386.001
21	Yes	27/09/13	NO	YES	cs1000-mscTone-7.65.16.21-03.i386.001
25	Yes	27/09/13	NO	yes	cs1000-cs-7.65.P.100-01.i386.001
26	Yes	02/10/13	YES	yes	cs1000-linuxbase-7.65.16.21-08.i386.000
27	Yes	02/10/13	NO	YES	cs1000-csmWeb-7.65.16.21-07.i386.000
28	Yes	02/10/13	NO	YES	cs1000-gk-7.65.16.21-01.i386.000
29	Yes	02/10/13	NO	yes	cs1000-Jboss-Quantum-7.65.16.21-7.i386.000
30	Yes	02/10/13	NO	YES	cs1000-snmp-7.65.16.21-00.i686.000
31	Yes	02/10/13	YES	yes	tzdata-2013c-1.e15.i386.001
32	Yes	02/10/13	NO	YES	cs1000-emWeb_6-0-7.65.16.21-09.i386.000
33	Yes	02/10/13	YES	yes	cs1000-tps-7.65.16.21-08.i386.000
34	Yes	02/10/13	NO	YES	cs1000-sps-7.65.16.21-7.i386.000
35	Yes	02/10/13	YES	YES	cs1000-bcc-7.65.16.21-31.i386.000
36	Yes	02/10/13	NO	YES	cs1000-vtrk-7.65.16.21-107.i386.000

## Communication Server 1000E system software

Product Release: 7.65.16.00

Base Applications

base	7.65.16	[patched]
NTAFS	7.65.16	
sm	7.65.16	
cs1000-Auth	7.65.16	
Jboss-Quantum	n/a	[patched]
cnd	7.65.16	
lhmonitor	7.65.16	
baseAppUtils	7.65.16	
dfoTools	7.65.16	
cppmUtil	n/a	[patched]
oam-logging	n/a	[patched]
dmWeb	n/a	[patched]
baseWeb	7.65.16	
ipsec	7.65.16	
Snmp-Daemon-TrapLib	n/a	[patched]
ISECSH	7.65.16	
patchWeb	n/a	[patched]
EmCentralLogic	7.65.16	

Application configuration: CS+SS+NRS+EM



```

Packages:
CS+SS+NRS+EM
Configuration version: 7.65.16-00
cs 7.65.16 [patched]
dbcom 7.65.16.21 [patched]
cslogin 7.65.16
sigServerShare 7.65.16 [patched]
csv 7.65.16
tps 7.65.16.21 [patched]
vtrk 7.65.16.21 [patched]
pd 7.65.16.21 [patched]
sps 7.65.16.21 [patched]
ncs 7.65.16
gk 7.65.16.21 [patched]
nrsm 7.65.16 [patched]
nrsmWebService 7.65.16
managedElementWebService 7.65.16
EmConfig 7.65.16
emWeb 6-0 7.65.16 [patched]
emWebLocal_6-0 7.65.16 [patched]
csmWeb 7.65.16 [patched]
bcc 7.65.16 [patched]
ftrpkg 7.65.16
cs1000WebService_6-0 7.65.16 [patched]
mscAnnnc 7.65.16.21 [patched]
mscAttn 7.65.16.21 [patched]
mscConf 7.65.16.21 [patched]
mscMusc 7.65.16.21 [patched]
mscTone 7.65.16.21 [patche

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