Avaya Solution & Interoperability Test Lab

Application Notes for configuring Avaya Aura® Communication Manager R7.0, Avaya Aura® Application Enablement Services R7.0 and Avaya Interaction Center R7.3.4 with CCT ContactPro – Issue 1.0

Abstract

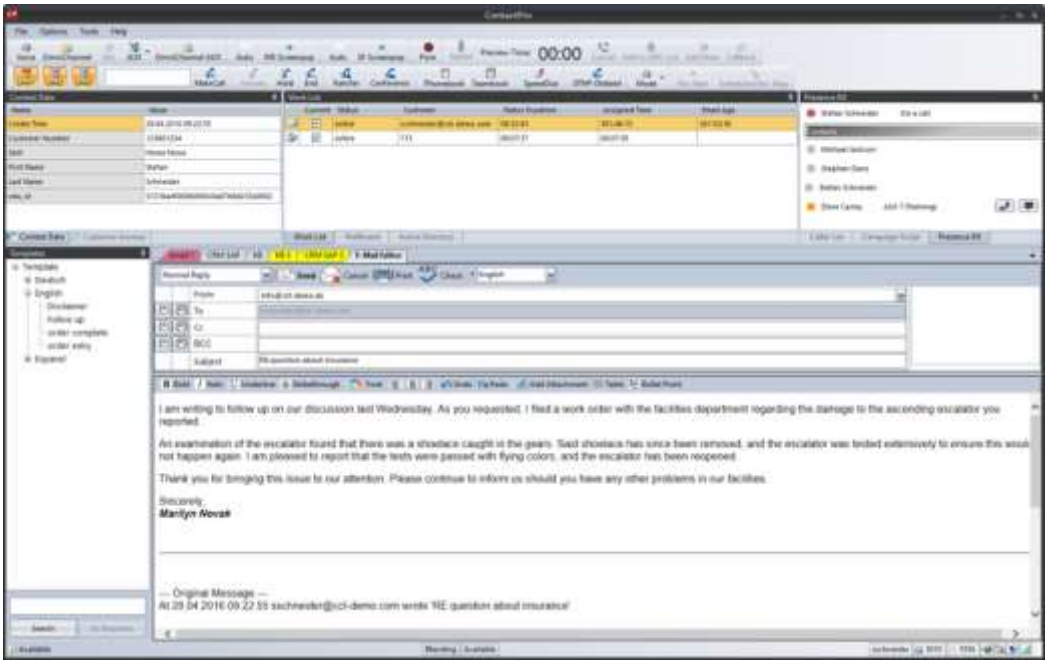
These Application Notes describe the configuration steps required for CCT ContactPro to interoperate with Avaya Aura® Communication Manager, Avaya Aura® Application Enablement Services and Avaya Interaction Center. The CCT ContactPro Agent Client is an interaction management application for the Avaya Interaction Center platform developed using the Avaya Interaction Center Client Software Development Kit (SDK)

Readers should pay attention to **Section 2**, in particular the scope of testing as outlined in **Section 2.1** as well as the observations noted in **Section 2.2**, to ensure that their own use cases are adequately covered by this scope and results.

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 configuration used to enable CCT ContactPro to interoperate with Avaya Aura® Communication Manager, Avaya Aura® Application Enablement Services and Avaya Interaction Center. The CCT ContactPro Agent Client is an interaction management application for Avaya Interaction Center. It is used as an alternative to and expands on the features provided by Avaya Agent Rich Client and provides a flexible and modular client solution for a multi-channel contact center. CCT ContactPro can be customized for each customer according to requirements. Shown below is an example of a fully customized, multi-module CCT ContactPro Agent Desktop client.



Note: For the purposes of Interoperability Tests, not all Modules were present.

2. General Test Approach and Test Results

The general test approach was to validate successful handling of contacts in a variety of contact handling scenarios using the ContactPro Agent Client. This was performed by manually emailing or calling inbound or outbound to/from the contact center and handling inbound chat sessions. Where applicable agent actions were performed using both the physical phone and the ContactPro Agent Client.

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

Interoperability compliance testing consisted of the validating the successful execution and verification of the following

- Login with correct/incorrect credentials and appropriate response
- Change ACD Agent state AVL/AUX
- Enable/Disable voice/web channels
- Outgoing/incoming PSTN call to ACD agent
- Answer call using deskphone/CCT pro with/without auto-answer with/without forced ACW
- ANI presentation
- Call Tracking
- Customer and History Lookup
- Hold/Retrieve
- Consultative/Blind transfer
- 3-way conference
- Customer/agent hangup
- RONA (Return On No Answer)
- Receive/respond/send email
- Defer/close/forward/transfer/cancel Email
- Email template
- Integrated history detail
- Search results
- Receive/chat/close Web Chat

2.2. Test Results

All test cases passed successfully with the following observations.

During transfers to off PBX endpoints the transfer cannot be completed until after the call has been answered. Blind transfers are only possible to local extensions.

2.3. Support

Support for CCT products can be obtained as follows:

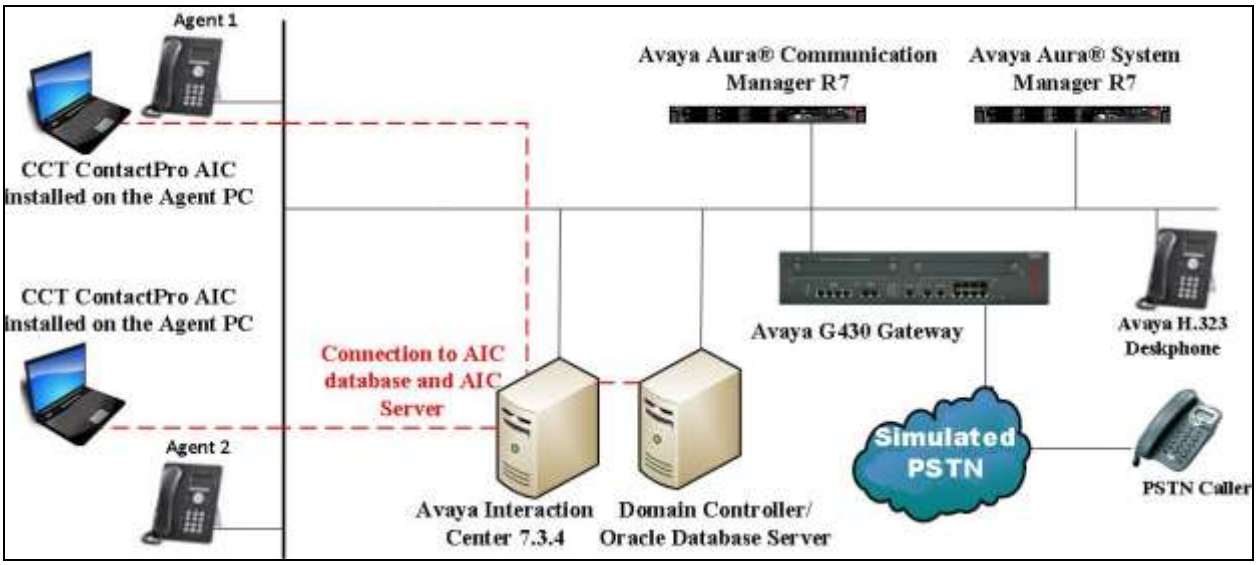
WEBSITE
www.cct-solutions.com

CONTACT
Phone: +49 69 7191 4969 0
Email: kontakt@cct-solutions.com

SUPPORT
Hotline: +49 821 455152 456
Email: helpdesk@cct-solutions.com

3. Reference Configuration

Avaya Aura® Communication Manager serving H.323 endpoints with an Avaya G430 Media Gateway was configured. Avaya Interaction Center hosted on a VMware virtualized infrastructure comprising three Windows 2008 R2 servers providing Interaction Center Administration, Business Advocate and Oracle Database applications. The Avaya Aura® Application Enablement Services vAppliance was used to provide a CVLAN link to interaction center and a switch connection to Avaya Aura® Communication Manager. The CCT ContactPro Client was installed on Windows agent PCs.



Avaya Aura® Communication Manager, Avaya Aura® Application Enablement Services and Avaya Interaction Center with CCT ContactPro Solution

4. Equipment and Software Validated

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

Equipment/Software	Release/Version
Avaya Aura® Communication Manager running on VMware	CM 7.0.0.3.0.441.22856
Avaya Aura® Application Enablement Services running on VMware	R 7.0.0.0.0.13-0
Avaya G430 Media Gateway	37.21.0
Avaya 9611 IP Deskphone	H.323 6.6029
Avaya Interaction Center running on VMware comprising: • Admin Server • Business Advocate Server • Oracle Database Server	R 7.3.4 (build 37)
Oracle Database Server	11g Release 2
CCT ContactPro Desktop	4.0.0.346
CCT Database Connector Service	1.1.3

5. Configure Avaya Aura® Communication Manager

The configuration and verification operations illustrated in this section were all performed using the Communication Manager System Access Terminal (SAT). It is assumed that the relevant dialplan, hunt groups, stations, trunks and call routing have been configured. The connection from Communication Manager to Session Manager is not specific to the test environment and is therefore not detailed below.

The information provided in this section describes the configuration of Communication Manager for this solution. For all other provisioning information such as installation and configuration, please refer to the product documentation in **Section 10**.

5.1. Configure AE Services

An AE Services link must be established between Communication Manager and Application Enablement Services. Enter the command **change node-names ip** and enter the node **Name** and **IP Address** for Application Enablement Services in this case **10.10.16.78**. Take a note of the **procr** node **Name** and **IP Address**, in this case **10.10.16.27.**

```
change node-names ip                                          Page   1 of   2
                                  IP NODE NAMES
    Name                  IP Address
procr                   10.10.16.27
default                 0.0.0.0
aes71678                10.10.16.78
```

In order for Communication Manager to establish a connection to Application Enablement Services, administer the CTI Link as shown below. Using the **add cti-link next** command specify an available **Extension** number, set the **Type** as **ADJ-IP**, which denotes that this is a link to an IP connected adjunct, and name the link for easy identification. In this instance, the node-name is used.

```
add cti-link next                                             Page   1 of   3
                                    CTI LINK
 CTI Link: 2
Extension: 5897
     Type: ADJ-IP
                                                                    COR: 1
     Name: aes71678
```

On **Page 2** set **IC Adjunct Routing** to **y**.

```
change cti-link 2                                             Page   2 of   3
                                    CTI LINK
FEATURE OPTIONS

      Event Minimization? n        Special Character for Restricted Number? n
      IC Adjunct Routing? y   Send Disconnect Event for Bridged Appearance? n
                                        Two-Digit Aux Work Reason Codes? y
                                            Block CMS Move Agent Events? y
```

Using the command **change ip-services,** configure IP-Services using **AESVCS** as the **Service Type** enter the **procr** node name as noted above as the **Local Node**

```
change ip-services                                            Page   1 of   4

                                  IP SERVICES
 Service      Enabled     Local        Local       Remote      Remote
  Type                    Node         Port        Node        Port

AESVCS         y          procr          8765
```

On **Page 4**, set the **AE Services Server** node-name and the **Password** that Application Enablement Services will use to authenticate with Communication Manager.

```
change ip-services                                          Page   4 of   4
                            AE Services Administration

   Server ID    AE Services       Password          Enabled    Status
                   Server
      1:      aes71678          Avayapassword1        y        in use
```

5.2. Configure Inbound Vector

A vector must be configured, this defines the steps required to route an inbound call to the required destination. Enter the command **change vector x** where **x** is an appropriate vector number and configure as shown below:

- **Name** – assign an identifying name.
- **adjunct routing link 2** – enter the cti-link number created in **Section 5.1**.

```
add vector 5015                                             Page   1 of   6
                                  CALL VECTOR

    Number: 5015             Name: IC Vector
Multimedia? n     Attendant Vectoring? n    Meet-me Conf? n          Lock? n
    Basic? y   EAS? y   G3V4 Enhanced? y   ANI/II-Digits? y   ASAI Routing? y
 Prompting? y   LAI? y  G3V4 Adv Route? y   CINFO? y   BSR? y   Holidays? y
 Variables? y   3.0 Enhanced? y
01 adjunct      routing link 2
02 wait-time    999 secs hearing ringback
```

5.3. Configure Inbound VDN

A VDN must be added, this is the number dialed to reach the vector configured in **Section 5.2**. Enter the command **add VDN x** where **x** is an appropriate extension number and configure an identifying **Name** and the **Destination: Vector Number** configured in **Section 5.2**.

```
add vdn 8274050                                          Page   1 of   3
                            VECTOR DIRECTORY NUMBER

                              Extension: 8274050
                                  Name*: IC VDN
                            Destination: Vector Number        5015
                     Attendant Vectoring? n
                   Meet-me Conferencing? n
                     Allow VDN Override? n
                                    COR: 1
                                    TN*: 1
                              Measured: none


        VDN of Origin Annc. Extension*:
                            1st Skill*:
                            2nd Skill*:
                            3rd Skill*:



* Follows VDN Override Rules
```

6. Configure Avaya Aura® Application Enablement Services Server

This section provides the procedures for configuring Application Enablement Services. The procedures include the following areas:

- Launch OAM interface
- Administer the Switch Connection
- Administer CVLAN Link
- Restart TSAPI Service
- Obtain Tlink name
- Administer Avaya CTI User

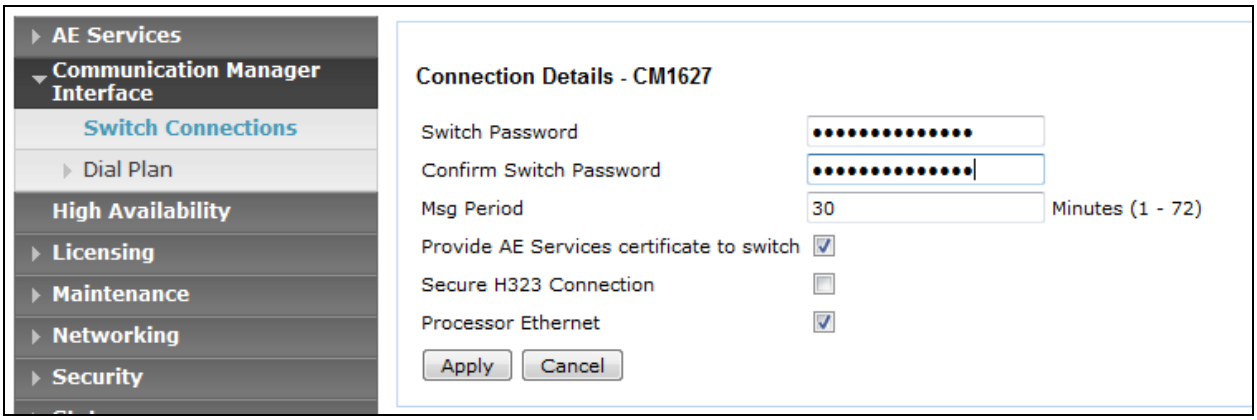
6.1. Launch OAM Interface

Access the OAM web-based interface of Application Enablement Services URL **https://<AES_IP>** . The Management console is displayed. Log in using the appropriate credentials.

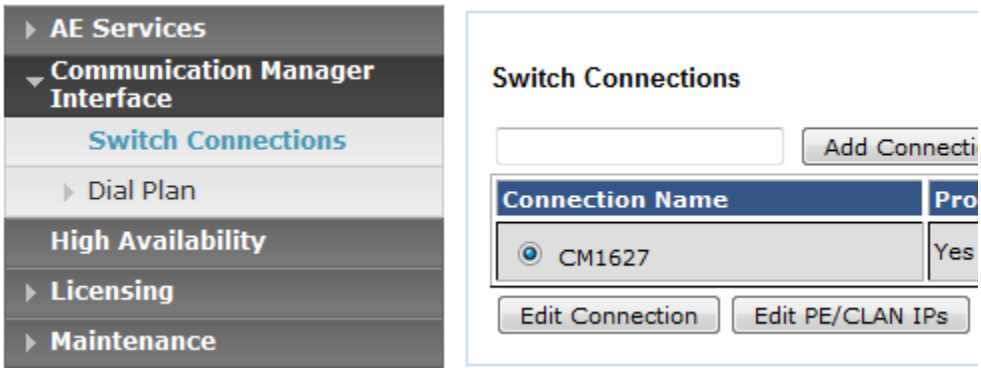
6.2. Administer the Switch Connection

To establish the connection between Communication Manager and Application Enablement Services, click **Communication Manager Interface → Switch Connections**. In the field next to Add Connection enter **CM1627** and click on **Add Connection**.

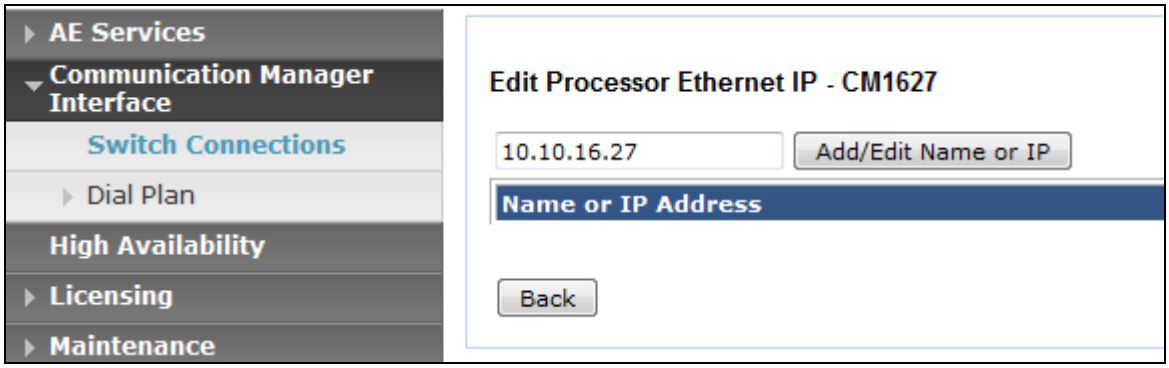
The following screen is displayed. Complete the configuration as shown and enter the password specified in **Section 5.1** when configuring AESVCS in ip-services. Click on **Apply** when done.



The following screen will be shown displaying the newly added switch connection, click on **Edit PE/CLAN IPs** in order to specify the IP address of the procr, as noted in **Section 5.1**.

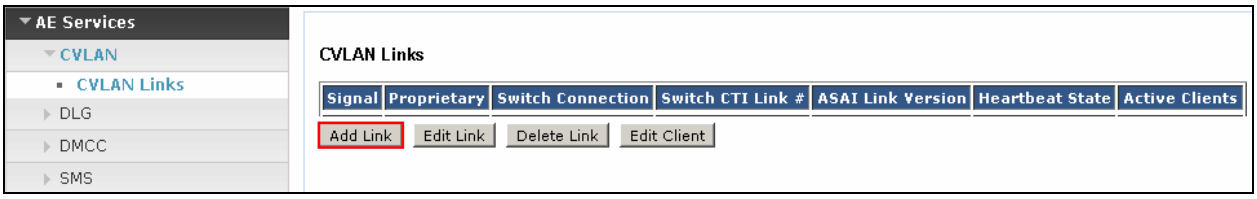


Next to **Add name or IP,** enter the IP address of the procr as shown below.



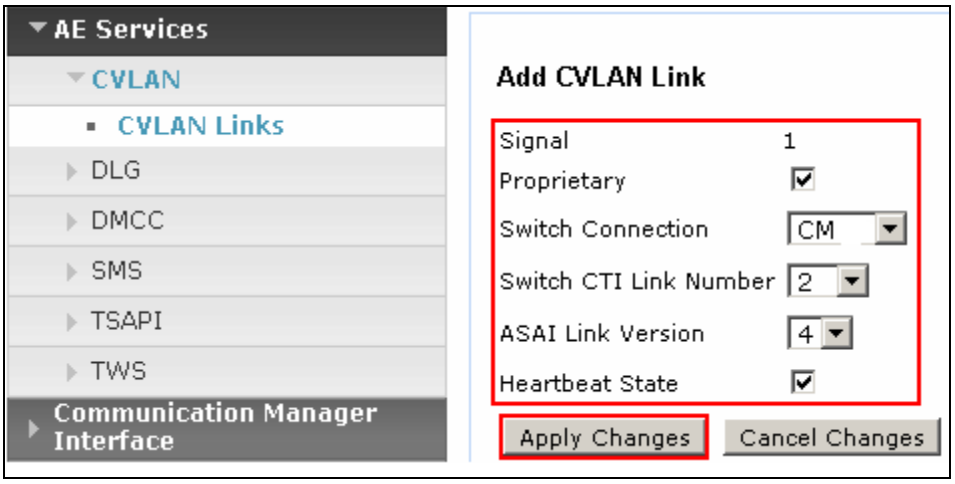
6.3. Administer CVLAN Link

Interaction Center interfaces with AES via a CVLAN link. Select **AE Services → CVLAN → CVLAN Links** from the left pane. The **TSAPI Links** screen is displayed, click **Add Link**.

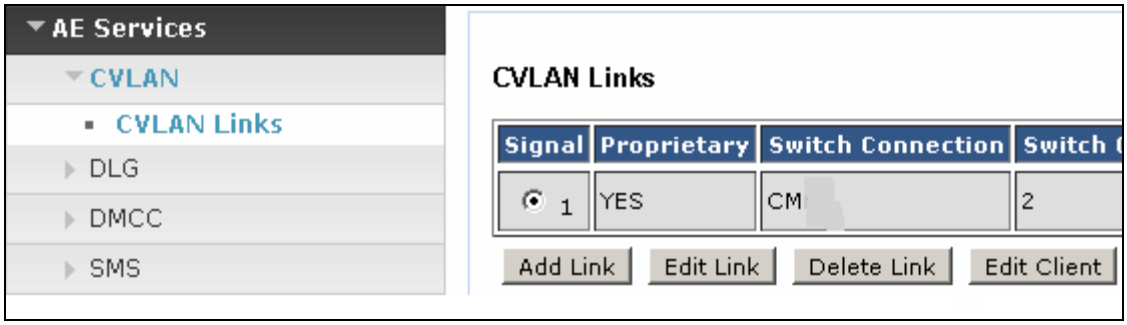


Configure the CVLAN Link as follows and click **Apply Changes** when done:

- **Signal** – if this is the first CVLAN link this value will be **1**
- **Proprietary** – place a check in this box
- **Switch Connection** – select the switch connection configured in **Section 6.2**
- **Switch CTI Link Number** – enter the CTI Link number as configured in **Section 6.1**
- **Heartbeat State** – place a check in this box



The following screen will be displayed showing the newly administered CVLAN Link.



7. Configure Avaya Interaction Center

The detailed administration of Interaction Center, is not the focus of these Application Notes and will not be described. This information provided in this Section can be summarized as follows:

- Launch IC Manager
- Configure Telephony
- Administer Account for Java Bridge
- Administer Java Application Bridge
- Administer Avaya IC Client SDK Service
- Start SDK Service

7.1. Launch IC Manager

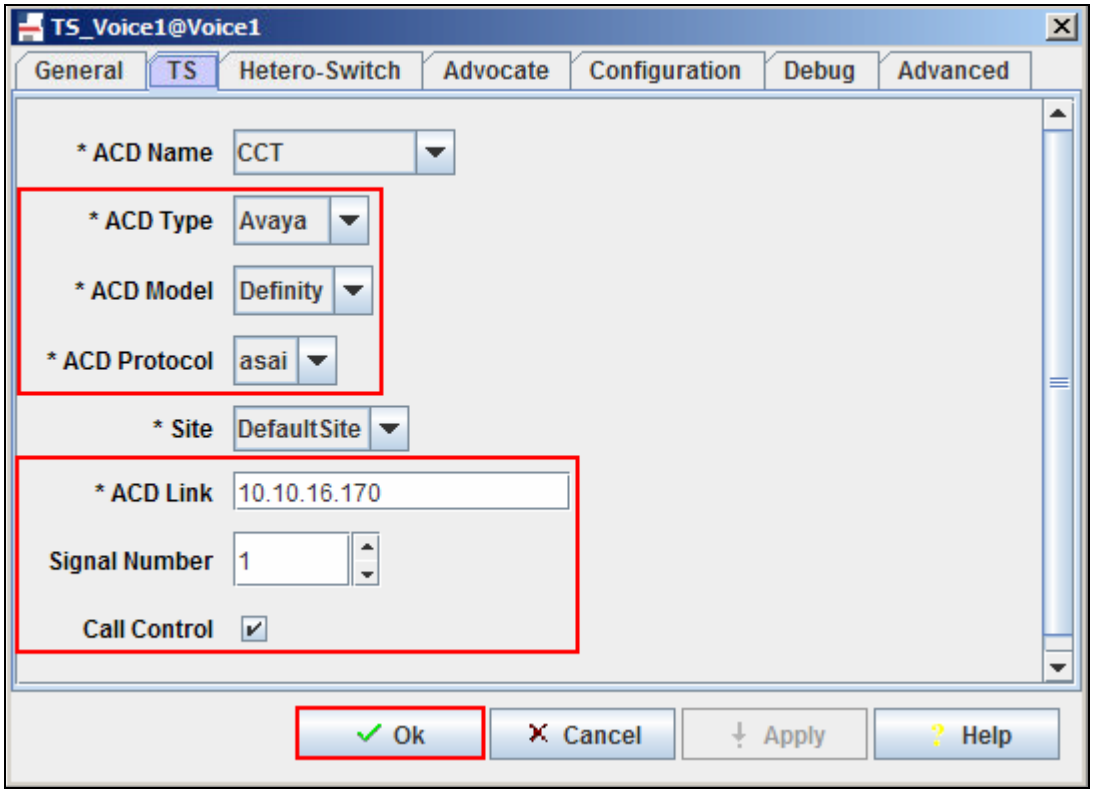
From the PC where the Avaya IC Design and Administration Tools have been installed, select Start → **All Programs** → **Avaya Interaction Center 7.3** → **IC Manager** to launch IC Manager. The IC Manager Login dialog box is displayed. Enter the appropriate credentials and click **Ok**.

7.2. Configure Telephony

A connection to the telephony server must be administered. This relates to the configuration performed on AES in **Section 6.3**. Click **Server → All Domains → Voice1 → TS** to select the Telephony Service for the Voice1 domain. Click the **TS** tab and ensure that the following are configured:

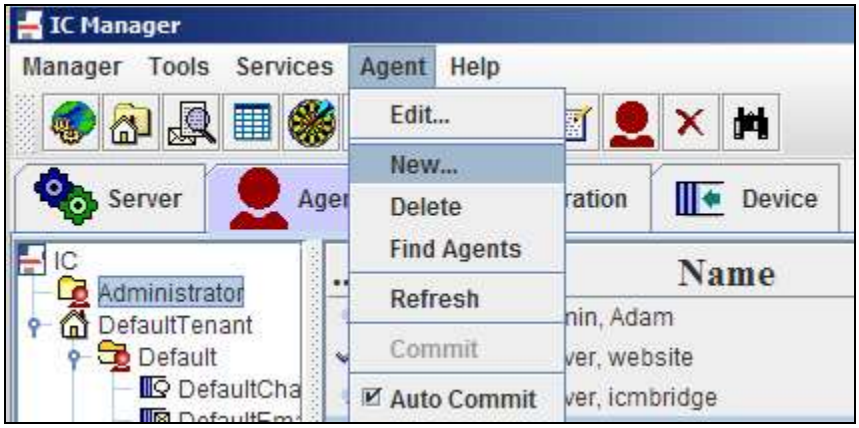
- **ACD Type** – select **Avaya**
- **ACD Model** – select **Definity**
- **ACD Protocol** – select **asai**
- **ACD Link –** enter the IP address of AES
- **Signal Number** – select the signal number configured for the CVLAN Link in **Section 6.3**
- **Call Control** – place a check in this box

The remaining values are configured relevant to the implementation.



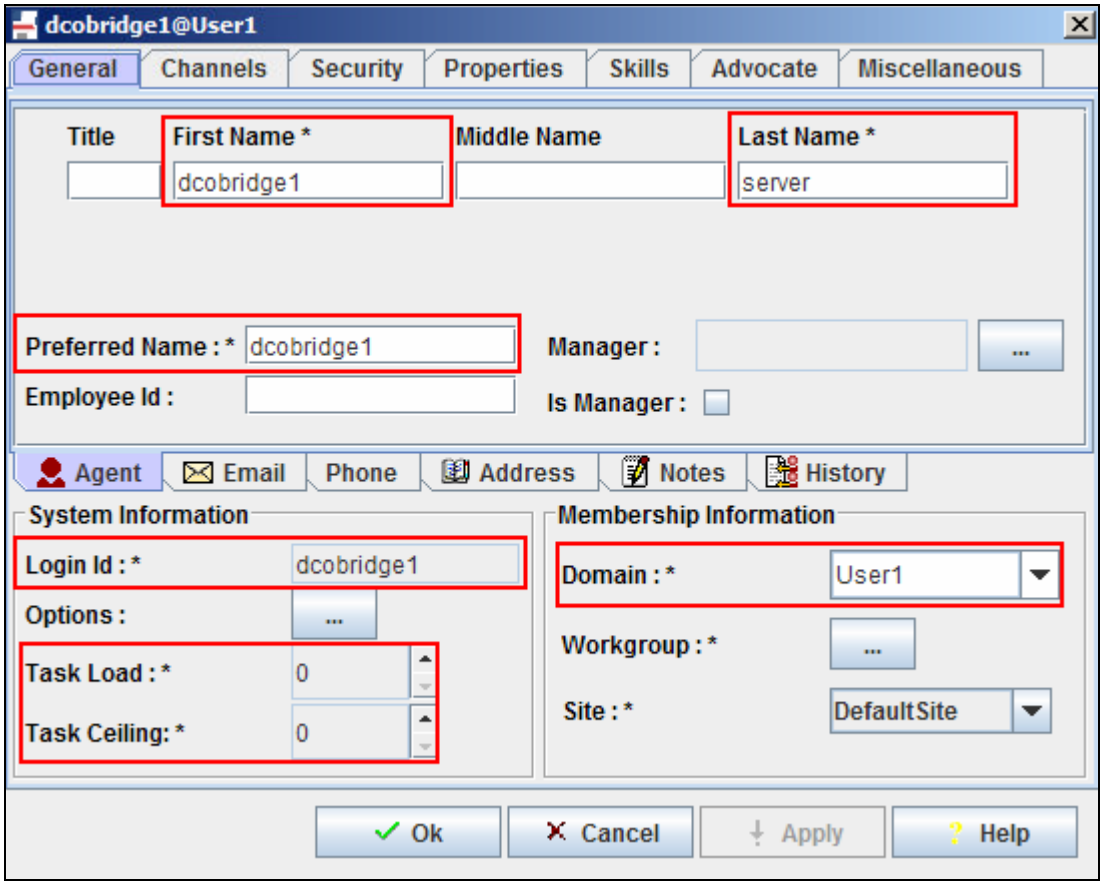
7.3. Administer Account for Java Bridge

On the **IC Manager** screen, click the **Agent** tab. The **IC Manager** screen is updated with agent account information. In the left pane, navigate to the place where a non-human agent account will be created. For the compliance testing, the agent account was created under **IC → Administrator**, as shown below. Select **Agent → New** from the menu bar to create an agent account.

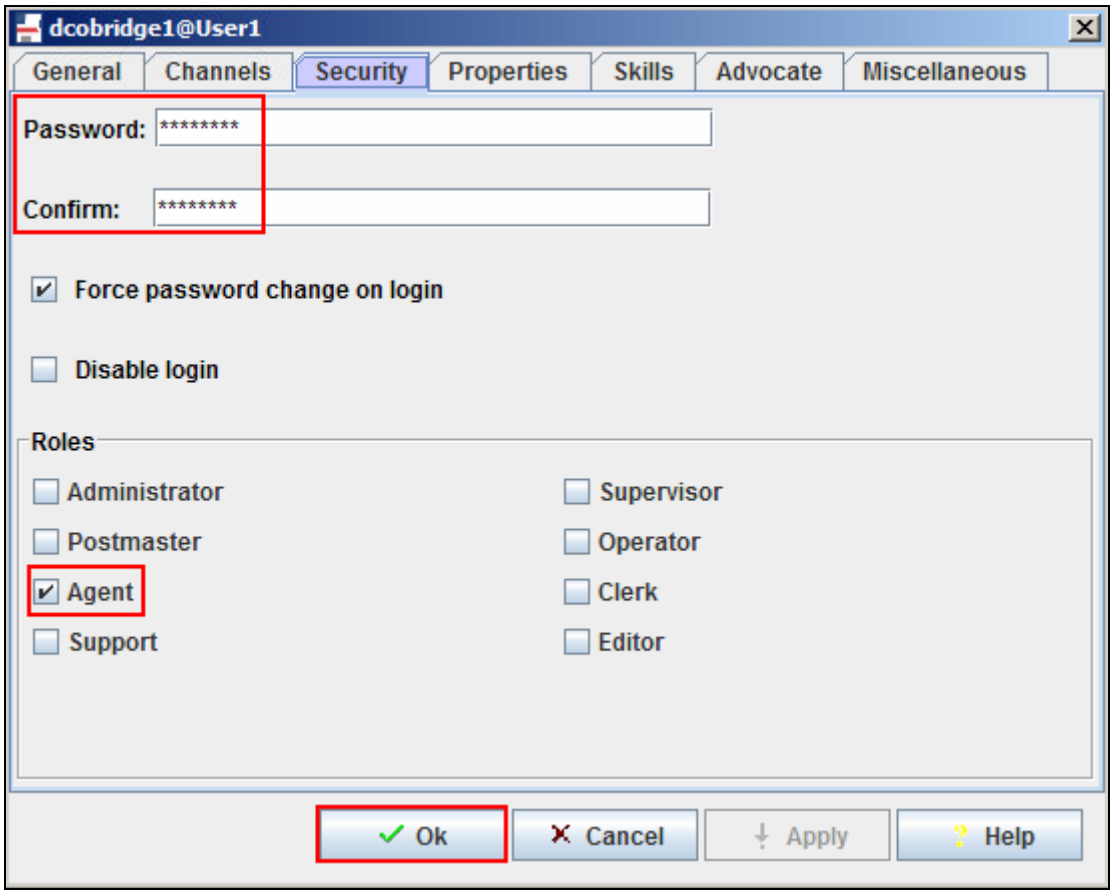


The Agent Editor screen is displayed. Select the General tab. Enter the following values for the specified fields, and retain the default values for the remaining fields

- **First Name** - A descriptive first name, in this case **dcobridge1**
- **Last Name** - A descriptive last name, in this case **server**
- **Preferred Name** - A descriptive preferred name, in this case **dcobridge1**
- **Login Id** - A descriptive login id, in this case **dcobridge1**
- **Domain** - Select the **User1** domain
- **Task Load** - Use the down arrow to decrease the load to **0**
- **Task Ceiling** - Use the down arrow to decrease the ceiling to **0**

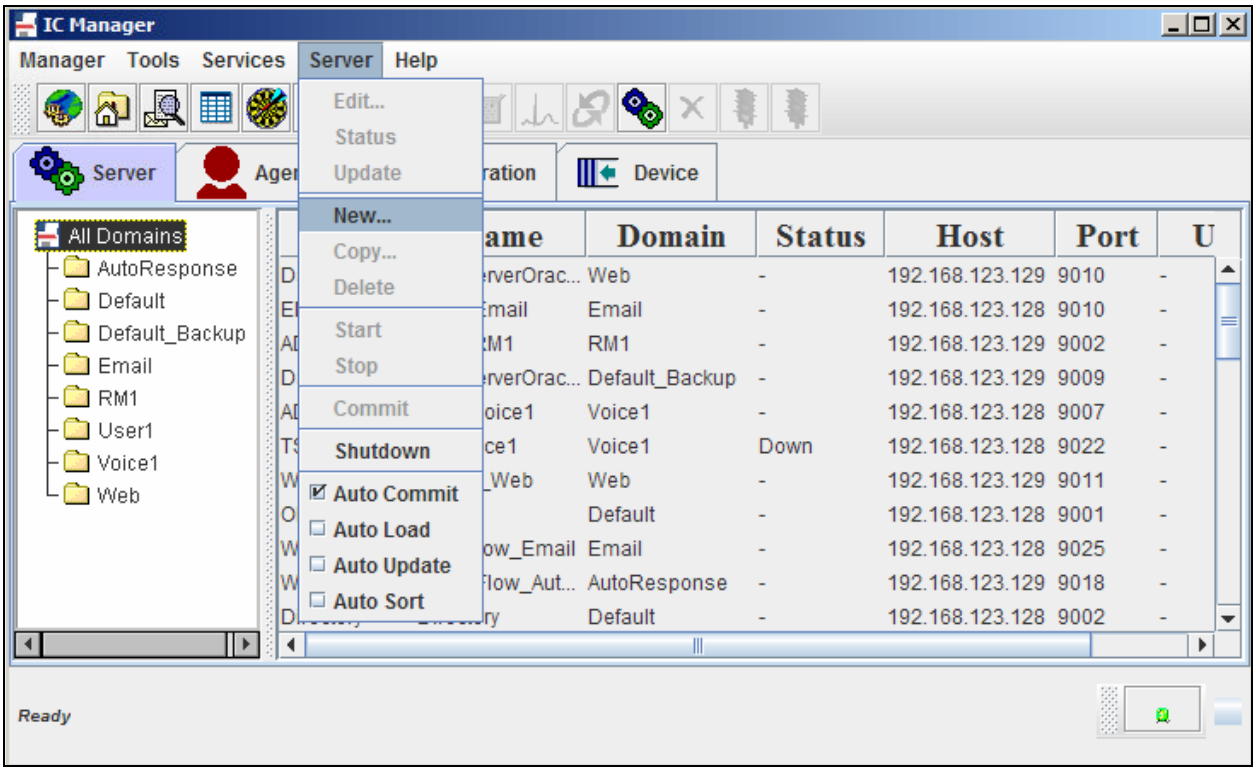


Select the **Security** tab and enter the desired password into the **Password** and **Confirm** fields and check the **Agent** field. Click **Ok**.

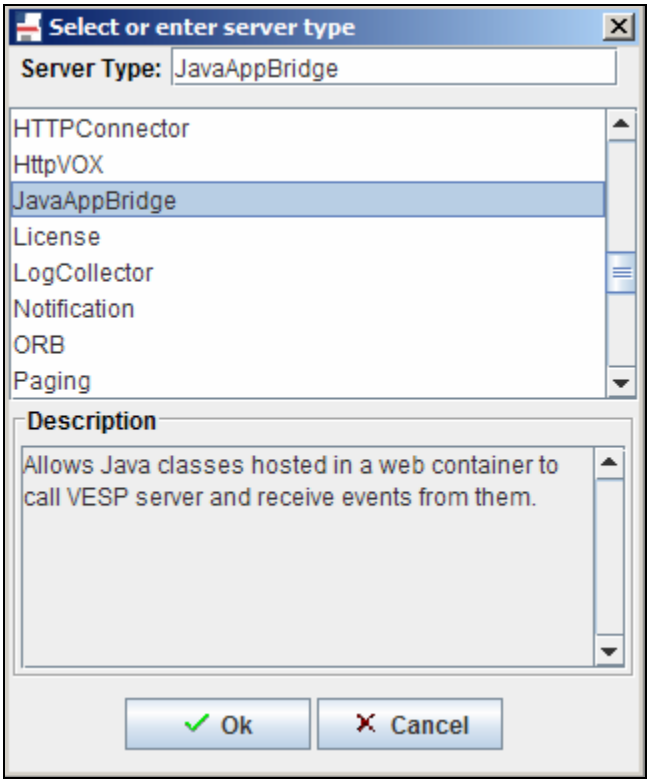


7.4. Administer Java Application Bridge

Click the **Server** tab. The **IC Manager** screen is updated with server information. Select **Server** → **New** from the main menu, as shown below.



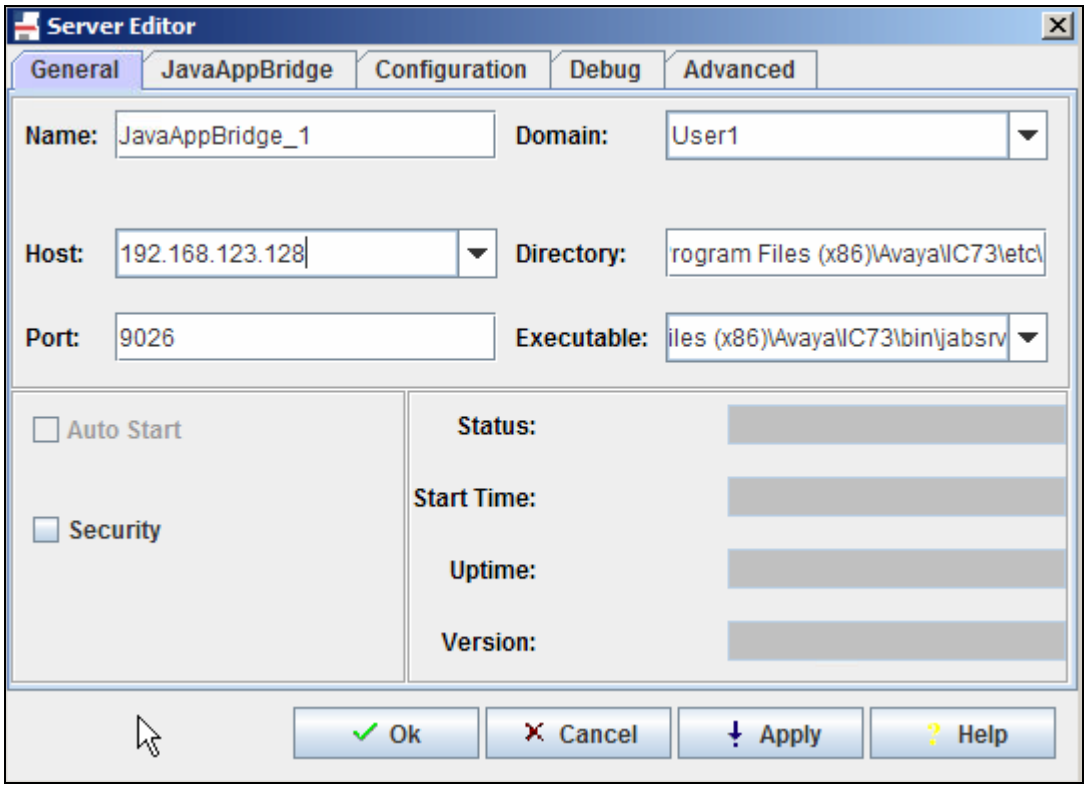
The **Select or enter server type** dialog box is displayed. Scroll down the top pane and select **JavaAppBridge** and click **Ok**.



The **Server Editor** screen is displayed next, under the **General** tab configure as follows:

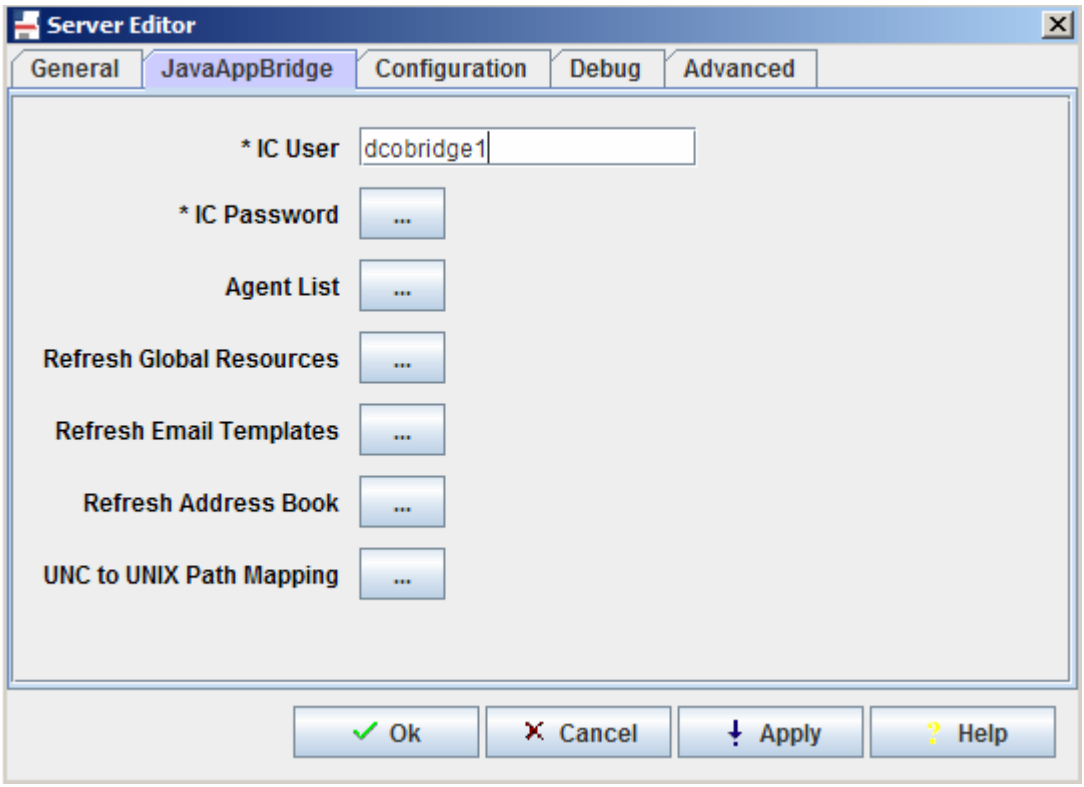
- **Name** - enter a descriptive name
- **Domain** – select **User1** from the drop-down list
- **Host** – select the IP address of the server that will run the IC Client SDK from the drop-down list.

Maintain the automatically populated default values in the remaining fields.

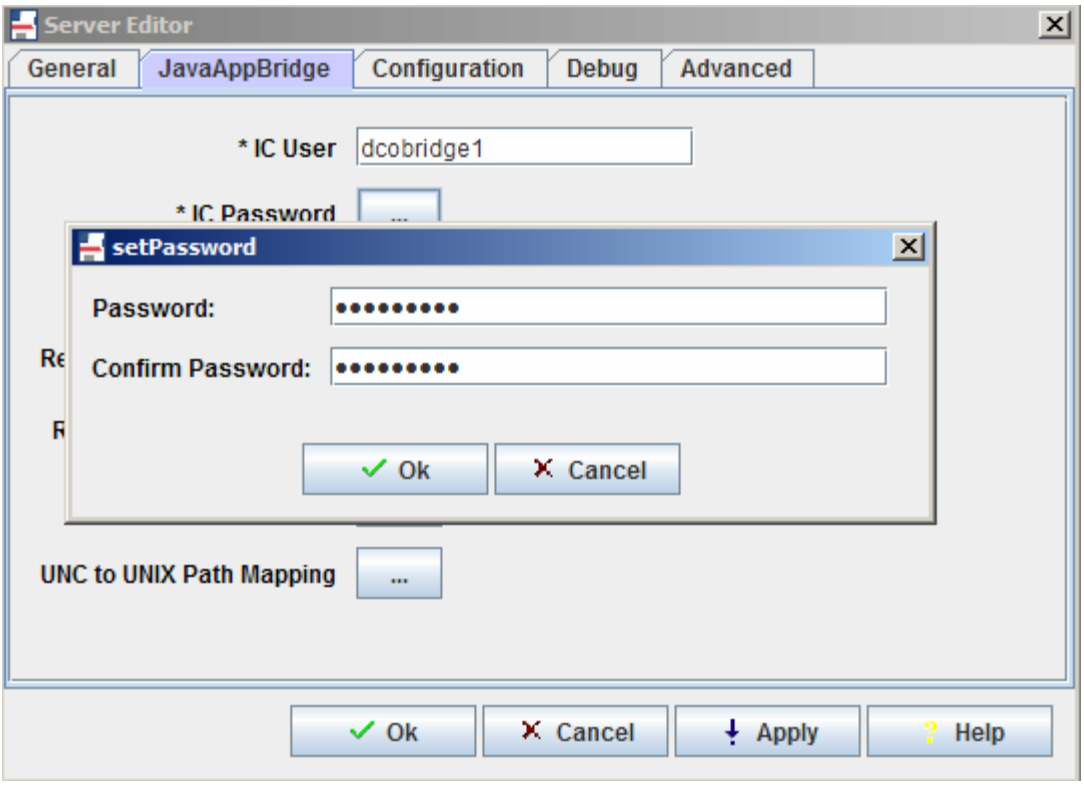


Select the **JavaAppBridge** tab and configure as follows:

- **IC User -** enter the agent account configured in **Section 7.3**.



Click the **IC Password** field to display the **setPassword** dialog box. Enter the agent account password from **Section 7.3** into the **Password** and **Confirm Password** fields in the dialog box, and click **Ok**. Maintain the default values in the remaining fields on the **Server Editor** screen, and click **Ok**.



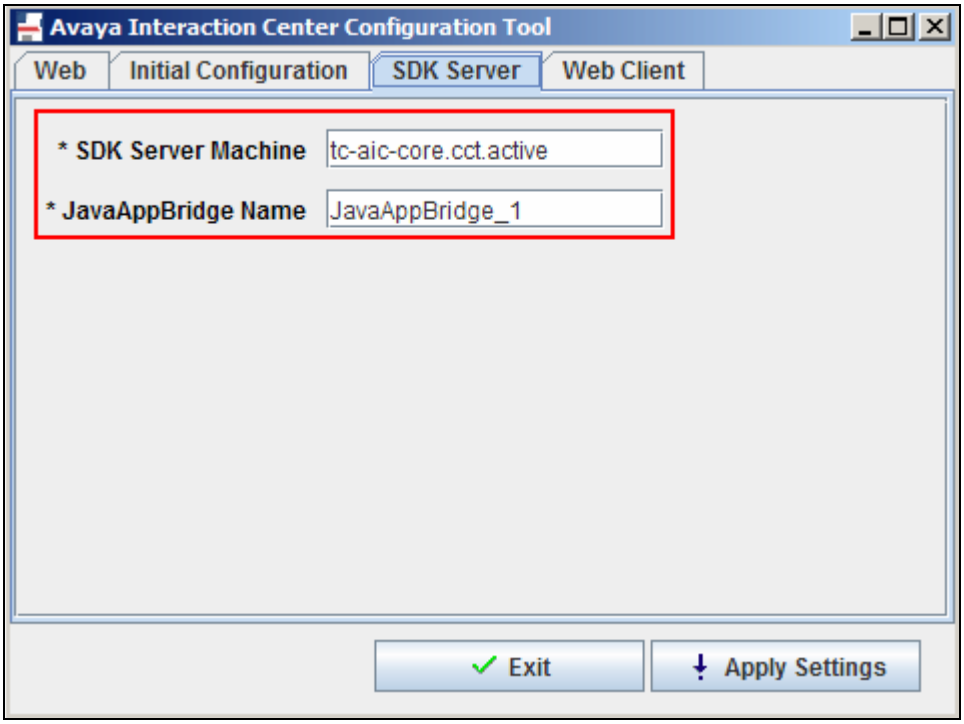
7.5. Administer Avaya IC Client SDK Service

The SDK Service is required to allow the CCT ContactPro Client to connect to Interaction Center. From the IC Client SDK server, select **Start → Programs → Avaya Interaction Center 7.3 → Config Tool**. The **AIC Login** dialog box is displayed. Enter the appropriate administrator credentials and click **Ok**.

The **Avaya Interaction Center Configuration Tool** screen is displayed next. Select the **SDK Server** tab and configure as follows:

- **SDK Server Machine** - enter the fully-qualified domain name of the IC Client SDK server
- **JavaAppBridge Name** - enter the name of the Java Application Bridge from **Section 7.4**.

Click **Apply Settings** followed by **Exit**.



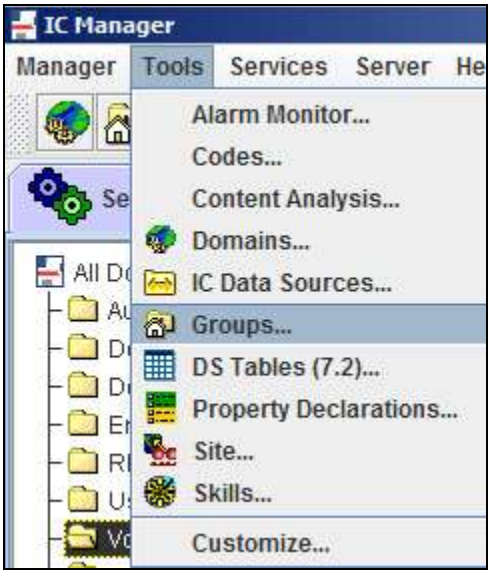
7.6. Start SDK Service

From the IC Client SDK server, select **Start → Administrative Tools → Services** (not shown) to load the Services screen below. Right click on **Avaya IC SDK Service 7.3**, and select **Start** to start the service.

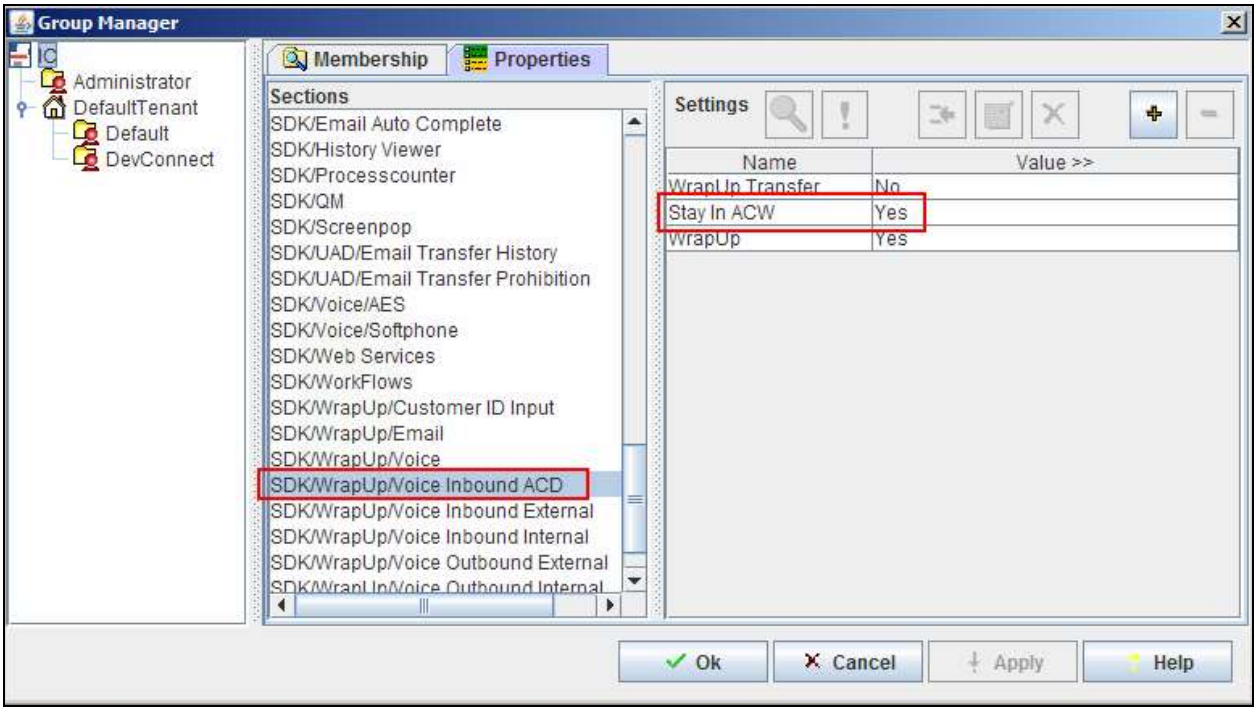
7.7. Server Side Customisations

Server Side Customisations are required on Interaction Center in order for integration with ContactPro. The details of these are not covered by these application notes and customisation is performed during engagement with CCT

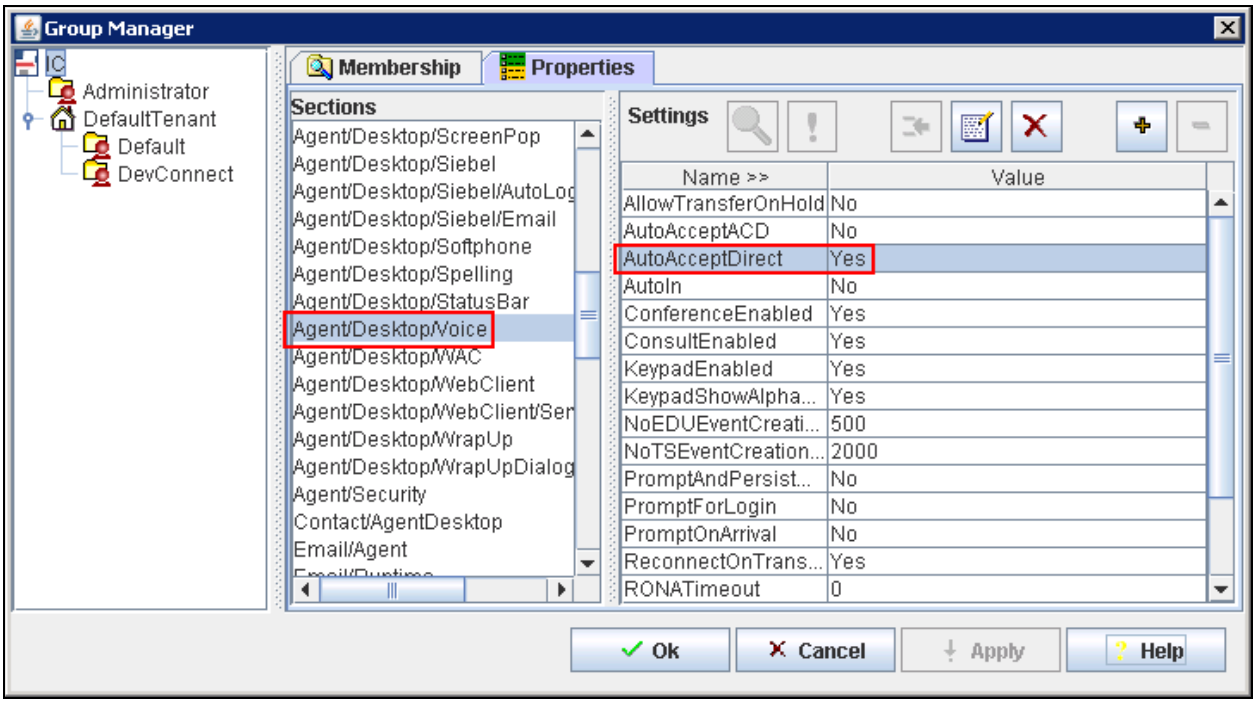
To configure Interaction Center Properties from **IC Manager** click **Tools → Groups** from the menu bar.



Select **IC** at the top of the hierarchy and click **Properties**. The customisations relevant to the SDK are prefixed with **SDK**. Below is an example of such a customisation where **Stay In ACW** is enabled for Inbound Voice ACD calls.

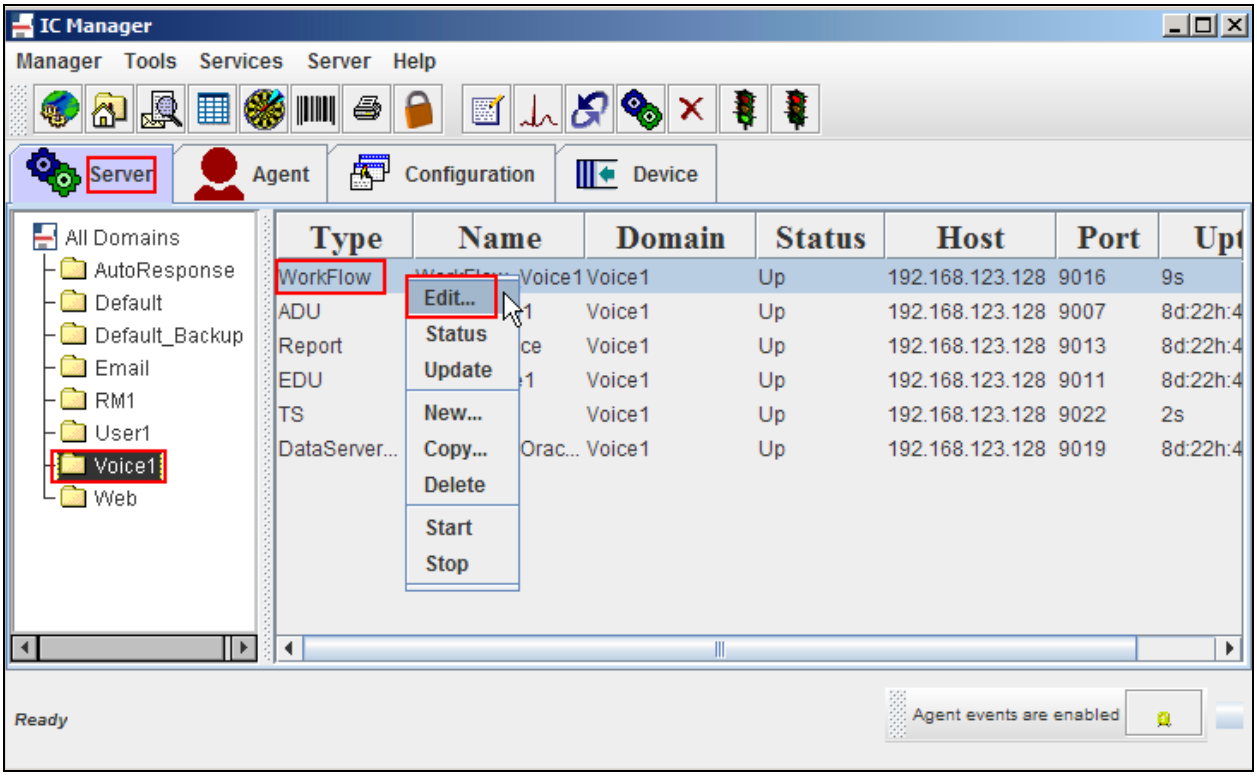


Customisations not specific to the SDK can also be configured in these property pages. In the screenshot below Auto Answer is enabled.

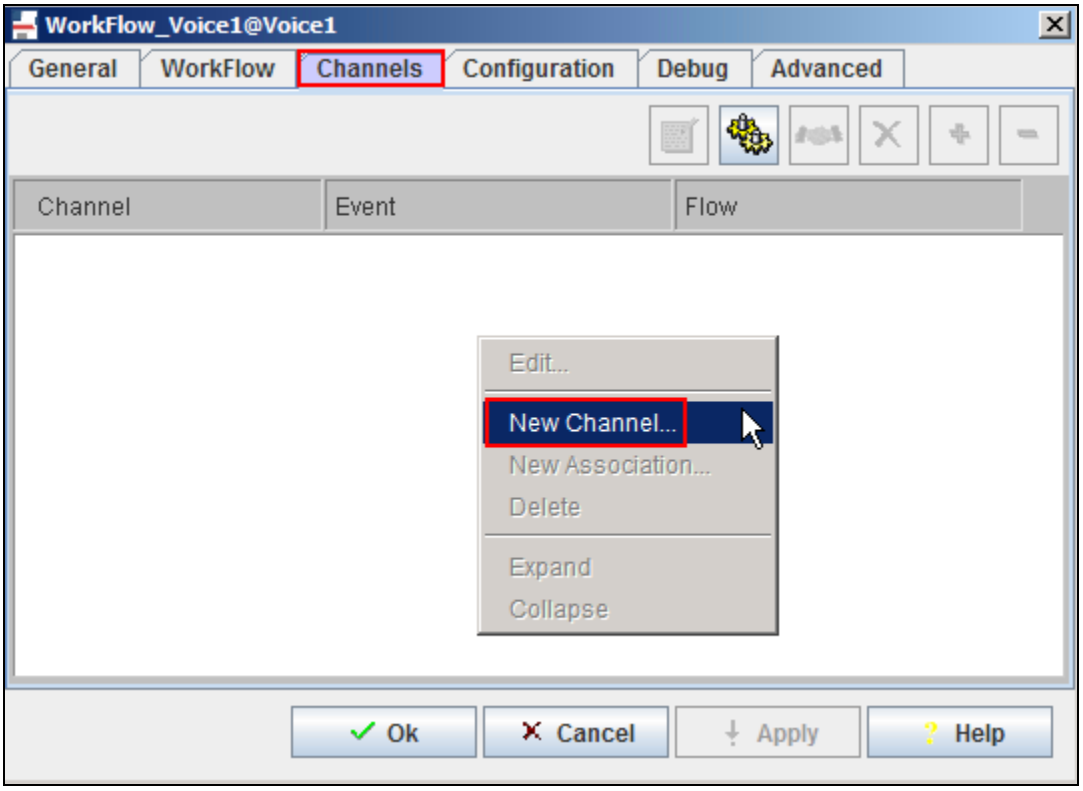


7.8. Administer Voice Domain Workflow Channel

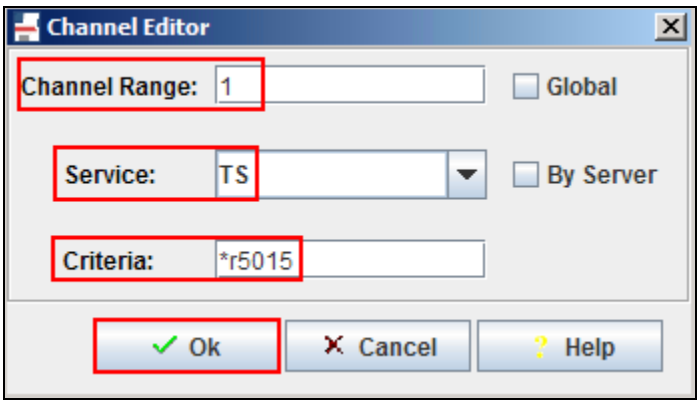
The adjunct-route Vector and VDN configuration in **Section 5.2** and **5.3** is used to create a Voice Domain Workflow Channel. Calls to this VDN will be routed to Interaction Center. From **IC Manager** click the Voice domain and right click on the **Workflow** component and click **Edit**.



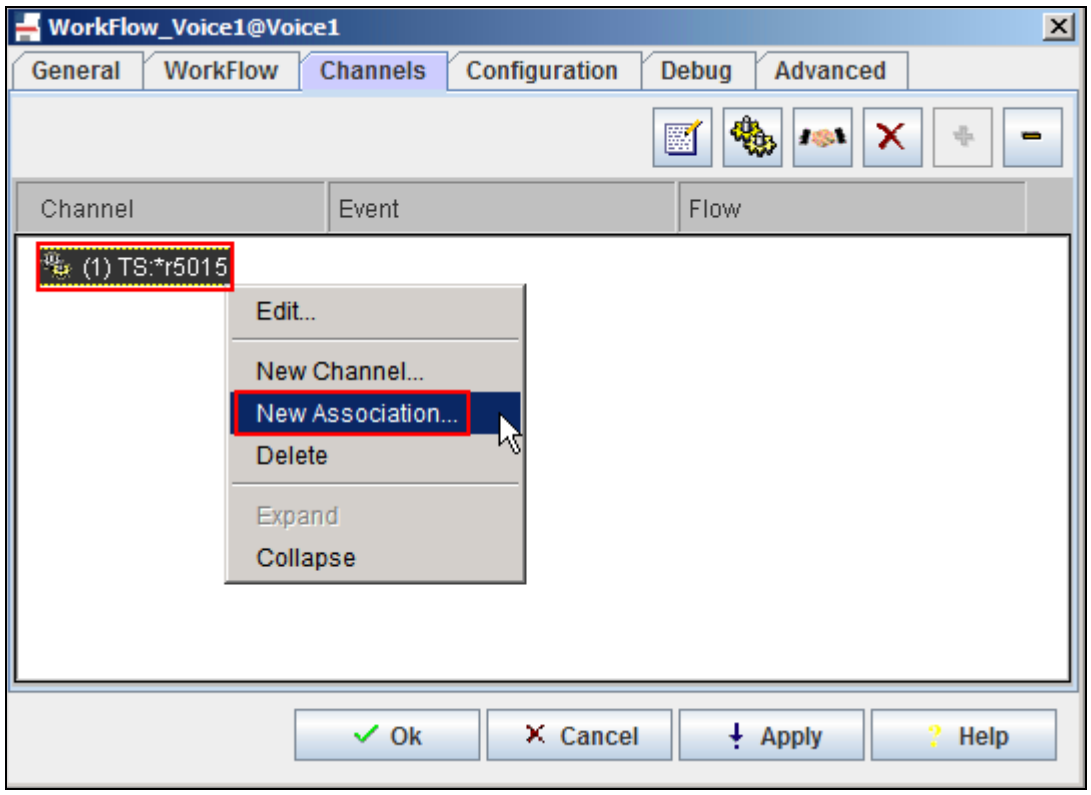
Click on the **Channels** tab and right click in the empty pane and select **New Channel**.



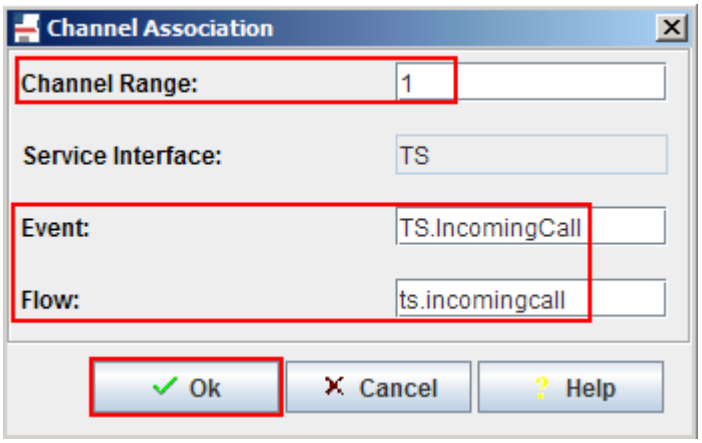
In the screen that follows, configure the **Channel Range** as **1**, from the **Service** drop down box select **TS** and in the **Criteria** field enter ***r5015**. This is the format required by Interaction Center and relates to VDN 5015 configured in **Section 5.3**. Click **Ok** when done.



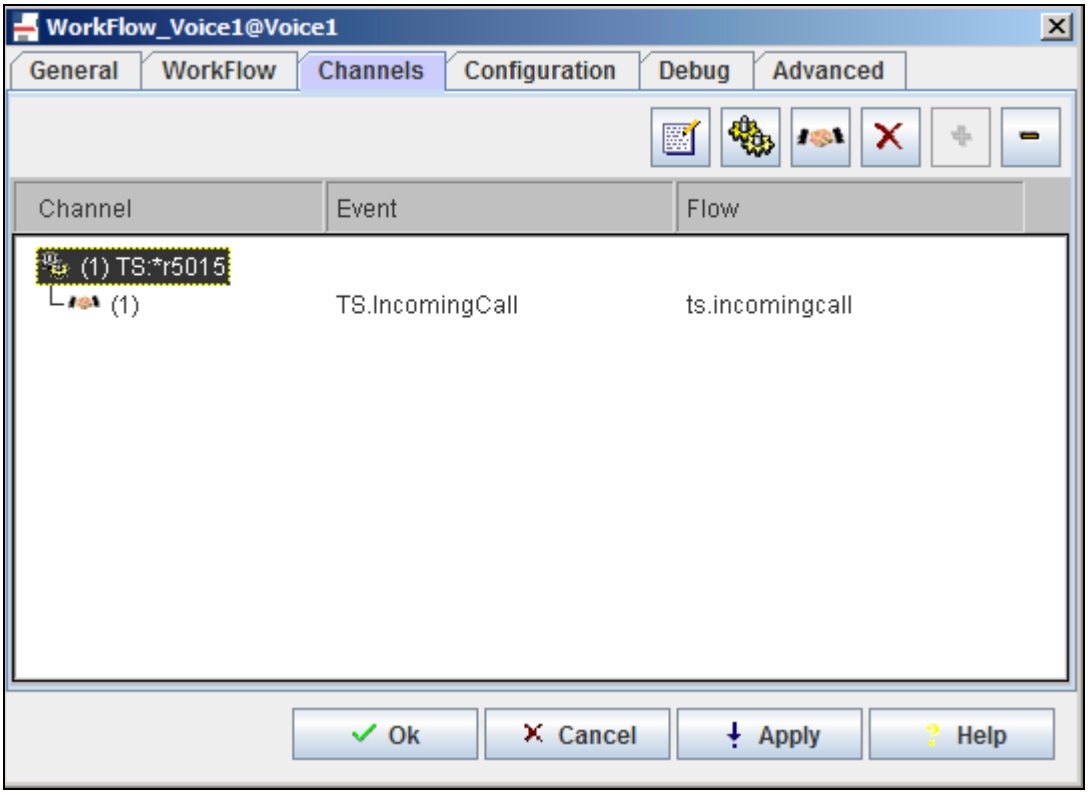
Right click on the newly added channel and click **New Association**.



In the screen that follows enter the **Channel Range** of **1**, the **Event** with a value of **TS.IncomingCall** and the **Flow** with a value of **ts.incomingcall** click **Ok** when done.



The following screen will be displayed showing the newly added channel and association.



8. Configure CCT ContactPro

The full documentation of configuration is not covered by these application notes and customisation is performed during engagement with CCT. The following lists the main sources of configuration needed on the server.

- Configuration.xml
    - Exists in the same folder of ContactPro.exe. This is the main configuration file that the application loads on start up.

Below are excerpts of the configuration.xml file used demonstrating the configuration required for connection to the Database Server:

```
<Section name="Database" description="">
<Item name="Enabled" value="true" type="bool" required="true"
advanced="false" description="If this is disabled, the Host does not perform
any Database transactions on Startup.  Such as retrieving the
ApplicationNumber, UserNumber and Automatic Configuration update. " />
<Item name="Database Connector" value="192.168.123.128:1101" type="string"
required="true" advanced="false" description="" />
<Item name="Database Connector" value="192.168.123.129:1101" type="string"
required="true" advanced="false" description="" />
<Item name="Maximum Rows Returned Per Select Query" value="100" type="int"
required="false" advanced="false" description="" />
<Item name="Use LOWER Function In Select Queries" value="false" type="bool"
required="false" advanced="false" description="" />
</Section
```

And the SDK Server

```
<Section name="SDK Server" description="If the IP Address of the connecting
client is not in the range of any of the 'SDK Server n' sections, this
configuration is used.">
<Item name="Primary URL" value="http://192.168.123.128:9700/icsdk"
type="string" description="URL of the IC SDK Server." />
<Item name="Secondary URL" value="http://192.168.123.129:9700/icsdk"
type="string" description="URL of the IC SDK Server." />
<Item name="Tertiary URL" value="http://192.168.123.128:9700/icsdk"
type="string" description="URL of the IC SDK Server." />
<Item name="Quaternary URL" value="http://192.168.123.129:9700/icsdk"
type="string" description="URL of the IC SDK Server." />
</Section>
```

- IC Properties
    - IC Properties are used for configuration where it is necessary to apply different settings for a group or individual users.
- ContactPro Database Schema
    - Further configuration such as translation languages, and customer specific SQL Queries are stored in the ContactPro Database Schema.

8.1. Database Customisations

IC allows full database customisations through its Database Designer. The design and structure of the three IC databases (CCQ, REPOSITORY and ADVOCATE) can be different for each installation. To support complicated variations of the each customer, ContactPro utilises its own CONTACTPRO database schema and provides the following features.

- Dynamic SQL

Dynamic SQL statements allow easy migration to ContactPro without database design changes for existing IC installations. Please contact CCT for analysis of any required modifications to the dynamic SQL statements.

- Multilingual Support

ContactPro supports multilingual user interfaces, by retrieving all text from the CONTACTPRO database schema. You can easily add new languages. English, German and Turkish translations are available as of date of writing.

8.2. CCT ContactPro Database Connector Service

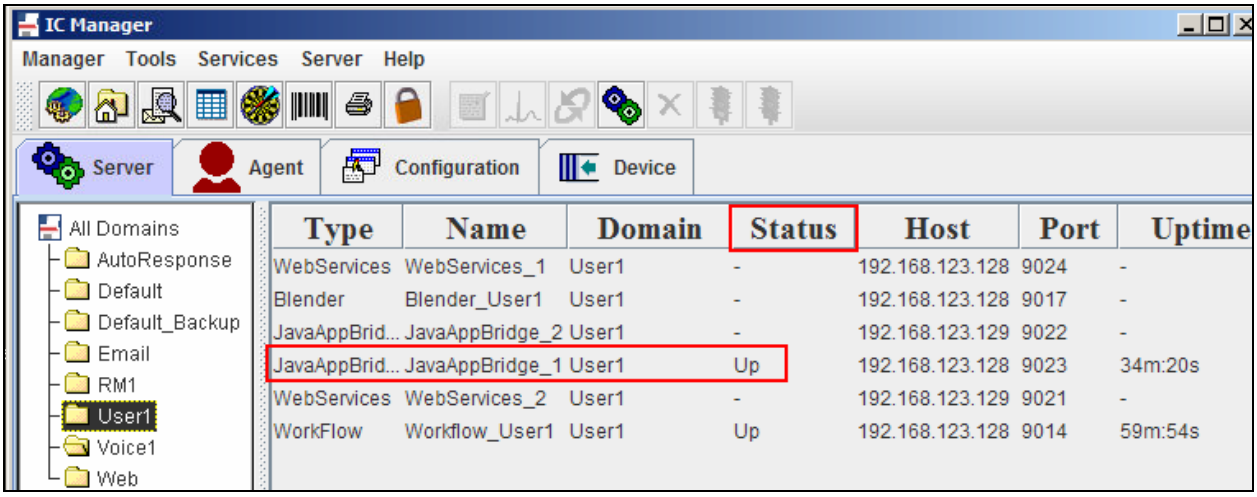
By default IC SDK does not support custom database access. To provide rich customisable features such as History, Templates and Reporting, CCT provides its own Database Connector Service. This allows ContactPro Desktops to access the database without directly opening a connection. Database Connector Services are available for Oracle and Microsoft SQL.

9. Verification Steps

This section provides the tests that can be performed to verify proper configuration of Avaya Interaction Center and CCT ContactPro.

9.1. Verify Java Application Bridge

From the **IC Manager** application select the **Server** tab and click on the **User1** domain. In the **Status** column verify the status of the Java App Bridge configured in **Section 7.4** is **Up**.



9.2. Verify CVLAN Link Status

From the AES OAM pages, click **AE Services → CVLAN → CVLAN Links** and verify that the configured CVLAN Link has an **Active Client**. This relates to the connection configured on Interaction Center in **Section 7.2**.

9.3. Verify Successful Operation of CCT ContactPro Client

Double click on the ContactPro.exe icon on the client PC and enter the appropriate credentials as follows and click **OK**:

- **IC Login Username** – enter an agent administered on Interaction Center
- **IC Login Password** – enter the corresponding password for the above username
- **Station ID** – enter the extension number used for the voice path
- **Agent ID** – enter the agent configured on Communication Manager
- **Agent Password** – enter the corresponding agent password configured on Communication Manager

Place an incoming/outgoing contact to/from the agent using email, webchat or voice and verify the agent desktop is populated with the contact information. Ensure that the relevant options are available to answer and/or respond to the contact. In the case of a voice call ensure the appropriate call handling options are available. Throughout the handling of the contact, ensure that the state of the contact is reflected accurately.

The screenshot below shows an outgoing call being placed, note the **Status** of the Work item and the agent is in the A**vailable** state.

9.4. Verify Status of Communication Manager Agent

Enter the command **list agent-loginID** verify that agent **8271001** shown in **Section 9.3** is logged-in to extension **8270001**.

```
list agent-loginID
                                AGENT LOGINID
Login ID     Name            Extension     Dir Agt  AAS/AUD       COR Ag Pr SO
              Skil/Lv Skil/Lv Skil/Lv Skil/Lv Skil/Lv Skil/Lv Skil/Lv Skil/Lv

8271001      Agent 1         8270001                                 1   lvl
                   3/01    9/02     /       /       /       /       /       /
8271002      Agent2          8270002                                 1   lvl
                   3/02    9/01     /       /       /       /       /       /
5623         Agent3          unstaffed                               1   lvl
                   2/01    3/03    5/01    6/01     /       /       /       /
```

Enter the command **status station 6001** and on **Page 7** verify that the agent is logged-in to the appropriate skills and in the **MI** mode.

```
status station 8270001                                    Page   7 of   7
                                   ACD STATUS

 Grp/Mod  Grp/Mod  Grp/Mod  Grp/Mod  Grp/Mod  Grp/Mod  Grp/Mod
   3/MI       /        /        /        /        /        /   On ACD Call? no
   9/MI       /        /        /        /        /        /
```

10. Conclusion

These Application Notes describe the configuration steps required for CCT ContactPro to interoperate with Avaya Interaction Center 7.3 using the Avaya IC Client SDK interface. All feature and serviceability test cases were completed successfully any with observations noted in **Section 2.2**.

11. Additional References

This section references the Avaya and CCT product documentation that are relevant to these Application Notes.

[1] *Deploying Avaya Aura® Call Center Interaction Center in an Avaya Customer Experience Virtualized Environment* Release 7.3
[2] *Avaya Aura® Call Center Interaction Center Installation Guide* Release 7.3.4
[3] *Administering Avaya Aura® Call Center Interaction Center* Release 7.3.x
[4] *Administering Avaya Aura® Communication Manager*, Document ID 03-300509
[5] *Avaya Aura® Communication Manager Feature Description and Implementation*, Document ID 555-245-205
[6] *Avaya Aura® Application Enablement Services Administration and Maintenance Guide* Release 7.0

Avaya product documentation can be obtained from http://support.avaya.com

The following CCT documentation can be obtained using the contact information detailed in **Section 2.3**.

- CCT ContactPro Installation Guide.
- CCT ContactPro User Guide.
- CCT ContactPro Technical Specification.
- CCT ContactPro Test Specification.
- CCT Channel States with DMCC.
- CCT ContactPro Port Ranges.