



Application Notes for Komutel Solution for Integrated Telecommunications with Avaya IP Office - Issue 1.0

Abstract

These Application Notes describe the steps required to integrate the Komutel SIT (Solution for Integrated Telecommunications) PC Attendant Console with Avaya IP Office. The PC Attendant Console provides a desktop communications center with enhanced control of call handling features. It provides the ability to handle a high volume of calls and offers tools designed to manage telephony functions and Presence Management to monitor the availability of users.

In the compliance test, the PC Attendant Console successfully controlled an already existing IP Office deskphone using TAPI. The PC Attendant Console established calls with other telephones, and executed telephony features such as Hold, Transfer, Forward and Conference.

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 steps required to integrate the Komutel Attendant Console (Solution for Integrated Telecommunications) with Avaya IP Office. The PC Attendant Console provides a PC based communications center with enhanced control of call handling features. The console connects to the telephone to manage telephone operations. This telephone is necessary to establish voice communications and must be fully functional. The console sends commands to the telephone which in turn returns call information to the console.

The Avaya IP Office Server Edition configuration consisted of two Avaya IP Office systems, a primary Linux server at the Main site and an expansion IP500V2 at the Remote site that were connected via Small Community Network (SCN) trunks.

In the compliance testing, two PC Attendant Consoles were deployed on two servers. The first PC Attendant Console interfaces with primary IP Office system using Telephony Application Programming Interface (TAPI) and controlled an already existing deskphone on primary at the Main site, and the second PC Attendant Console interfaces with the expansion IP Office using TAPI to control and monitored users at the Remote site.

In addition, an optional component of the PC Attendant Console, the BLF Agent, which allows attendants to monitor the availability of users through the use of BLF (Busy Lamp Field) buttons, was also successfully verified. The BLF feature requires the use of a TAPI to obtain status information of monitored stations on IP Office.

2. General Test Approach and Test Results

The feature test cases were performed manually. Calls were placed manually from and to Attendant Console to various IP Office users and emulated PSTN users while exercising common telephone features. Test included established calls with other telephones, and executed telephony features such as Hold, Transfer, Forward and Conference.

The serviceability test cases were performed manually by disconnecting and reconnecting the Ethernet connection to the PC Attendant Console.

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 compliance test included feature and serviceability testing.

- Successful connection of the PC Attendant Console with IP Office via TAPI.
- Calls between Attendant Console and Avaya IP Deskphone (SIP and H.323) and digital stations.
- G.711 codec support.
- Caller ID display on Avaya IP deskphone and Attendant Console.
- Proper sending of DTMF.
- Basic telephony features including Hold, Mute, Transfer, call Forward, Do Not Disturb, call Park and Conference.
- BLF buttons to monitor user availability of other IP Office extensions such as: Free, Absent, Online, Ringing, Do not Disturb, Call Forward.
- Proper system recovery after a restart of the PC Attendant Console and loss of IP connectivity.

2.2. Test Results

Basic test cases were executed and passed with the following observations:

- When the PC Attendant Console calls another extension, the Call Display only shows the extension after the recipient has answered the call. Result is similar when an extension makes a call to the PC Attendant Console.
- Line label automatic displays with phone number and will be deleted if the application is closed. User needs to manually enter label in Telephone Options tab.
- If the controlled phone is SIP (11xx series), the user needs to do 1 extra step for outbound calls. If the user clicks on BLF of the called number, the outbound call does not start yet. The user needs to perform an extra step by clicking on the Line button first and make sure it turns to Green, and then the outbound call will be made. This happens because IP Office will need to make a call to the SIP phone first, and then ring the called phone. This is the designed behavior of 11xx series SIP phones. E129 SIP phones are able to make direct outbound call without this extra step.
- In some scenarios after the call is completed, the call display box still shows the phone number of the caller. In a normal scenario, the call display text will be deleted upon the call being disconnected.
- Pressing Resume in an assisted call transfer will delete the text in Caller Display.
- In a conference call, if the organizer hangs up, and all other phones hang up except one, the last user will still be connected to the conference.
- User need to click 2 times on the Call Forward button in order to deactivate CFW for SIT or controlled phone. Work around is to select the entry corresponding to the SIT (SIT + Computer name) in the "Blf no" field in the edit BLF button window.
- The physical phone which has BLF will change color only if it has call Forward all. The other call forward will not display on BLF such as Forward Busy and Forward No Answer.

- For controlled phone, if the user wants to make any changes to BLF, the user needs to make sure phone ID is updated to reflect corrected Phone ID with SIT.
- The Contact's last name in PC Attendant Console display as "IP Office Phone: Extension" which does not match with the user's last name configured on IP Office system. It is possible to rename the imported contact or import contacts manually with the correct name.

2.3. Support

For technical support on the PC Attendant Console, contact Komutel Support via phone, email, or website.

- **Phone:** (877) 225-9988
- **Email:** service@komutel.com
- **Web:** www.komutel.com

3. Reference Configuration

The IP Office Server Edition configuration used in the compliance testing consisted of a primary Linux server at the Main site, and an expansion IP500V2 at the Remote site, with SCN trunks connectivity between the two systems. Each IP Office system has connectivity to the PSTN, for testing cross systems PSTN scenarios.

The detailed administration of IP Office resources is not the focus of these Application Notes and will not be described. As shown in **Figure 1** below, two Attendant Consoles were deployed on two separated Window 2008 Server. The first Attendant Console connected to the primary IP Office system and other Attendant Console to the expansion IP Office system via TAPI connections.

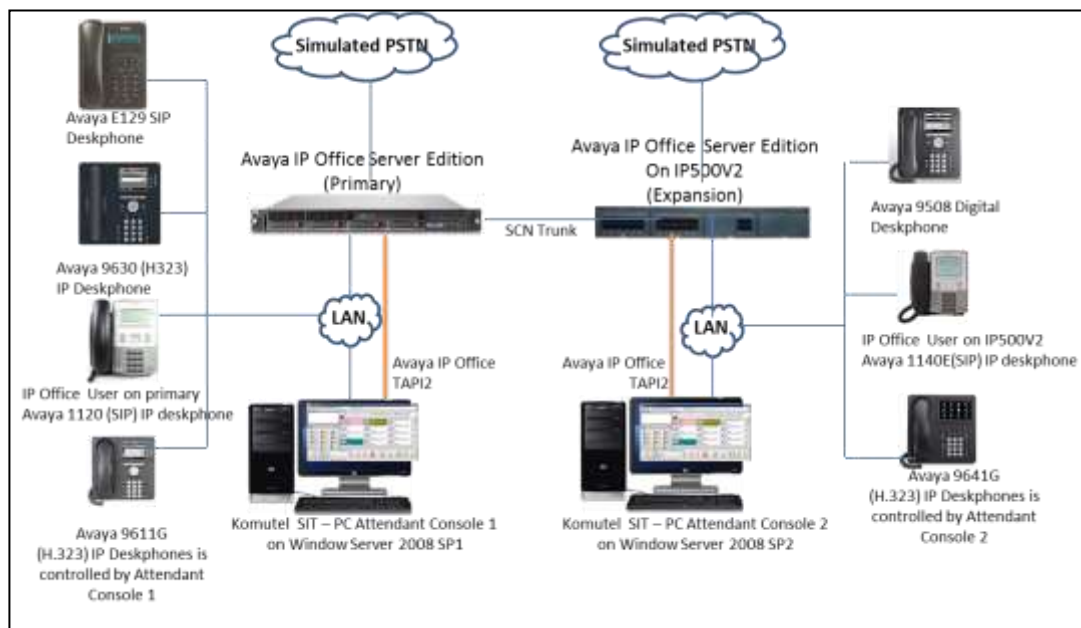


Figure 1: Test Configuration

4. Equipment and Software

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

Equipment/Software	Release/Version
Avaya IP Office on IP500V2(Expansion)	9.1 SP6
Avaya IP Office Server Edition (Primary)	9.1 SP6
Avaya 9611, 9641G IP Deskphone (H.323)	6.6.1.15
Avaya 9630G IP Deskphone (H.323)	3.2.6
Avaya 9508 Digital Deskphone	N/A
Avaya TAPI 2 Driver installed on Virtual Environment Window 2008 Server 64-bit SP1	1.0.0.42
Avaya 1120E, 1140E IP Deskphone (SIP)	4.4.23
Avaya E129 SIP Deskphone	1.0.2
Komutel Attendant Console (SIT) installed on Window 2008 Server 64-bit SP1	2.4.8.24160

Compliance Testing is applicable when the tested solution is deployed with a standalone IP Office 500 V2 and also when deployed with IP Office Server Edition in all configurations.

5. Configure Avaya IP Office

This section provides the procedures for verifying Avaya IP Office. The procedures include the following areas:

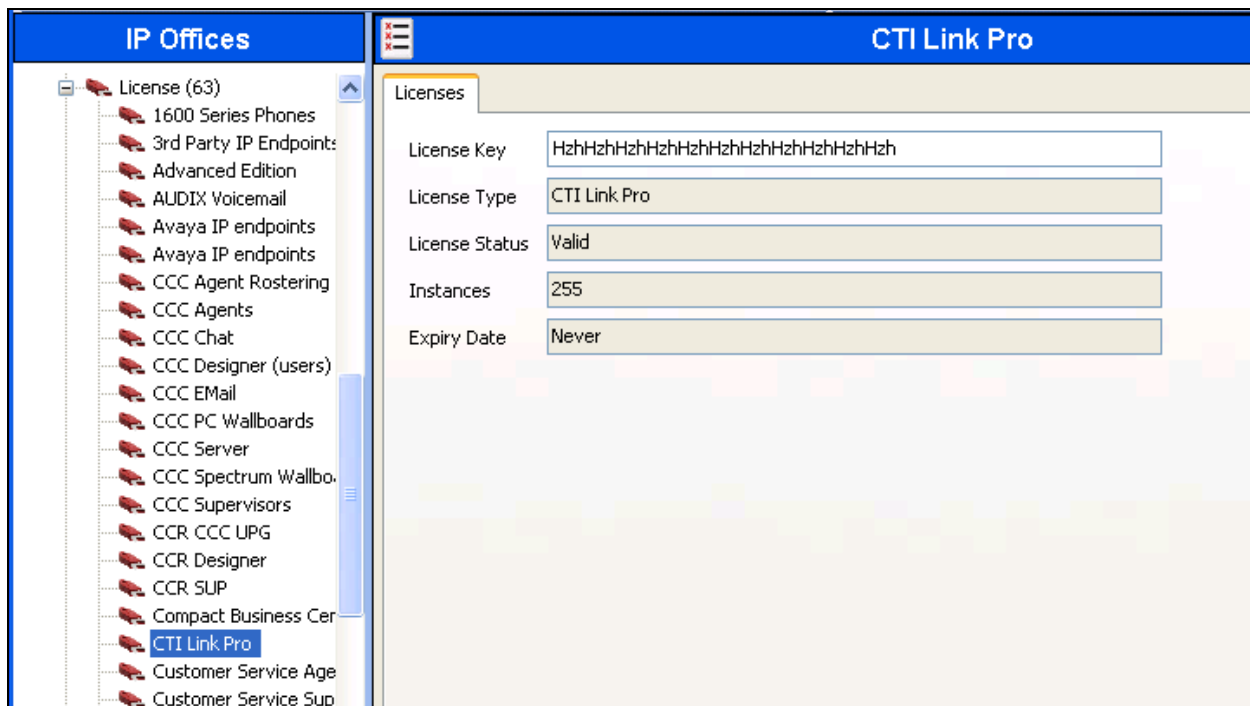
- Verify IP Office license
- Obtain LAN IP address

For detailed information on installation and configuration for IP Office, refer to **Section 9 [1]**.

5.1. Verify IP Office License

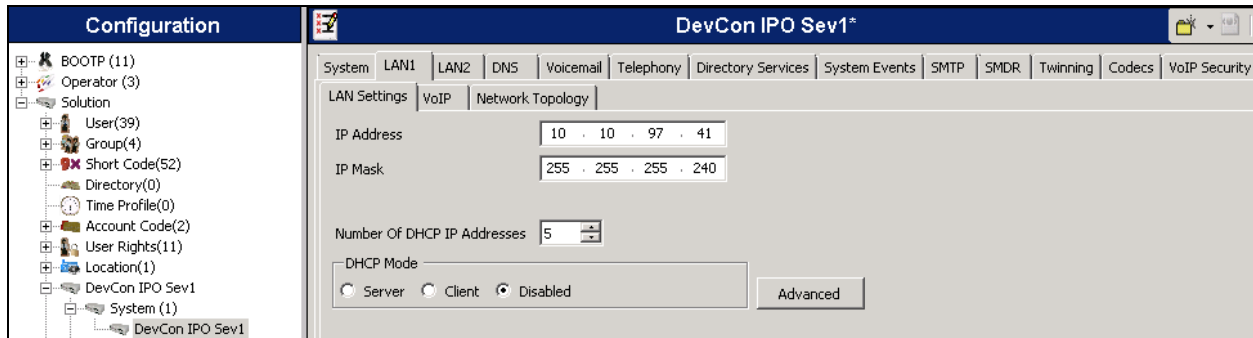
From a PC running the Avaya IP Office Manager application, select **Start > Programs > IP Office > Manager** to launch the Manager application. Select the proper IP Office system, and log in with the appropriate credentials.

The **Avaya IP Office Manager** screen is displayed. From the configuration tree in the left pane, select **License > CTI Link Pro**, to display the **CTI Link Pro** screen in the right pane. Verify that the **License Status** is “Valid”.

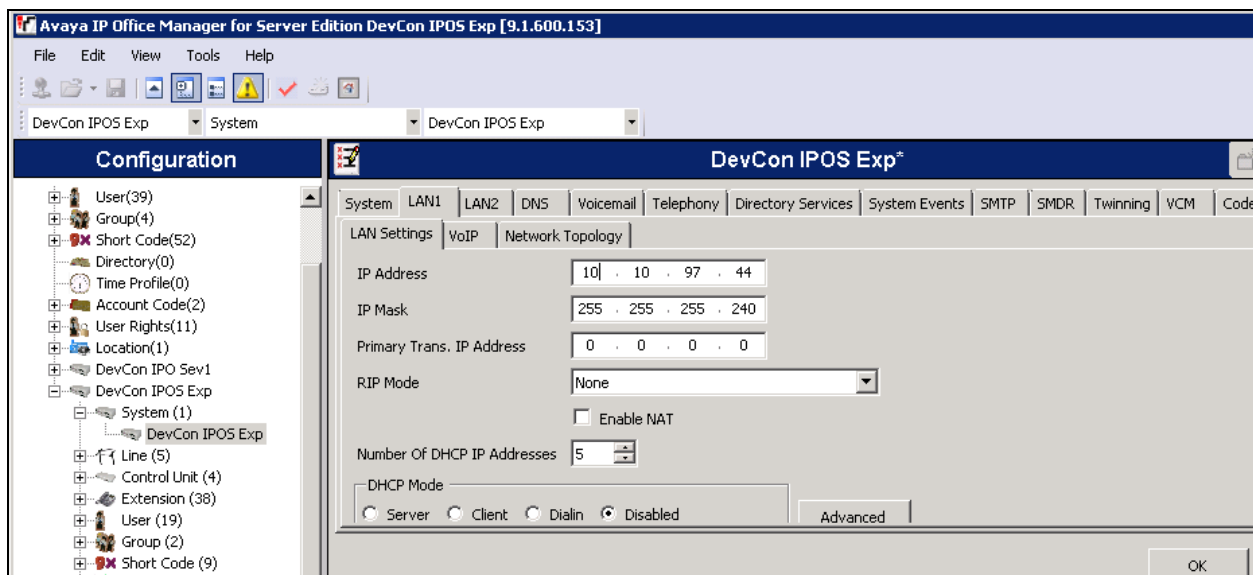


5.2. Obtain LAN IP Address

This section will explain how to obtain the LAN IP Addresses of the Primary server and Expansion IP500V2. From the configuration tree in the left pane, select the IP Office of interest under **System** (it was **DevCon IPO Sev1** for the compliance test). Select the **LAN1** tab, followed by the **LAN Settings** sub-tab in the right pane. Make a note of the **IP Address**, which will be used later to configure the TAPI. Note that IP Office can support LAN1 and/or LAN2 interfaces and the compliance testing used the LAN1 interface.



Repeat same steps for IP500V5 (it was **DevCon IPOS Exp**).



6. Configure Komutel Attendant Console

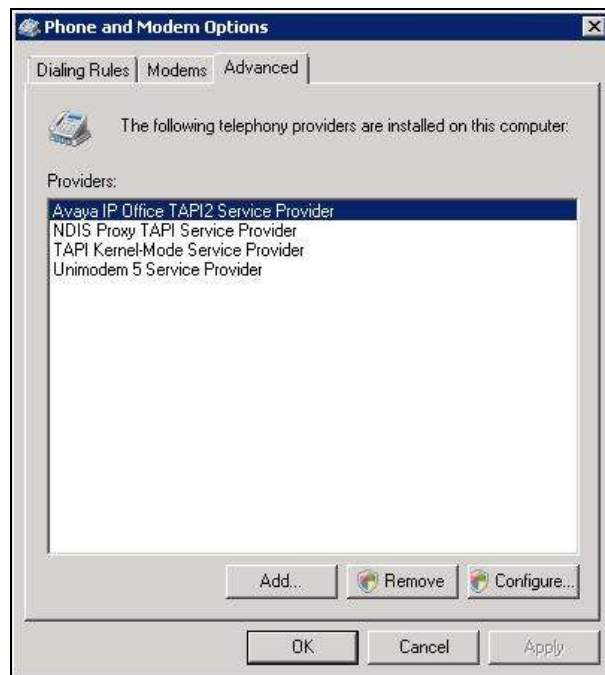
This section provides the procedures for configuring the PC Attendant Console 1 on Windows Server 2008SP1. Repeat the same steps in this section on second Windows Server. The procedures include the following areas:

- Administer TAPI Driver.
- Configure the PC Attendant Console.
- Configure the PC Attendant Console to monitor other deskphones.

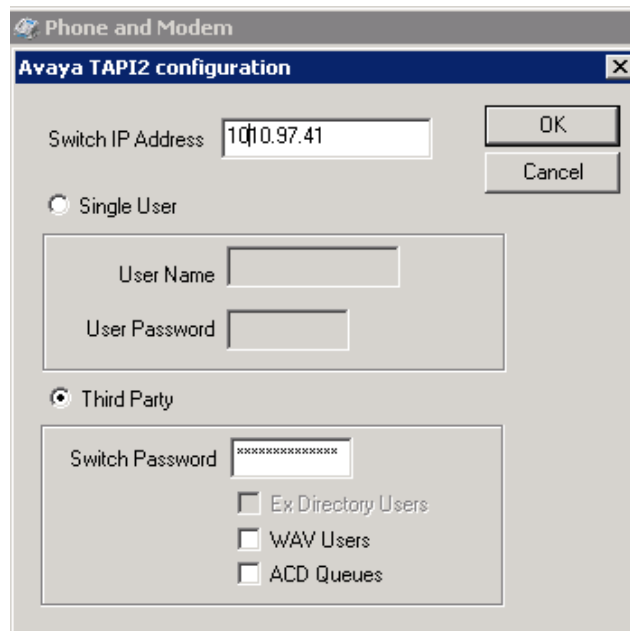
For detailed information on installation and configuration of PC Attendant Console refer to **Section 9 [2]**.

6.1. Administer TAPI Driver

From the PC hosting the PC Attendant Console, select **Start > Control Panel**, and click on the **Phone and Modem** icon (not shown below). In the **Phone and Modem Options** screen, select the **Advanced** tab. Select the **Avaya IP Office TAPI2 Service Provider** entry, and click **Configure**.



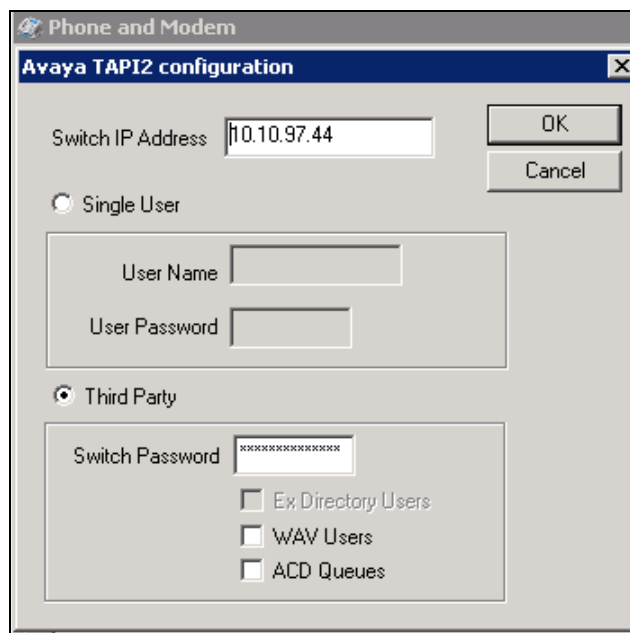
The **Avaya TAPI2 configuration** screen is displayed as shown below. For **Switch IP Address**, enter the IP address of Avaya IP Office Primary as noted in **Section 5.2**. Select the radio button for **Third Party**, and enter the IP Office password into the **Switch Password** field. Reboot the PC for the changes to take effect.



The image shows a Windows-style dialog box titled "Phone and Modem" with a sub-header "Avaya TAPI2 configuration". It contains the following fields and controls:

- Switch IP Address:** A text box containing "10.10.97.41".
- Buttons:** "OK" and "Cancel" buttons are located to the right of the IP address field.
- Radio Buttons:** Two radio buttons are present: "Single User" (unselected) and "Third Party" (selected).
- Single User Section:** A group box containing "User Name" and "User Password" text boxes.
- Third Party Section:** A group box containing a "Switch Password" text box (filled with asterisks) and three unchecked checkboxes: "Ex Directory Users", "WAV Users", and "ACD Queues".

Repeat the same steps on second Windows Server with IP Office IP500V2 Expansion IP address:



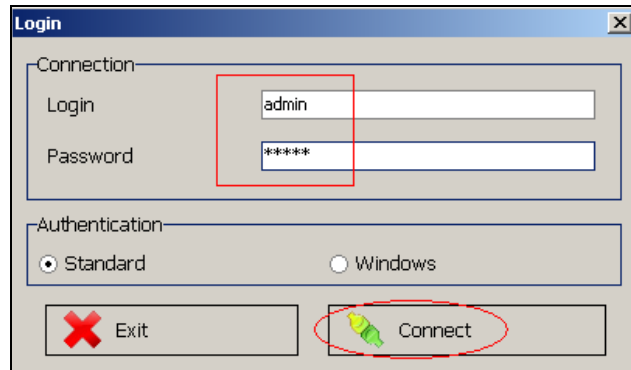
This image shows the same "Avaya TAPI2 configuration" dialog box as above, but with the following differences:

- Switch IP Address:** The text box now contains "10.10.97.44".
- Radio Buttons:** The "Third Party" radio button remains selected.
- Other fields and checkboxes:** These remain the same as in the previous image.

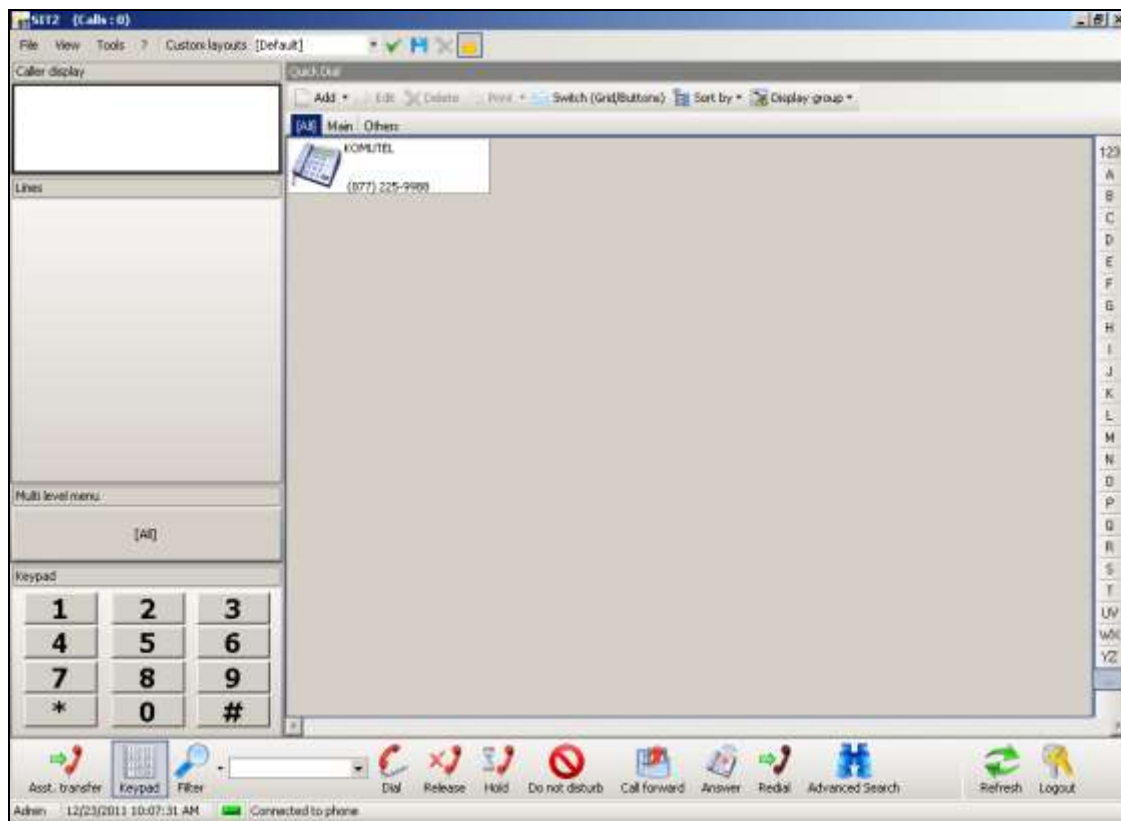
6.2. Configure Attendant Console

This section explains the configuration required on the PC Attendant Console so that it can control an already existing IP Office deskphone on the PC. It is assumed that the PC Attendant Console application and database was successfully installed on the PC.

Launch the PC Attendant Console on the PC and enter the login credentials as shown in the figure below and click on **Connect**.



The main Attendant Console screen is shown below.



To control an IP Office deskphone via Attendant Console, navigate to **Tools > Options** (not shown) from the screen above to display the PC Attendant Console **Options** screen. From the **Phone settings** tab, select an IP Office deskphone that will be controlled by Attendant Console. During compliance testing **26004** was selected. The rest of the values are left at default.

Options

Customization Application settings **Phone settings** Display group Status management Appearance Advanced options

Phone's functions identification

Label	Functions	Description	Can make
1	Automatic line	26004	<input checked="" type="checkbox"/>
2	Automatic line	26004	<input checked="" type="checkbox"/>
3	Automatic line	26004	<input checked="" type="checkbox"/>
4	Automatic line	26004	<input checked="" type="checkbox"/>
5	Automatic line	26004	<input checked="" type="checkbox"/>
6	Automatic line	26004	<input checked="" type="checkbox"/>
7	Automatic line	26004	<input checked="" type="checkbox"/>
8	Automatic line	26004	<input checked="" type="checkbox"/>
9	Automatic line	26004	<input checked="" type="checkbox"/>
10			<input checked="" type="checkbox"/>
11			<input checked="" type="checkbox"/>
12			<input checked="" type="checkbox"/>
13			<input checked="" type="checkbox"/>
14			<input checked="" type="checkbox"/>
15			<input checked="" type="checkbox"/>
16			<input checked="" type="checkbox"/>
17			<input checked="" type="checkbox"/>
18			<input checked="" type="checkbox"/>
19			<input checked="" type="checkbox"/>

System settings

Country:

Local prefix:

Long distance prefix:

Local area code:

National code:

International code:

Phone ID:

Phone to control:

Call park range:

IP Office Phone: 26011
IP Office Phone: 26012
IP Office Phone: 26013
IP Office Phone: 26006
IP Office Phone: 26004
IP Office Phone: 26010
IP Office Phone: 26008
IP Office Phone: 26015

Import/update contacts from the phone system

Enter the required **Label**, **Functions** and **Description** values as required and click on the **Save** icon to save the configuration as shown in figure below.

Options

Customization Application settings **Phone settings** Display group Status management Appearance Advanced options

Phone's functions identification

Label	Functions	Description	Can make
1 26004	Automatic line	26004	<input checked="" type="checkbox"/>
2 26004	Automatic line	26004	<input checked="" type="checkbox"/>
3 26004	Automatic line	26004	<input checked="" type="checkbox"/>
4 26004	Automatic line	26004	<input checked="" type="checkbox"/>
5 26004	Automatic line	26004	<input checked="" type="checkbox"/>
6 26004	Automatic line	26004	<input checked="" type="checkbox"/>
7 26004	Automatic line	26004	<input checked="" type="checkbox"/>
8 26004	Automatic line	26004	<input checked="" type="checkbox"/>
9 26004	Automatic line	26004	<input checked="" type="checkbox"/>
10			<input checked="" type="checkbox"/>
11			<input checked="" type="checkbox"/>
12			<input checked="" type="checkbox"/>
13			<input checked="" type="checkbox"/>
14			<input checked="" type="checkbox"/>
15			<input checked="" type="checkbox"/>
16			<input checked="" type="checkbox"/>
17			<input checked="" type="checkbox"/>
18			<input checked="" type="checkbox"/>
19			<input checked="" type="checkbox"/>
20			<input checked="" type="checkbox"/>

System settings

Country:

Local prefix:

Long distance prefix:

Local area code:

National code:

International code:

Phone ID:

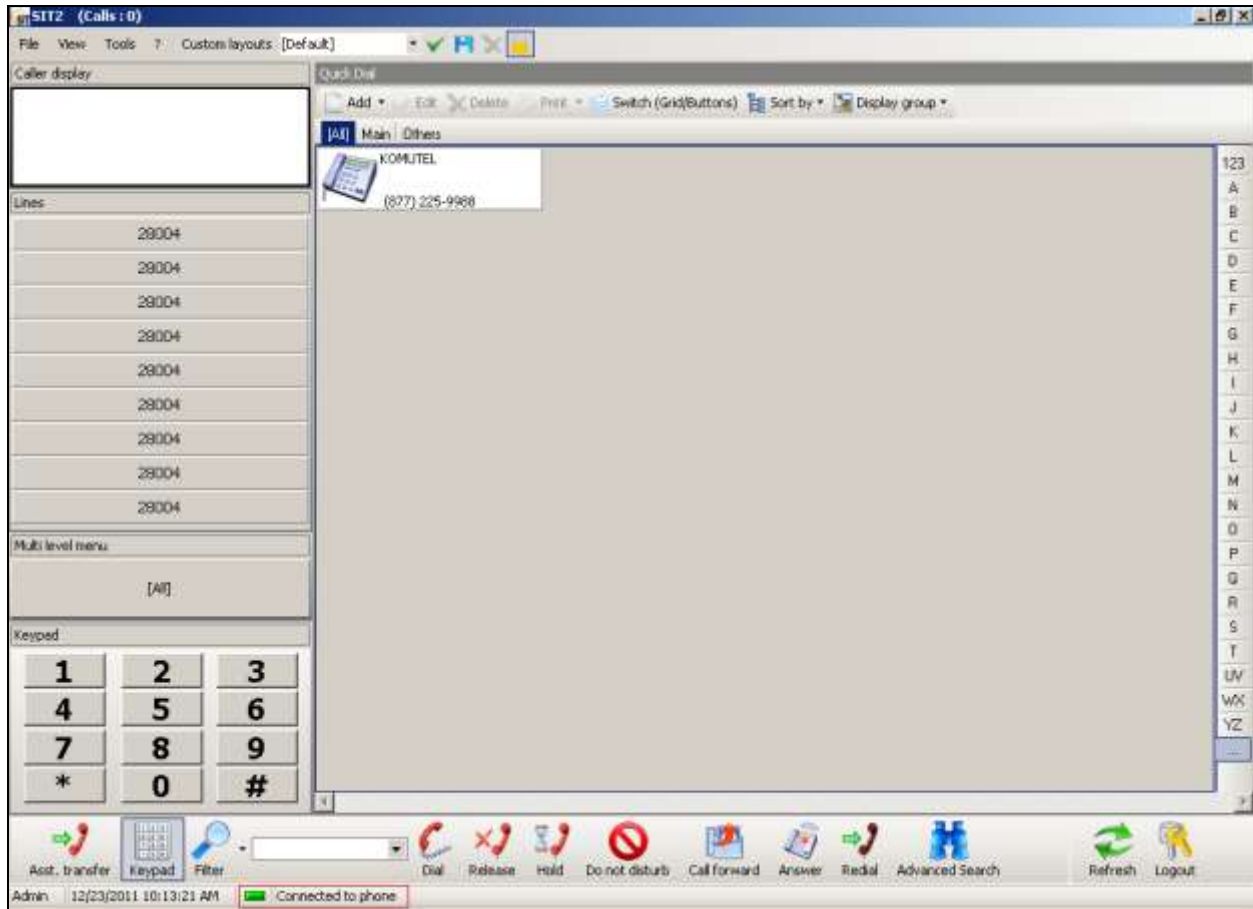
Phone to control:

Call park range: to

Import/update contacts from the phone system

NXX codes

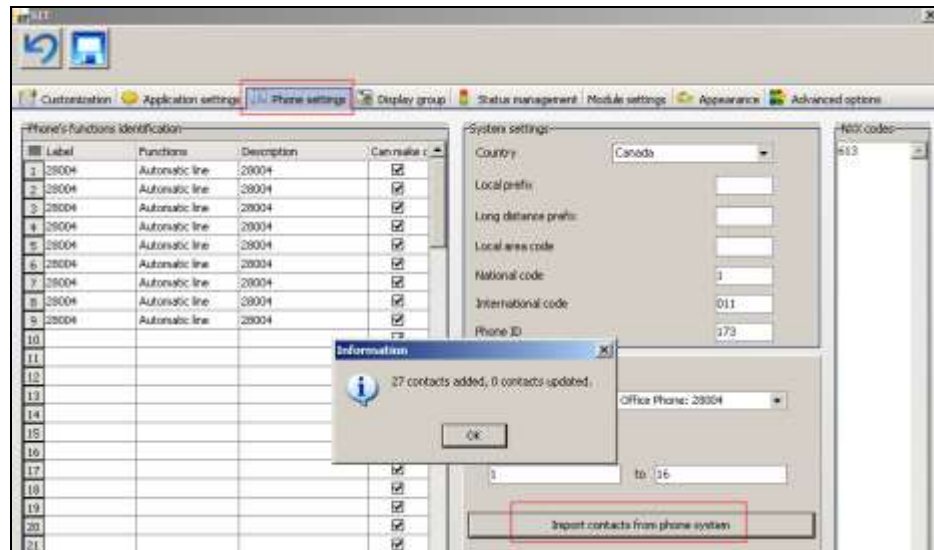
The screen below shows the IP Office 26004 deskphone that can now be controlled via the PC using the PC Attendant Console. Note the **Connected to phone** status on the bottom left hand of the screen. The PC Attendant Console is now ready to make and receive calls.



6.3. Configure Attendant Console to monitor other deskphones

This section explains the configuration required on the PC Attendant Console to monitor other available IP Office deskphones.

From the PC Attendant Console main screen, navigate to **Tools > Options** (now shown). The Options screen is shown below. From the **Phone settings** tab, click on the **Import contacts from phone system** button and all the configured IP Office deskphone contacts will be imported into the PC Attendant Console.



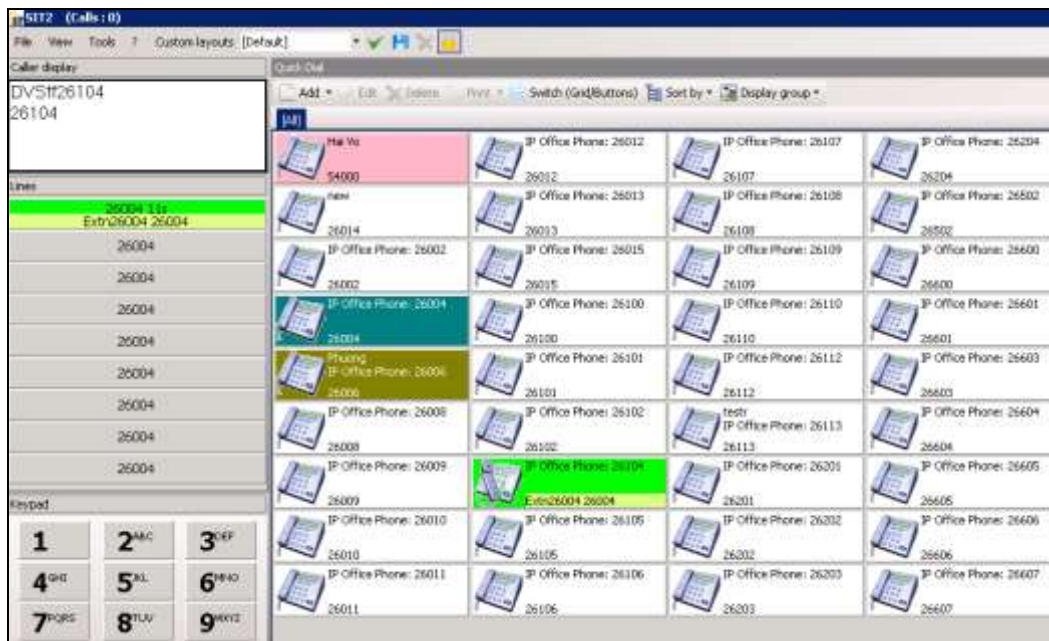
The below shows the PC Attendant Console for 26004 with presence of other IP Office deskphones that are available.



7. Verification Steps

This section provides the tests that can be performed to verify that the PC Attendant Console can control an existing IP Office deskphone via the PC.

During compliance testing, Attendant Console was configured to control IP Office desktop extension 26004. The screen below shows the call being made from the PC Attendant Console 26004 to another IP Office deskphone 26104.



The screen below shows the status of sets that are being monitored from the PC Attendant Console 26004. For example status of IP Office deskphone 26008 shows that it has been forwarded to another IP Office deskphone 26015.



Other basic telephony functionalities like Transfer, Assisted Transfer, Link (Conference), Hold, Redial, Release, Do not Disturb, Call Forward, Call Park and DTMF were also verified.

8. Conclusion

These Application Notes describe the configuration steps on Attendant Console to control an already existing deskphone of IP Office via PC. The PC Attendant Console was able to successfully control the IP Office deskphone using TAPI and execute the basic telephony features. In addition, the PC Attendant Console was able to monitor the availability and status of other deskphones that are registered to the IP Office. All basic test cases passed with observations listed in **Section 2.2**.

9. References

This section references the product documentation relevant to these Application Notes.

1. *IP Office Manager 9.1, Document 15-601011 Issue 9.14 0, September 2015.*
2. *Komutel Manager's and User Guide for SIT PC Attendant Console*, available by contacting Komutel
3. *Avaya IP Office (TAPI) Technical Specifications* available by contacting Komutel.

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