



Avaya Solution & Interoperability Test Lab

Application Notes for the Kirk IP600 Wireless Server 5.0 with Avaya IP Office 3.0 - Issue 1.0

Abstract

These Application Notes describe the configuration steps required for the Kirk IP600 Wireless Server to successfully interoperate with Avaya IP Office. Functionality was validated and performance testing was conducted in order to verify operation under load.

The Kirk IP600 Wireless Server is a wireless Digital Enhanced Cordless Telecommunications (DECT) solution capable of communicating standard H.323 with Avaya IP Office. The Kirk IP600 Wireless Server combines wireless DECT with H.323 IP telephony. Each Kirk IP600 Wireless Server can register up to thirty wireless DECT phones and handle up to six simultaneous calls. Only the following basic call features are supported: Place/Receive call, Hold and Transfer.

Information in these Application Notes has been obtained through interoperability compliance testing and additional technical discussions. Testing was conducted via the Developer*Connection* Program at the Avaya Solution and Interoperability Test Lab.

1. Introduction

These Application Notes describe a compliance-tested configuration utilizing Avaya IP Office 3.0 and the Kirk IP600 Wireless Server.

The Kirk IP600 Wireless Server is a wireless Digital Enhanced Cordless Telecommunications (DECT) solution capable of communicating standard H.323 with Avaya IP Office. The Kirk IP600 Wireless Server combines wireless DECT with H.323 IP telephony. Each Kirk IP600 Wireless Server can register up to thirty wireless DECT phones and handle up to six simultaneous calls. Only the following basic call features are supported: Place/Receive call, Hold and Transfer.

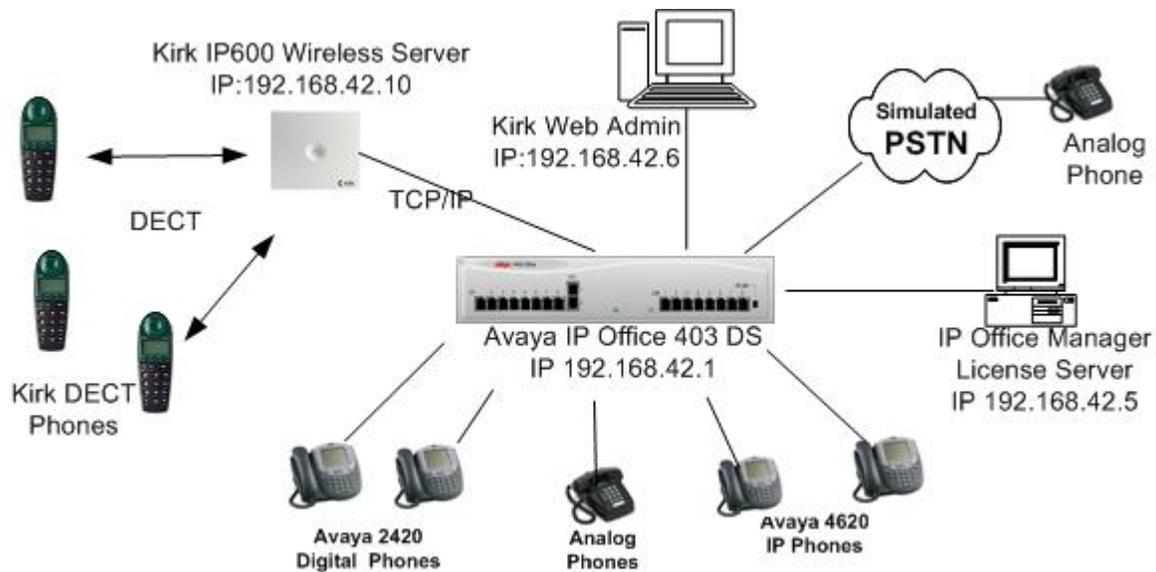


Figure 1: Avaya IP Office and Kirk IP600 Wireless Server Compliance Test Configuration

2. Equipment and Software Validated

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

Equipment	Software
Avaya IP 403 Office System	3.0 (59)
Avaya IP Endpoints License	-
Avaya IP Office Manager	5.0 (40)
Avaya 4620 IP Telephones	2.3.1
Avaya 2620 Digital Telephones	-
Kirk IP600 Wireless Server	5.01
Kirk 3040 and 4040 DECT Telephones	-
Analog Telephones	-

3. Configure Avaya IP Office

All system parameters of Avaya IP Office can be set to default. The main configuration is needed to ensure sufficient IP endpoint licenses are available, and the Voice Compression Module (VCM) is installed.

Configuration of the Avaya IP Office is as follows:

1. IP Office License Key Physical Installation

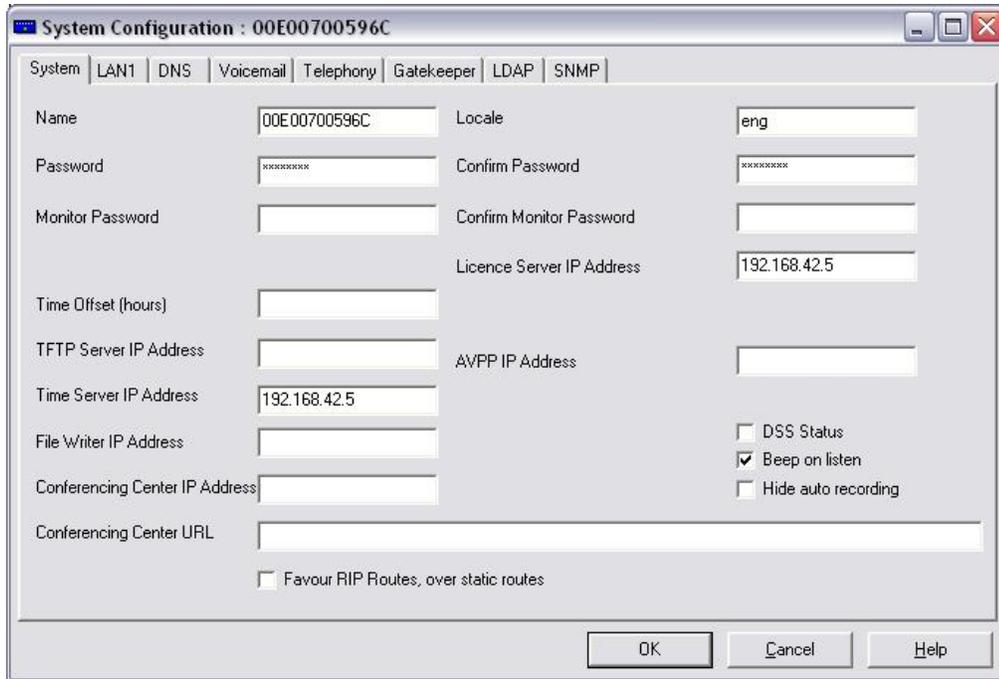
Plug in the red Avaya Software Sentinel key into the parallel or USB port of the IP Office Manager PC.

2. Log in to the IP Office Manager PC and go to Start → Programs → IP Office → Manager to launch the Manager application. Log into the Manager application using the appropriate credentials.

In the Manager window that appears, select File → Open to search for the IP Office system in the network.

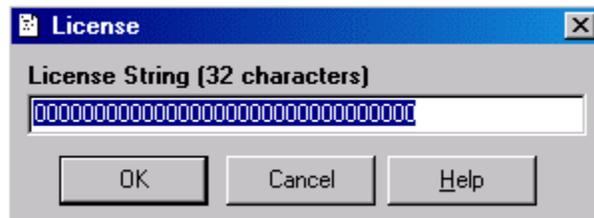
3. Log in to the IP Office system using the appropriate login credentials to receive its configuration.

4. In the Manager window, go to the Configuration Tree and double-click System. In the System Configuration window that appears, select the System tab and set License Server IP Address to the IP address of the machine to which the red Avaya Software Sentinel key is connected. This is typically the IP Office Manager PC.



5. Install Licenses

In the Manager window, go to the Configuration Tree and double-click License to open the list of licenses installed in the IP Office system. Right-click in the license list window and select New. In the License window that appears, enter the IP Endpoints License Key and click OK.



In the Manager window, select File → Save to save the licenses to the IP Office system and wait for the system to update.

NOTE: Before the system reloads, the new licenses will be listed with an Unknown status. After the system reloads, the new licenses will be listed as Valid.

The IP Office supports a maximum of 30 VoIP channels, which can be compressed using voice compression channels. These are added by installing 5, 10, 20 or 30 channel Voice Compression Modules.

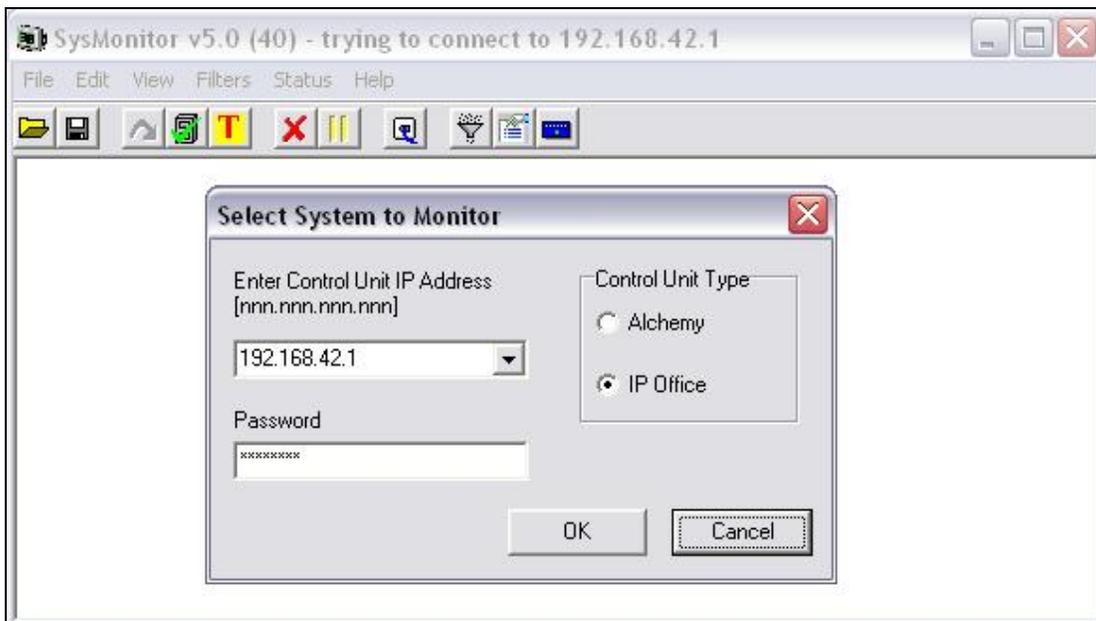
Note: The type and number of VCM modules supported by each control unit type varies.

The VCM module supports 5, 10 or 20 simultaneous voice over IP sessions. These can be used for either providing networking between sites over a Wide Area Network or supporting IP Telephones and Softphones. An IP extension only uses the compression module whilst on a call to a non-IP extension/line. Hence, it is possible to support more extensions than the capacity of the VCM.

6. Verify that a VCM module is installed.

Click on Start → Programs → IP Office → Start Monitor.

If necessary, use File | Select Unit to select the IP Office Control Unit to be monitored.

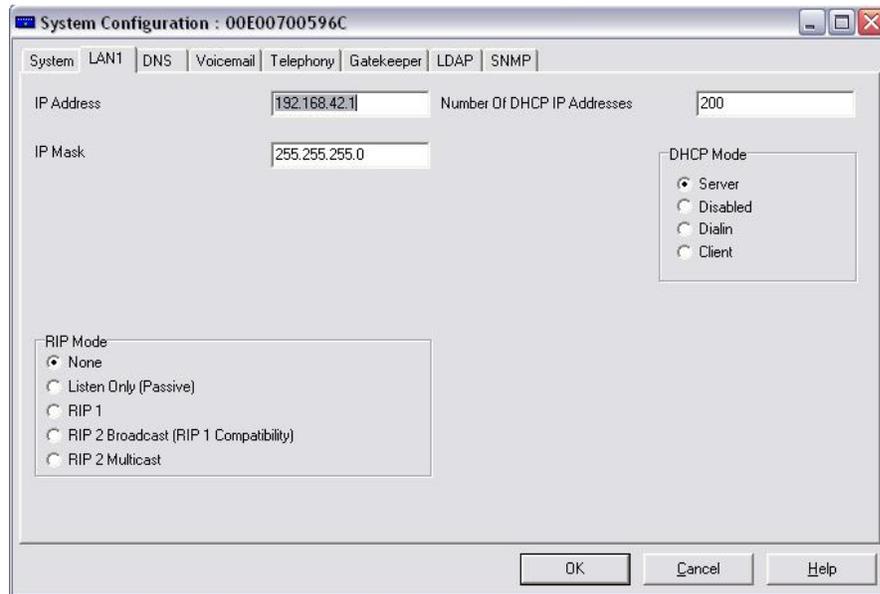


Amongst the first lines of the monitor output, there should be two lines similar to the following:

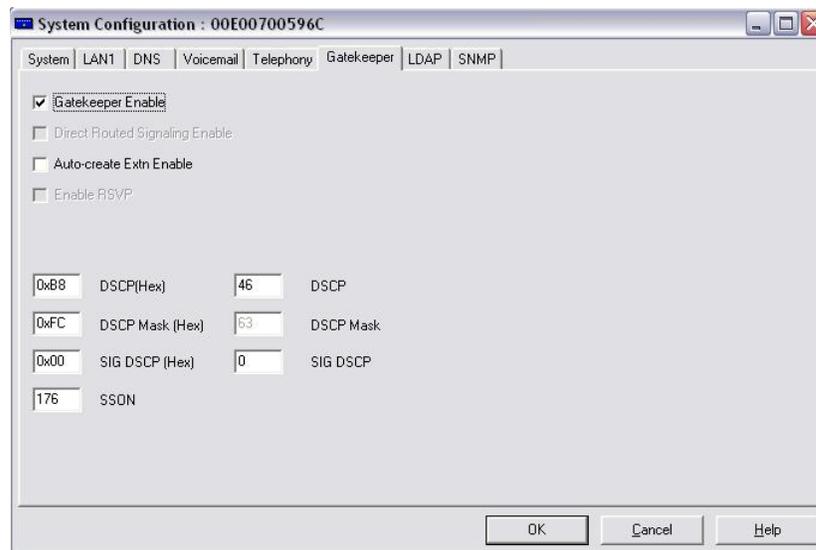
```
LAW=A, PRI=0, BRI=4, ALOG=4, ADSL=0 VCOMP=5, MDM=2, WAN=1,  
MODU=0 LANM=1 CkSRC=8 VMAIL=1(VER=2) CALLS=0(TOT=8)
```

This line provides information about various aspects of the control unit including VCOMP, which indicates the number of VCM channels installed.

7. In the Manager window, go to the Configuration Tree and double-click System. In the System Configuration window that appears, select the LAN1 tab. During compliance testing, the Avaya IP Office DHCP Mode was set to Server in order to dynamically assign IP address to the Avaya IP telephones. However, the IP600 was assigned a static IP address.



8. In the Manager window, go to the Configuration Tree and double-click System. In the System Configuration window that appears, select the Gatekeeper tab. Uncheck the Auto-create Extn Enable and ensure the Gatekeeper Enable box is checked.



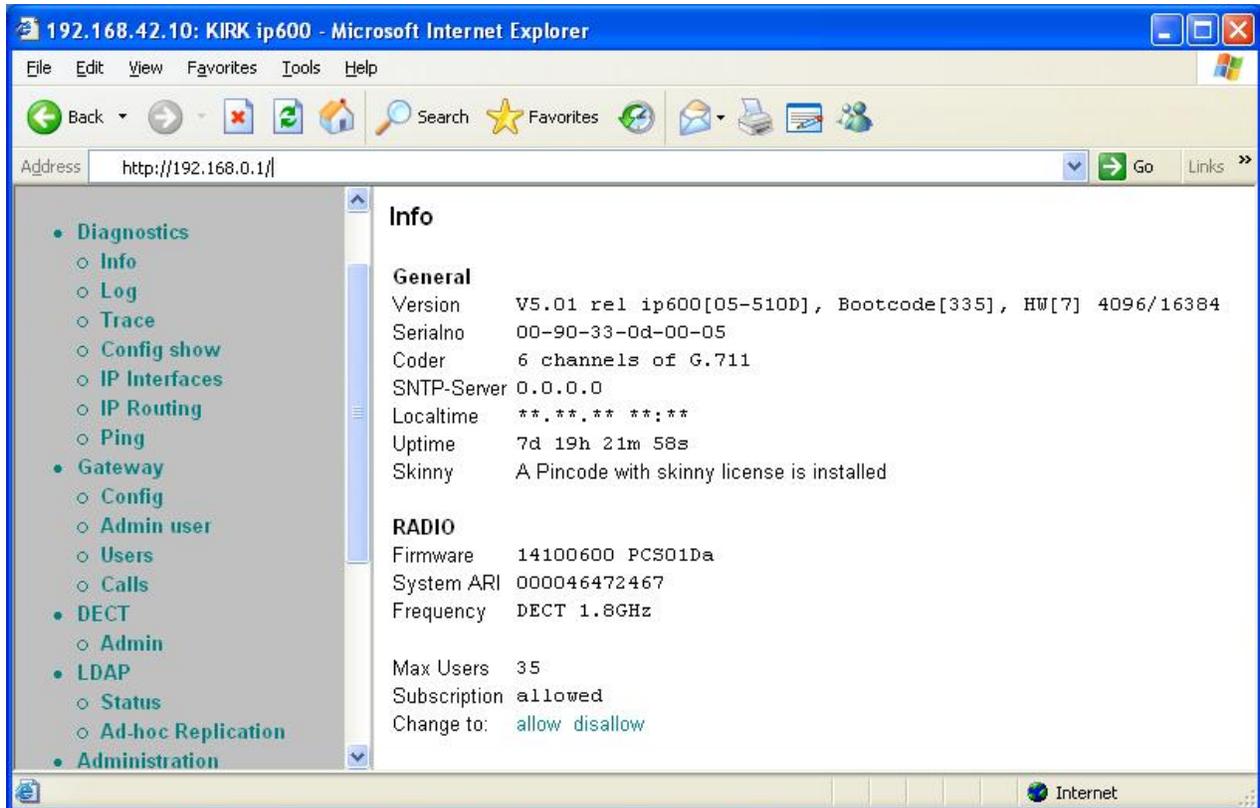
9. In the Manager window, select File → Save to push the configuration to the IP Office and wait for the unit to reboot.

4. Configure the Kirk IP600 Wireless Server

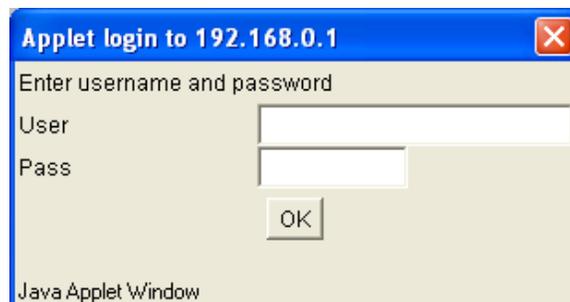
The following describes the installation and configuration of the Kirk IP600 Wireless Server

4.1. Setting IP address:

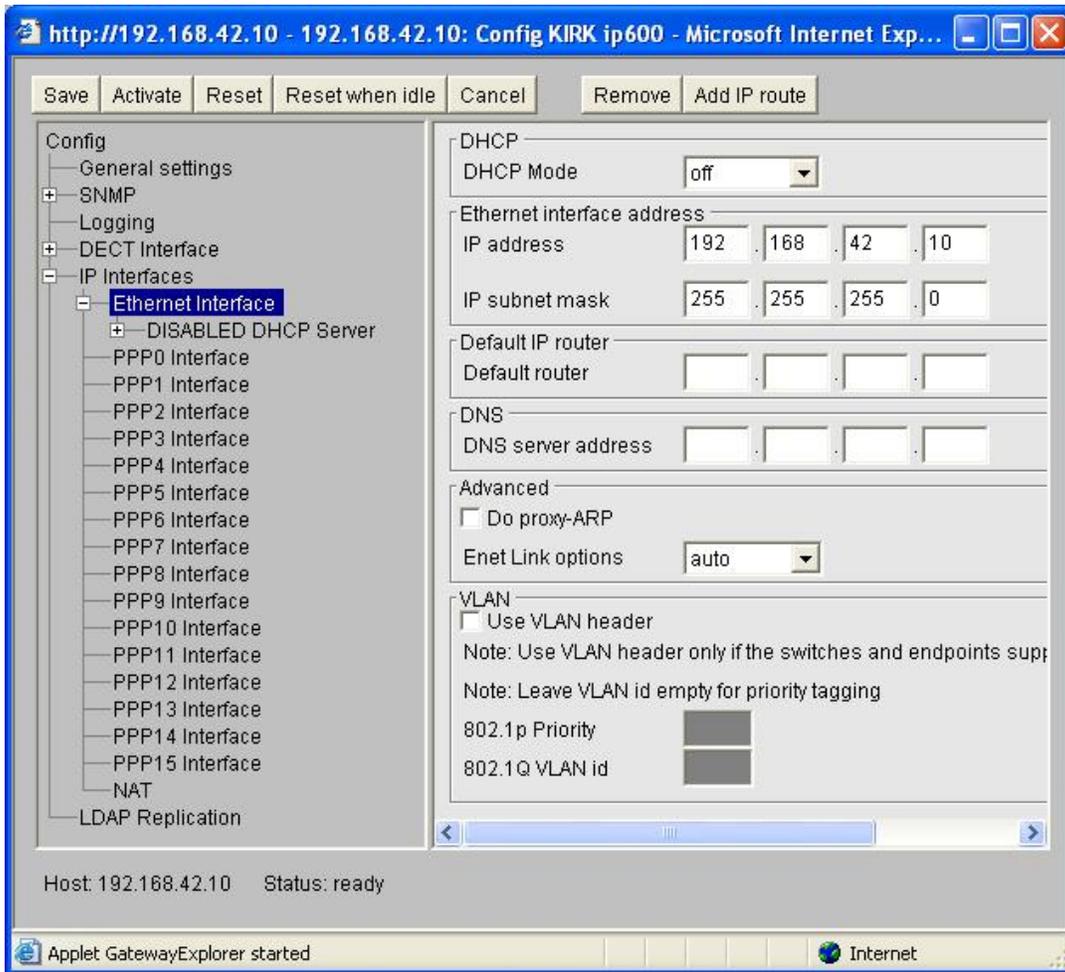
The default address of a Kirk IP600 is 192.168.0.1. Connect a PC directly to the Kirk IP600 with an Ethernet crossover cable. Open up an Internet browser and type in the following URL: <http://192.168.0.1>.



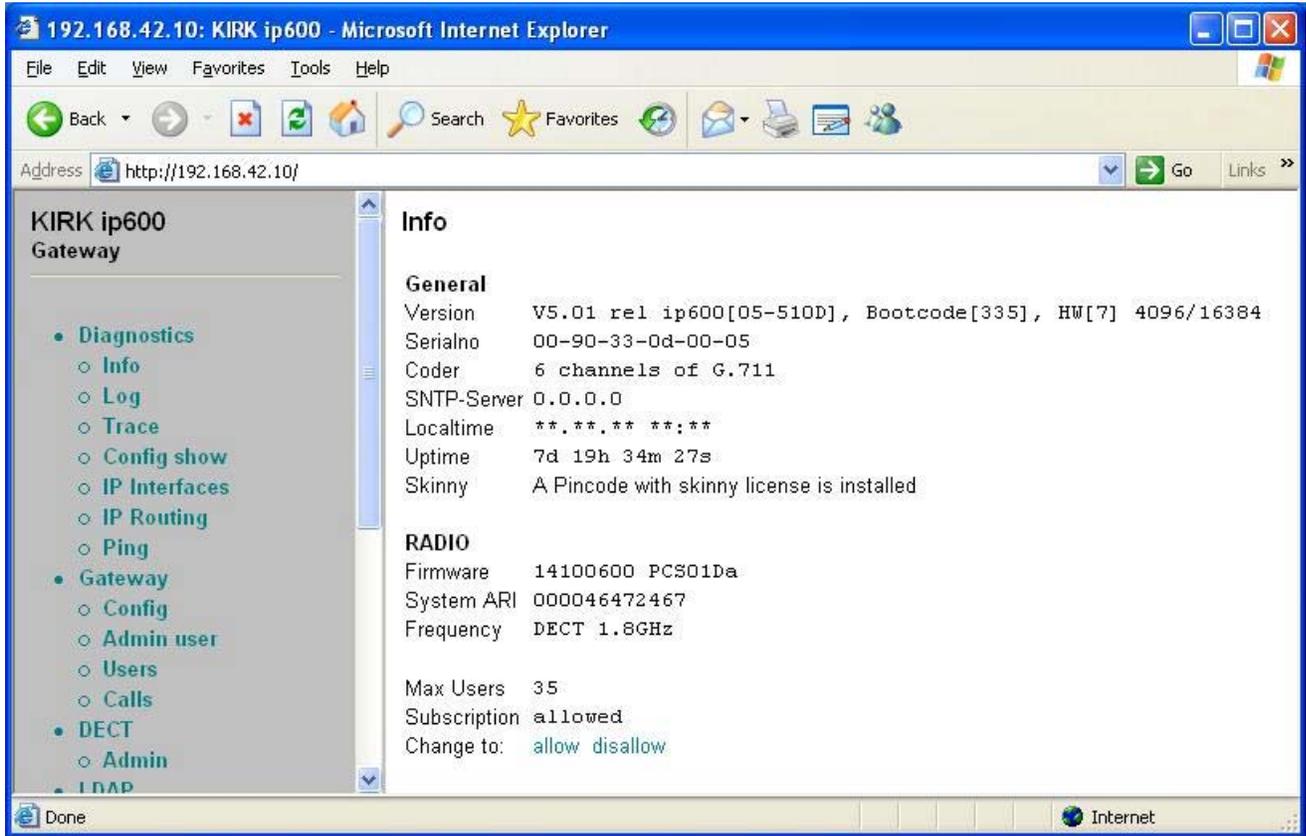
Click on Gateway → Config. Enter the appropriate login credentials and click on OK.



Click on IP Interfaces → Ethernet interface. Enter an IP address for the Kirk IP600. The IP address given to the Kirk IP600 should be in the same subnet as Avaya IP Office. Set the DHCP mode to OFF. In the Ethernet interface address section, assign an IP address and IP subnet mask to the Kirk IP600. Click on Save and then Activate.



The Kirk IP600 will now reboot with the new settings. Wait about 15 seconds and enter the new IP address in the browser.

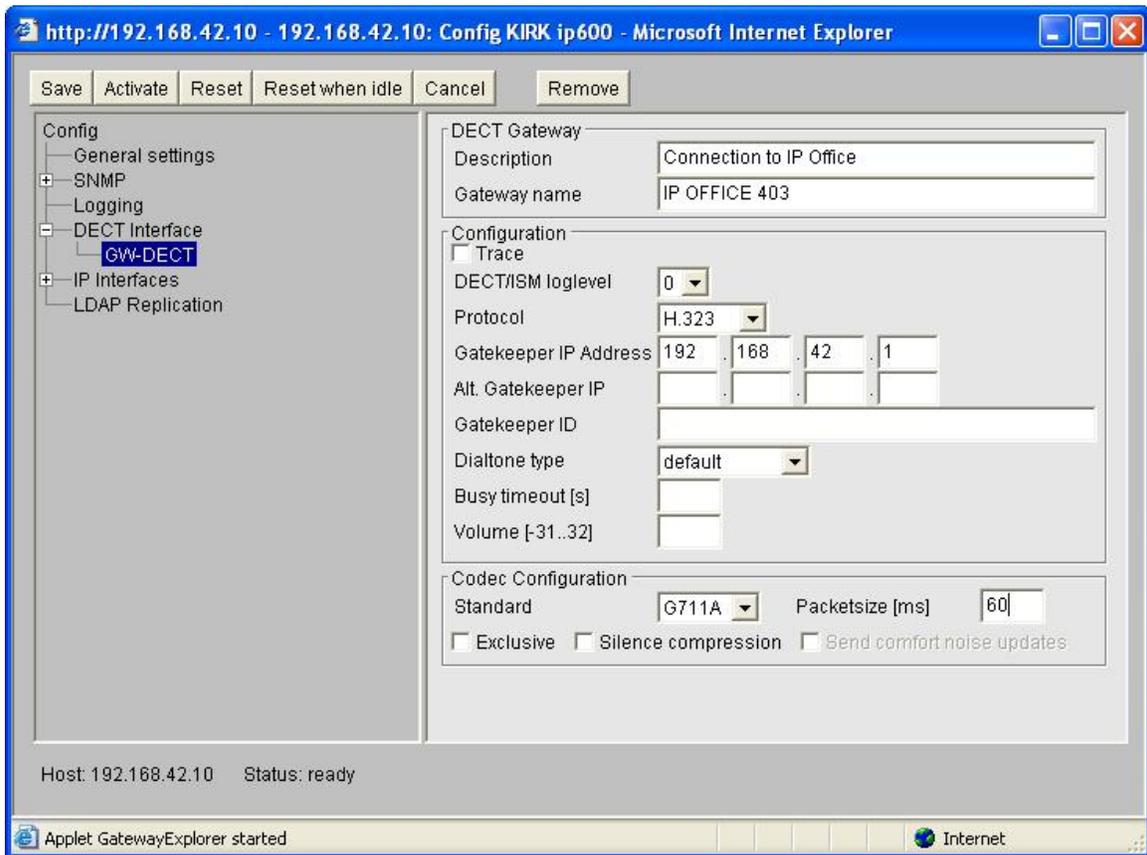


4.2. Set the Gatekeeper (Avaya IP Office)

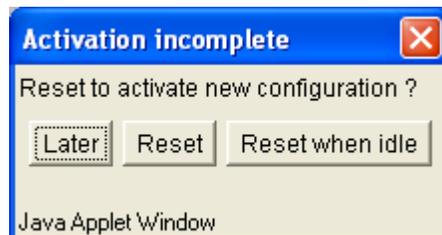
Click on Gateway → Config. Enter the appropriate login credentials and click on OK.



Click on DECT Interface → GW-DECT. Enter the IP Address of the Avaya IP Office and select H.323 as the Protocol. Under the Codec Configuration section, select either G711A or G711u law. The same codec settings need to be configured on the IP Office. During compliance testing, the IP Office was configured to automatically use the codec requested by the Kirk IP600.



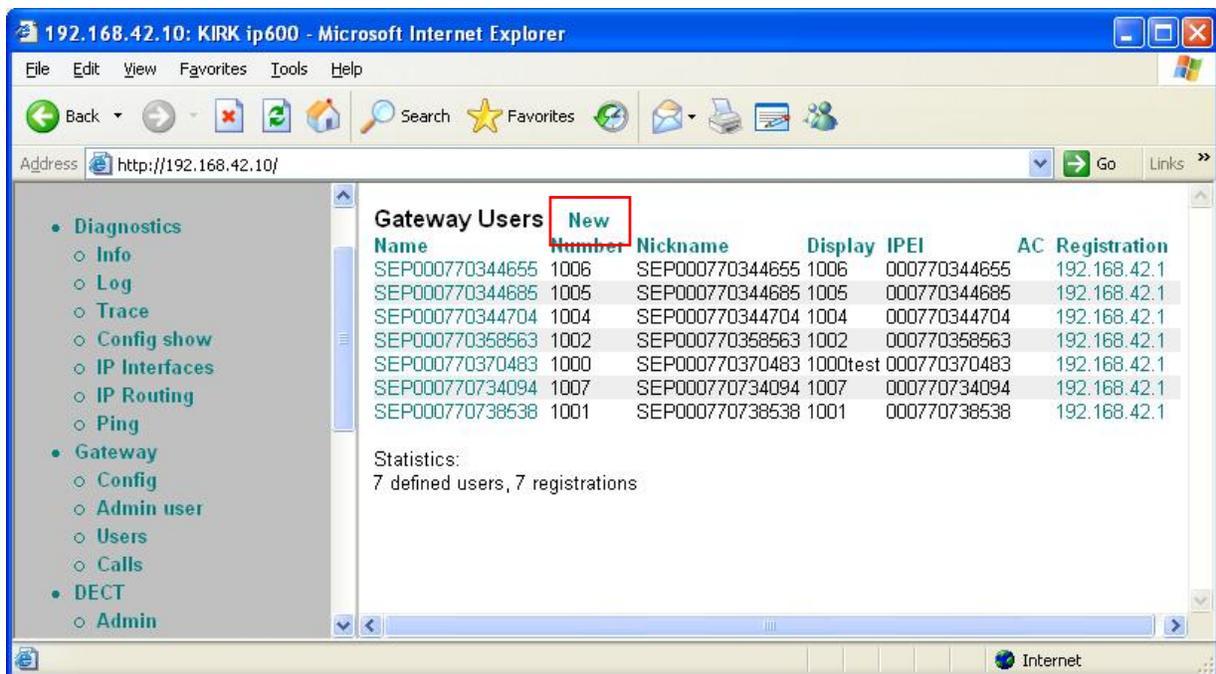
Click on Save and then Activate. When the following dialog box appears click on Reset.



Wait about 15 seconds, and refresh the browser.

4.3. Adding Phones

Click on Gateway → Config. Enter the appropriate login credentials and click on OK. Click on Gateway → Users. Enter the appropriate login credentials and click on OK.



Click on New.

The following dialog box appears. Enter the Kirk DECT phone information. The Name and Number are the important parameters needed for IP Office.

The screenshot shows a web browser window with the address bar containing `http://192.168.42.10/GW-DECT/gwuser1.xml?xsl=useredit.xsl&name=SEP0007...`. The main content area is titled "Gateway user add" and contains the following form fields:

- Name:
- Nickname:
- Number:
- Display:
- IPEI:
- AC (access code):
- Password:

At the bottom of the form are three buttons: "OK", "Remove", and "Cancel". Below the buttons is a note: "Note: IPEI is the serial number of the handset as in this example: 00077 2300000". The browser's status bar shows "Done" and "Internet".

4.4. Subscribing Phones

Ensure the Subscription setting is set to "allowed" by clicking on allow.

The screenshot shows a Microsoft Internet Explorer browser window with the address bar containing `http://192.168.42.10/`. The page title is "192.168.42.10: KIRK ip600 - Microsoft Internet Explorer". The main content area is titled "KIRK ip600 Gateway" and has a left-hand navigation menu with the following items:

- Diagnostics
 - Info
 - Log
 - Trace
 - Config show
 - IP Interfaces
 - IP Routing
 - Ping
- Gateway
 - Config
 - Admin user
 - Users
 - Calls
- DECT
 - Admin
 - LDAP

The "Info" section is expanded and shows the following details:

General

- Version: V5.01 rel ip600[05-510D], Bootcode[335], HW[7] 4096/16384
- Serialno: 00-90-33-0d-00-05
- Coder: 6 channels of G.711
- SNTP-Server: 0.0.0.0
- Localtime: **.**,** **:**
- Uptime: 7d 19h 34m 27s
- Skinny: A Pincode with skinny license is installed

RADIO

- Firmware: 14100600 PCS01Da
- System ARI: 000046472467
- Frequency: DECT 1.8GHz

Max Users: 35

Subscription: **allowed**

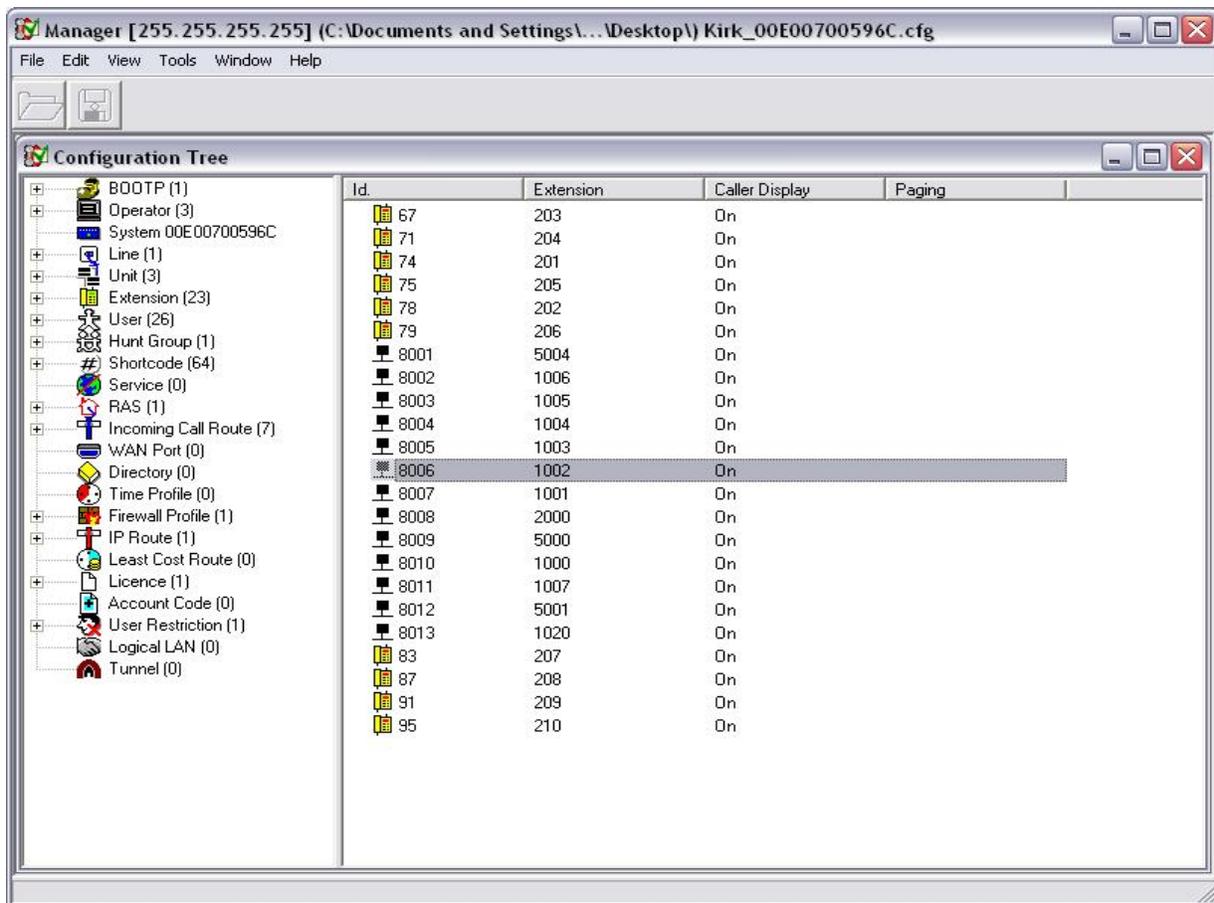
Change to: [allow](#) [disallow](#)

The "Subscription" line and its options are highlighted with a red rectangular box. The browser's status bar shows "Done" and "Internet".

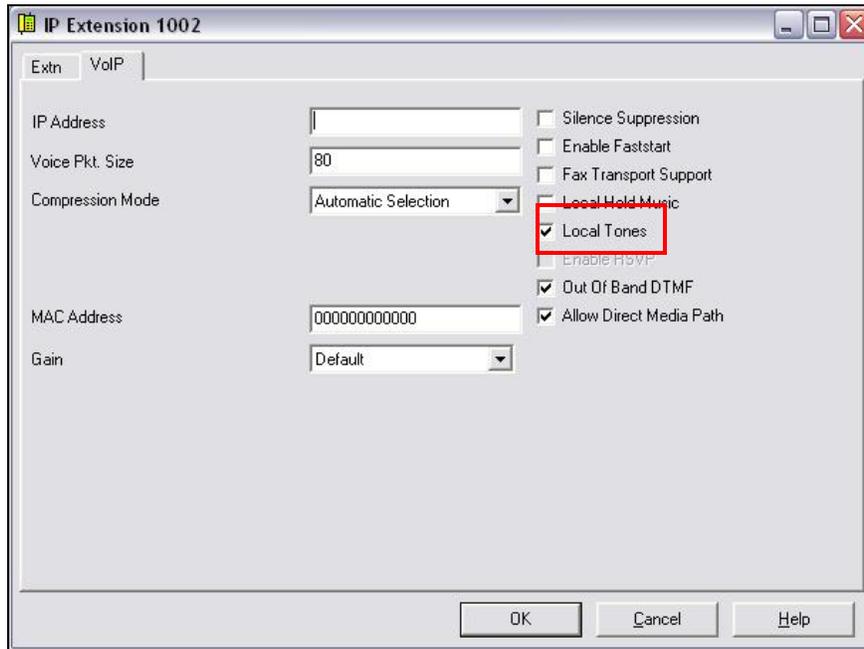
On the DECT phone, click the Menu button and scroll through the options until the Menu Login is reached and click the Mute button (which has a tick on the button). Scroll through again until the Subscription Create option is reached and click on the Mute button. When the System ID of the IP600 appears, select it and click on the Mute Button, and the phone will subscribe to the IP600.

5. Configuration of the DECT Phones in Avaya IP Office

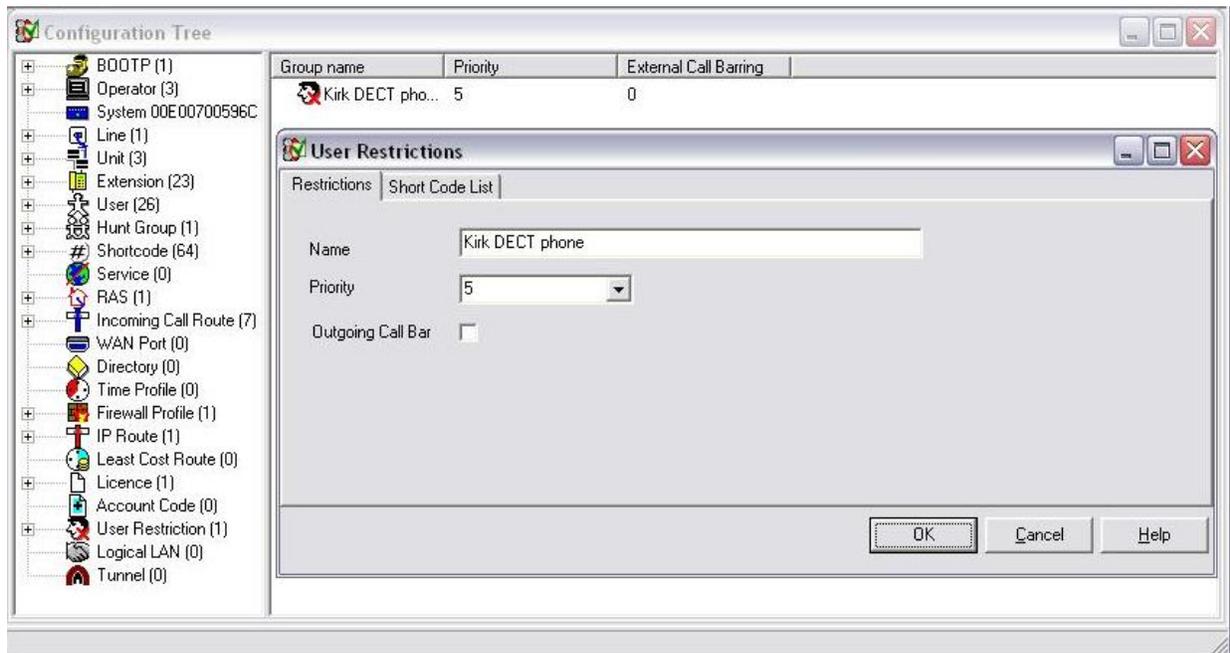
1. Log into the IP Office system using the appropriate login credentials to receive its configuration. Select Extension and select a newly created phone (created after the Kirk DECT phone subscribes to the Kirk IP600) by double-clicking on the extension.



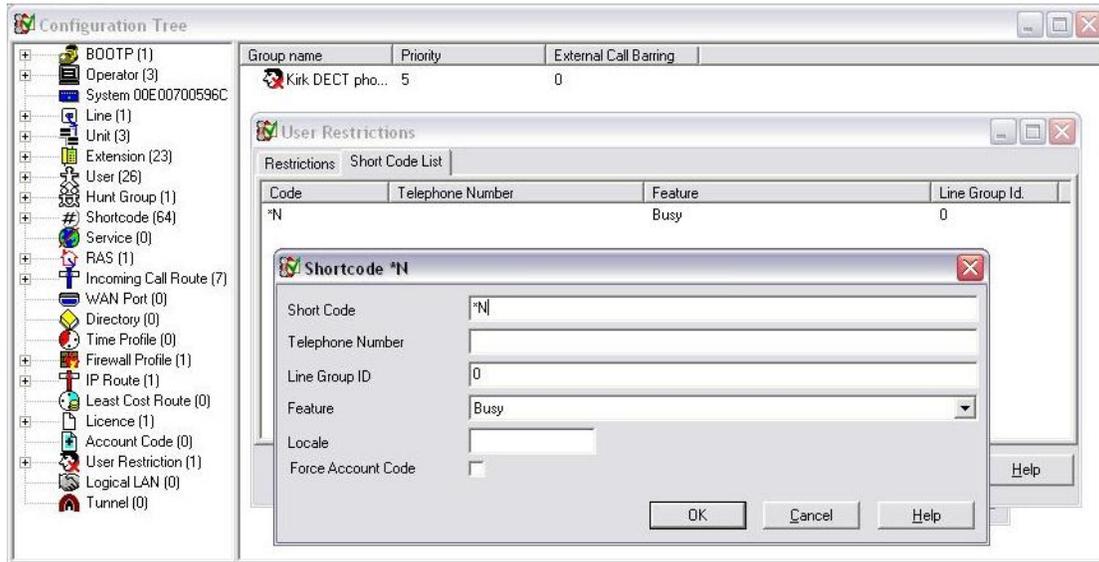
2. Click on the VOIP tab and enable Local Tones by checking the box. Otherwise, the DECT phone will not function correctly. Click on OK.



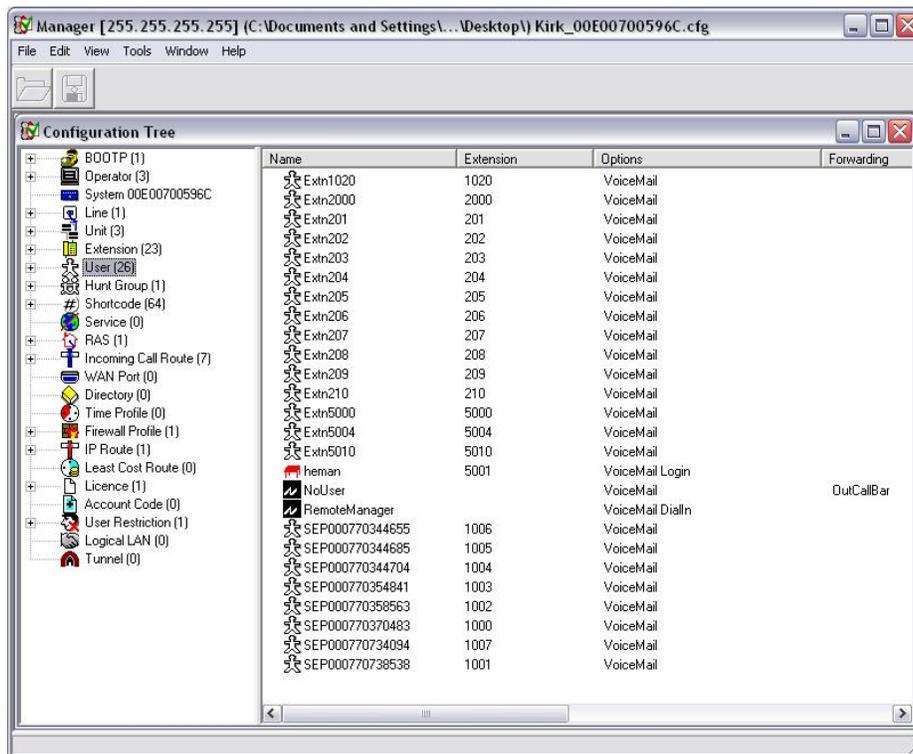
3. Repeat Steps 1 and 2 for all other Kirk DECT phones.
4. Click on User Restriction and create a new user restriction called Kirk DECT phone.



5. Click on the Short Code List tab. Right-click and select New. Enter the following details in the dialog box that appears:
 - Short code: *N
 - Line Group ID: 0
 - Feature: Busy
 Click OK in the dialog box and click OK again in the User Restrictions window.



6. Click on User and select the Kirk DECT phone by double-clicking on the extension.



7. For Restrictions, select the Kirk DECT phone user restriction configured in Step 4.

The screenshot shows a configuration window titled "User SEP000770358563". The window has a tabbed interface with the following tabs: User, Voicemail, DND, ShortCodes, SourceNumbers, Telephony, Forwarding, Dial In, VoiceRecording, and DigitalTelephony. The "User" tab is selected. The configuration fields are as follows:

- Name: SEP000770358563
- Ex Directory:
- Password: [Empty text box]
- Confirm Password: [Empty text box]
- Full Name: [Empty text box]
- Extension: 1002
- Locale: [Empty text box]
- Priority: 5
- Restrictions: Kirk DECT phone (selected in dropdown)
- Book with Conference Centre in Phone Manager:
- Phone Manager Type: Lite (selected in dropdown)

At the bottom of the window, there are three buttons: OK, Cancel, and Help.

8. Repeat Steps 6 and 7 for all other Kirk DECT phones.
9. In the Manager window, select File → Save to push the configuration to the IP Office and wait for the unit to reboot.

Click on Shortcodes to see the full list of features that will not be able to be activated from the Kirk DECT phones.

The screenshot shows a 'Configuration Tree' window with a tree view on the left and a table on the right. The tree view includes categories like BOOTP, Operator, System, Line, Unit, Extension, User, Hunt Group, Shortcode, Service, RAS, Incoming Call Route, WAN Port, Directory, Time Profile, Firewall Profile, IP Route, Least Cost Route, Licence, Account Code, User Restriction, Logical LAN, and Tunnel. The 'Shortcode (64)' category is expanded, showing a list of shortcodes in the table below.

Code	Telephone Number	Feature	Line group Id
#)*#N	K#NI	Dial	0
#)**N	K*NI	Dial	0
#)*00		CancelAllForwarding	0
#)*01		ForwardUnconditionalOn	0
#)*02		ForwardUnconditionalOff	0
#)*03		ForwardOnBusyOn	0
#)*04		ForwardOnBusyOff	0
#)*05		ForwardOnNoAnswerOn	0
#)*06		ForwardOnNoAnswerOff	0
#)*07*N#	N	ForwardNumber	0
#)*08		DoNotDisturbOn	0
#)*09		DoNotDisturbOff	0
#)*10*N#	N	DoNotDisturbExceptionAdd	0
#)*11*N#	N	DoNotDisturbExceptionDel	0
#)*12*N#	N	FollowMeHere	0
#)*13*N#	N	FollowMeHereCancel	0
#)*14*N#	N	FollowMeTo	0
#)*15		CallWaitingOn	0
#)*16		CallWaitingOff	0
#)*17	?U	VoicemailCollect	0
#)*18		VoicemailOn	0
#)*19		VoicemailOff	0
#)*20*N#	N	SetHuntGroupNightService	0
#)*21*N#	N	ClearHuntGroupNightService	0
#)*22*N#	N	SuspendCall	0
#)*23*N#	N	ResumeCall	0
#)*24*N#	N	HoldCall	0
#)*25*N#	N	RetrieveCall	0
#)*26		ClearCW	0

6. Interoperability Compliance Testing

The interoperability compliance test included feature, failover and performance load testing. The testing examined the Kirk IP600 Wireless Server interoperability with Avaya IP Office 3.0. The majority of the testing focused on the ability of the Kirk IP600 Wireless Server to perform the following operations: Place/Receive calls, Hold and Transfer. All additional IP Office features were disabled for the Kirk DECT phones as only Place/Receive calls, Hold and Transfer operations are supported by the Kirk IP600 and DECT phones.

6.1. General Test Approach

The general test approach was to place inbound and outbound calls between the Kirk DECT phones and Avaya phones, and exercise Hold/Retrieve and Call Transfer operations on the Kirk DECT phones. Registration and deletion of the Kirk DECT phones with the Avaya IP Office was tested during failover test cases. Performance testing included placing inbound calls with a call generator over an extended period to several Kirk DECT phones that were set to auto answer.

6.2. Test Results

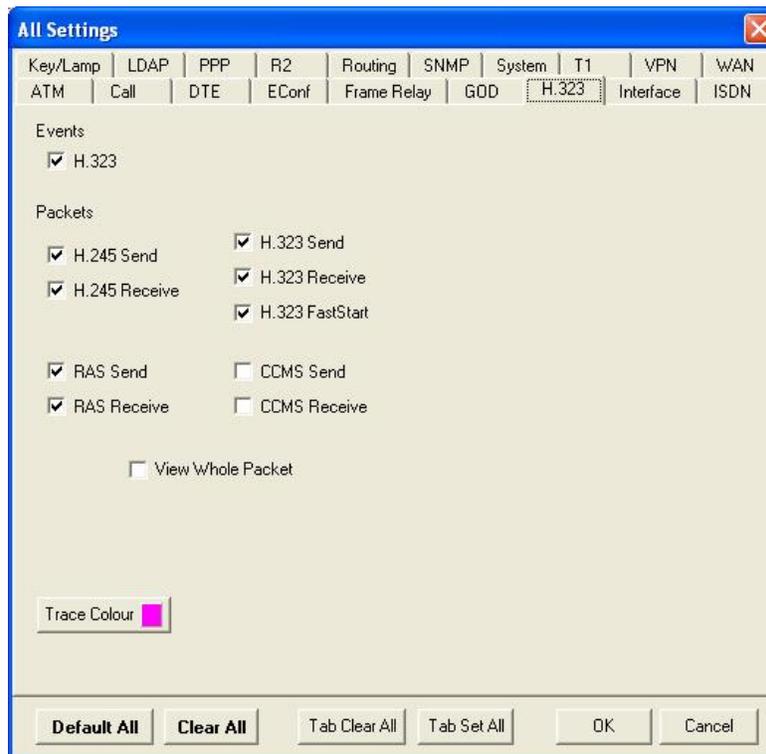
All feature, failover and performance tests passed. The Kirk IP600 Wireless Server successfully place/received, held/retrieved, and transferred calls. Blind transfer can fail between DECT phones if executed very quickly.

7. Verification Steps

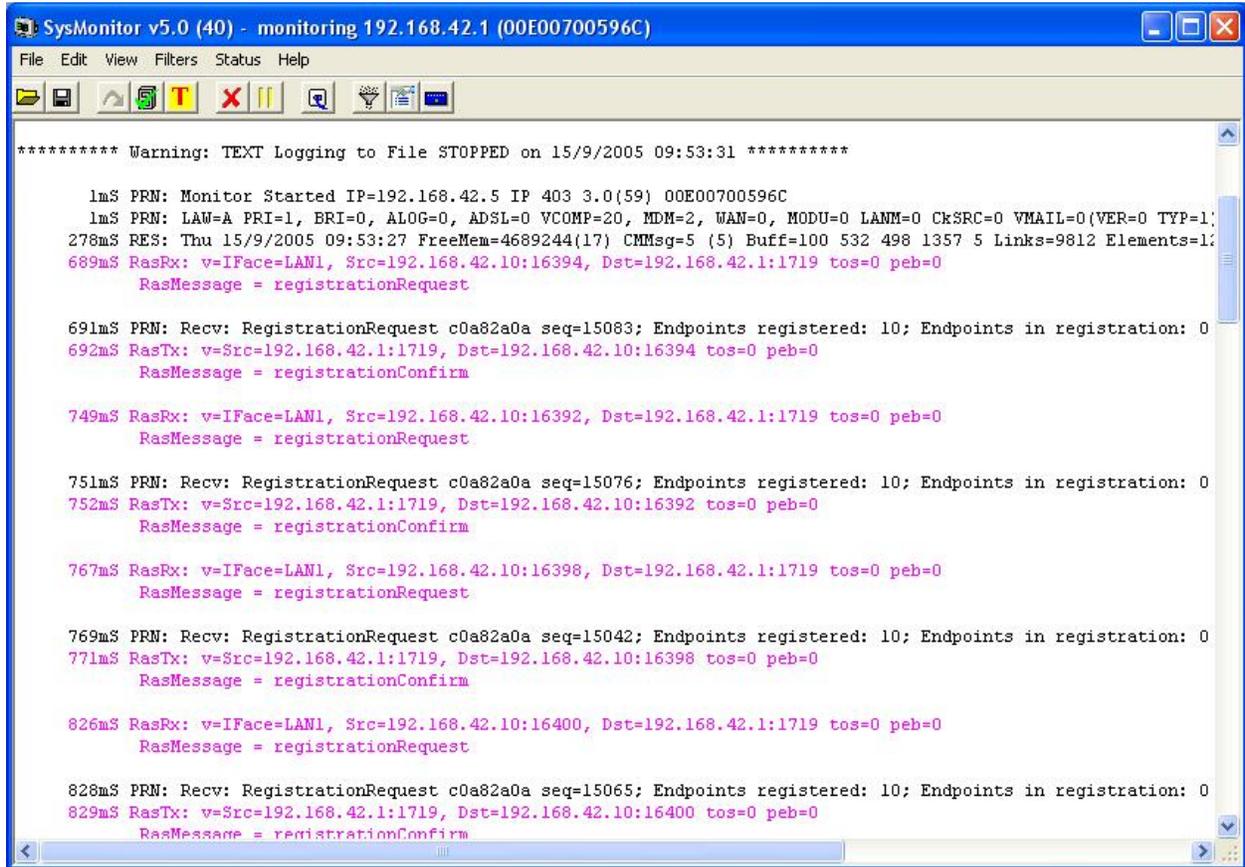
There are a number of verification steps that can be taken to ensure that the Kirk IP600 Wireless Server is operating correctly.

1. Ensure that the Kirk IP600 IP address can be pinged from the Manager PC.
2. Check the Kirk web admin tool to see if the Kirk DECT phones are registered.
3. Start up System Monitor on IP Office and check if the Kirk IP600 is registered.

From the Menu bar of the System Monitor, click on Filters → Trace options. In the dialog box that appears, click on the H.323 tab.



The following SysMonitor log shows the Register Request from and confirmation between IP Office and the Kirk IP600.



```
***** Warning: TEXT Logging to File STOPPED on 15/9/2005 09:53:31 *****

1mS PRN: Monitor Started IP=192.168.42.5 IP 403 3.0(59) 00E00700596C
1mS PRN: LAW=A PRI=1, BRI=0, ALOG=0, ADSL=0 VCOMP=20, MDM=2, WAN=0, MODU=0 LANM=0 CkSRC=0 VMAIL=0(VER=0 TYP=1:
278mS RES: Thu 15/9/2005 09:53:27 FreeMem=4689244(17) CMMsg=5 (5) Buff=100 532 498 1357 5 Links=9812 Elements=1:
689mS RasRx: v=IFace=LAN1, Src=192.168.42.10:16394, Dst=192.168.42.1:1719 tos=0 peb=0
      RasMessage = registrationRequest

691mS PRN: Recv: RegistrationRequest c0a82a0a seq=15083; Endpoints registered: 10; Endpoints in registration: 0
692mS RasTx: v=Src=192.168.42.1:1719, Dst=192.168.42.10:16394 tos=0 peb=0
      RasMessage = registrationConfirm

749mS RasRx: v=IFace=LAN1, Src=192.168.42.10:16392, Dst=192.168.42.1:1719 tos=0 peb=0
      RasMessage = registrationRequest

751mS PRN: Recv: RegistrationRequest c0a82a0a seq=15076; Endpoints registered: 10; Endpoints in registration: 0
752mS RasTx: v=Src=192.168.42.1:1719, Dst=192.168.42.10:16392 tos=0 peb=0
      RasMessage = registrationConfirm

767mS RasRx: v=IFace=LAN1, Src=192.168.42.10:16398, Dst=192.168.42.1:1719 tos=0 peb=0
      RasMessage = registrationRequest

769mS PRN: Recv: RegistrationRequest c0a82a0a seq=15042; Endpoints registered: 10; Endpoints in registration: 0
771mS RasTx: v=Src=192.168.42.1:1719, Dst=192.168.42.10:16398 tos=0 peb=0
      RasMessage = registrationConfirm

826mS RasRx: v=IFace=LAN1, Src=192.168.42.10:16400, Dst=192.168.42.1:1719 tos=0 peb=0
      RasMessage = registrationRequest

828mS PRN: Recv: RegistrationRequest c0a82a0a seq=15065; Endpoints registered: 10; Endpoints in registration: 0
829mS RasTx: v=Src=192.168.42.1:1719, Dst=192.168.42.10:16400 tos=0 peb=0
      RasMessage = registrationConfirm
```

8. Support

If technical support is required for the Kirk IP 600 Wireless Server solution, then contact Kirk Technical Support. Full details are available at <http://www.kirktelecom.com>.

9. Conclusion

These Application Notes describe the required configuration steps for the Kirk IP600 Wireless Server to successfully interoperate with Avaya IP Office. Feature, failover and performance tests were successfully validated. The configuration described in these Application Notes has been successfully compliance tested.

10. Additional References

This section references the Avaya IP Office and Kirk IP600 Wireless Server product documentation that are relevant to these Application Notes.

Avaya product documentation can be found at <http://support.avaya.com>.

Kirk documentation is available on request from Kirk <http://www.kirktelecom.com>.

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