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Avaya Solution & Interoperability Test Lab

Application Notes for Configuring the ADTRAN NetVanta UC Server with Avaya IP Office 6.1 – Issue 1.0

Abstract

These Application Notes describe the procedure for configuring the ADTRAN NetVanta UC Server to interoperate with Avaya IP Office 6.1.

ADTRAN NetVanta UC Server is a software-only package designed for Microsoft Windows platforms that provides capabilities of unified communications.

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.

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SPOC 6/15/2011
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1 of 34
ADTRAN-IPO615

1. Introduction

These Application Notes describe the procedure for configuring ADTRAN NetVanta UC Server (herein referred to as NetVanta UC Server) to interoperate with Avaya IP Office 6.1 (herein refers as Avaya IP Office).

These Application Notes assume that Avaya IP Office is already installed and basic configuration steps have been performed. Only steps relevant to this compliance test will be described in this document.

During the compliance test, the test environment included NetVanta UC Server with Communication Manager / Session Manager, and NetVanta UC Server with Avaya IP Office. However, in these Application Notes, only Avaya IP Office and NetVanta UC Server will be discussed. Communication Manager / Session Manager and NetVanta UC Server scenario will be discussed in other Application Notes.

1.1. NetVanta UC Server

NetVanta Unified Communications (UC) Server is a software-only package designed for Microsoft Windows platforms that provides capabilities of unified communications – without the need for a forklift upgrade. It is perfect for organizations that already have one or more PBXs, but want the added benefits of unified communications.

The NetVanta UC Server portfolio includes:
- PBX Integration
- Unified Messaging (UM)
- FAX Server
- Text-to-Speech Engine
- Auto-Attendant and Personal Call Control
- Administration

Unified Communications Server
NetVanta UC Server is capable of supporting UC on one or more different types of PBXs to provide a centralized UC solution. This feature-rich platform offers advanced UC services like unified messaging, voice mail, integrated messaging, fax server, graphical drag and drop service creation, inbound and outbound IVR services, personal assistants, one number services, call redirection services, notifications, auto-attendants, mobile support and scales from 75 up to 2,000 users on a single server.

PBX Integration
If you have an existing investment in legacy business communications systems (PBXs and/ or key systems), NetVanta UC Server lets you leverage your existing investment and transition to IP Telephony at your own pace.

Unified Messaging (UM)
UM is the ability to quickly and effectively retrieve and manage voicemail, faxes, and email messages, all from the familiar interface of your email client or from any telephone. NetVanta UC Server integrates with Microsoft Outlook/Exchange Server, Lotus Notes/Domino, Google Gmail, and a host of other email clients with Internet Message Access Protocol—IMAP4.

FAX Server
NetVanta UC Server includes a full fax server. The built-in fax server provides advanced features such as DID fax, and individual "fax on demand" using the multimedia personal call control capabilities. In addition, NetVanta UC Server uses standard TIFF or PDF formats so that you can view faxes on any PC.

Text-to-Speech Engine
NetVanta UC Server includes a speech engine to provide text-to-speech conversion. This enables you to listen to e-mail messages from any telephone and speak text from your auto attendants, Interactive Voice Response (IVR) applications, or Personal Assistants.

Auto-Attendant and Personal Call Control
NetVanta UC Server provides the ability to create multiple auto-attendants using its award-winning drag-and-drop, database-enabled, graphical service creation environment. These assistants integrate with Microsoft Outlook contacts and internal/external databases, allowing employees to easily configure their own assistants to establish multifaceted business rules for call screening, call routing, find-me/follow-me, and call notifications, all depending on the defined rules like the caller ID, time-of-day/day-of-week, and many others.

Administration
NetVanta UC Server can be installed in one of two modes—standalone or within a customer's Active Directory. When integrated with Active Directory, the Microsoft Active Directory Users and Microsoft Management Console (MMC) Snap-ins can be used to administer and manage users. NetVanta UC Server allows your IT staff to manage your business communications services using the same user accounts and security policies used in your Windows environment, without any programming or special integration.

2. General Test Approach and Test Results

The general test approach was to place calls to NetVanta UC Server, using coverage paths or hunt groups. The main objectives were to verify the following:

- Successfully establish calls to NetVanta UC Server from various telephones attached to Avaya IP Office.
- Successfully transfer from NetVanta UC Server to SIP and H.323 telephones attached to Avaya IP Office.
- Successfully tested FAX using T.38.
- Successfully turn on or off the MWI on the telephones.
- Successfully leave messages for subscribers.
- Successfully retrieve messages for subscribers.
- Successfully tested DTMF using the voicemail.
- Successfully tested G.711MU codec.

2.1. Interoperability Compliance Testing

The interoperability compliance testing included features and serviceability tests. The focus of the compliance testing was primarily on verifying the interoperability between NetVanta UC Server and Avaya IP Office.

2.2. Test Results

The test objectives were verified. For serviceability testing, NetVanta UC Server operated properly after recovering from failures such as cable disconnects, and resets of NetVanta UC Server and Avaya IP Office.

2.3. Support

Technical support for the NetVanta UC Server solution can be obtained by contacting ADTRAN:

- URL – http://www.adtran.com/web/page/portal/Adtran/wp_support_postsalestechsupport
- Phone – 888-4ADTRAN

3. Reference Configuration

Figure 1 illustrates the configuration used in these Application Notes. The sample configuration shows an enterprise with Avaya IP Office. Endpoints include Avaya 5610SW IP Telephone, Avaya 1616I IP Telephones, and an Avaya 1416 Digital Telephone.
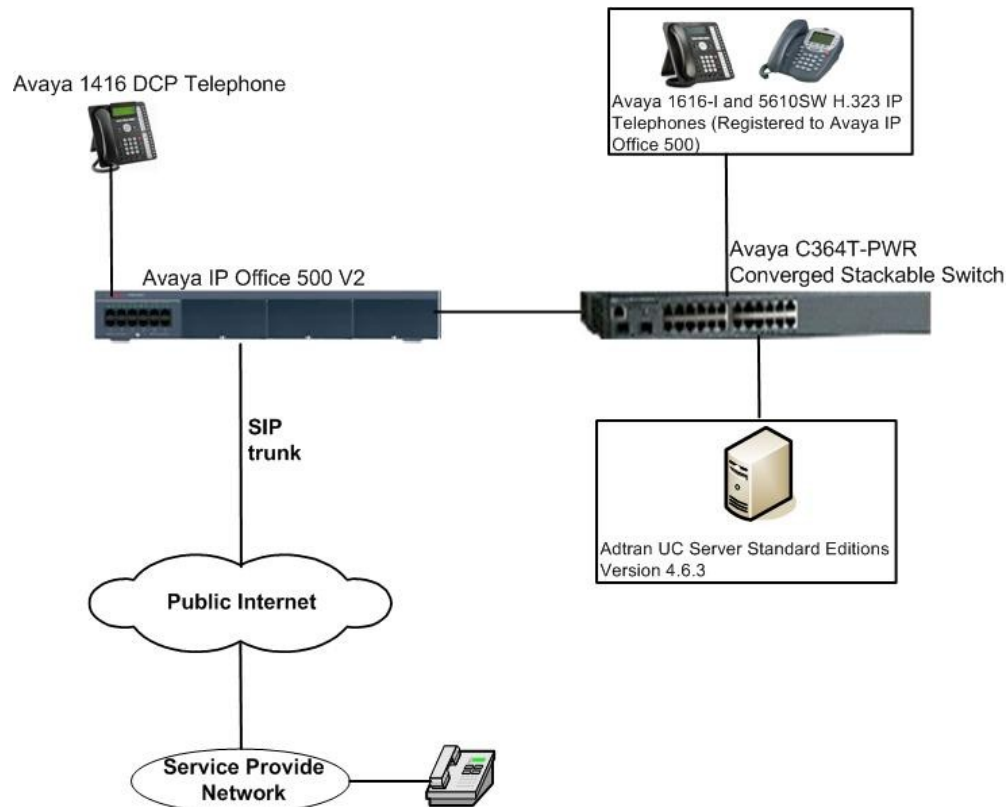
Figure 1: Test Configuration of NetVanta UC Server

4. Equipment and Software Validated

The following equipment and software were used for the test configuration.

Equipment	Software/Firmware
Avaya IP Office 500 V2	6.1 (5)
Avaya H.323 IP Telephones	
5610 (H.323)	2.9.1
1616-I (H.323)	1.22
Avaya 1416 Digital Telephone	-
Avaya Analog / Fax	
IP Office Manager on Windows XP Professional with Service Pack 3	8.1 (5)
ADTRAN UC Server Standard Editions	4.6.3

5. Configure Avaya IP Office

This section describes the steps required for configuring Avaya IP Office. During the compliance test, a SIP trunk and DID numbers were utilized.

The procedures include the following areas:

SIP trunk configuration – The SIP trunk, from the previous compliance test, was utilized. This provides a PSTN calls to NetVanta UC Server either by directly or through a hunt group.

- Verify SIP Trunk Channels License
- Configure WAN interface
- Enable SIP Trunk
- Create the static SIP line
- Configure SIP URI parameters for the SIP Line
- Configure SIP OPTIONS timer for "keep alive" function
- Configure a short code to route calls through the SIP trunk
- Create an Incoming Call Route for the Inbound SIP calls
- Configure Users' SIP names
-

SIP endpoint (NetVanta UC Server) Configuration – In these Application Notes, only NetVanta UC Server configuration is included.

- Verify 3rd party IP endpoints License
- Verify IP Office license
- Obtain LAN IP address
- Administer SIP registrar
- Administer SIP extensions
- Administer SIP users

These steps are performed from the Avaya IP Office Manager.

5.1. Verify SIP Trunk Channels License

IP Office is configured via the IP Office Manager application. Log into the PC running the Avaya IP Office Manager application, and select **Start** ➔ **All Programs** ➔ **IP Office** ➔ **Manager** to launch the Manager application. Select the proper IP Office system if there are more than one IP Office system, and log in with the appropriate credentials.

From the configuration tree in the left pane, select **License** ➔ **SIP Trunk Channels** to display the SIP Trunk Channels screen in the right pane. Verify that the **License Status** field is set to **Valid**.

If a required feature is not enabled or there is insufficient capacity, contact an authorized Avaya sales representative to make the appropriate changes.

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7 of 34
ADTRAN-IPO615
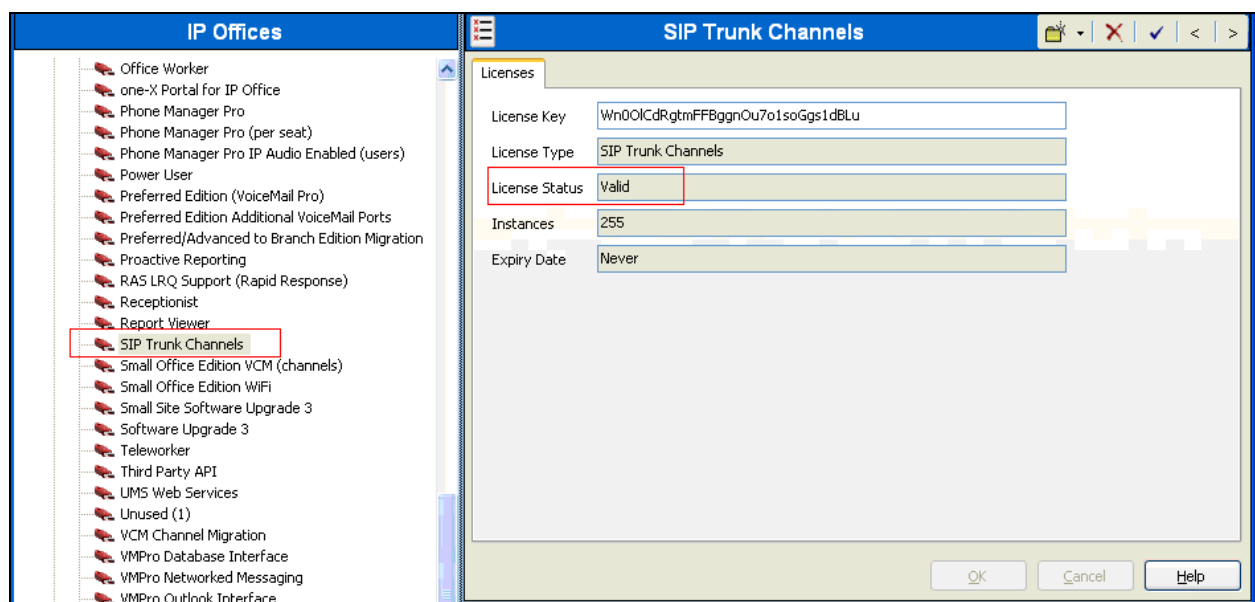
5.2. Configure WAN interface

From the configuration tree in the left pane, select **System** to display the System screen in the right pane. Click the **LAN2** tab. Under the **LAN2** tab, select the **LAN Settings** sub-tab, and provide **IP Address** and **IP Mask**.

5.3. Enable SIP Trunk

From the configuration tree in the left pane, select **System** to display the System screen in the right pane. Click the **LAN2** tab. Under the **LAN2** tab, select the **VoIP** sub-tab, and check the **SIP Trunks Enable** box. Click the **OK** button.

Note: During the initial configuration of Avaya IP Office, the LAN1 was configured as a private network (LAN) and the LAN2 was configured as a public network (WAN). Avaya IP Office can support SIP extensions on the LAN1 and/or LAN2 interfaces, and the compliance test used the LAN2 interface for a SIP trunk termination.
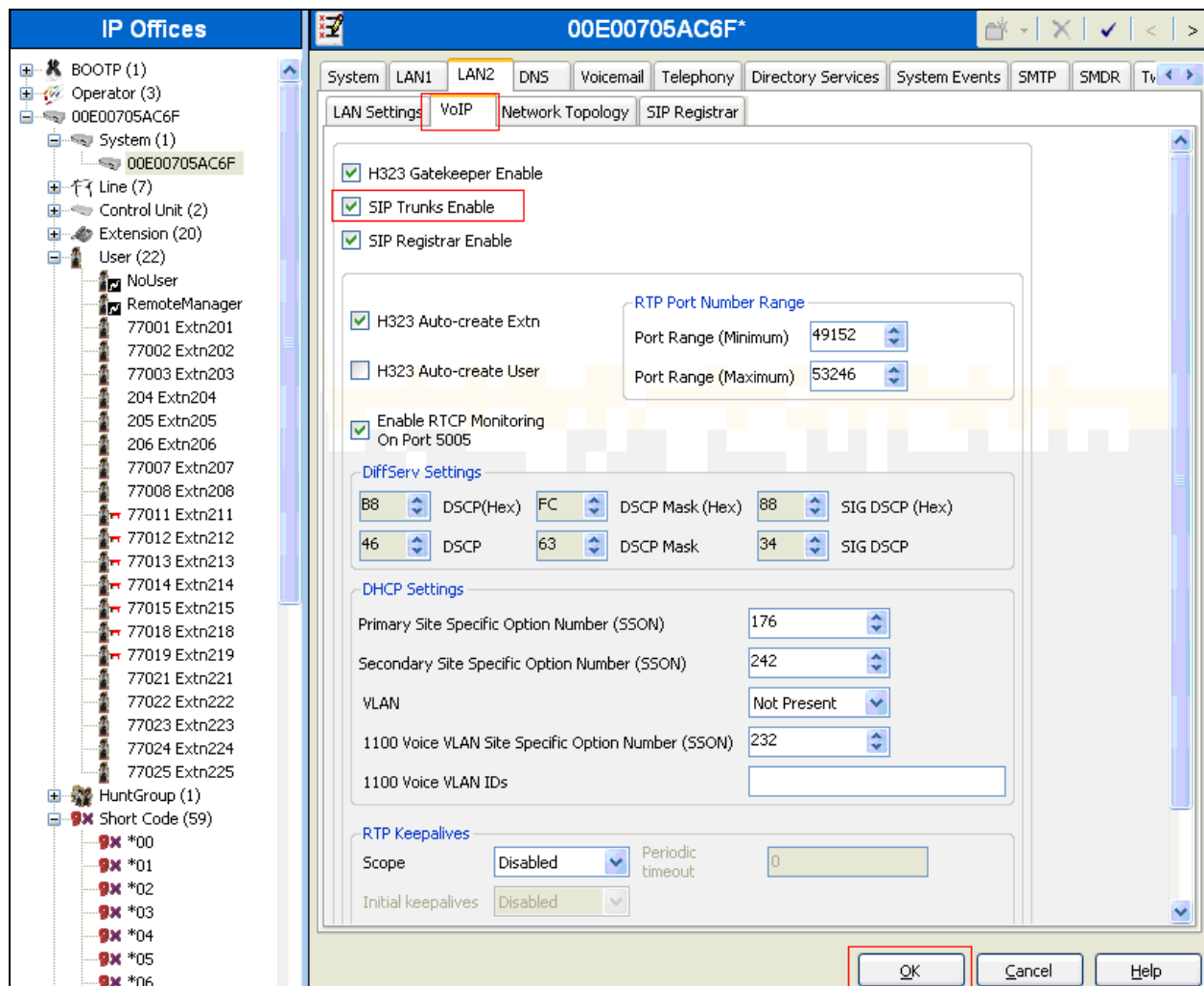
5.4. Create SIP Lines for a SIP Trunk

Select **Line** in the left pane. Right-click and select **New → SIP Line**, and create a new **Line Number**. During the compliance test, two SIP lines (21 and 22) were configured. Click the **OK** button.

Select the **Transport** sub-tab, and provide the following information:

- **ITSP Proxy Address** – Enter the IP address of the SIP termination point for the SIP Trunk Service Provider.
- **Layer 4 Protocol** – Select **UDP**.
- **Use Network Topology Info** – Select **LAN2** (WAN interface).
- Click the **OK** button.

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SPOC 6/15/2011
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10 of 34
ADTRAN-IPO615

5.5. Configure SIP URI Parameters for the SIP Line

Select the **SIP URI** tab to configure SIP URI parameters for the SIP Line. Click on the **Add** button.
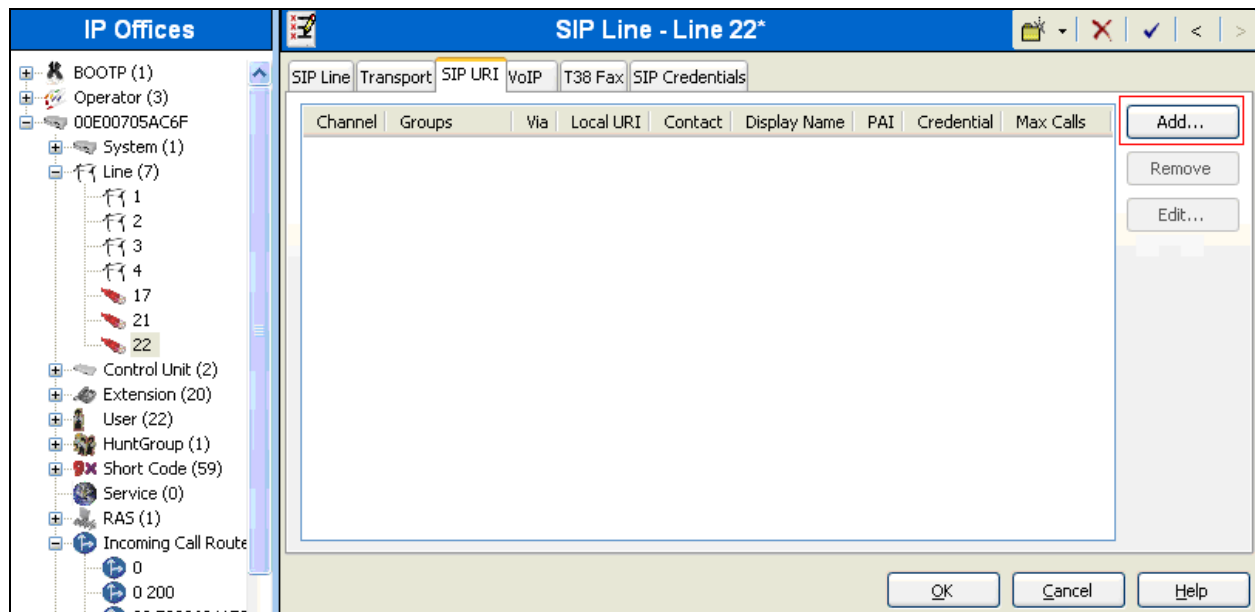
Select VoIP to configure the Fax configuration. On the **Fax Transport Support** field, select **T38** using the drop down list.

The default values for the other fields may be used

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SPOC 6/15/2011
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11 of 34
ADTRAN-IPO615
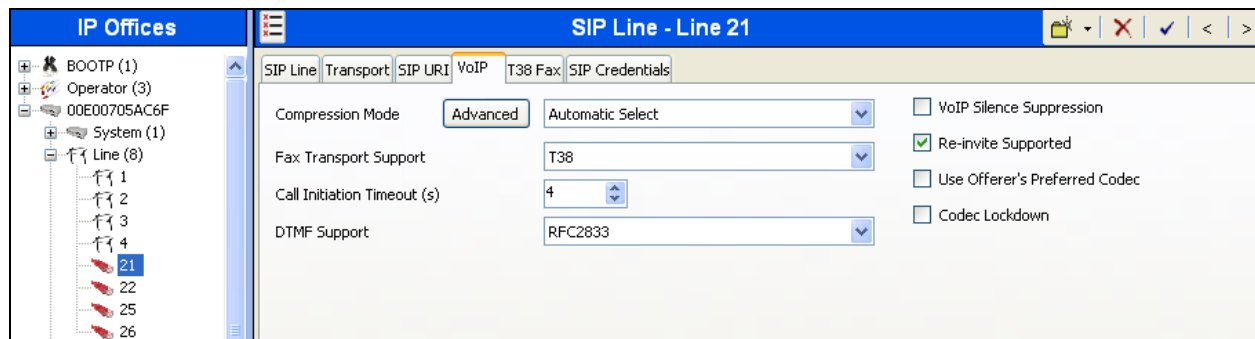
Select **Use Internal Data** for the **Local URI**, **Contact**, and **Display Name** fields. Enter a unique number for the **Incoming Group** and **Outgoing Group** fields. The **Incoming Group** field will be used for mapping inbound calls from the SIP trunk to local stations. The **Outgoing Group** will be used for routing calls externally via the Short Code configured in **Section 5.9**. Use default values for all other fields. Click the **OK** button.

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5.6. Configure VoIP Parameters for the SIP Line

Select the **VoIP** tab to Configure VoIP parameters for the SIP Line. Click the **Add** button (not shown). For **Compression Mode**, select **Automatic Select** or the desired codec from the drop-down list. Check the **Fax Transport Support** and **Re-invite Supported** check boxes.

Click the **OK** button.
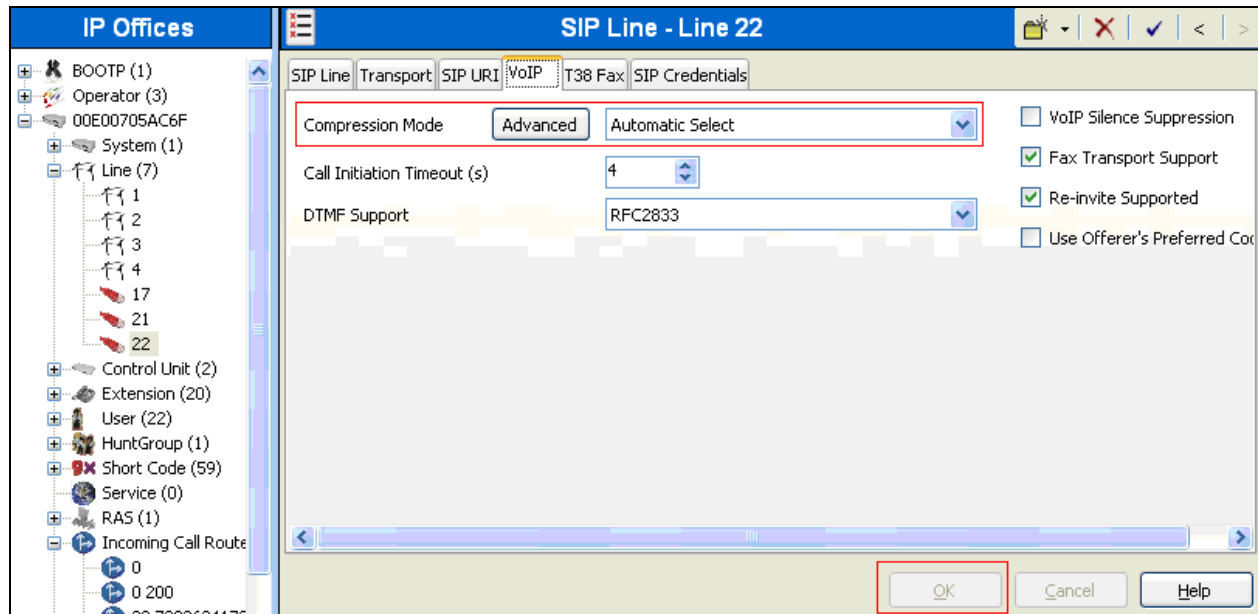
5.7. Configure T38 Fax Parameters for the SIP Line

Select the **T38 Fax** tab to configure T38 Fax parameters for the SIP Line, and check the **Use Default Values** check box. Click the **OK** button.
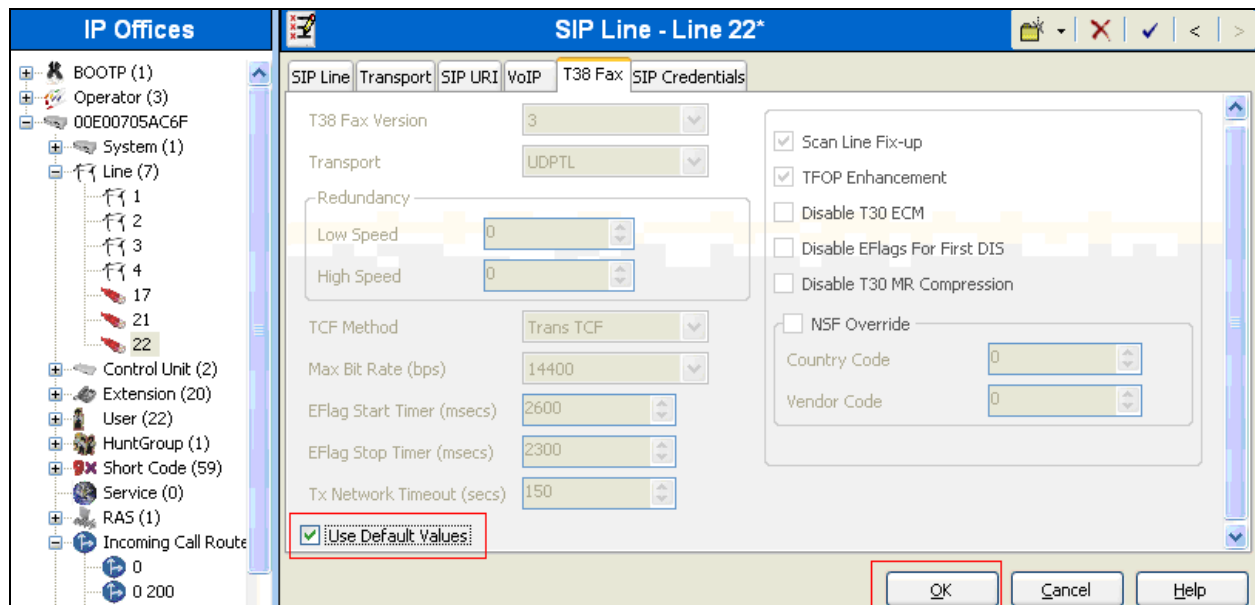
A FAX machine was connected to an analog extension. The following screen shows the analog extension that was configured as a FAX line.

Set the Equipment Classification field as **Standard Telephone**. Click the **OK** button.
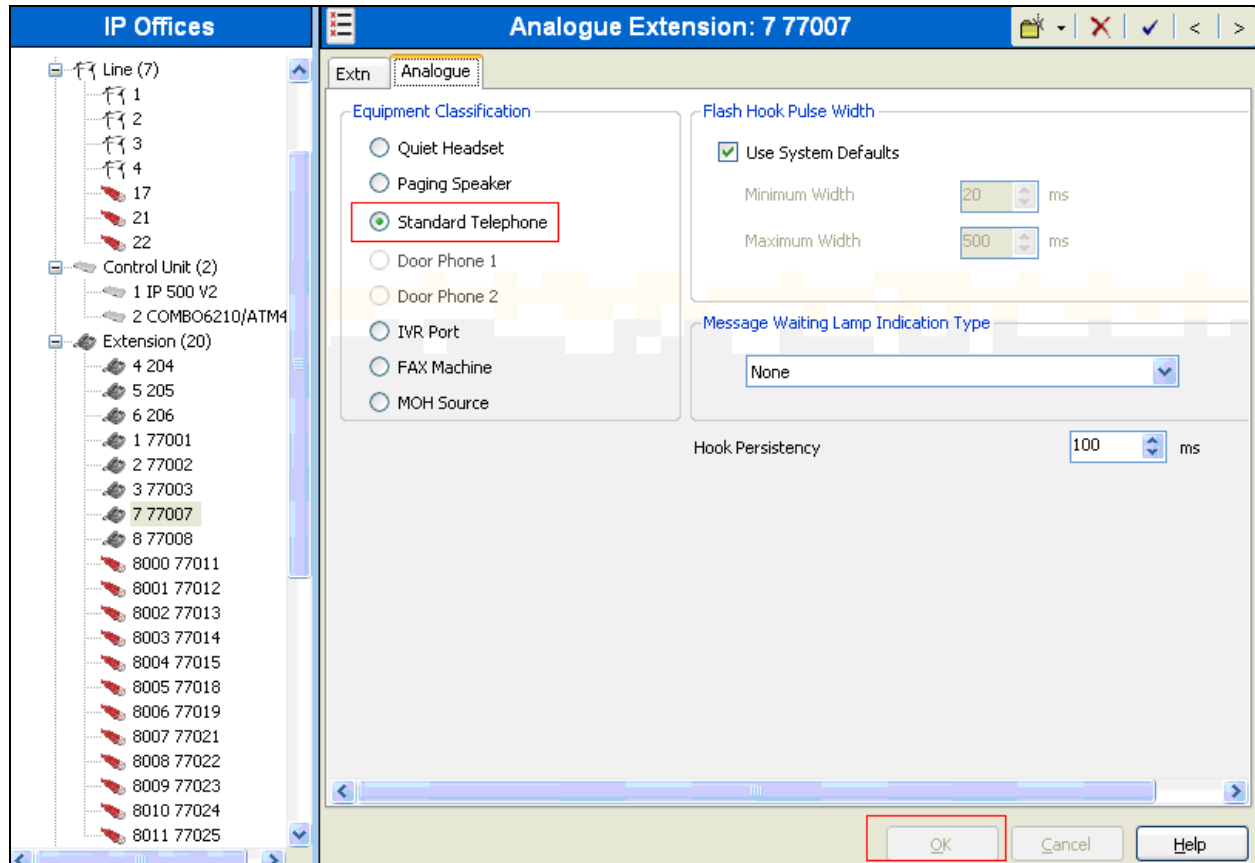
5.8. Configure SIP OPTIONS Timer for "keep alive" Function

Select **System** in the left pane. Under the **LAN2** tab, select the **Network Topology** sub-tab. Set the **Binding Refresh Time** to the desired interval which determines the frequency with which OPTIONS messages will be sent to the SIP termination device. For this compliance testing, it is set to 300. The default value of 0 means disabling OPTIONS messages. For **Public IP Address**, enter the Avaya IP Office system public IP address (WAN). Confirm that **Public Port** is set to 5060 and accept the default values for all other fields. Click the **OK** button (not shown).
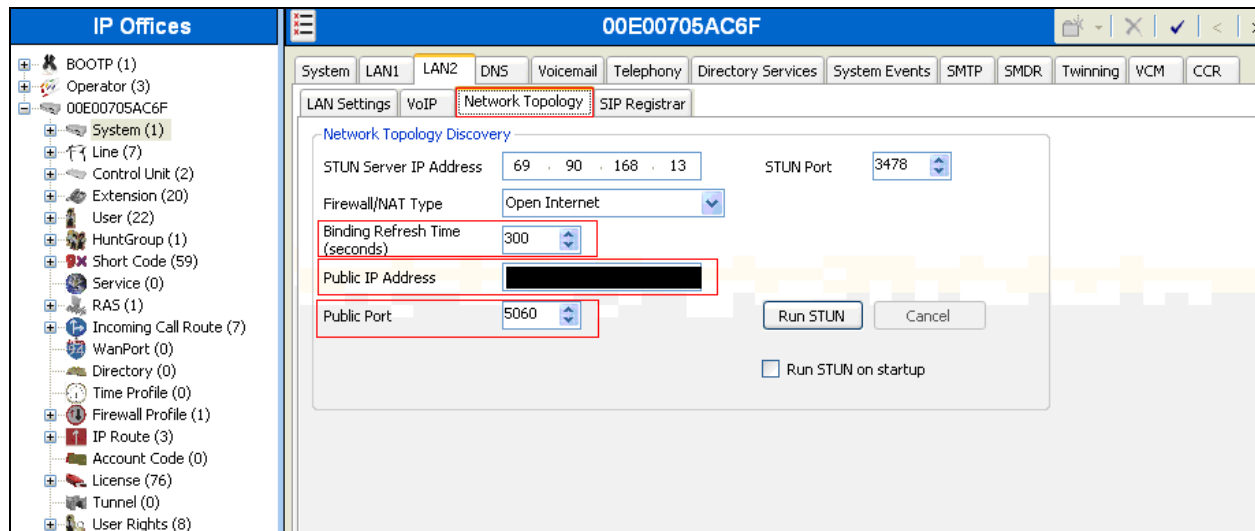
5.9. Configure a Short Code to Route Calls through the SIP trunk

Select **Short Code** in the left panel. Right click and select **Add**.   Enter **[x]N;**, where **[x]** is a valid number, in the **Code** text box. The number **9** is used for **[x]** in the example below. This code requires the user to dial the digit **9** followed by the destination's telephone number symbolized by **N** in order to route the call out the SIP Trunk.

Note: N can be any number other than a local IP Office extension. For example, a 10-digit number, a toll-free number, directory assistance, information service, etc.

Select **Dial** for the **Feature**. Enter the **Outgoing Group** number created in **Section 5.4** for the **Line Group Id** field. Enter the dialed number **N** followed by **"@<IP address of SIP trunk termination point >"** for the **Telephone Number** field. The **Telephone Number** field is used to construct the SIP URI in the **To** field of the outgoing SIP INVITE message. Use default values for all other fields. Click the **OK** button.

5.10. Create an Incoming Call Route for the Inbound SIP Calls

Select **Incoming Call Route** in the left pane. Right-click and select **New**.
Enter the following:

- **Any Voice** for the **Bearer Capability** field.
- The **Incoming Group** number created for the URI in **Section 5.4** in the **Line Group Id** field.
- The 10-digit DID number that is mapped back to a local IP Office extension in the **Incoming Number** field.
- Use default values for all other fields.

- Next, navigate to the **Destinations** tab and select the desired local extension number from the drop down list.
- Click the **OK** button.

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SPOC 6/15/2011

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18 of 34
ADTRAN-IPO615

If a hunt group is utilized, instead of an extension, a hunt group extension can be selected as a destination.
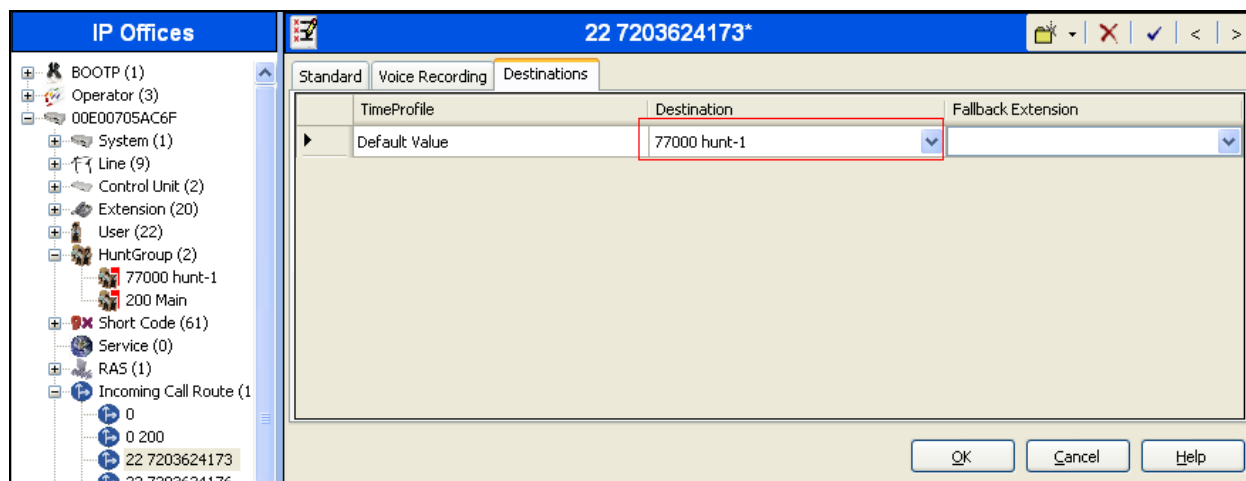
The following screen shows the corresponding hunt group.

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SPOC 6/15/2011
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19 of 34
ADTRAN-IPO615
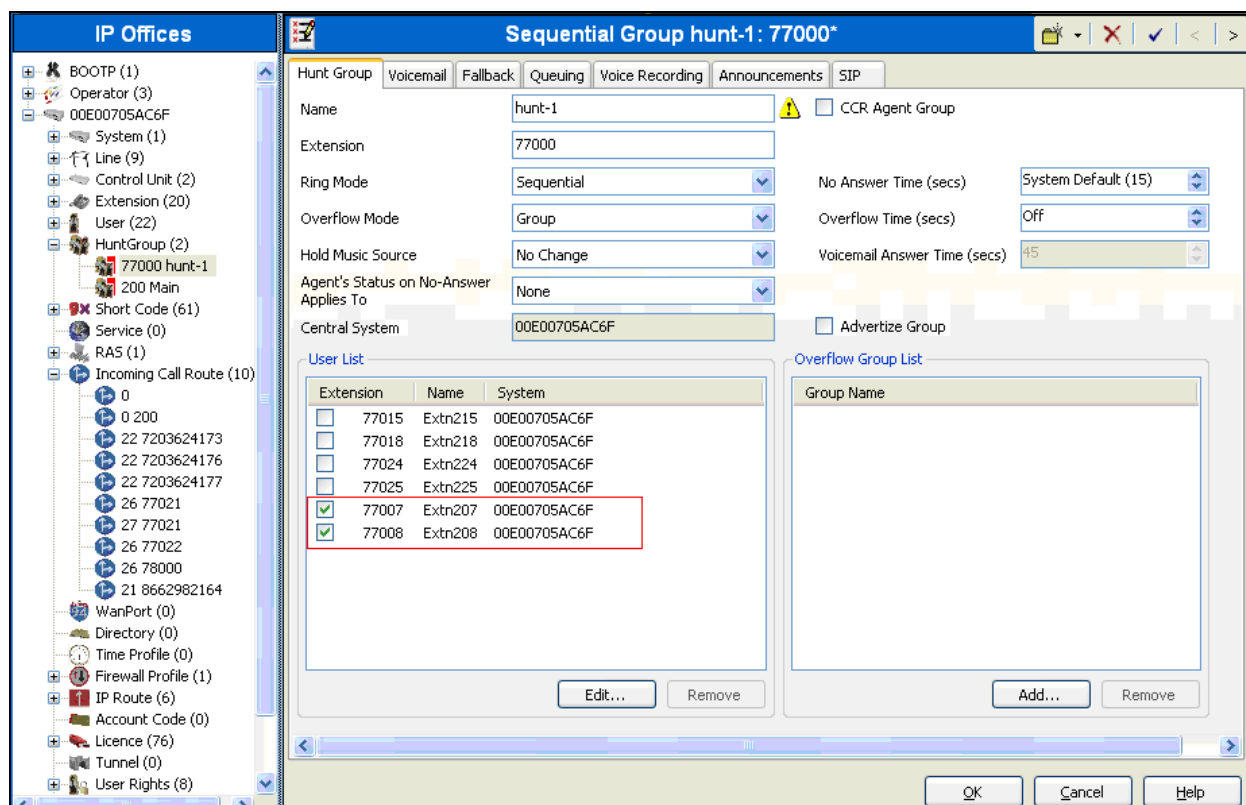
5.11. Configure Users' SIP Names

Select **User** in the left panel. Select the desired user by double-clicking on an entry in the left panel. Select the **SIP** tab.

Modify the **SIP Name** and **Contact** fields to the DID number that is used for this particular extension. These settings instruct the system to use this DID number to construct the:

- user part of the SIP URI in the From header of an outgoing SIP INVITE message
- user part of the SIP URI in the Contact header of an outgoing SIP INVITE message

Modify the **SIP Display Name (Alias)** that will be used for the SIP Display info. The other fields can be left as defaults. Click the **OK** button.
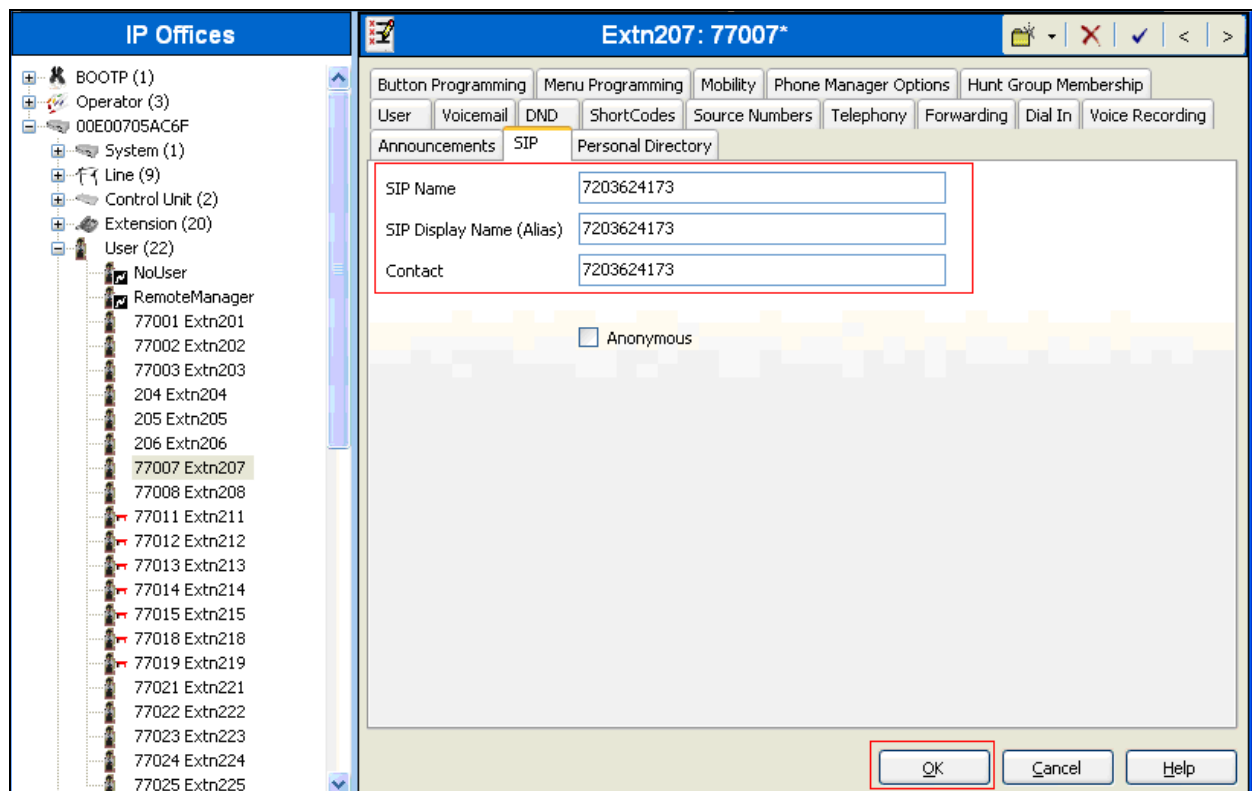
5.12. Verify 3rd party IP Endpoint License

From a PC running the Avaya IP Office Manager application, select **Start → All Programs → IP Office → Manager** to launch the Manager application.   Select the proper IP Office system if there are more than one 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 → 3rd Party IP endpoints** to display the Avaya IP endpoints screen in the right pane. Verify that the License Status field is set to **Valid**. NetVanta UC Server utilizes a 3rd party IP endpoint license.

5.13. Obtain LAN IP Address

From the configuration tree in the left pane, select **System** to display the System screen in the right pane. Select the **LAN1** tab, followed by the **LAN Settings** sub-tab in the right pane.

Note: During the initial configuration of Avaya IP Office, the LAN1 was configured as a private network and the LAN2 was configured as a public network. Avaya IP Office can support SIP extensions on the LAN1 and/or LAN2 interfaces, and the compliance test used the LAN1 interface was used for internal SIP endpoints.
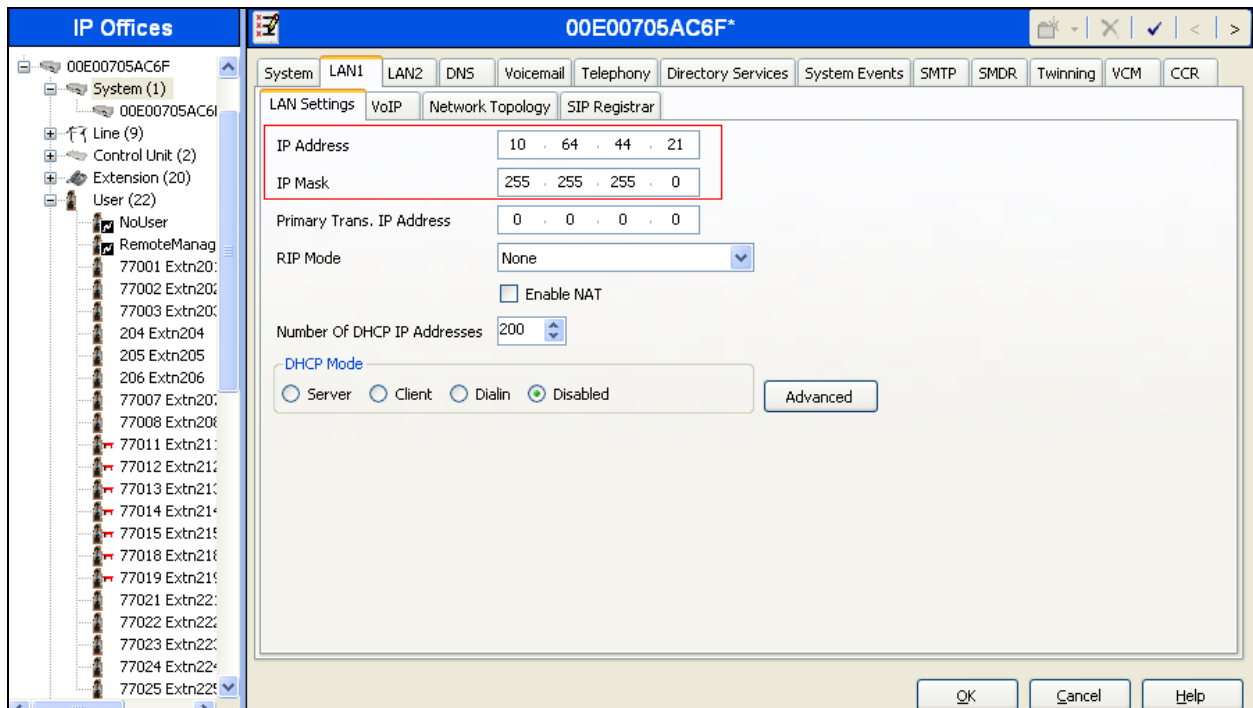
5.14. Administer SIP Registrar

Select the **VoIP** sub-tab. Make certain that **SIP Registrar Enable** is checked, as shown below.
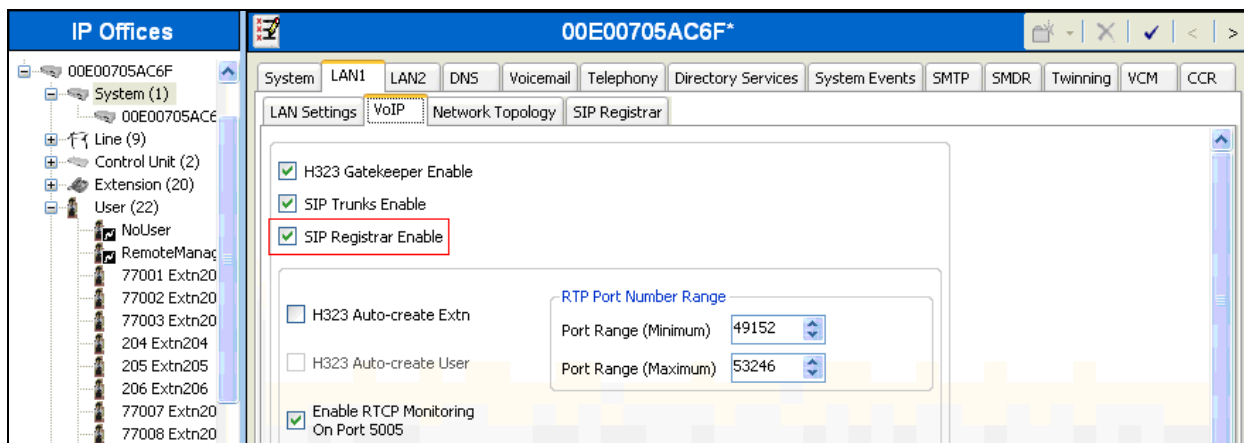
Select the **SIP Registrar** sub-tab, and enter a valid Domain Name for SIP endpoints to use for registration with IP Office. In the compliance testing, the **Domain Name** field was set to **avaya.com**. If **the Domain Name** field is left blank, then the SIP endpoints uses the LAN IP address for registration.

Click the **OK** button.
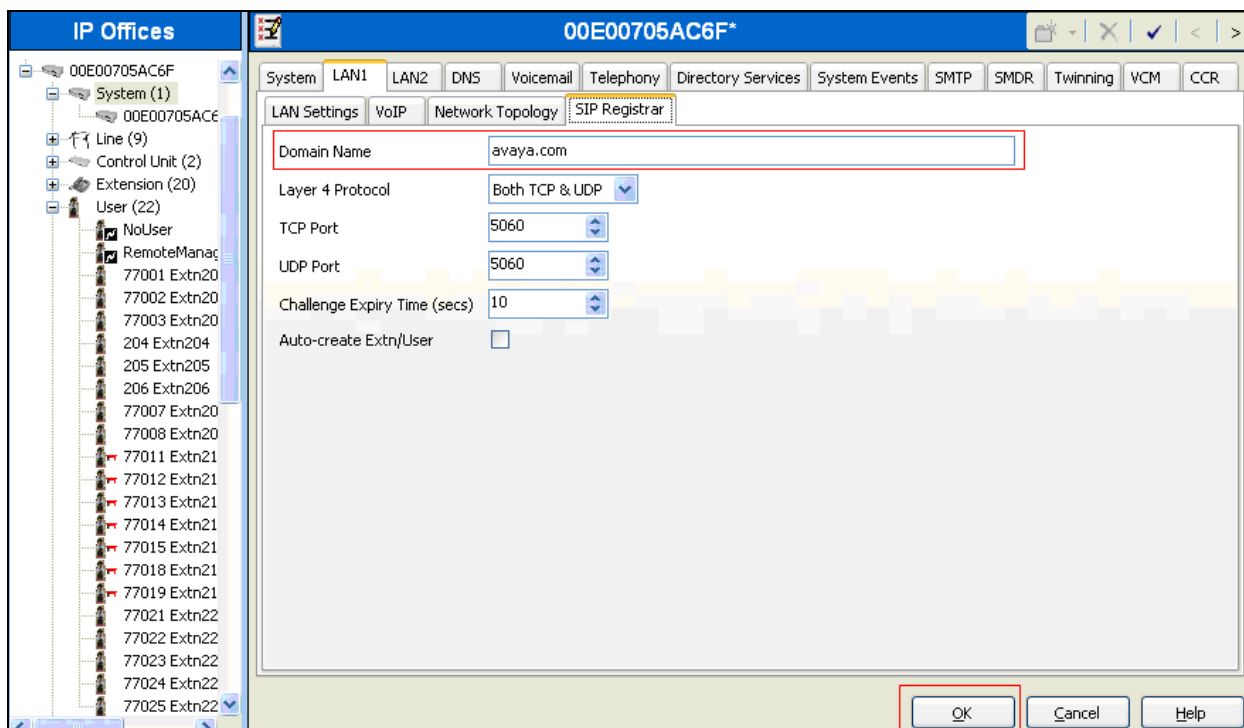
5.15. Administer NetVanta UC Server Extension

From the configuration tree in the left pane, select an unused Extension Id to add a NetVanta UC Server extension. Enter the desired digits for the **Base Extension** field.

Click the **OK** button.

Repeat steps if multiple extensions are needed. During the compliance test, extensions 77007 and 77008 are used.

5.16. Administer NetVanta UC Server User

From the left pane, right-click on **User**, and select **New** from the pop-up list. Enter desired values for the **Name** and **Full Name** fields. For the **Extension** field, enter the NetVanta UC Server extension created in **Section 5.14**.

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SPOC 6/15/2011

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25 of 34
ADTRAN-IPO615

Select the **Telephony** tab, followed by the **Call Settings** sub-tab. Check the **Call Waiting On** field, as shown below.
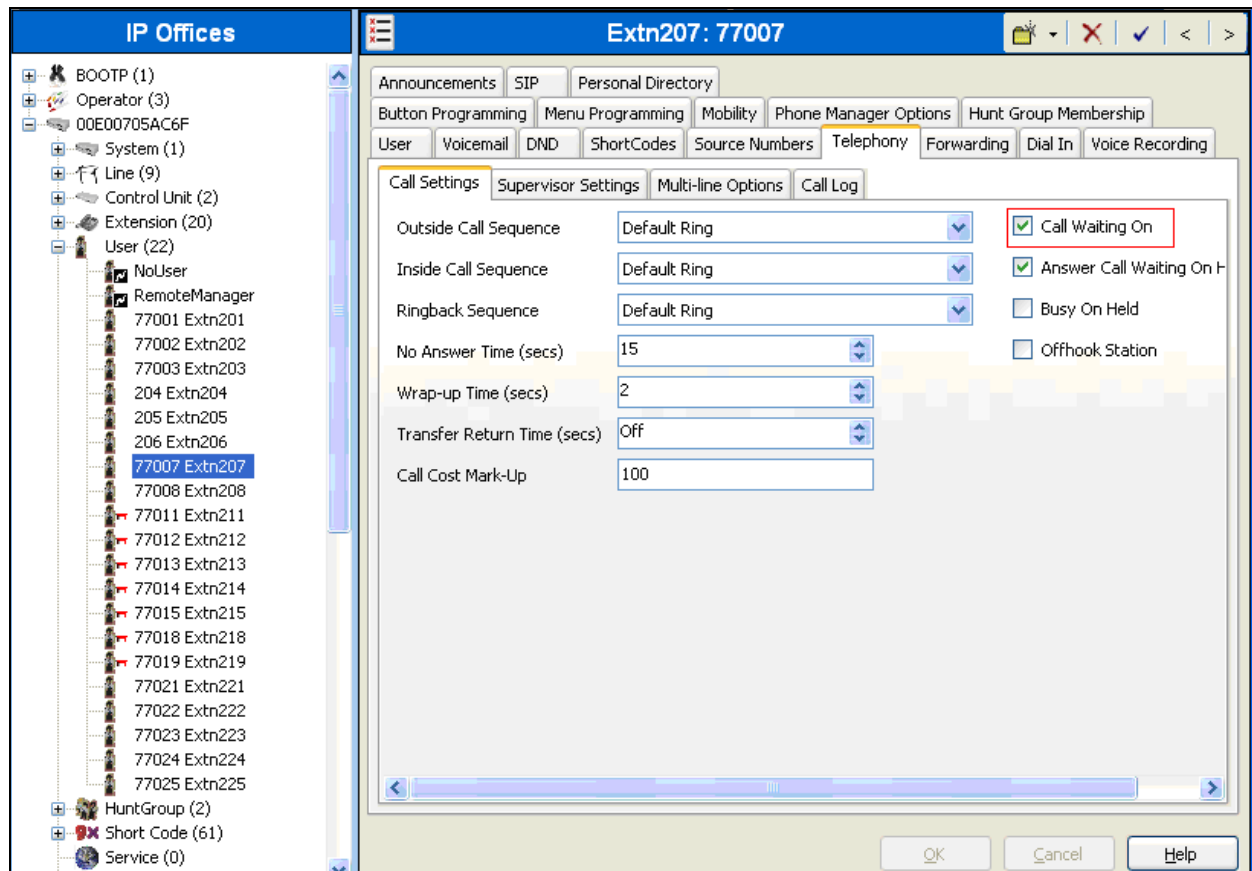
Repeat steps if multiple users are needed. During the compliance test, users 77007 and 77008 are used.

After making the changes, click on the floppy disk icon (not shown) to push the changes to the IP Office system and have them take effect

Note: *Changes will not take effect until this step is completed. This may cause a reboot of Avaya IP Office causing service disruption.*

6. Configure the ADTRAN NetVanta UC Server

ADTRAN installs, configures, and customizes the NetVanta UC Server application for their end customers. Thus, this section only describes the interface configuration, so that NetVanta UC Server can talk to Avaya IP Office.

The procedures for setting up NetVanta UC Server include the following areas:
- Configure the Switch
- Configure Users
- Configure Ports
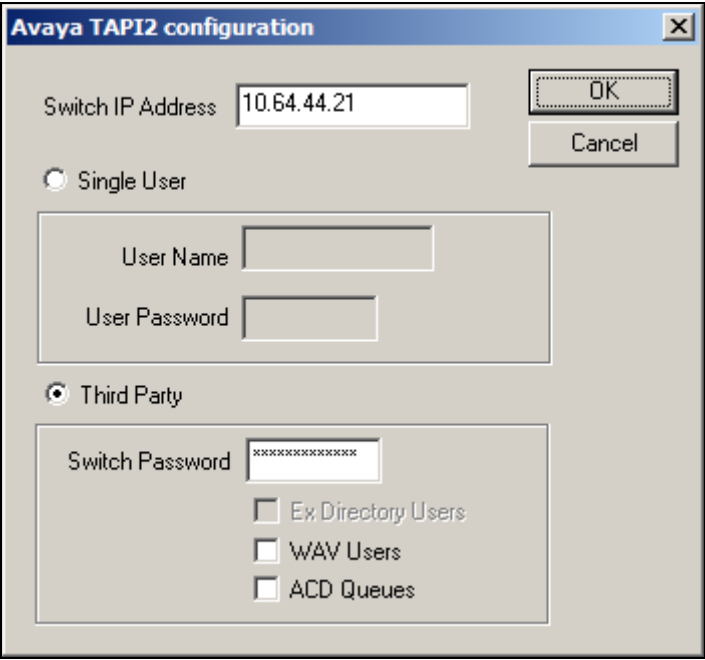
6.1. Configure the Switch

To configure NetVanta UC Server, navigate to **Control Panel** ➔ **Phone and Modem** ➔ **Advanced** ➔ **Avaya IP Office TAPI 2 Service Provider**.

Enter the IP address of Avaya IP Office for the **Switch IP Address** field. Select **Third Party** and enter the IP Office System Password in the **Switch Password** field.

Click the **OK** button.

6.2. Configure Users

Navigate to Start ➔ **All Programs** ➔ **ADTRAN** ➔ **NetVanta UC Server** ➔ **NetVanta UC Client**. Click **Identities** from the left pane.

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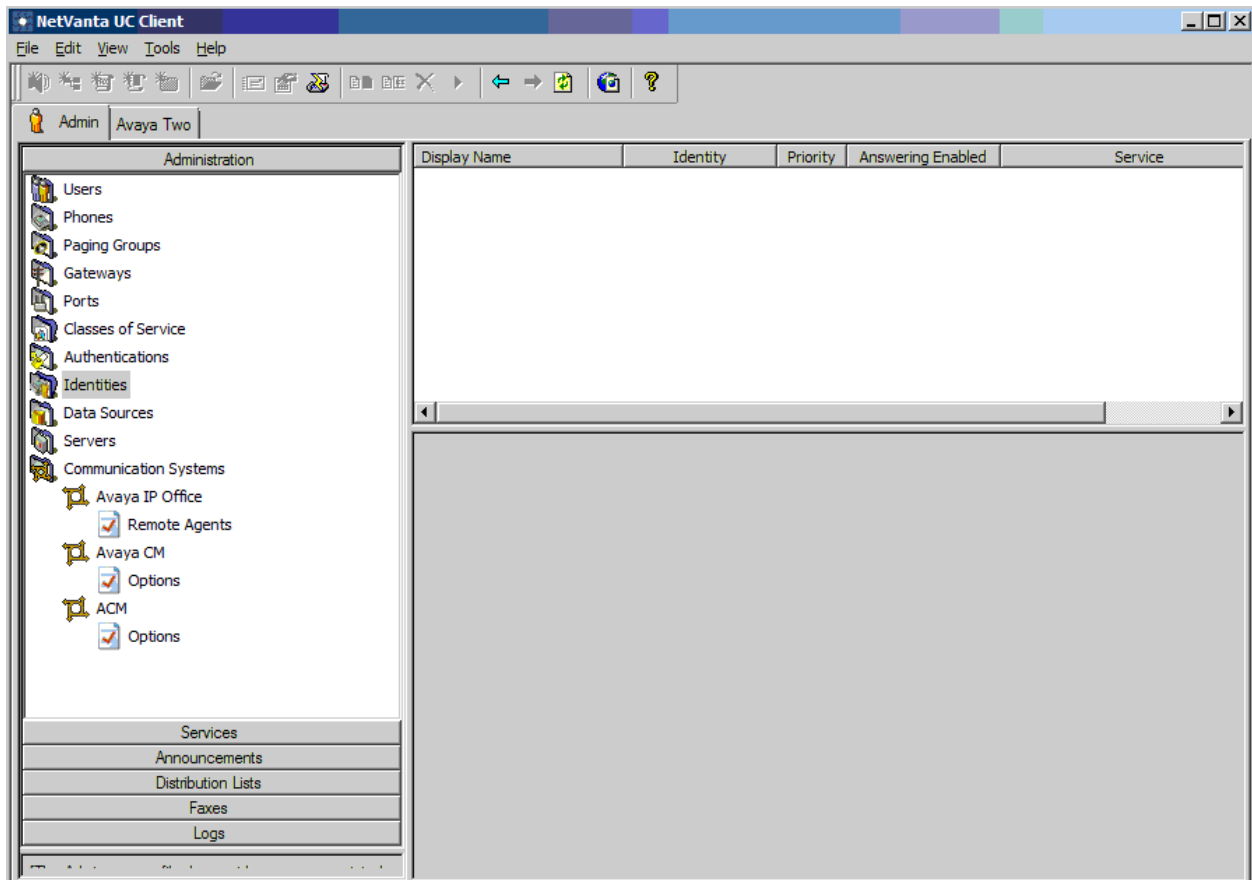
On the Select Identity Type page, create a New Identity, using the right mouse button.
Enter the following information:

- **Select a communication system** – Select **Avaya IP Office** using the drop-down list.
- **Select a user profile** – Select **User1** using the drop-down list.
- Select the **User** option.

Click the **Next** button.

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SPOC 6/15/2011
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29 of 34
ADTRAN-IPO615

On the Configure User Identity page, provide the following information:
- **Name** – Enter the user profile just created previous, **User 1**.
- **Address** – Enter the extension.

Click the **Next** button.

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6.3. Configure Ports

Navigate to Start ➔ **All Programs** ➔ **ADTRAN** ➔ **NetVanta UC Server** ➔ **NetVanta UC Client**. Click **Ports** from the left pane.
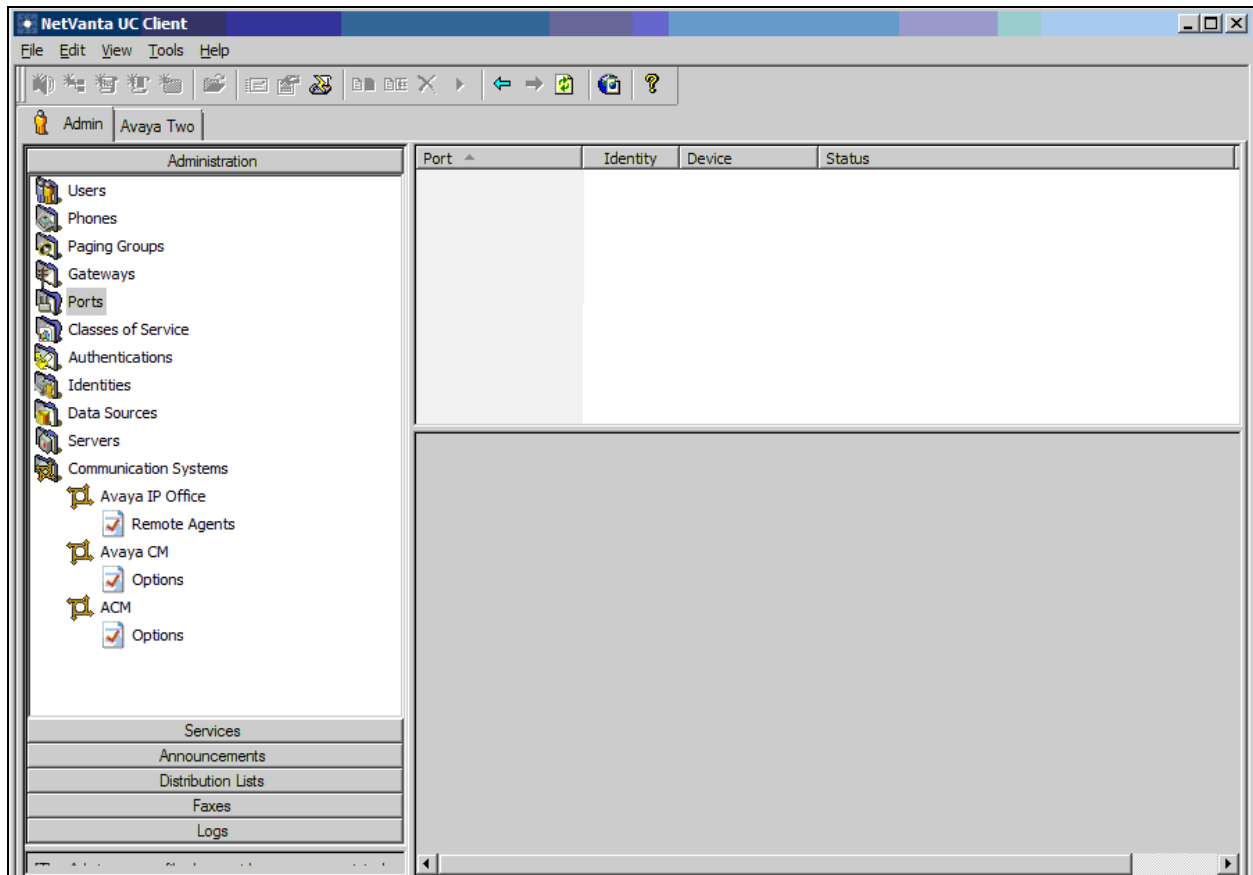
On the Port – Port1 page, provide the following information:
- Name – Enter **Port 1**.
- Identity – Enter an extension.
- Communication System – Select Avaya IP Office using the drop-down list.
- Device – Select the port on the dialogic. In this example, the first port is selected.

7. Verification Steps

This section provides the tests that can be performed to verify proper configuration of Avaya IP Office and NetVanta UC Server.

7.1. Verify Avaya IP Office

From a PC running the Avaya IP Office Monitor application, select **Start → Programs → IP Office → Monitor** to launch the application. The **Avaya IP Office R6.1 SysMonitor** screen is displayed, as shown below. Select **Status → SIP Phone Status** from the top menu.

Verify that there is an entry for each SIP extension from **Section 5.15.**

8. Conclusion

These Application Notes describe the procedures required to configure ADTRAN UC Server to interoperate with Avaya IP Office 6.1. ADTRAN UC Server successfully passed compliance testing.

9. Additional References

The following Avaya product documentation can be found at http://support.avaya.com
[1] *IP Office Manager,* December 2010, Release 8.1, Document Number 15-601011, Issue 25j

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SPOC 6/15/2011
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34 of 34
ADTRAN-IPO615