Avaya Solution & Interoperability Test Lab

Application Notes for NICE Perform with Avaya Proactive Contact System with CTI - Issue 1.0

Abstract

These Application Notes describe the configuration steps required for NICE Perform to successfully interoperate with Avaya Proactive Contact with CTI.

NICE Perform delivers enterprise call recording capabilities to optimize call center quality and performance. NICE Perform uses the Telephony Services API (TSAPI) of Avaya Application Enablement Services (AES) to extract agent and call event information. Only trunk side call recording was tested and verified. The test configuration consisted of Avaya S8700 Servers with an MCC1 Media Gateway running Avaya Communication Manager, Avaya Application Enablement Services and Avaya Proactive Contact with CTI.

Information in these Application Notes has been obtained through Developer*Connection* 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 the compliance-tested configuration utilizing Avaya Proactive Contact (PC3) 3.0 with computer telephony interface (CTI) and NICE Perform 3.0 (NICE Perform). NICE Perform monitors, records, stores and plays back phone calls for verification and quality assurance.

NICE Perform consists of the NiceLog server and the NiceCLS server. The NiceLog server is a digital voice logging system. NiceLog records and archives audio from multiple sources. Audio is recorded to the hard drive of the NiceLog server for immediate playback capability. The NiceCLS server contains the Avaya Telephony Service API (TSAPI) connector.

NiceCLS uses the TSAPI connector of Avaya Application Enablement Services (AES) to receive events concerning particular stations, agents, and agent ACD/skill groups. NICE uses these events as recording triggers. There are many methods that NICE Perform 3.0 can use for call recording. During the compliance testing, trunk side recording was used. Trunk side recording was performed using an active tap on an E1/T1 connection between the Avaya MCC1 Media Gateway and the simulated Public Network.

There are three possible system deployments of Avaya Proactive Contact 3.0.

- Avaya Proactive Contact with computer telephony interface (CTI)
- Avaya Proactive Contact with Avaya Proactive Contact Gateway PG230
- Avaya Proactive Contact with the System Cabinet (the System Cabinet contains the PG230)

The compliance testing was configured with Avaya Proactive Contact with CTI.

1.1. Integration Overview

Figure 1 depicts an overview of the NICE Perform 3.0 integration to Avaya Proactive Contact 3.0. The configuration consists of a pair of redundant Avaya S8700 Servers, an Avaya MCC1 Media Gateway, Avaya Application Enablement Services server, Avaya IP Telephones, an Avaya Proactive Contact System with CTI, agent workstations, and NICE servers (NiceCLS and NiceLog servers).

The NiceLog server interfaces the trunk-side digital input using the NICE Active Multi Coupler. The Multi Coupler's PBX port connects to the DS1 board on Avaya MCC1 Media Gateway and the CO port connects to the T1 from the Public Network. The audio is transmitted from the Multi Coupler to the NiceLog server through a cable with a 50-pin Centronics connector.

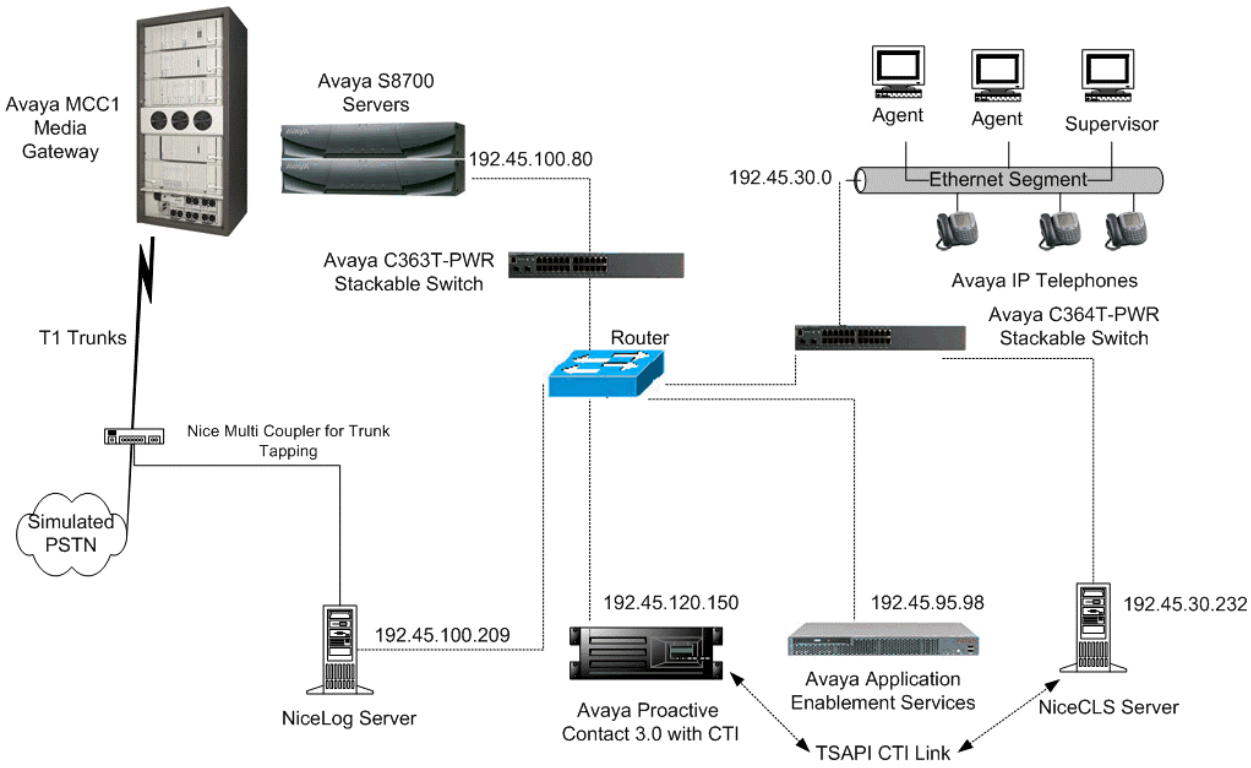


Figure 1: Avaya Proactive Contact 3.0 and NICE Perform 3.0 Integration

2. Equipment and Software Validated

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

Equipment	Software
Avaya Proactive Contact System with CTI on the HP C8000 Server	Avaya Proactive Contact 3.0 SP 1, Build 36
Avaya S8700 Servers	Avaya Communication Manager 4.0 (R014x.00.0.730.5)
Avaya MCC1 Media Gateway	
TN464F DS1	Version 16
Avaya Application Enablement Services	4.0, Build 47.3
Avaya 4610SW IP Telephones (H.323)	2.1.3
Avaya C363T-PWR Converged Stackable Switch	4.5.14
Avaya C364T-PWR Converged Stackable Switch	4.5.14
NiceCLS Windows 2003 SP2 Server	Perform 3.0
NiceLog Windows 2003 SP1 Server	Perform 3.0
Nice Multi Coupler for T1	

3. Configure Avaya Communication Manager

The Avaya Communication Manager to Avaya Proactive Contact System with CTI and to Avaya Application Enablement Services configurations are outside the scope of these Application Notes and should already be operating successfully [5].

Trunk side monitoring does not require any additional configuration on the T1 trunk, to allow the NiceLog server to monitor the T1 trunk. Details of the DS1, Signaling Group, and Trunk Group configuration are provided for informational purposes.

```
display ds1 3b15                                          Page   1 of   2
                              DS1 CIRCUIT PACK

            Location: 03B15                          Name: ISDN to PSTN
            Bit Rate: 1.544                   Line Coding: b8zs
   Line Compensation: 1                      Framing Mode: esf
      Signaling Mode: isdn-pri
             Connect: pbx                       Interface: user
   TN-C7 Long Timers? n                  Country Protocol: 1
Interworking Message: PROGress           Protocol Version: a
Interface Companding: mulaw                         CRC? n
           Idle Code: 11111111
                             DCP/Analog Bearer Capability: 3.1kHz

                                          T303 Timer(sec): 4


      Slip Detection? n                Near-end CSU Type: other
```

```
display trunk-group 31                                    Page   1 of  21
                               TRUNK GROUP

Group Number: 31                   Group Type: isdn          CDR Reports: y
  Group Name: ISDN to PSTN                COR: 1        TN: 1        TAC: 1031
   Direction: two-way        Outgoing Display? y         Carrier Medium: PRI/BRI
 Dial Access? y              Busy Threshold: 255  Night Service:
Queue Length: 0
Service Type: tie                    Auth Code? n            TestCall ITC: rest
                         Far End Test Line No:
TestCall BCC: 4
```

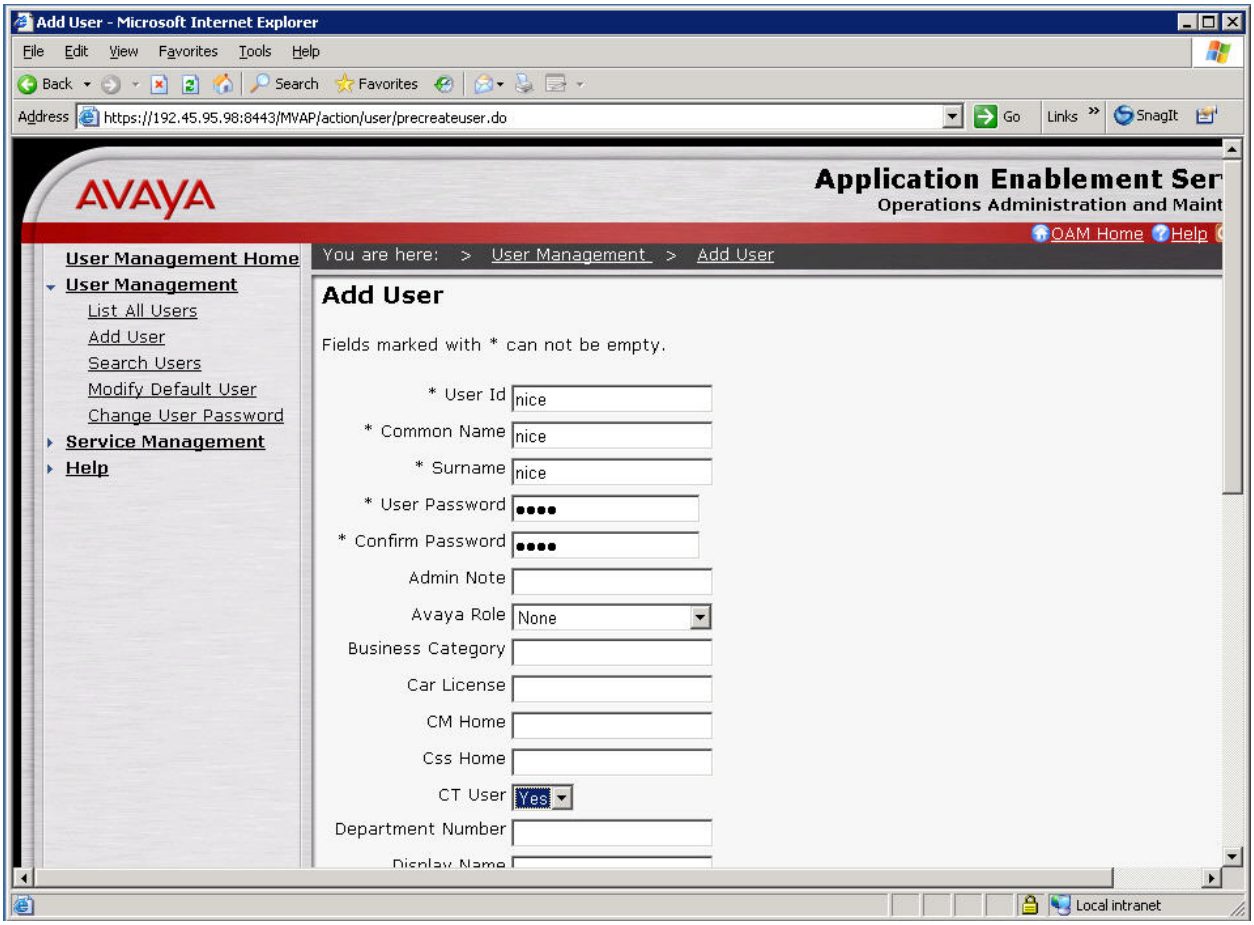
```
display trunk-group 31                                    Page   5 of  21
                                TRUNK GROUP
                                     Administered Members (min/max):   1/4
GROUP MEMBER ASSIGNMENTS                 Total Administered Members:   4

       Port    Code Sfx Name        Night           Sig Grp
  1: 03B1501  TN464  F                               31
  2: 03B1502  TN464  F                               31
  3: 03B1503  TN464  F                               31
  4: 03B1504  TN464  F                               31
```

4. Configure Avaya Application Enablement Services

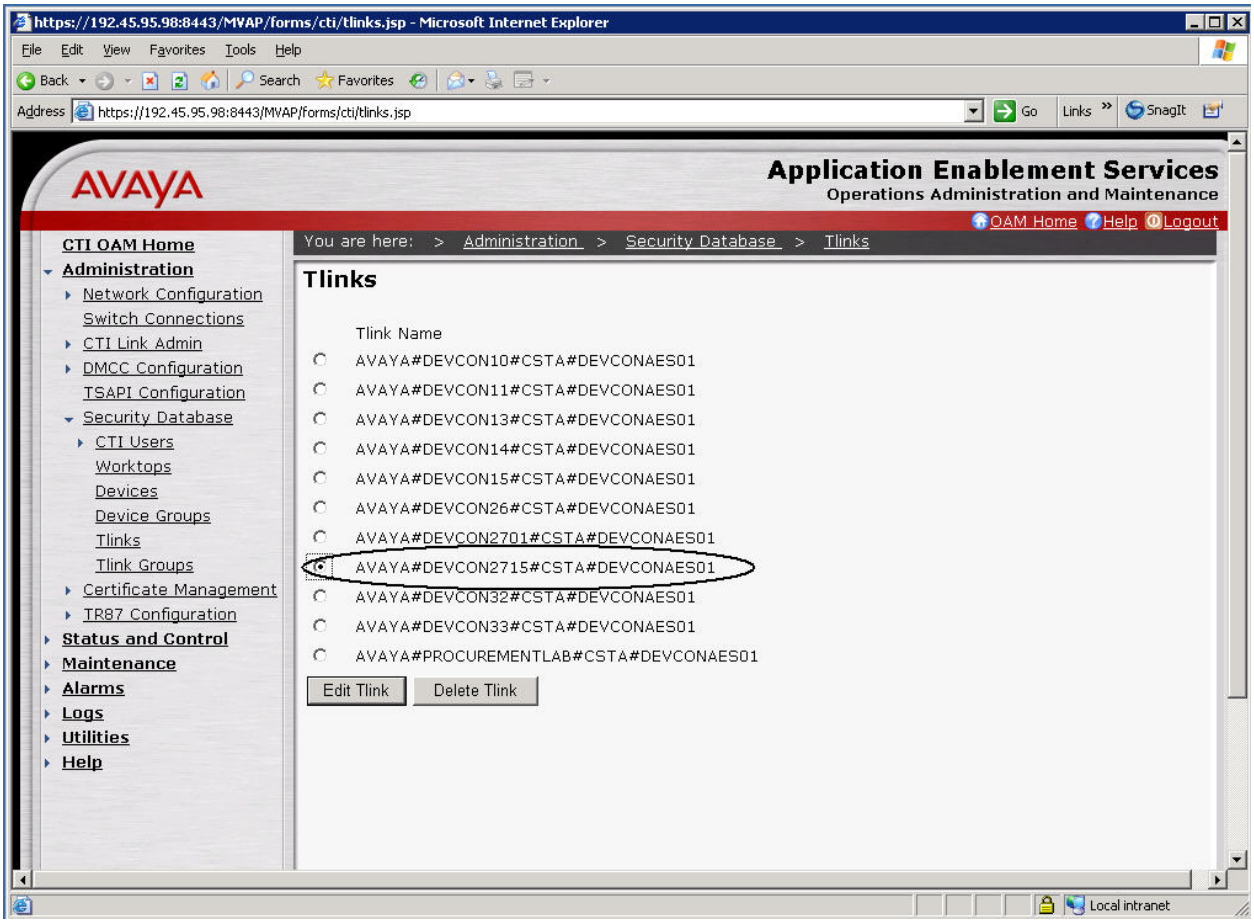
The TSAPI link is used by Avaya Proactive Contact 3.0 with CTI to communicate with Avaya Communication Manager for outbound calling, and for inbound calling when the Predictive Agent Blending feature is enabled on Avaya PC3. This administration should have already been completed during the installation of Avaya PC3 along with the creation of a TSAPI user ID [5].

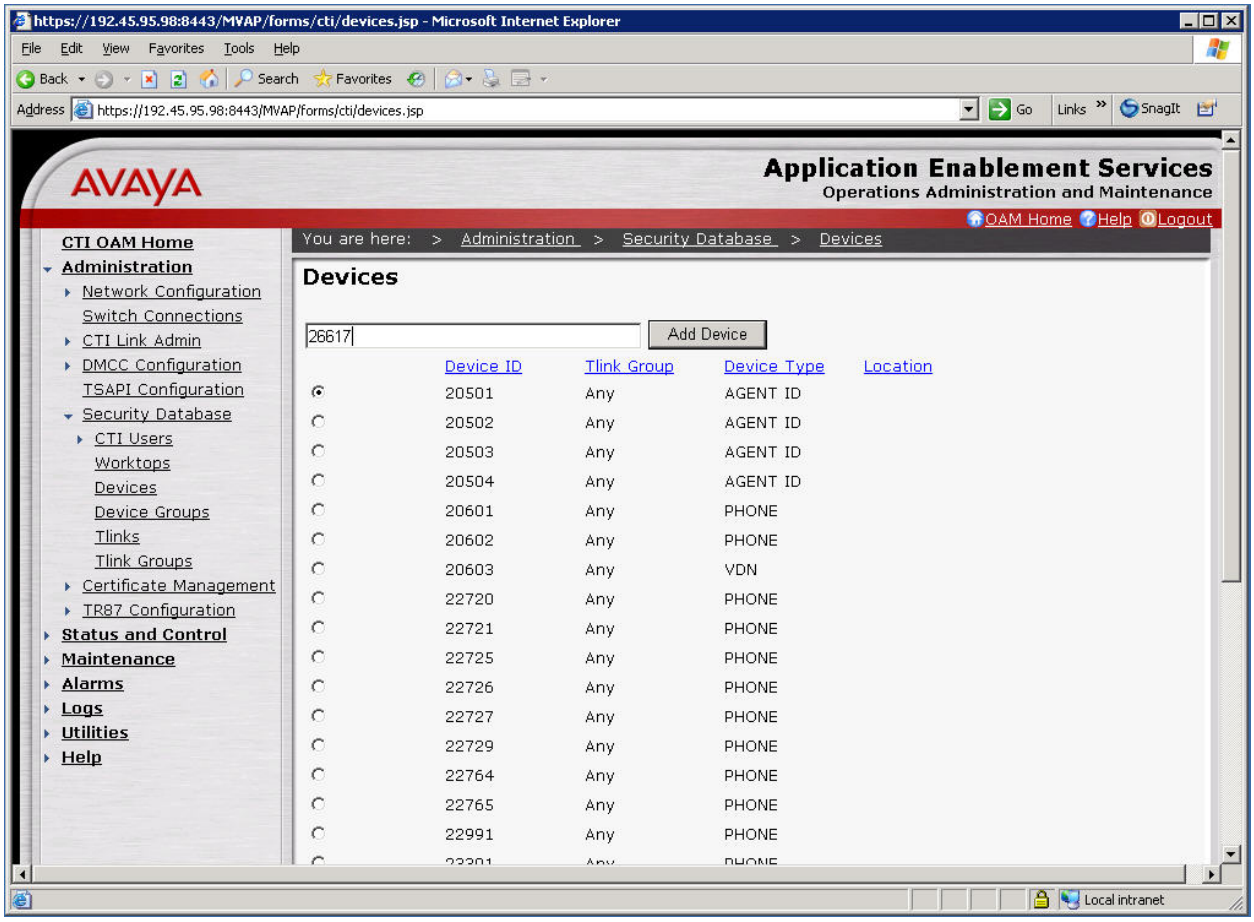
The only additional configuration on AES needed for the NICE solution is the configuration of a new TSAPI CTI user for NICE.

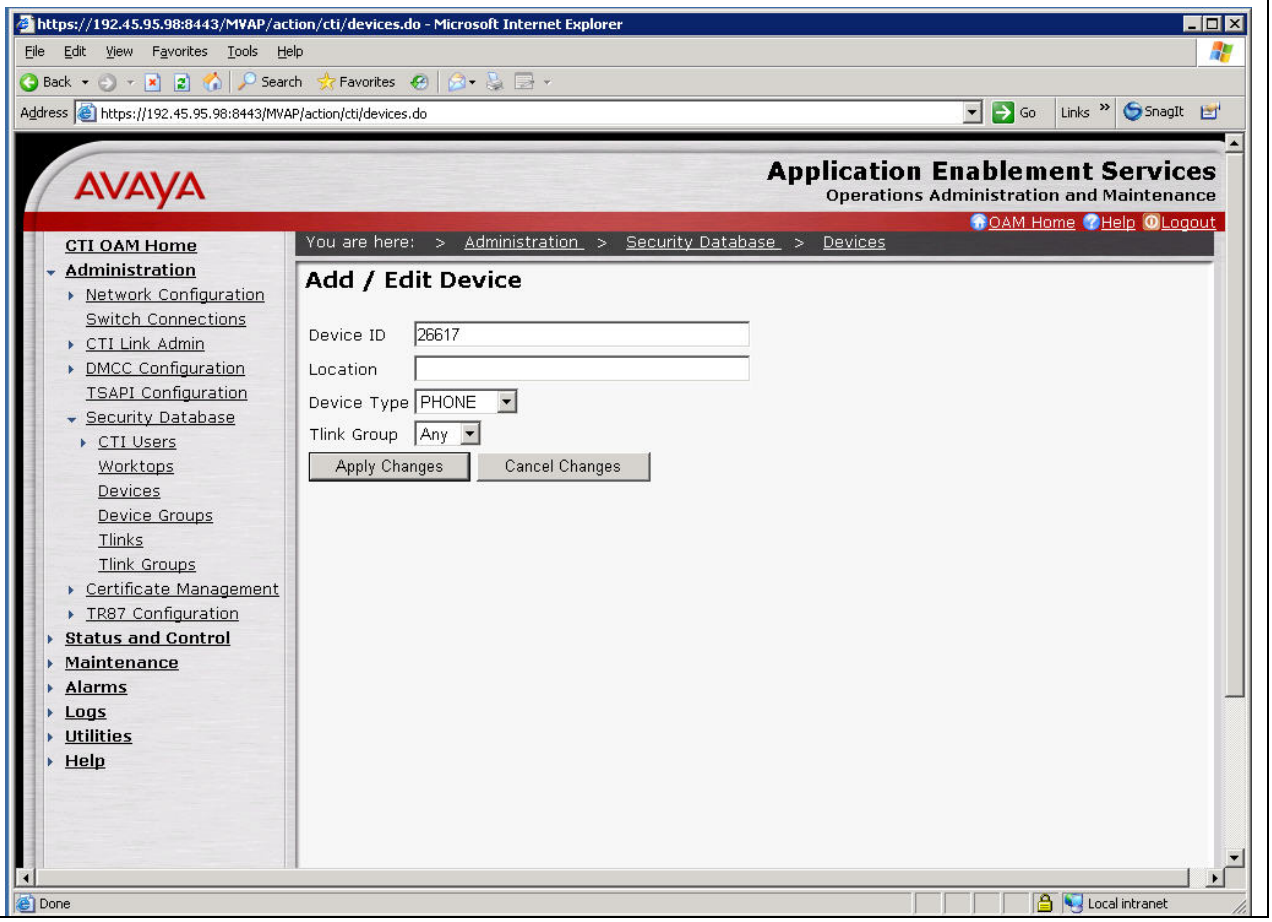
4.1. User Management

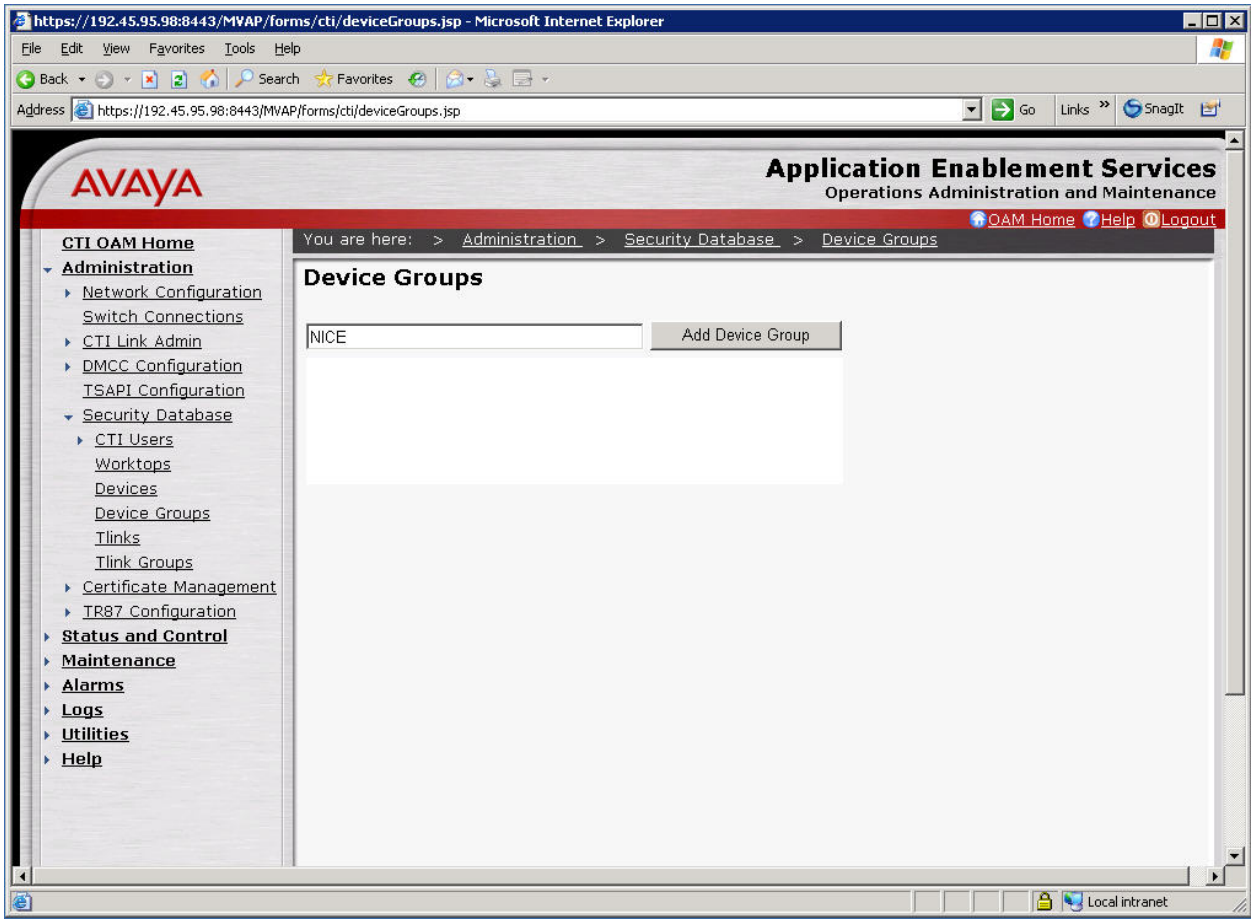
Step	Description
1.	Launch a web browser, enter https://<IP address of AES server>:8443/MVAP in the URL, and log in with the appropriate credentials for accessing the AES User Management pages.
2.	Click **User Management**, then **User Management → Add User** in the left pane. Configure the asterisk fields and set **CT User** to "Yes". NiceCLS will use this **User Id** and **User Password** to access the AES server. Scroll down to the bottom of the page and click **Apply**. 

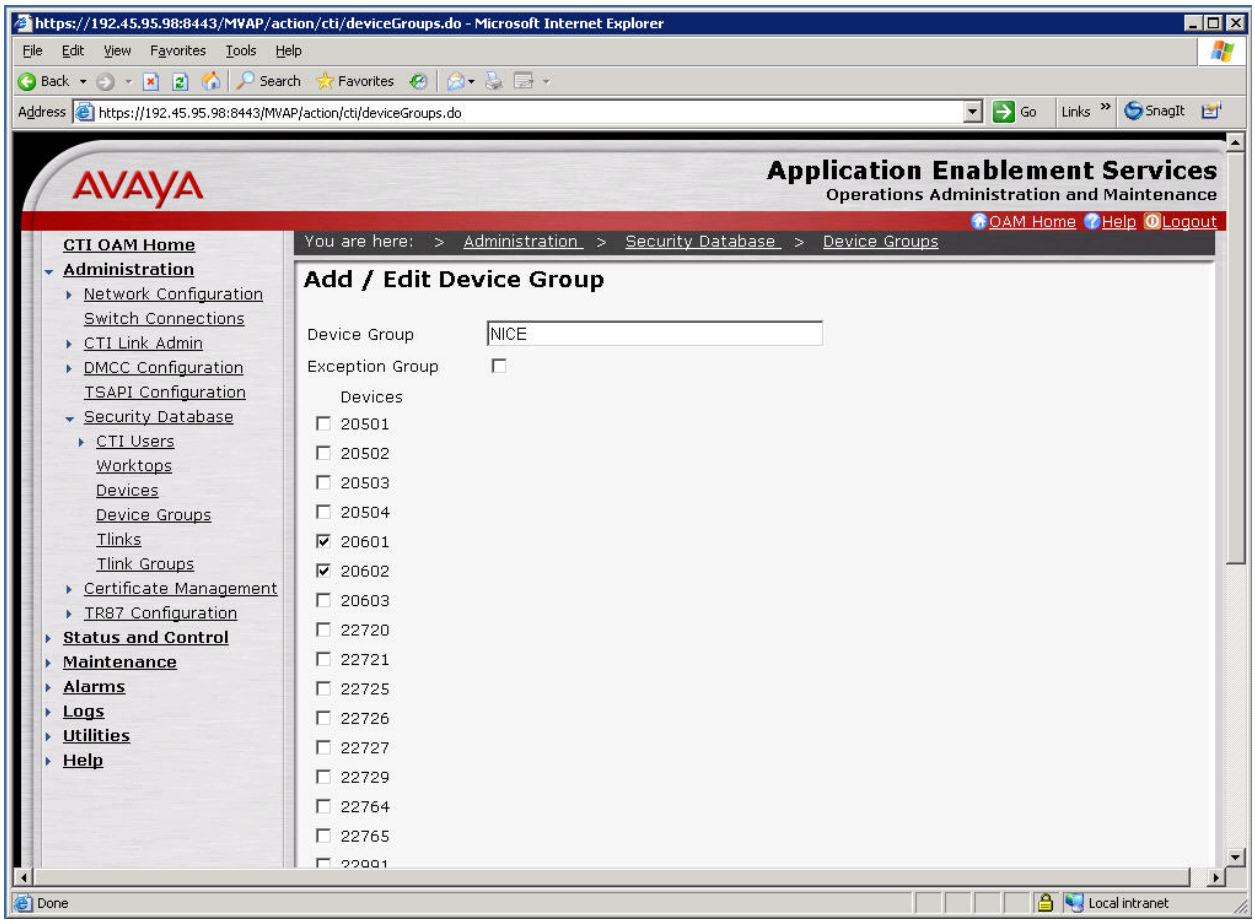
4.2. CTI OAM Admin

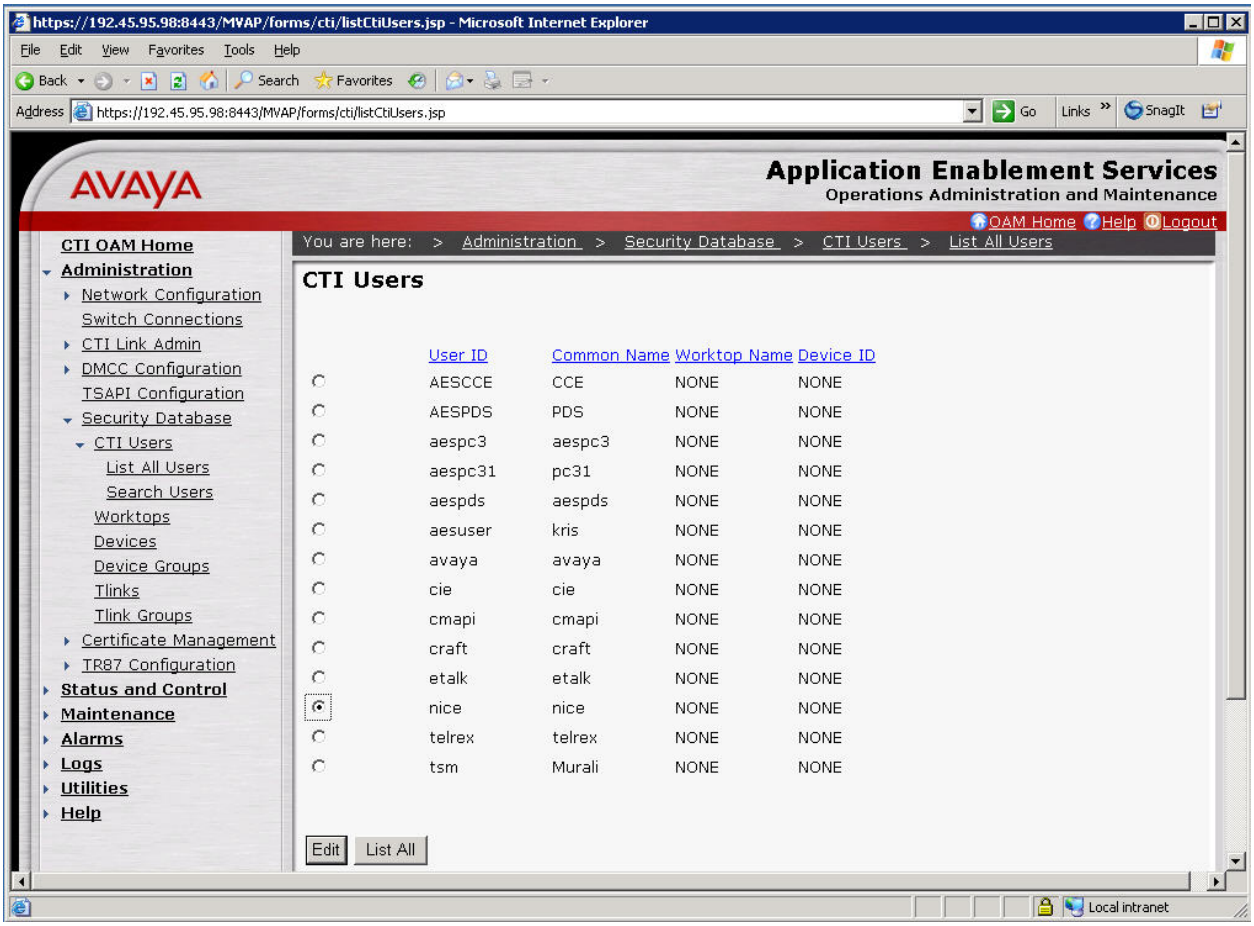
Step	Description
1.	Launch a web browser, enter https://<IP address of AES server>:8443/MVAP in the URL, and log in with the appropriate credentials for accessing the AES CTI OAM pages.
2.	In the left panel of the CTI OAM Home, click **Security Database → Tlinks** to view the Tlink names (these names are automatically generated by AES). Make a note of the Tlink that is associated with the Avaya Communication Manager that is being used. This Tlink Name will be used by the NiceCLS server. 

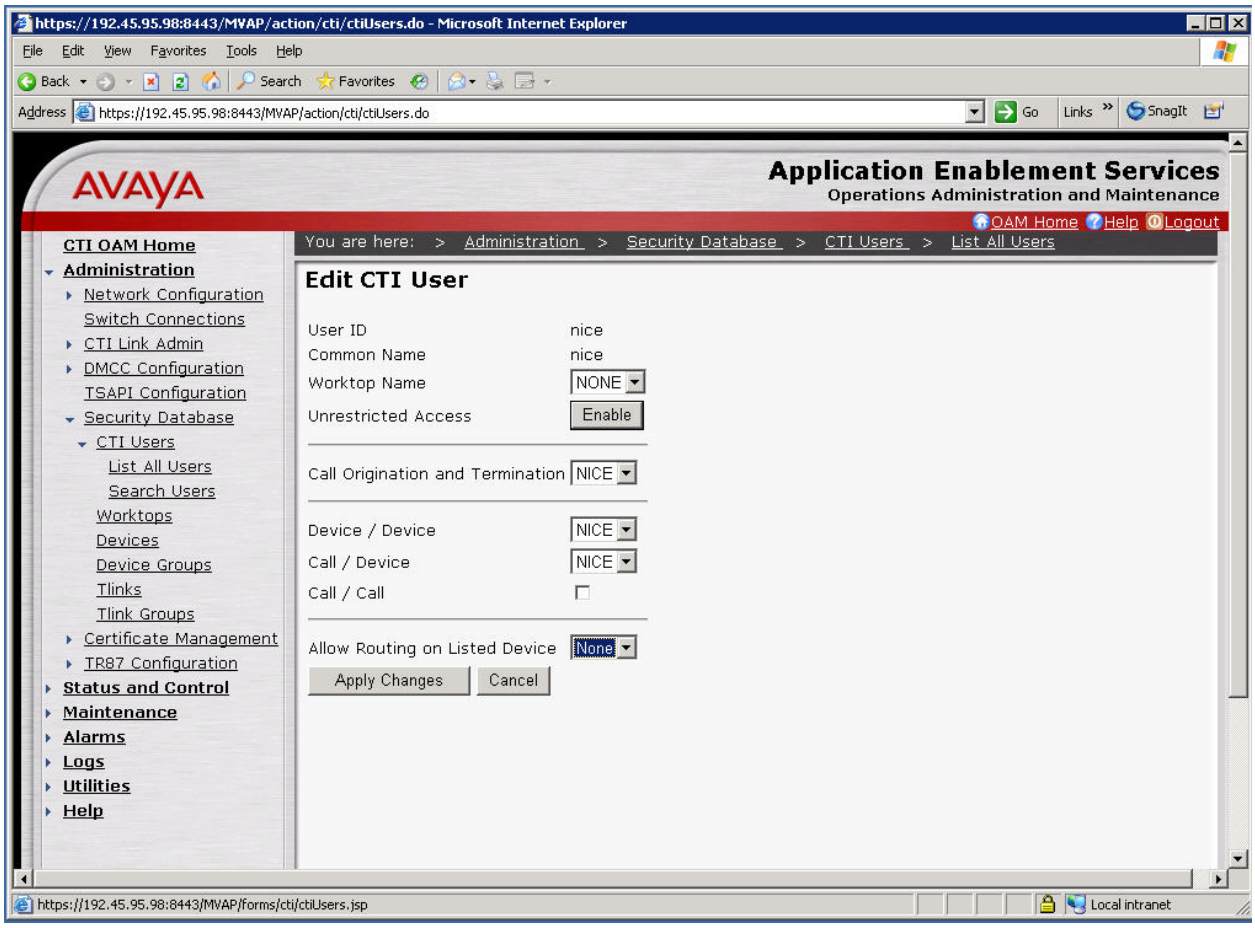
Step	Description
3.	Under **Administration** in the left pane, click **Security Database → Devices** to add new Avaya Communication Manager devices (e.g., Phone, VDN, Hunt Group). Enter the **Device ID** and click **Add Device**. For the compliance testing, the Device IDs are the agent telephone extensions, VDNs and the hunt groups used for Avaya PC3 Agent Predictive Blending . 

Step	Description
4.	The **Add / Edit Device** window appears. Select the **Device Type** and click **Apply Changes** to finish adding the new device. Click **Apply** when the **Apply Changes to Device Properties** window appears. Repeat this step to add additional Phones, VDNs, and Hunt Group Extensions associated with Avaya PC3. 

Step	Description
5.	Under **Administration** in the left pane, click **Security Database → Device Groups** to add a new device group. Enter a descriptive name for the device group and click **Add Device Group**. 

Step	Description
6.	The **Add / Edit Device Group** window appears. Select the **Devices** associated with Avaya PC3, scroll down and click **Apply Changes**. Click **Apply** when the **Apply Changes to Device Group Properties** window appears. 

Step	Description
7.	Under **Administration** in the left pane, click **Security Database → CTI Users → List All Users**. Select the **User ID** created in Section 4.1 Step 2 and click **Edit**. 

Step	Description
8.	The **Edit CTI User** window appears. Select the device group created in **Step 5** for **Call Origination and Termination**, **Device / Device**, and **Call / Device**. Click **Apply Changes**. Click **Apply** when the **Apply Changes to User** window appears. 

5. Configure Avaya Proactive Contact 3.0

These Application Notes assume that the interface with Avaya Proactive Contact 3.0, Avaya S8700 Servers, Avaya Communication Manager and Avaya Application Enablement Services has been configured and is operational, and that a calling list has been successfully downloaded to PC3. The following features should have already been configured on Avaya PC3 [5].

- Outbound Calling
- Predictive Agent Blending

6. Configure NICE Perform 3.0

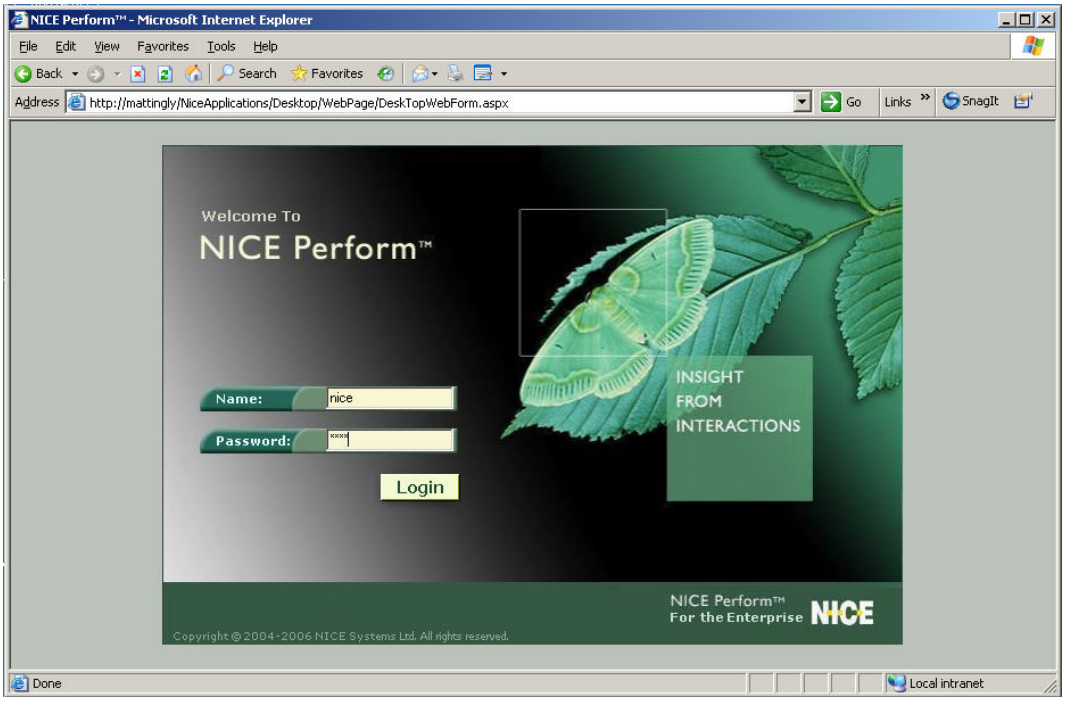
These Application Notes assume the NiceCLS and NiceLog software has been installed successfully. The NiceLog server should be installed and configured with the DS1 parameters from **Section 3**.

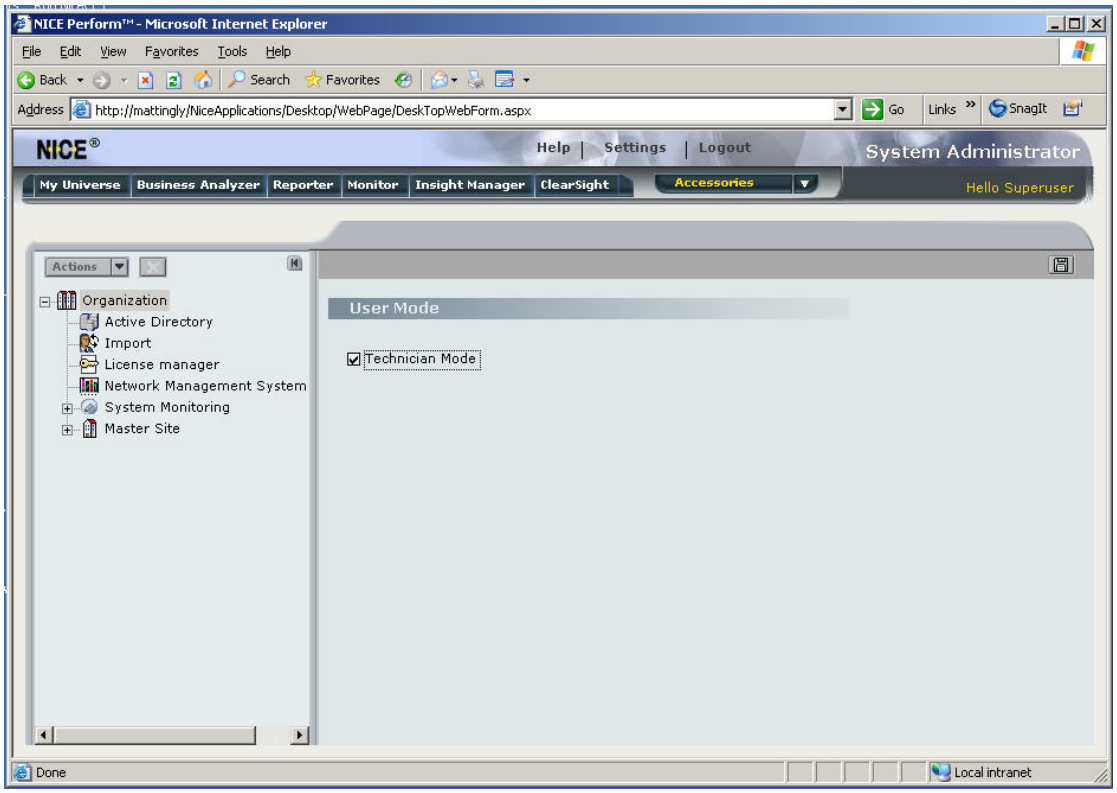
The following steps will be performed on the NiceCLS server:

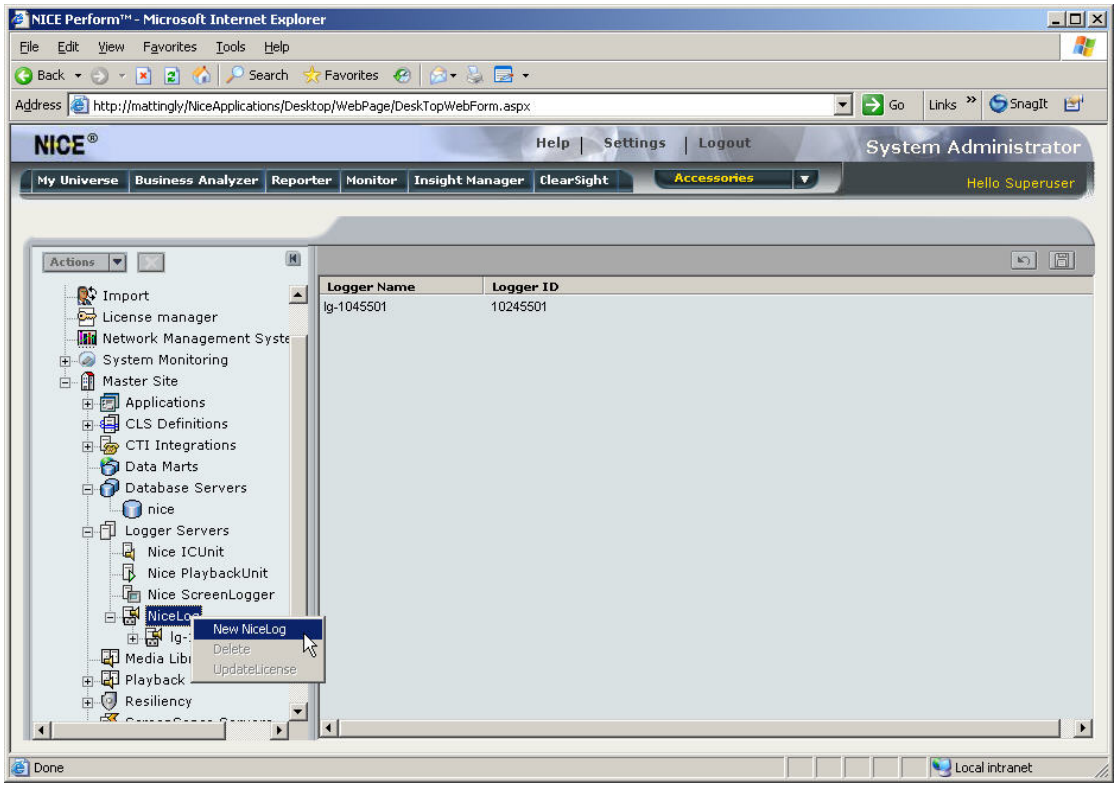
- Define NICE servers
- Configure Avaya TSAPI Driver
- Configure Channel Mapping
- Configure Users

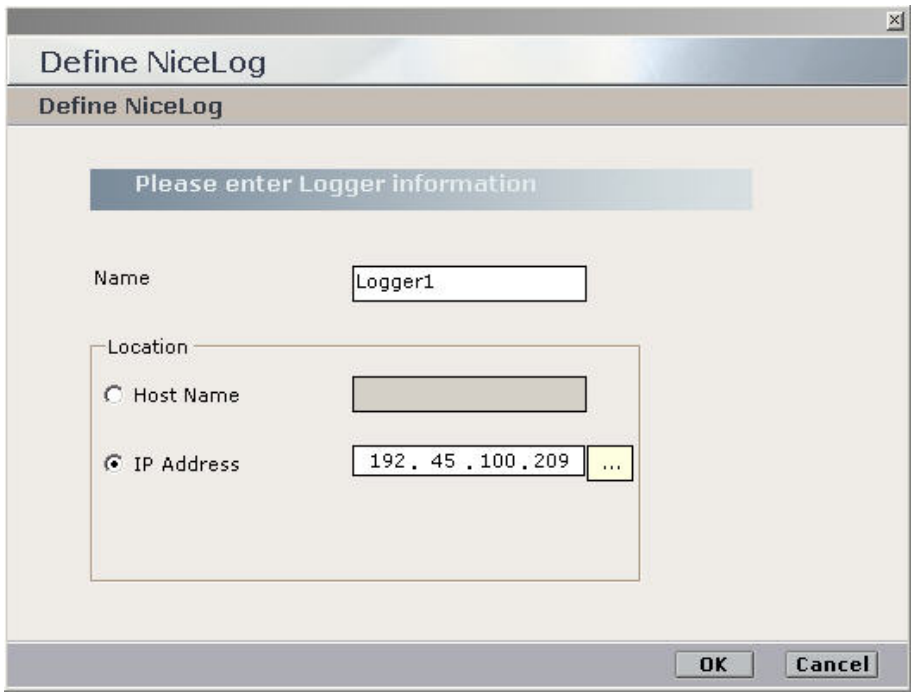
6.1. Define NICE Servers

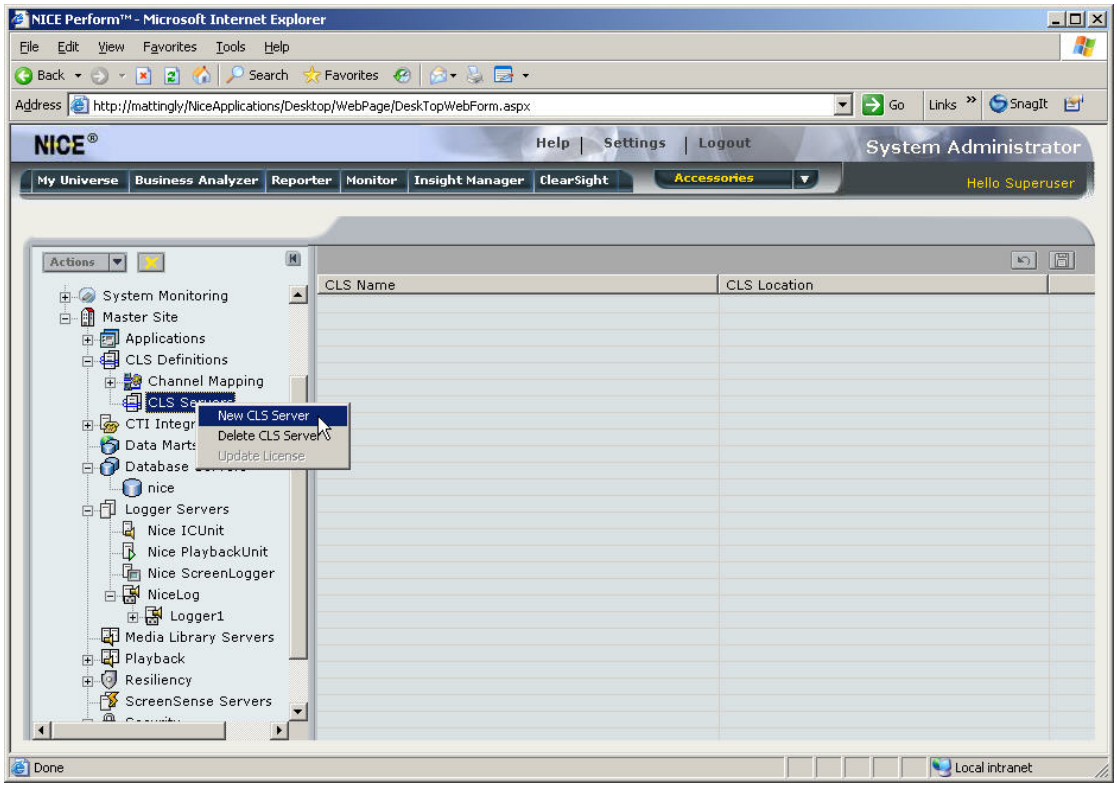
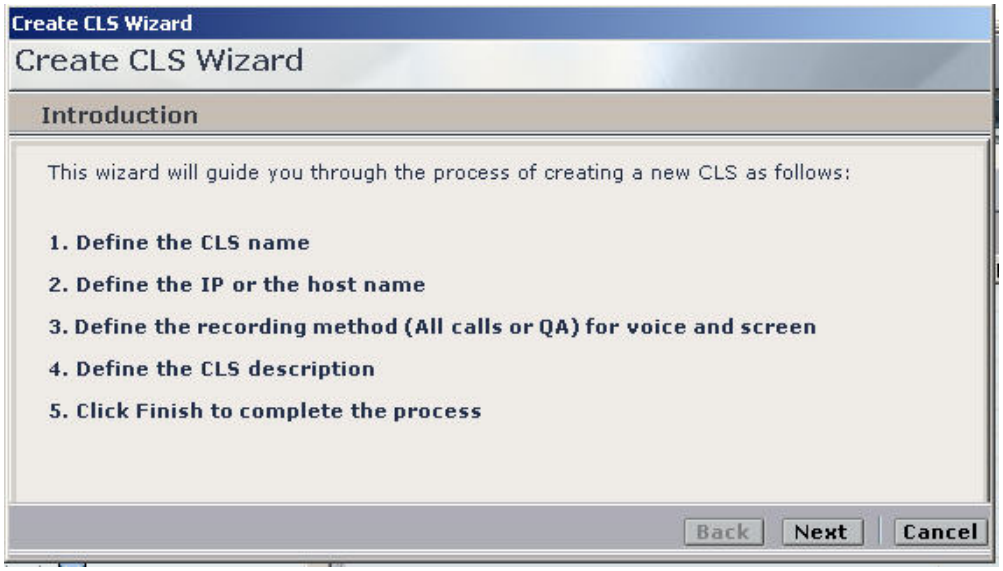
This section provides the procedures for defining the NiceCLS and NiceLog servers at the site.

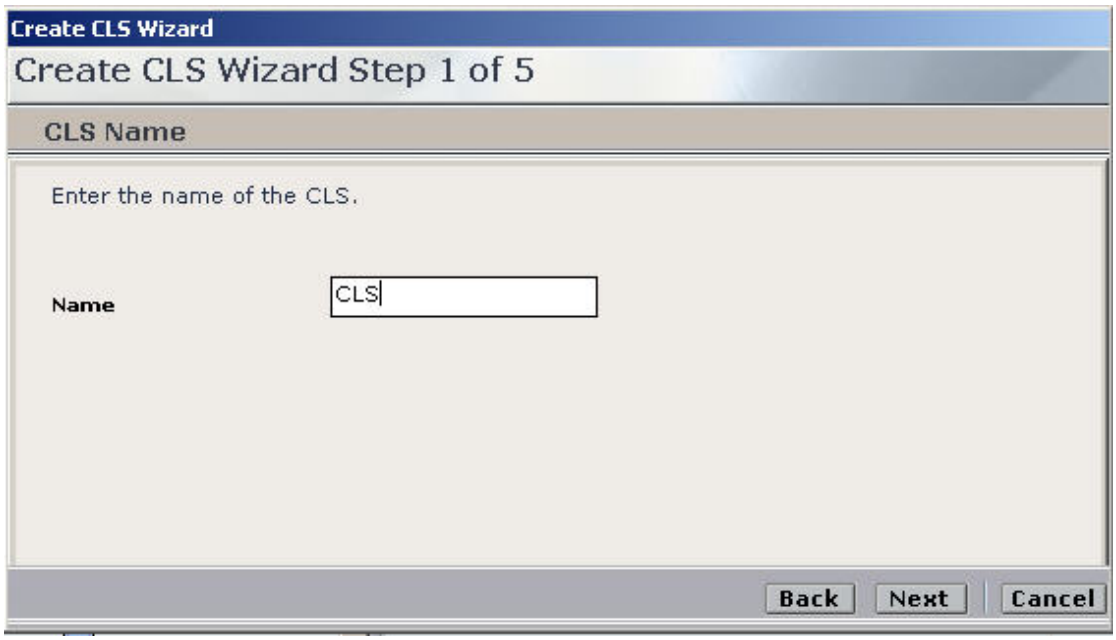
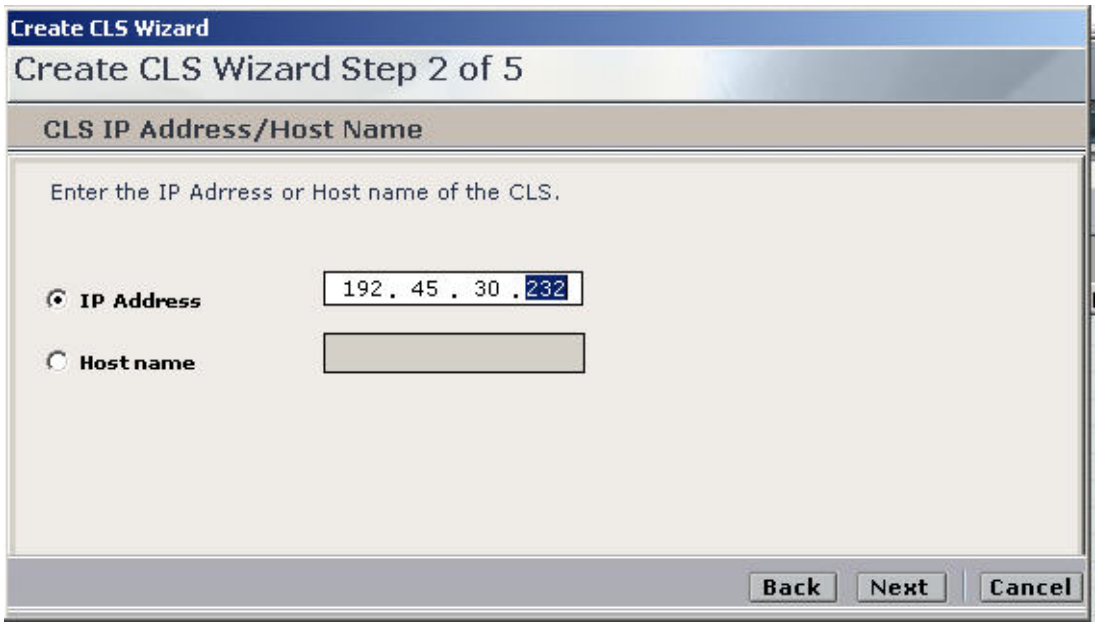
Step	Description
1.	Access the NICE administration interface by using the URL http://<server name>/nice in an Internet browser window. Enter the **Name** and **Password** supplied by NICE. Click **Login**. 

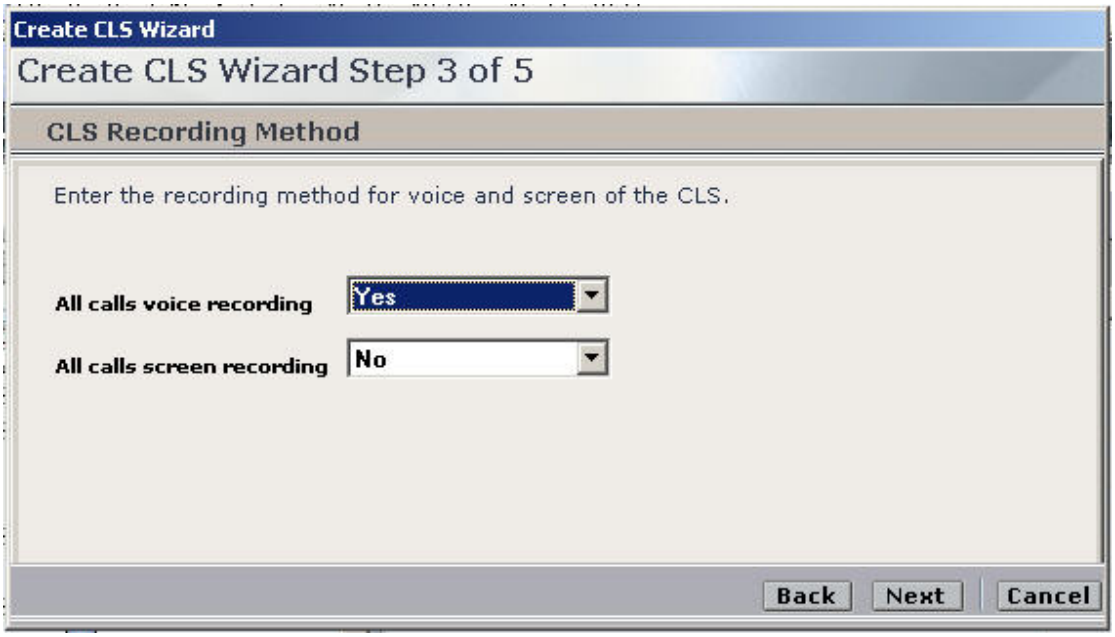
Step	Description
2.	In the **NICE Users Administrator** window (not shown), select **Accessories → System Administrator.** In the **System Administrator** window, check the checkbox for **Technician Mode**. 

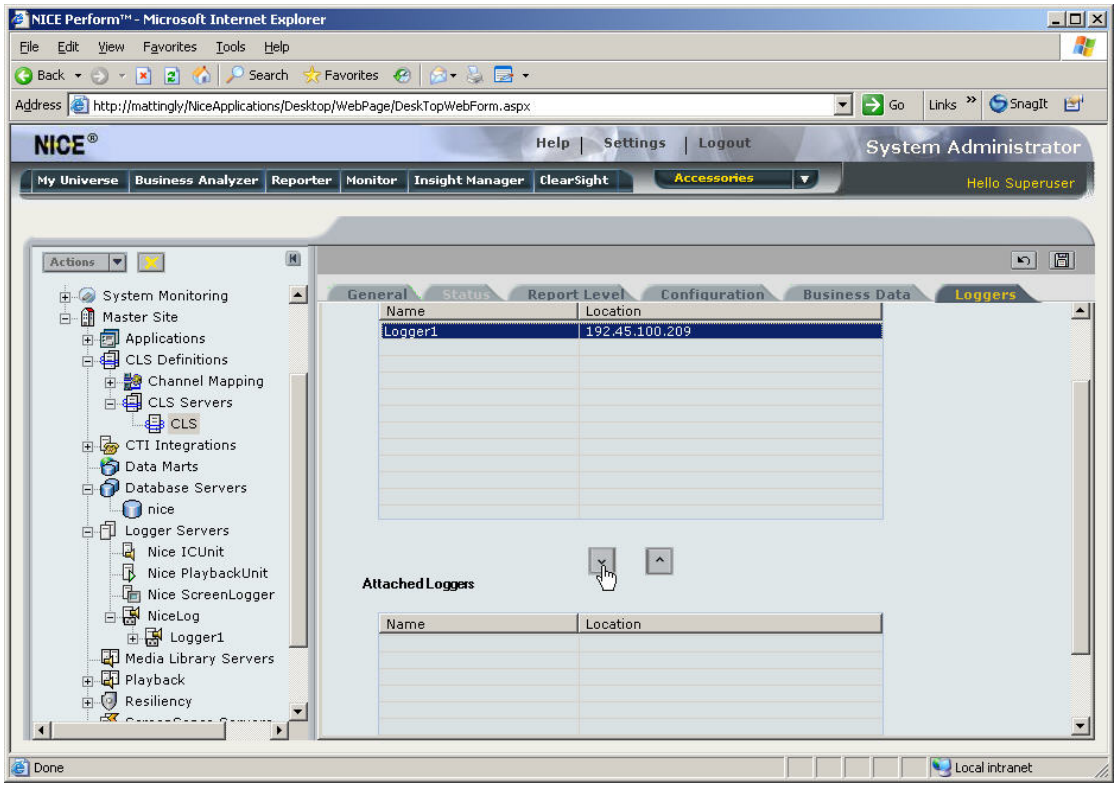
Step	Description
3.	In the left pane, select **Logger Servers → NiceLog.** Right click and select **New NiceLog**. 
4.	Enter the **Serial Number** and **License Key** provided by NICE. Click **OK**. 

Step	Description
5.	In the **Define NiceLog** window, configure the following. • **Name** – set to any unique name. • **IP Address** – set to the IP address of the NiceLog Server. Click **OK**. Click **Save**. 

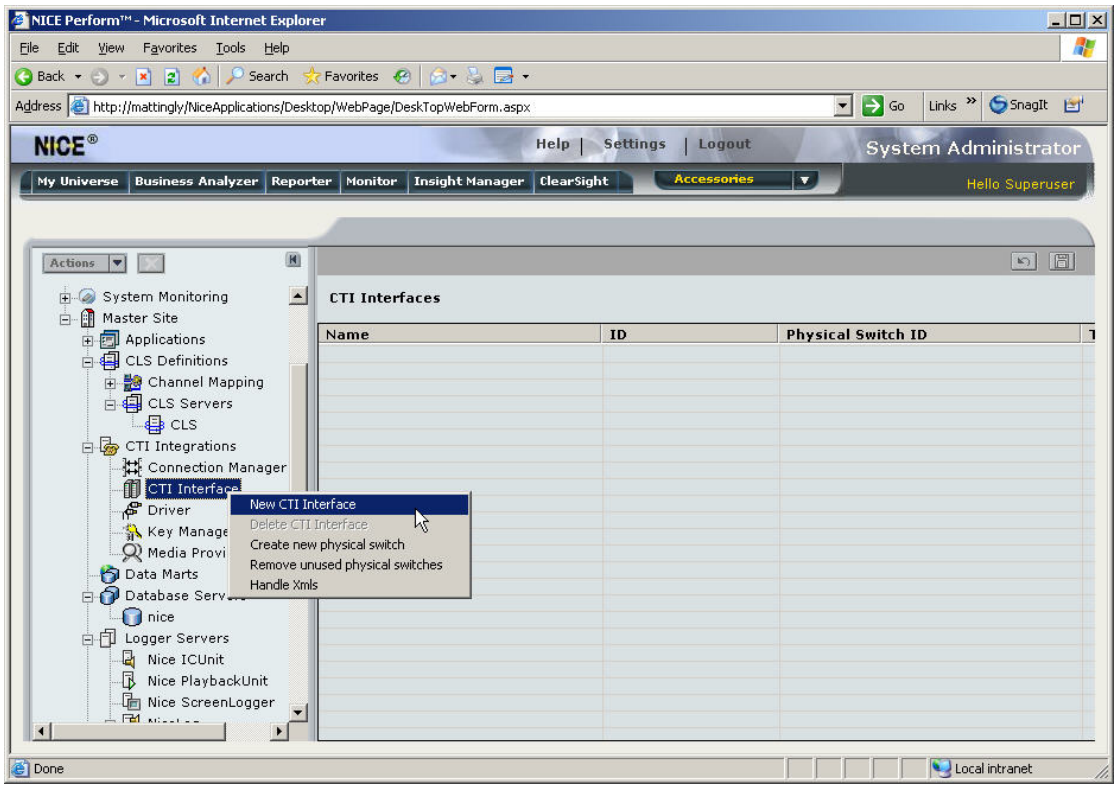
Step	Description
6.	In the left pane, select **CLS Definitions → CLS Server.** Right click and select **New Nice CLS Server**. 
7.	The **Create CLS Wizard** window is displayed. Click **Next**. 

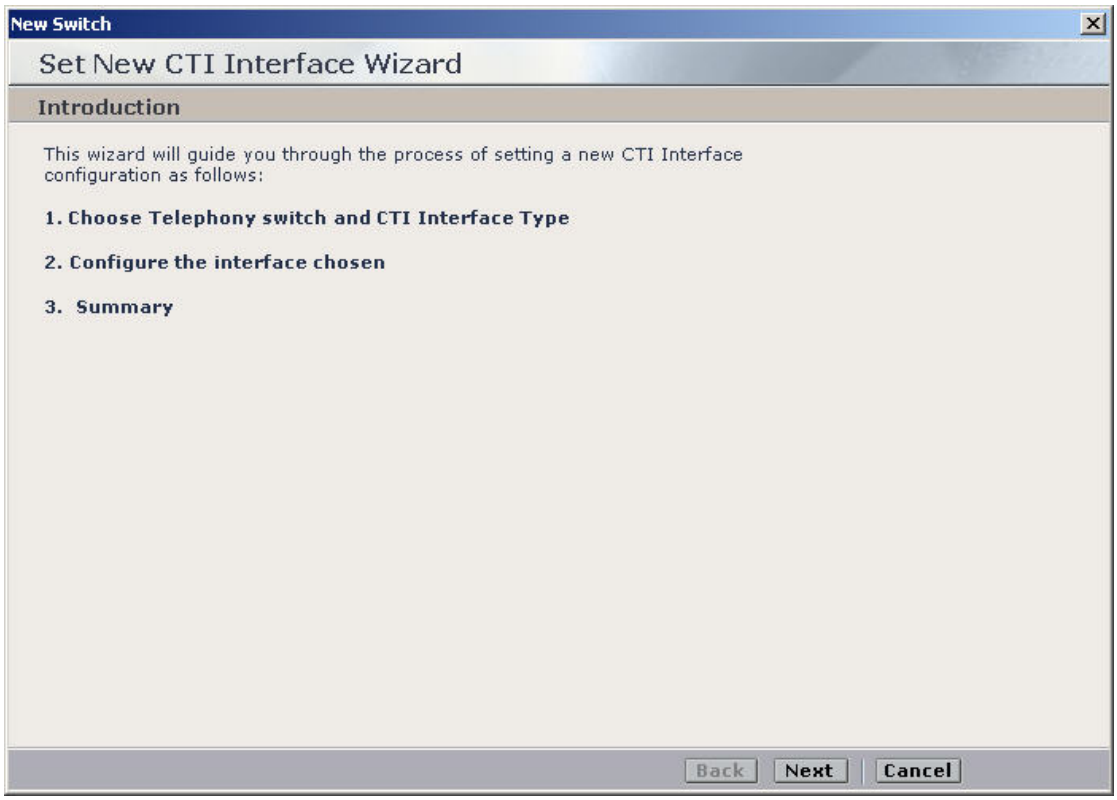
Step	Description
8.	Set the **Name** field to any unique name. Click **Next**. 
9.	Set the **IP Address** field to the IP address of the NiceCLS Server. Click **Next**. 

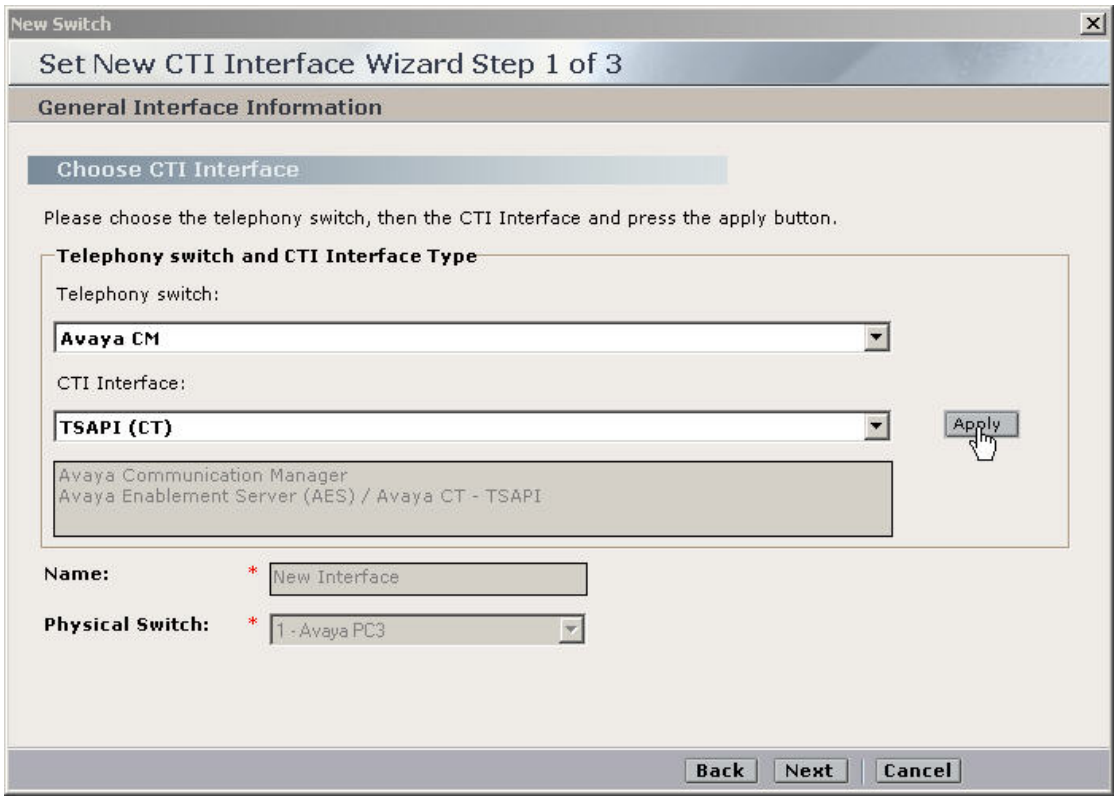
Step	Description
10.	Configure the following. • **All calls voice recording** – set to Yes. • **All calls screen recording** – this is optional for screen recording. Click **Next.** Then click **Next** on **Step 4** and **Finish** on **Step 5** in the Wizard. Click **Save**. 

Step	Description
11.	In the **Loggers** tab, highlight the Logger that was created in **Step 5**. Select the down-arrow button to attach this Logger to the CLS. Click **Save**. 

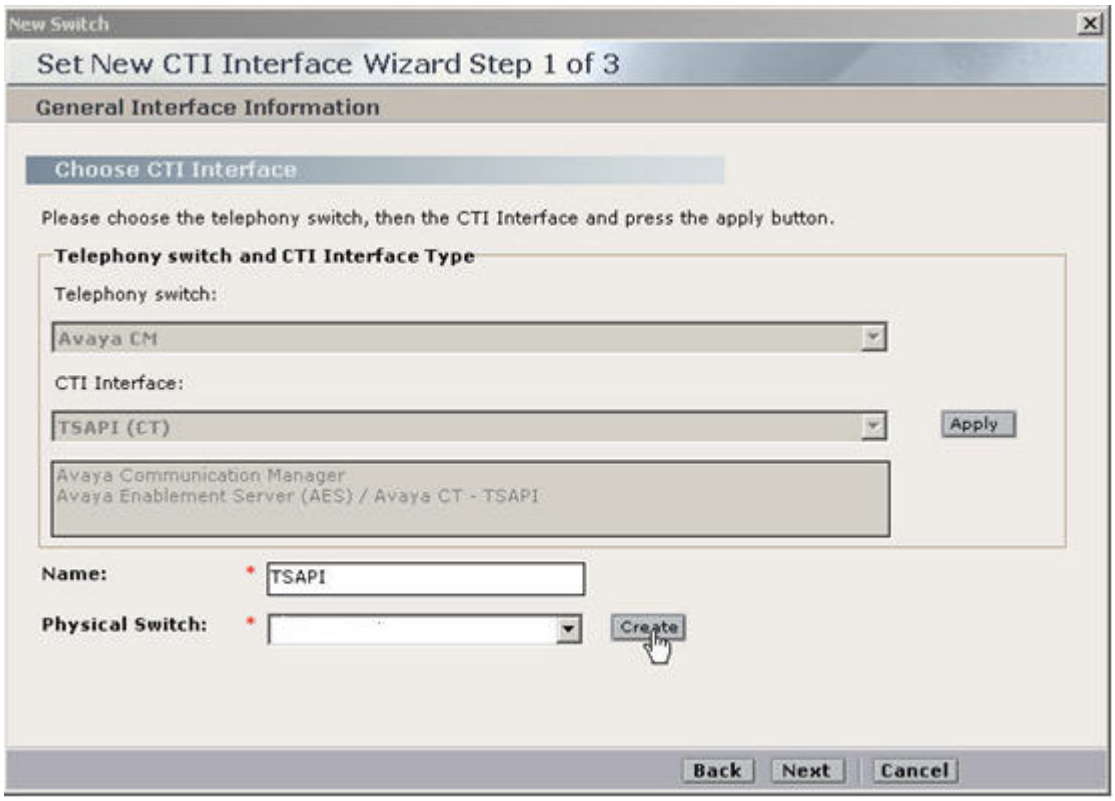
6.2. Configure Avaya TSAPI Driver

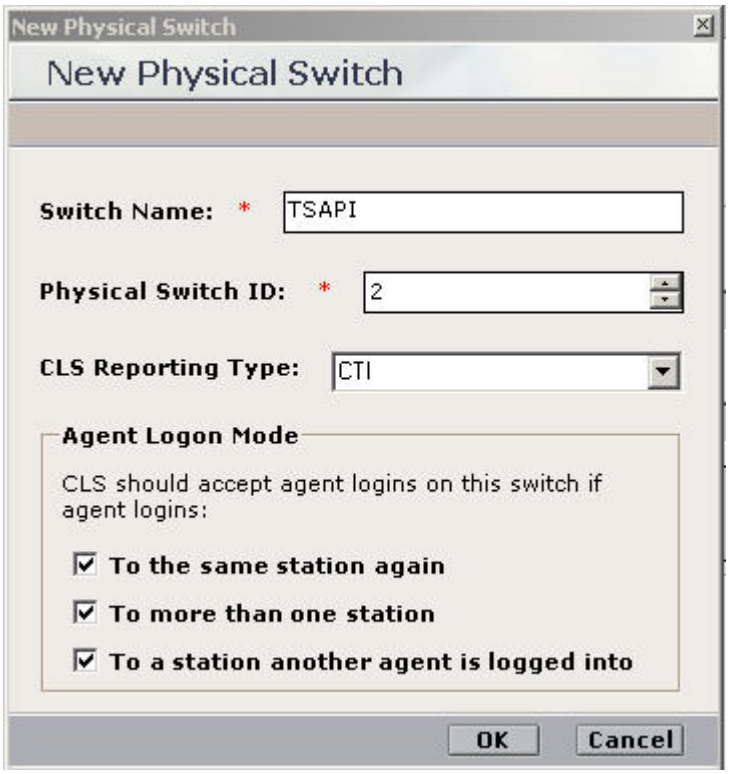
Step	Description
1.	In the left pane, select **CTI Integrations → CTI Interface.** Right click and select **New CTI Interface**. 

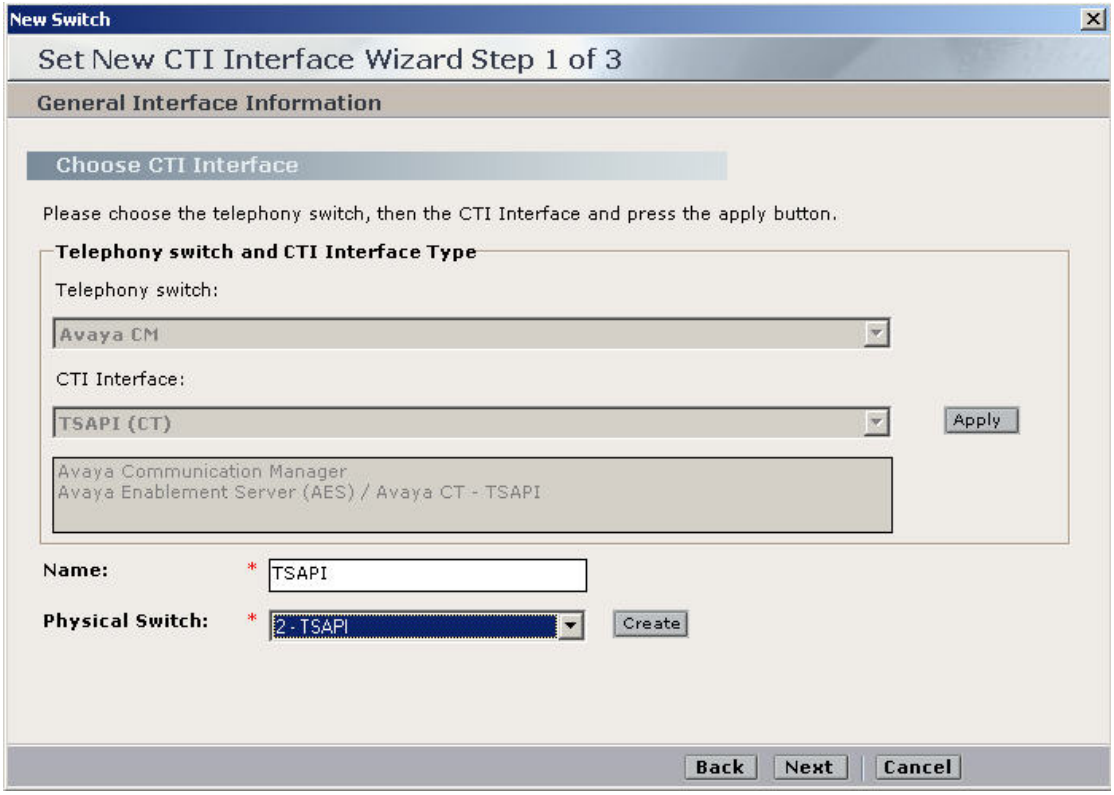
Step	Description
2.	The **Set New CTI Interface Wizard** window will appear. Click **Next**. 

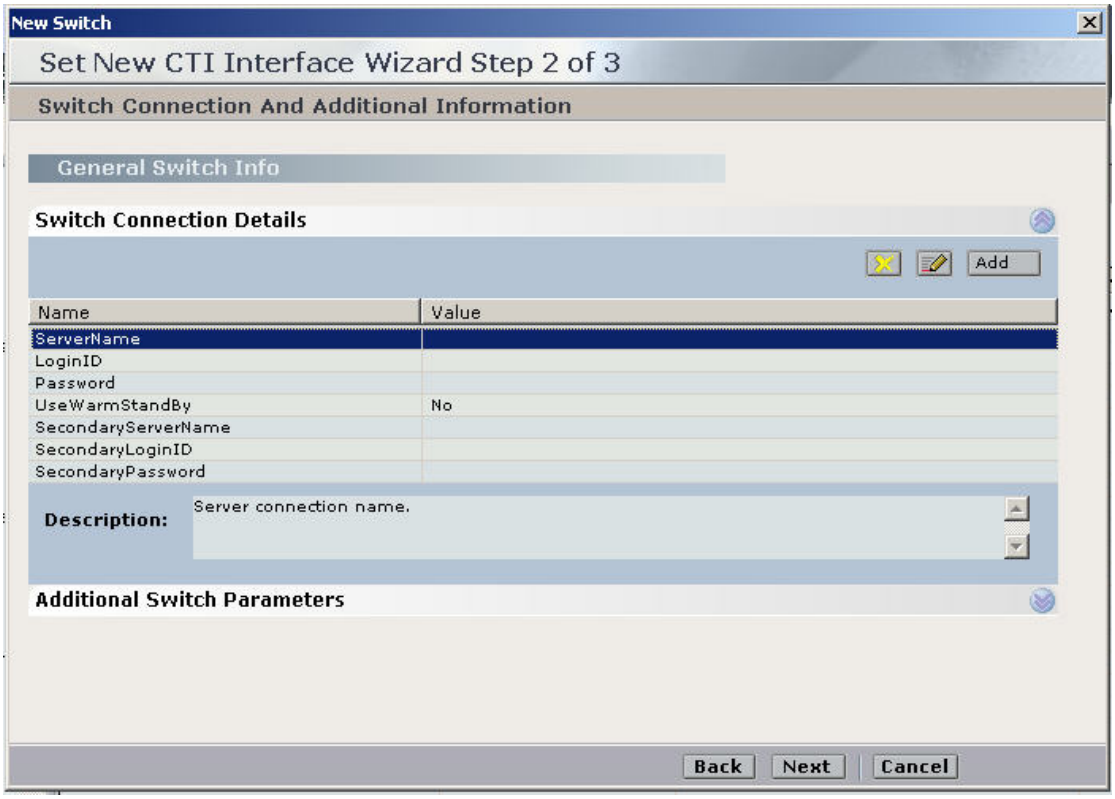
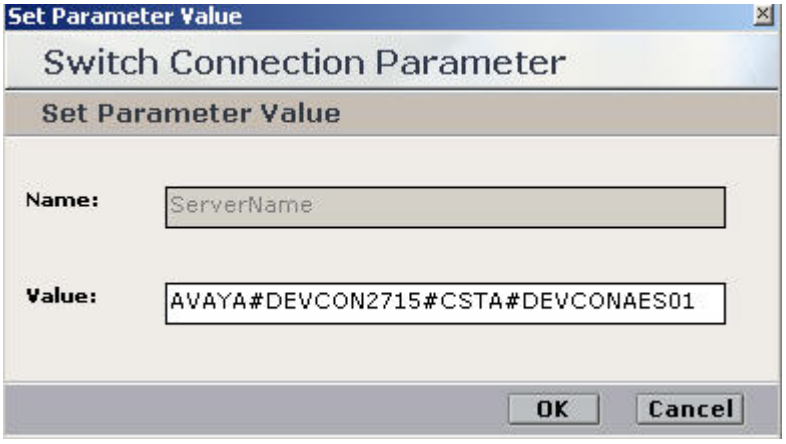
Step	Description
3.	Configure the following. • **Telephony switch** – select "Avaya CM" from the drop down list. • **CTI Interface** – select "TSAPI (CT)" from the drop down list. Click **Apply**. 

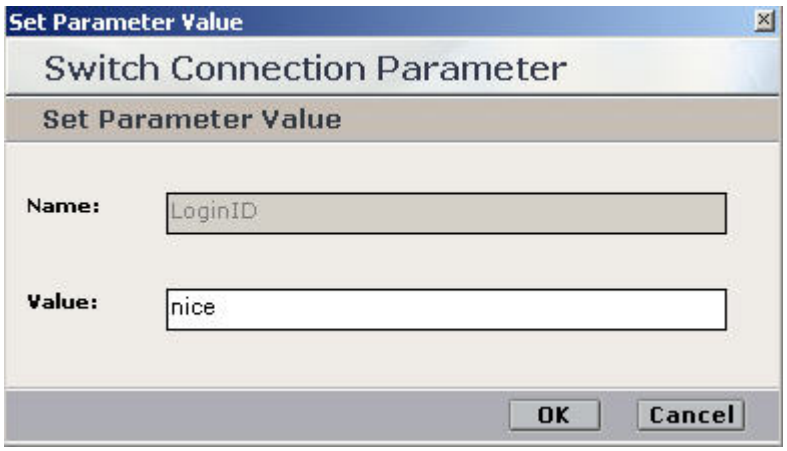
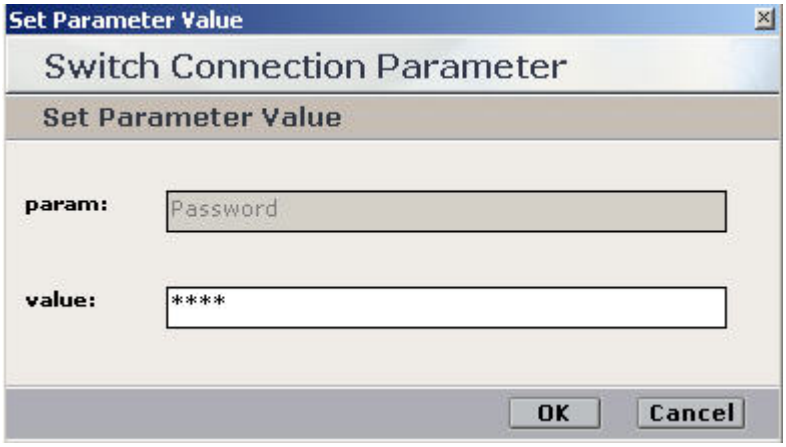
Step	Description
4.	Set the **Name** field to any unique name. Click **Create**. .

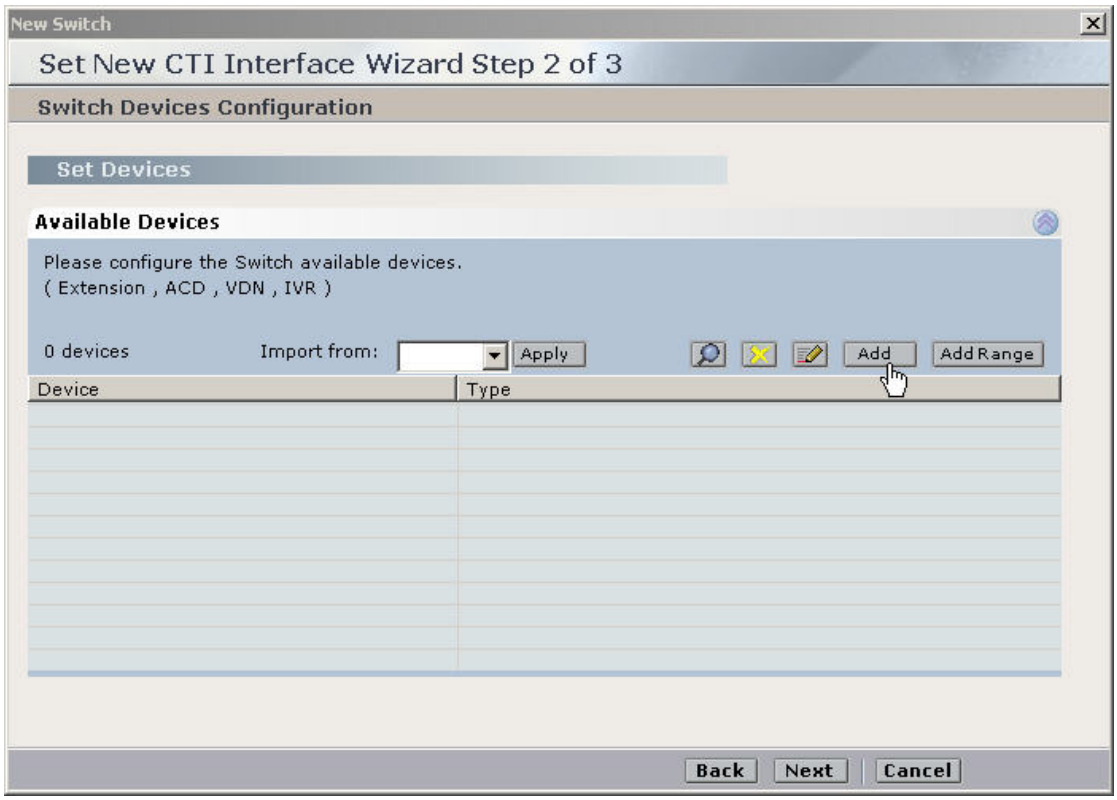


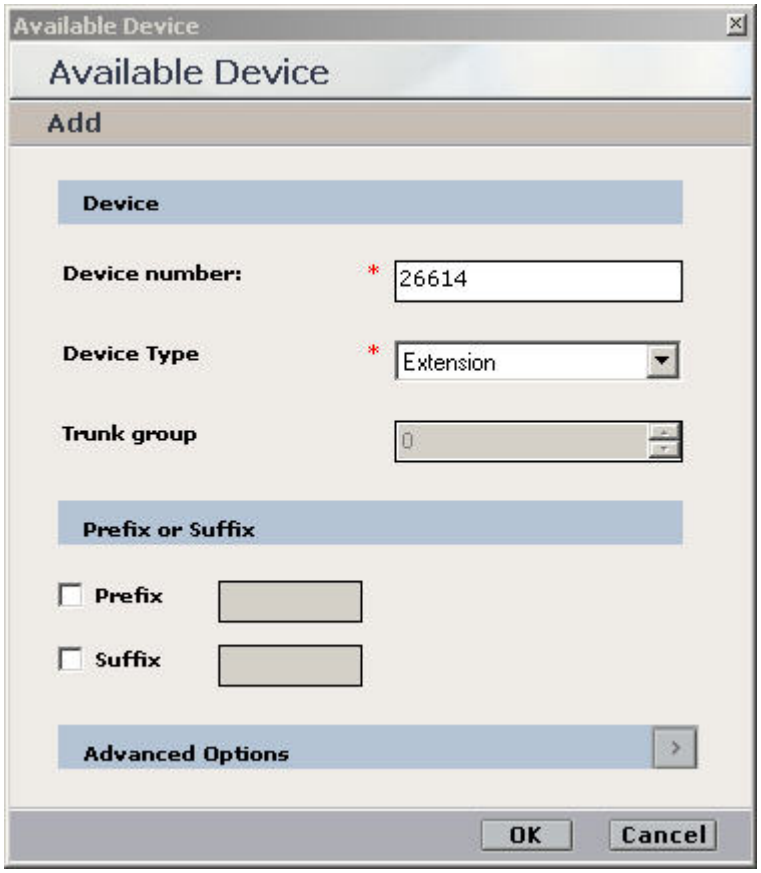
Step	Description
5.	Configure the following. • **Switch Name** – set to any unique name. • **Physical Switch ID** - set to any unused number. • **CLS Reporting Type** – set to "CTI" from the dropdown list. • **Agent Logon Mode** – check all the checkboxes. Click **OK**. 

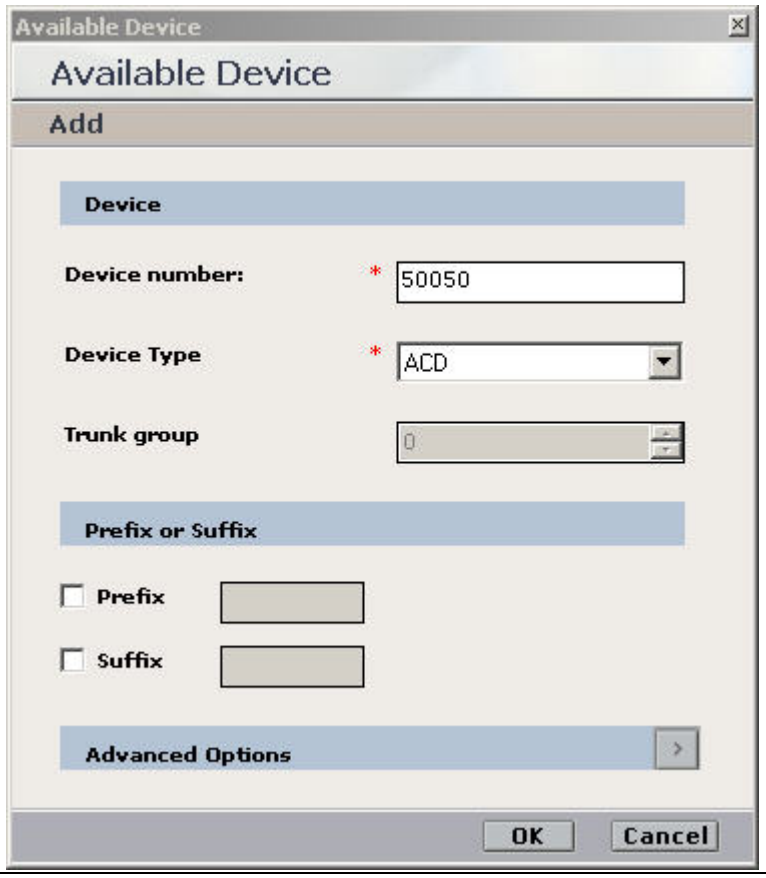
Step	Description
6.	Set the **Physical Switch** field to the switch created in the previous step. Click **Next**. 

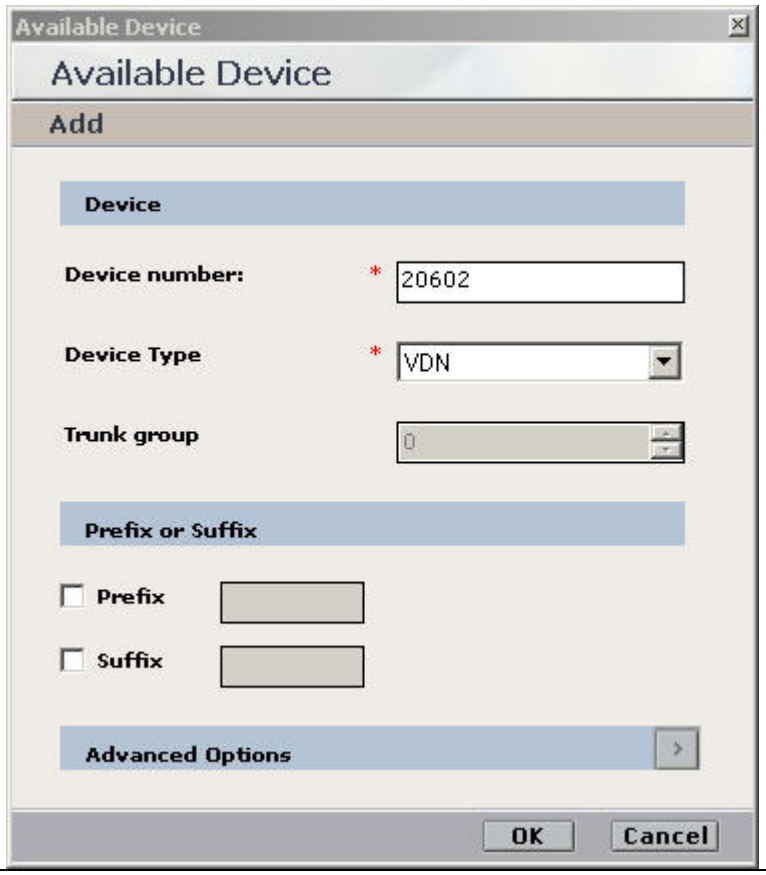
Step	Description
7.	On the **Switch Connection Details** section, double click each field to configure it. The following **Steps 8** through **10** describe the values that need to be configured. 
8.	Double click on the **ServerName** field. Set the **Value** field to the Tlink Name from **Section 4.2 Step 2**. Click **OK**. 

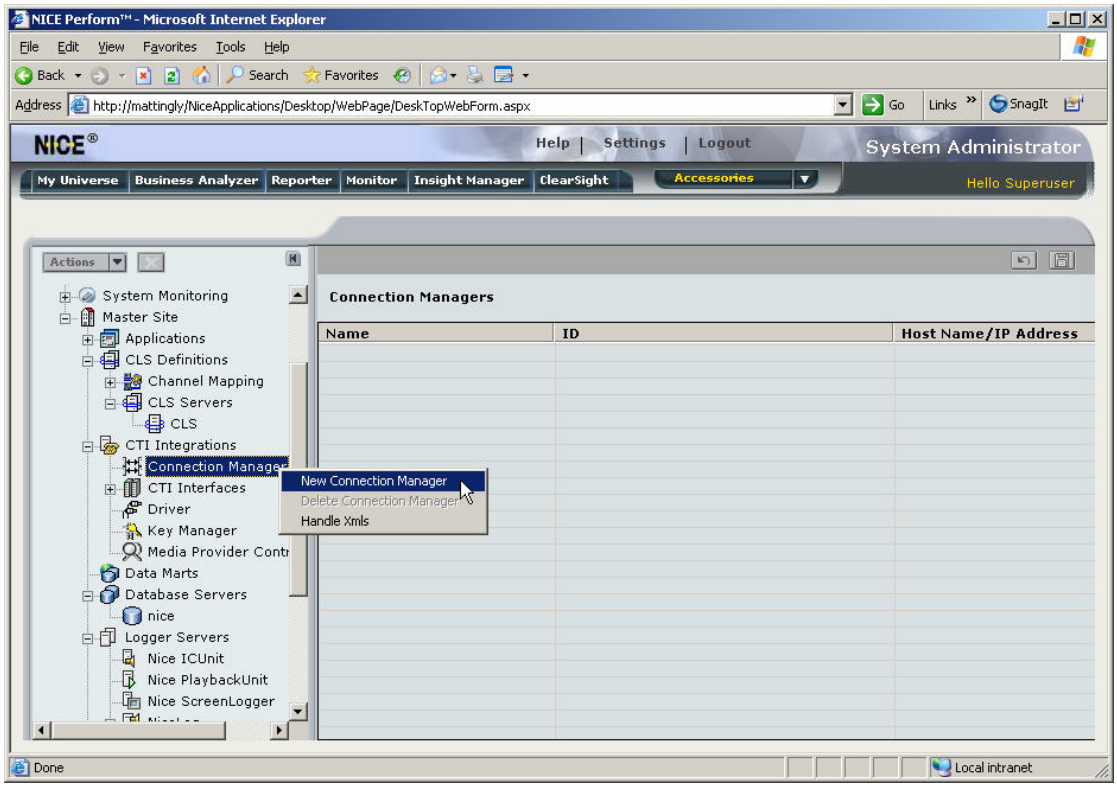
Step	Description
9.	Double click on the **LoginID** field. Set the **Value** field with the TSAPI User ID created in **Section 4.1 Step 2**. Click **OK**. 
10.	Double click on the **Password** field. Set the **Value** field with the TSAPI User Password created in **Section 4.1 Step2**. Click **OK**. Then click **Next**. 

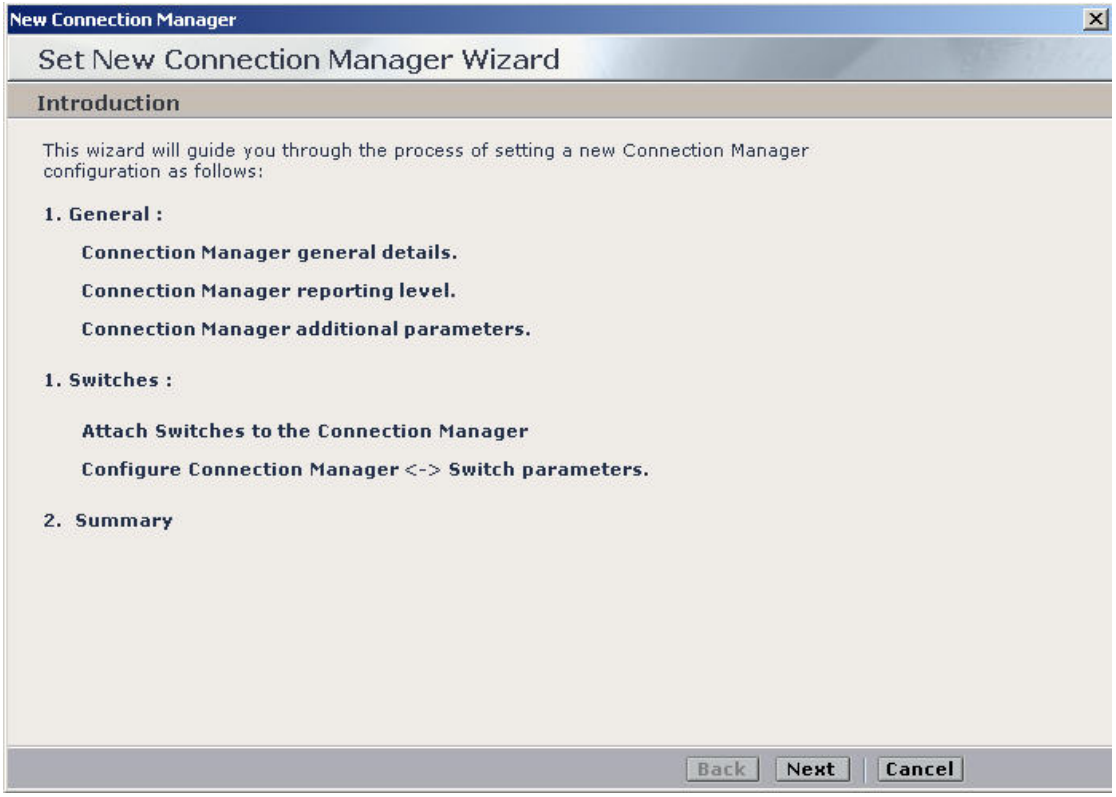
Step	Description
11.	In the **Available Devices** section, click **Add**. 

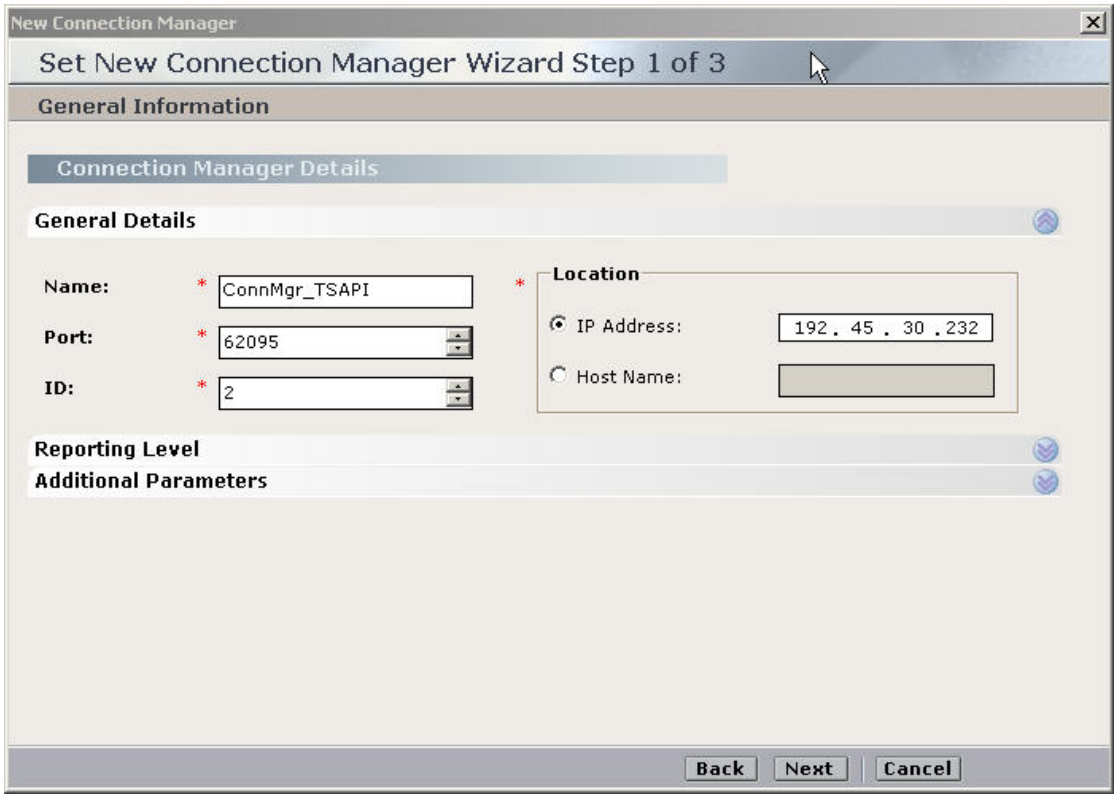
Step	Description
12.	Set the **Device number** field to the extension of the physical phone that should be monitored. Set the **Device Type** to "Extension". Click **OK.** Repeat **Steps 11** and **12** to add additional extensions. 

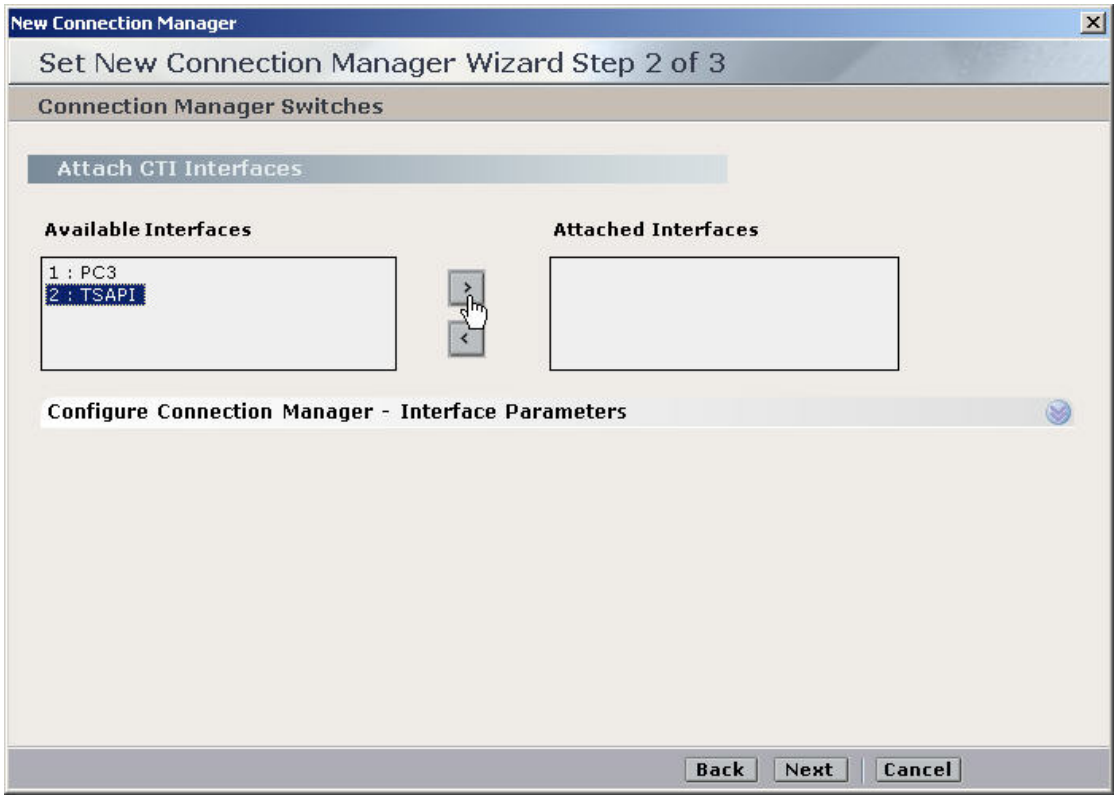
Step	Description
13.	In the **Available Devices** section, click **Add**. Set the **Device number** field to the extension of the ACD Hunt Group that should be monitored. Set the **Device Type** to "ACD". Click **OK.** Repeat **Steps 11** and **13** to add additional ACD Hunt Groups. 

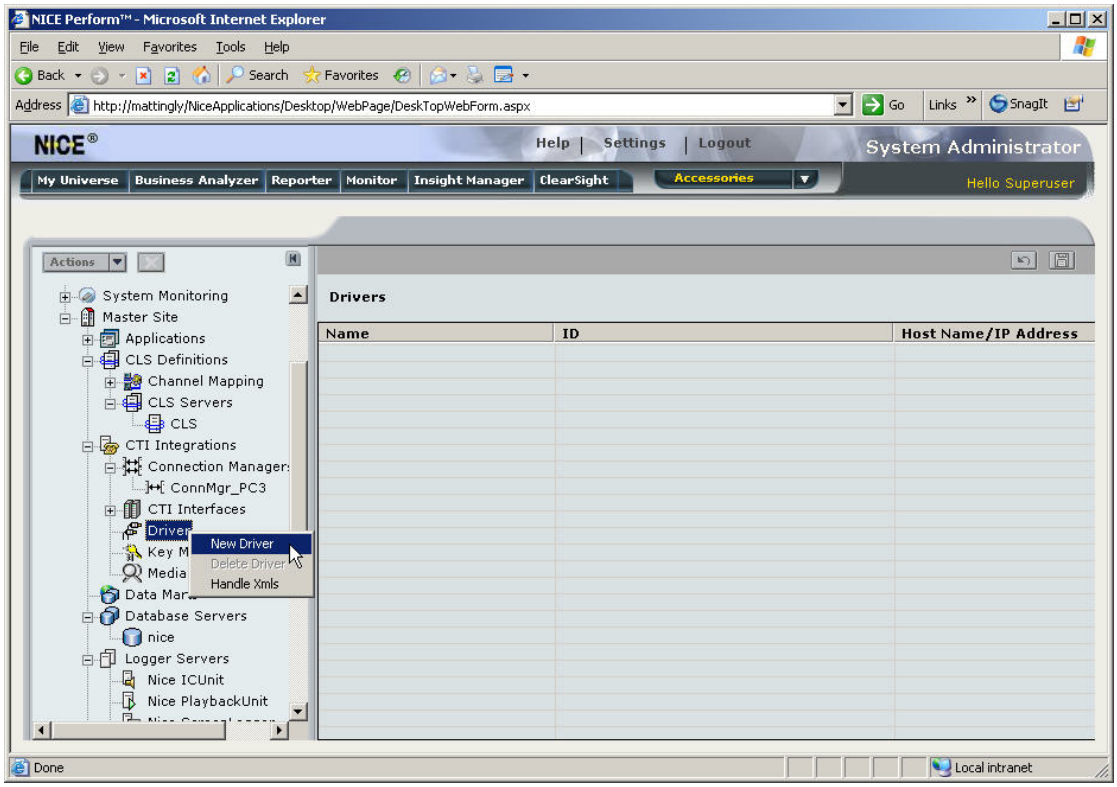
Step	Description
14.	In the **Available Devices** section, click **Add**. Set the **Device number** field to the VDN number that should be monitored. Set the **Device Type** to "VDN". Click **OK.** Repeat **Steps 11** and **14** to add additional VDNs. Click **Next** then click **Finish** on the **Wizard**. 

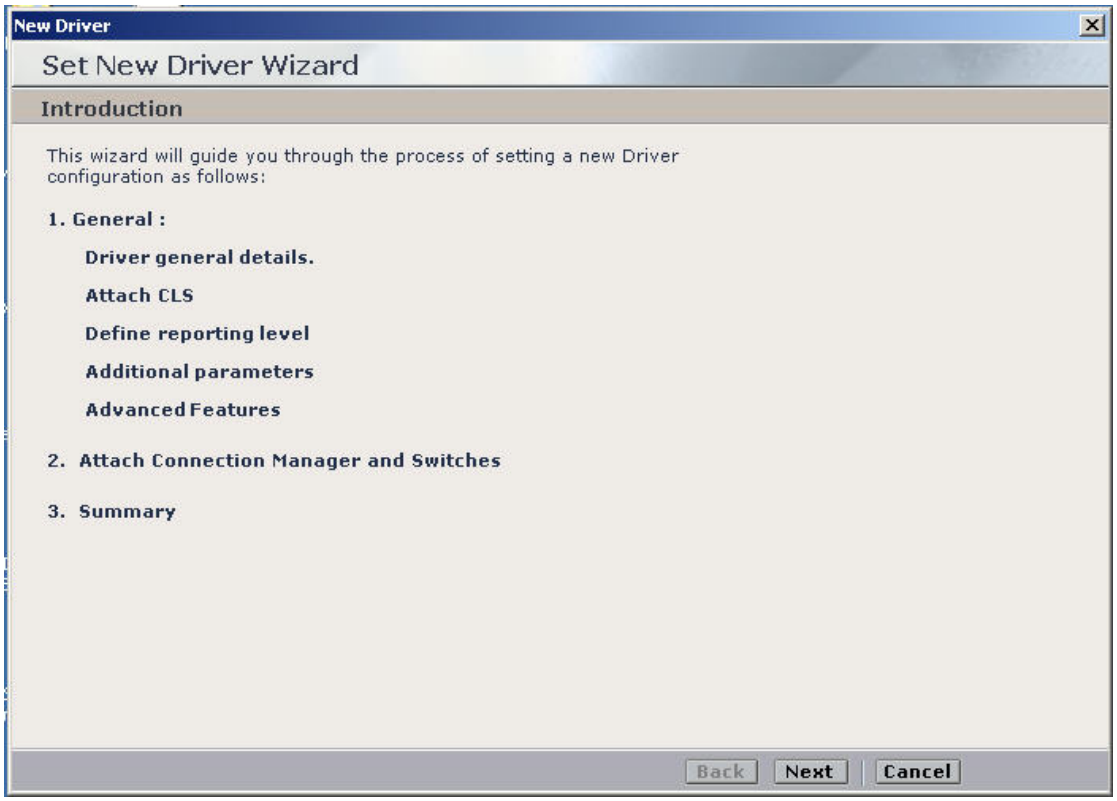
Step	Description
15.	In the left pane, select **CTI Integrations → Connection Manager.** Right click and select **New Connection Manager**. 

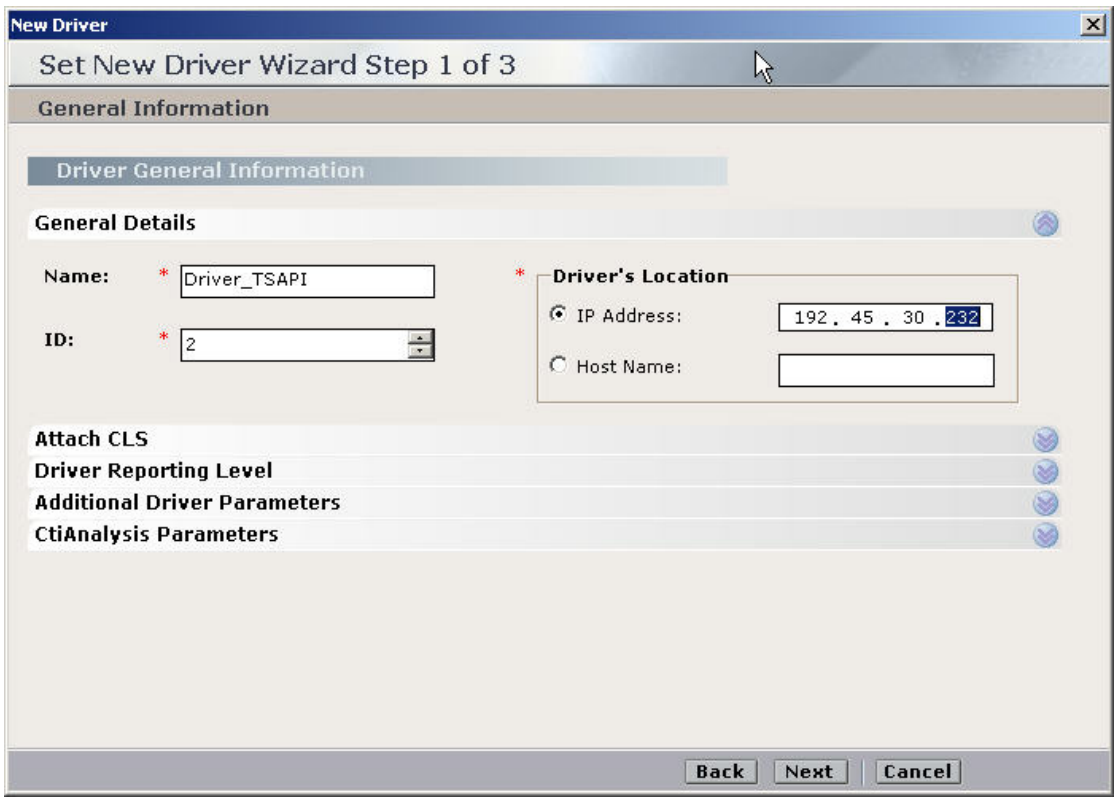
Step	Description
16.	The **Set New Connection Manager Wizard** window is displayed. Click **Next**. 

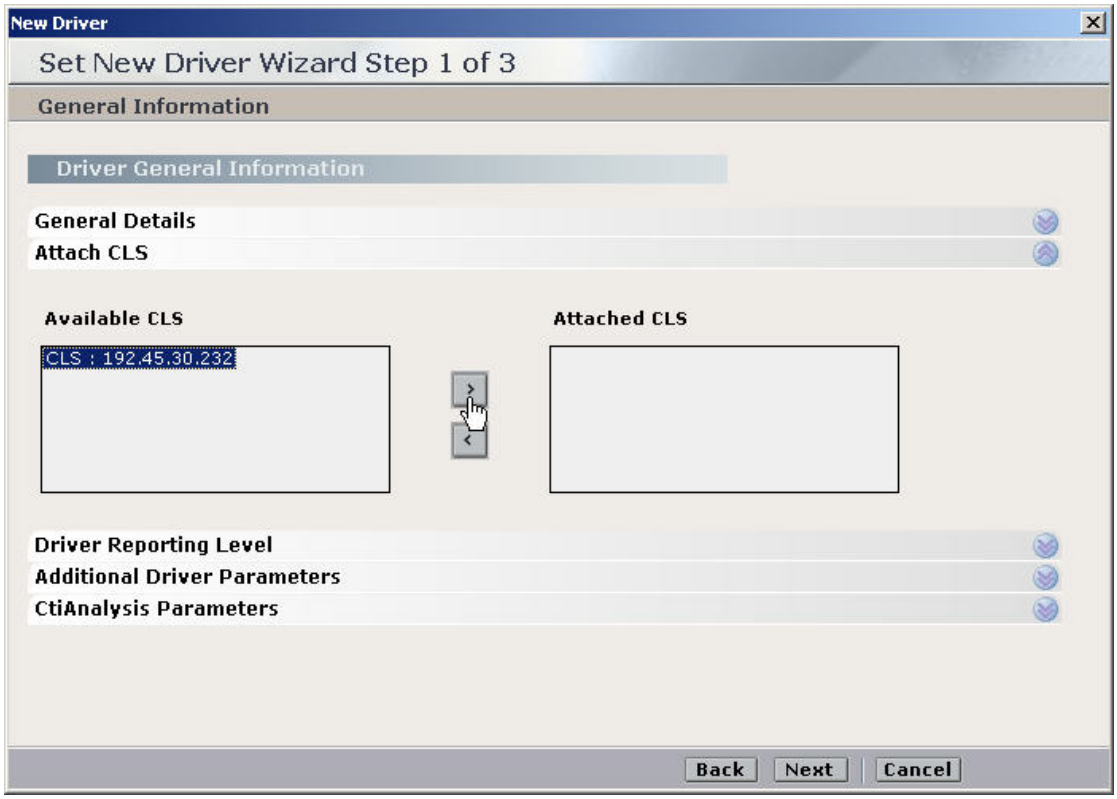
Step	Description
17.	Configure the following. • **Name** – set to any unique name • **Port –** set to "62095" • **ID** - set to any unused number. • **IP Address** - set to the IP address of the NiceCLS server. Click **Next**. 

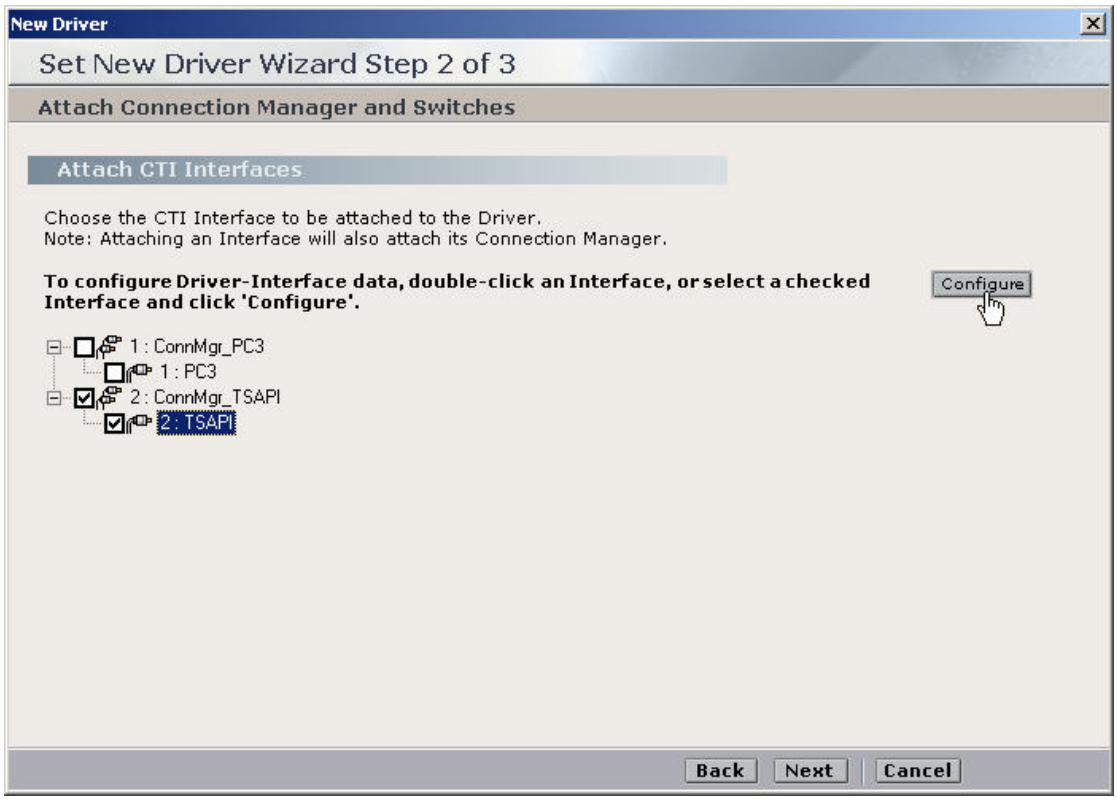
Step	Description
18.	Highlight "TSAPI" from the **Available Interface** list, use the right arrow button to move it to the **Attached Interfaces** list. Click **Next** then click **Finish**. 

Step	Description
19.	In the left pane, select **CTI Integrations → CTI Interfaces → Drivers.** Right click and select **New Driver**. 

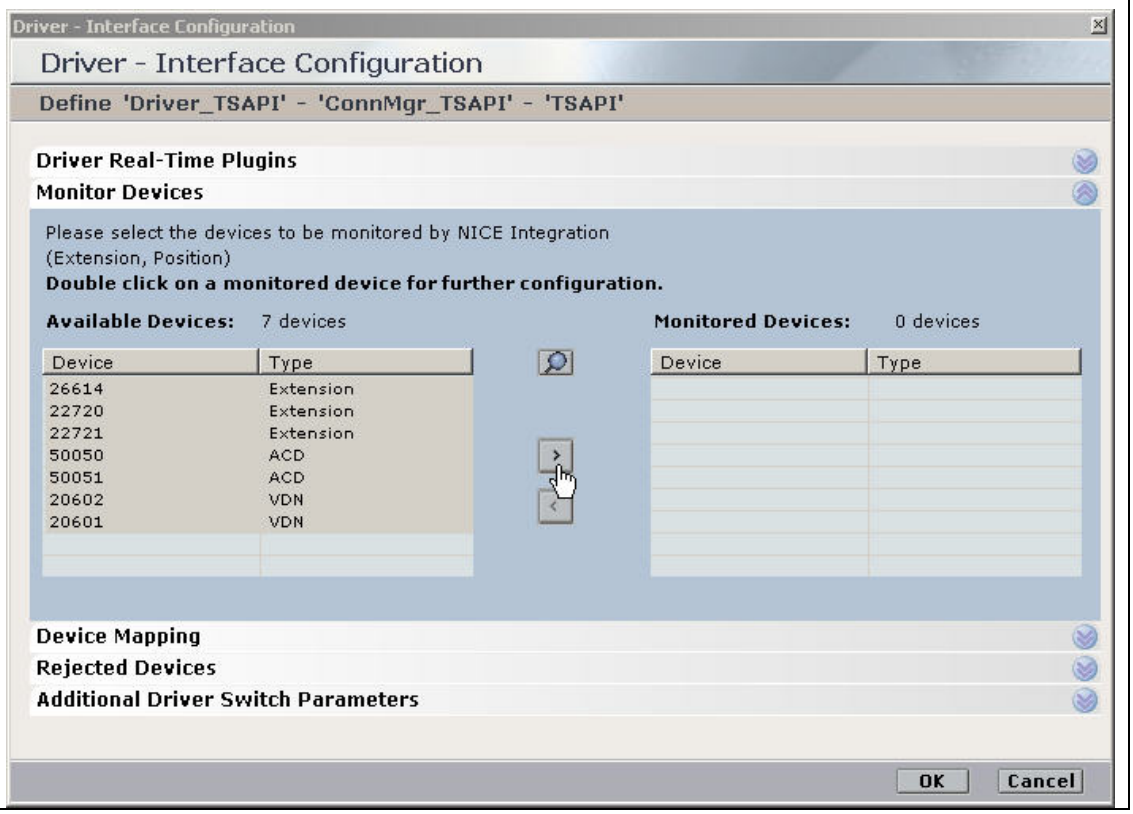
Step	Description
20.	The **Set New Driver Wizard** window is displayed. Click **Next**. 

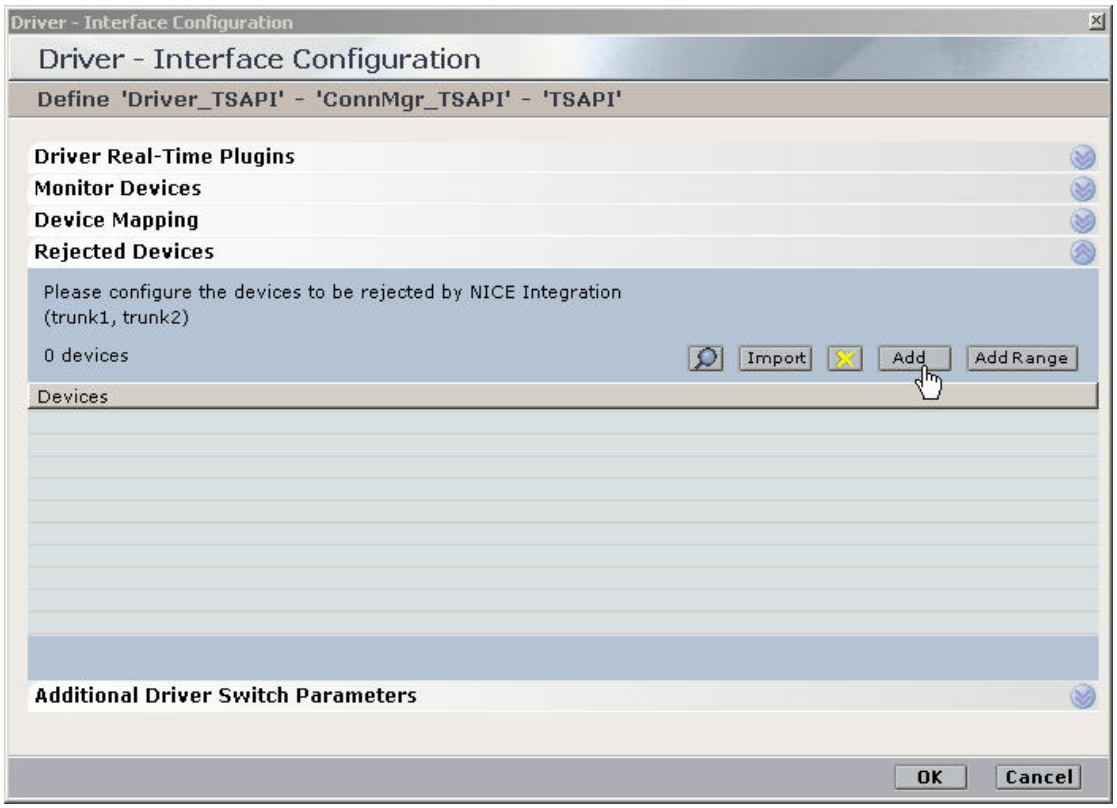
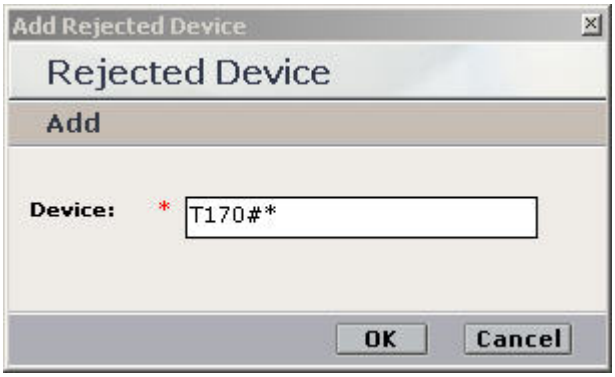
Step	Description
21.	Configure the following. • **Name** – set to any unique name • **ID** - set to any unused number. • **IP Address** - set to the IP address of the NiceCLS server. Open the **Attach CLS** section. 

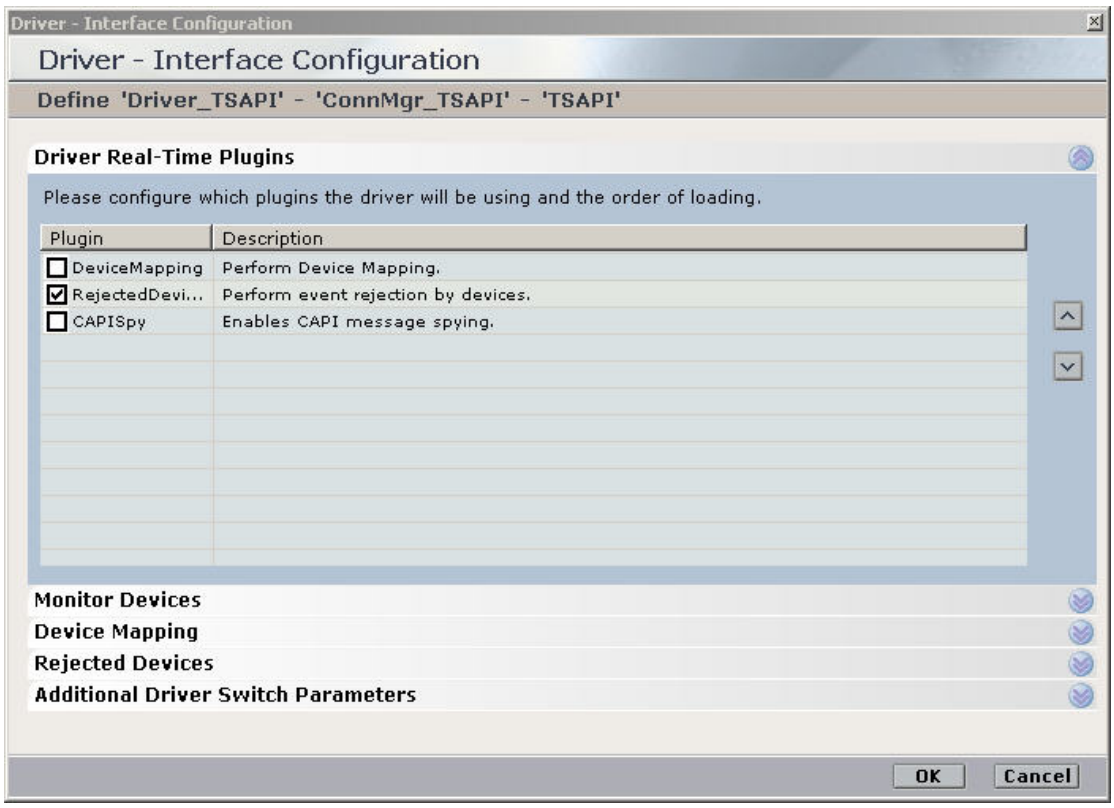
Step	Description
22.	Highlight the CLS server from the **Available CLS** list, use the right arrow button to move it to the **Attached CLS** list. Click **Next**. 

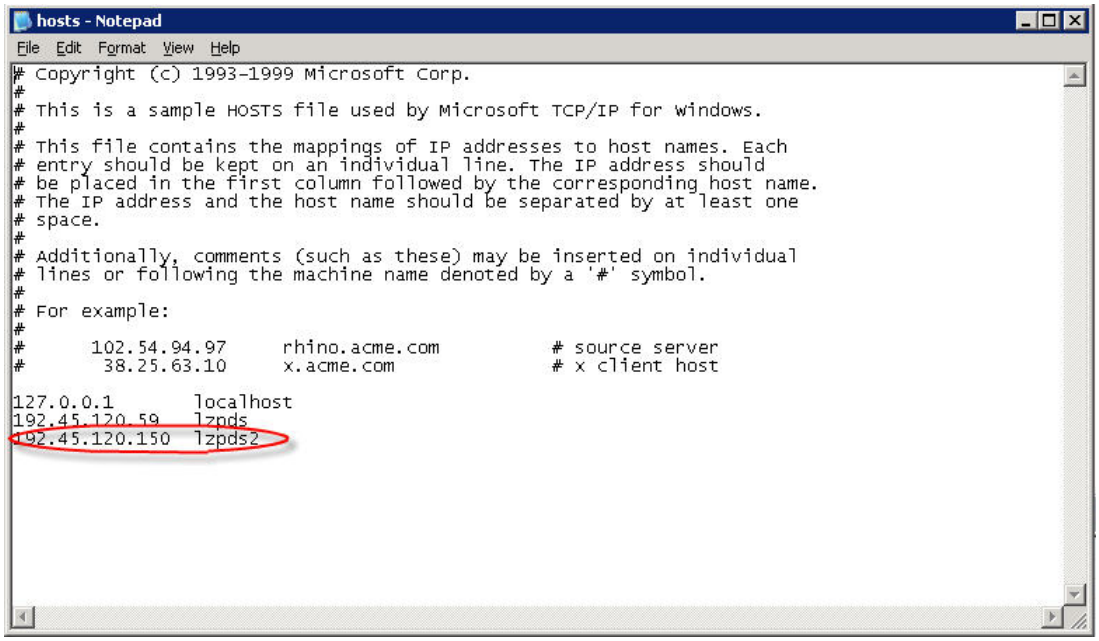
Step	Description
23.	Check the checkboxes for **ConnMgr_TSAPI**. Click **Configure**. 

Step	Description
24.	In the **Monitor Devices** section, select the devices that should be monitored in the **Available Devices** list and move them to the **Monitored Devices** list by using the right arrow button. Click **OK**.



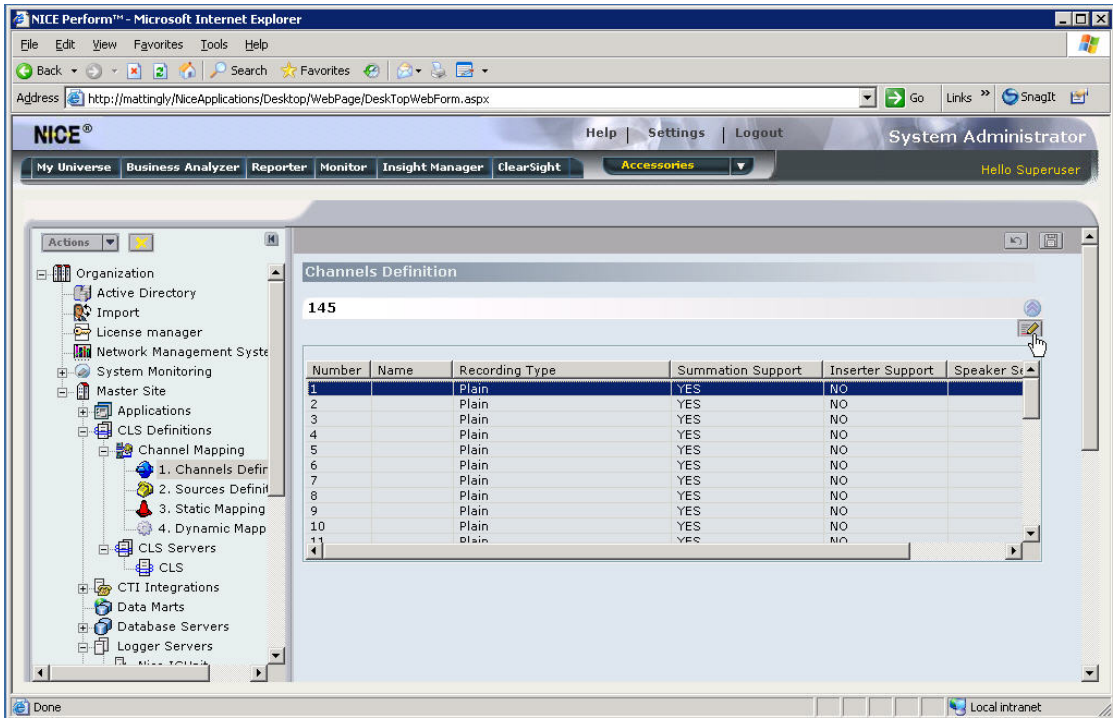
Step	Description
25.	For Avaya PC3 with CTI, the driver configuration is now complete, click **Next** and then **Finish**. Click **Save**. If the Avaya Proactive Contact with the Avaya Proactive Contact Gateway PG230 is being used, follow **Steps 25** and **26**. Expand the **Rejected Devices** section. Add the trunk group number from Avaya Communication Manager that is being used when the agents logs in to Avaya PC3. This configuration will reject any calls on that trunk group. NICE does not want to record the calls that are created when agents login to Avaya PC3. Set the **Rejected Device** to "T<trunk group #>#*". Click **OK.**  

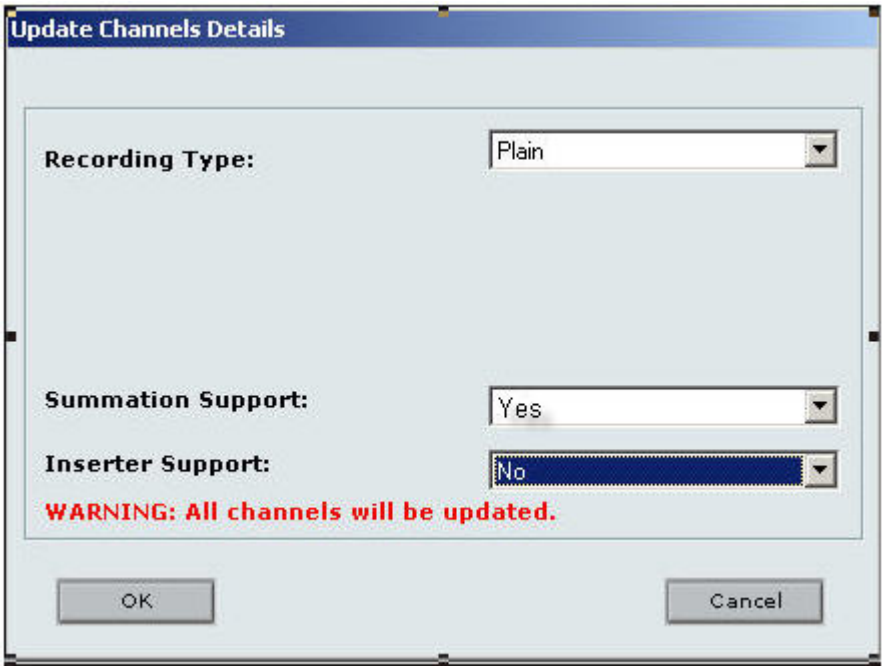
Step	Description
26.	Expand the **Driver Real-Time Plugins** section, check the checkbox for **RejectedDevices**. Click **OK**. Click **Next** and then **Finish**. Click **Save**. 

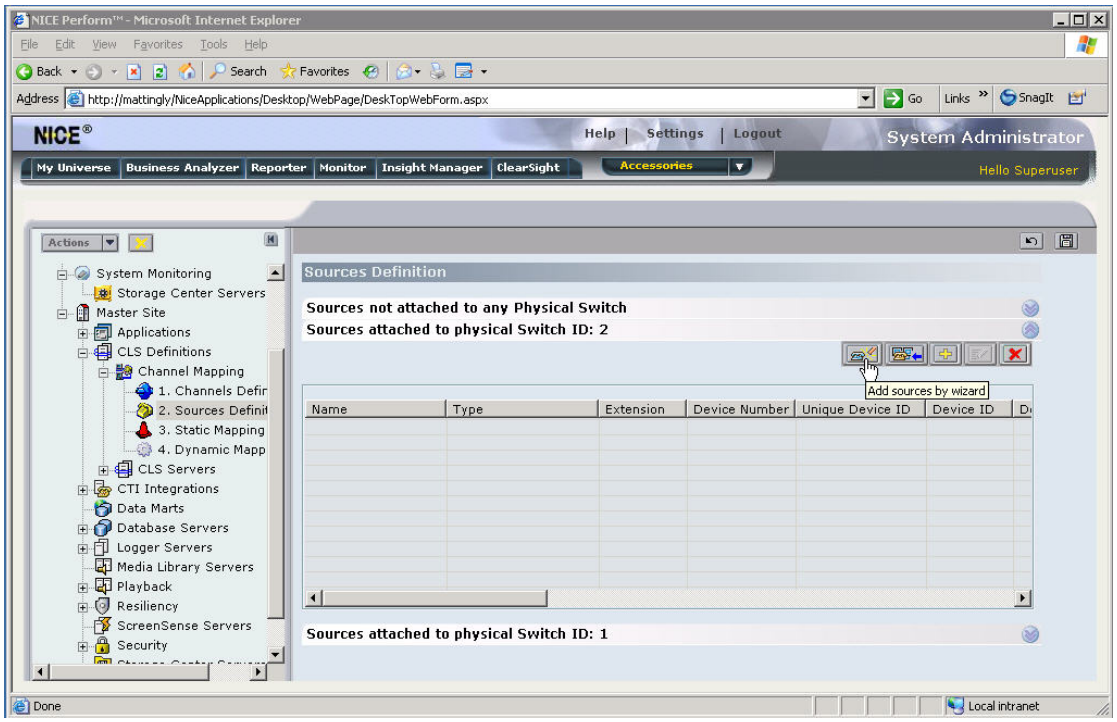
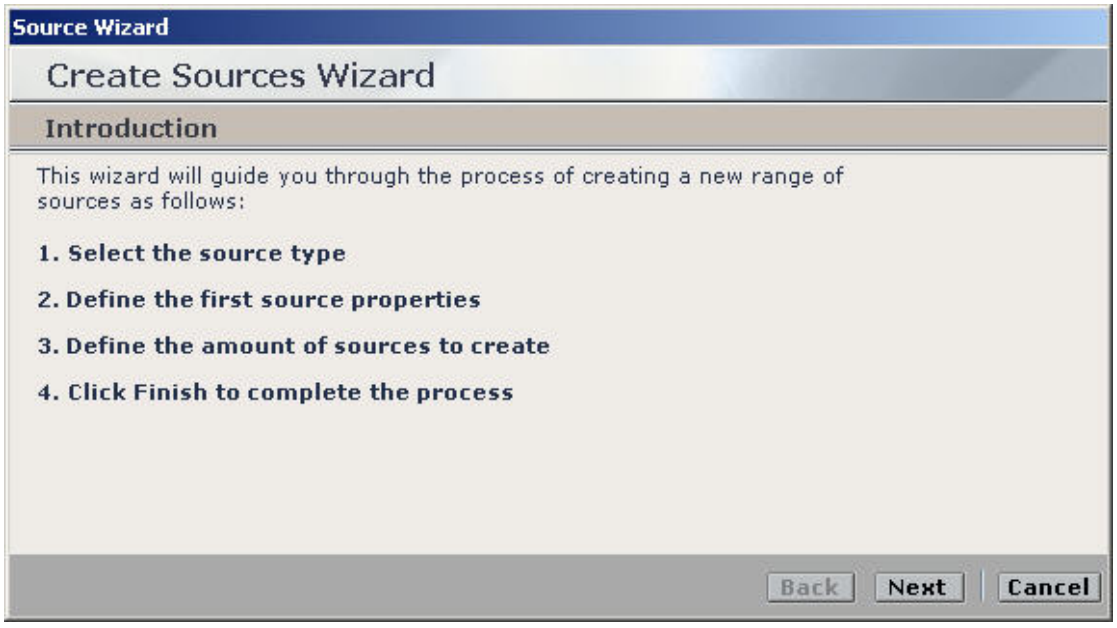
Step	Description
27.	On the NiceCLS server, navigate to the **hosts** file located at: **C:\WINDOWS\system32\drivers\etc** (Note: the etc file may be located in a different directory based on the windows installation). Enter the IP address and host name of Avaya PC3 with CTI. 

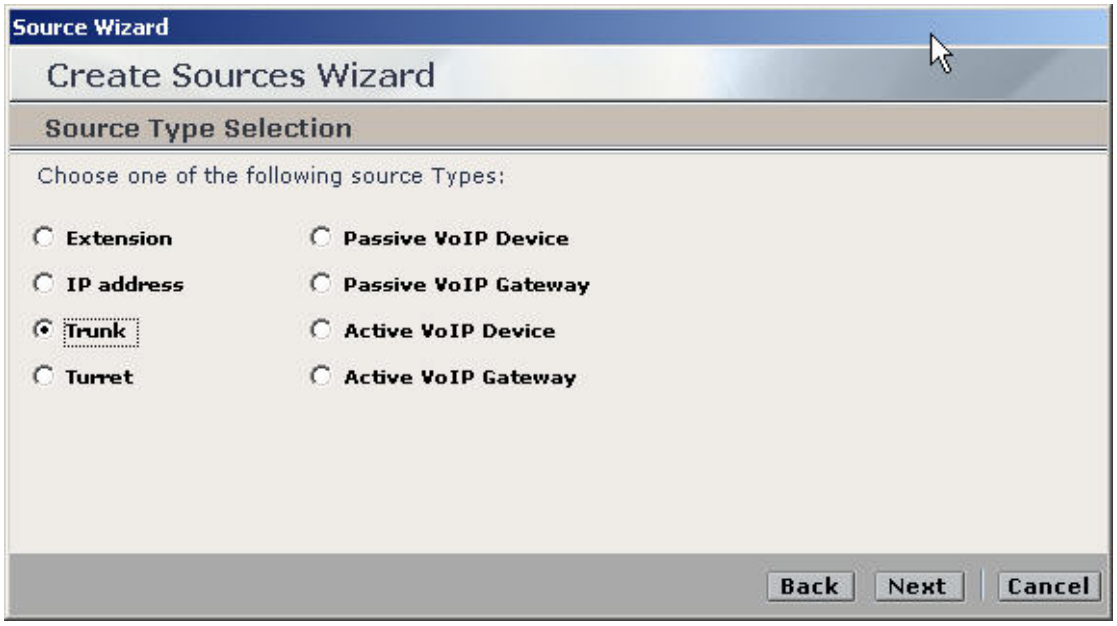
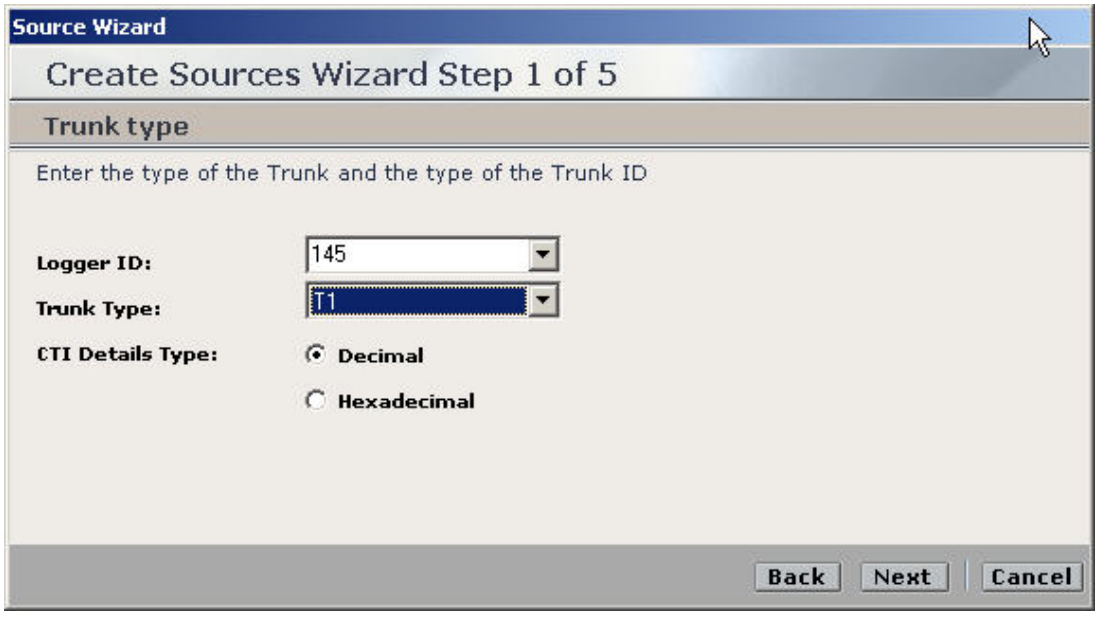
6.3. Configure Channel Mapping

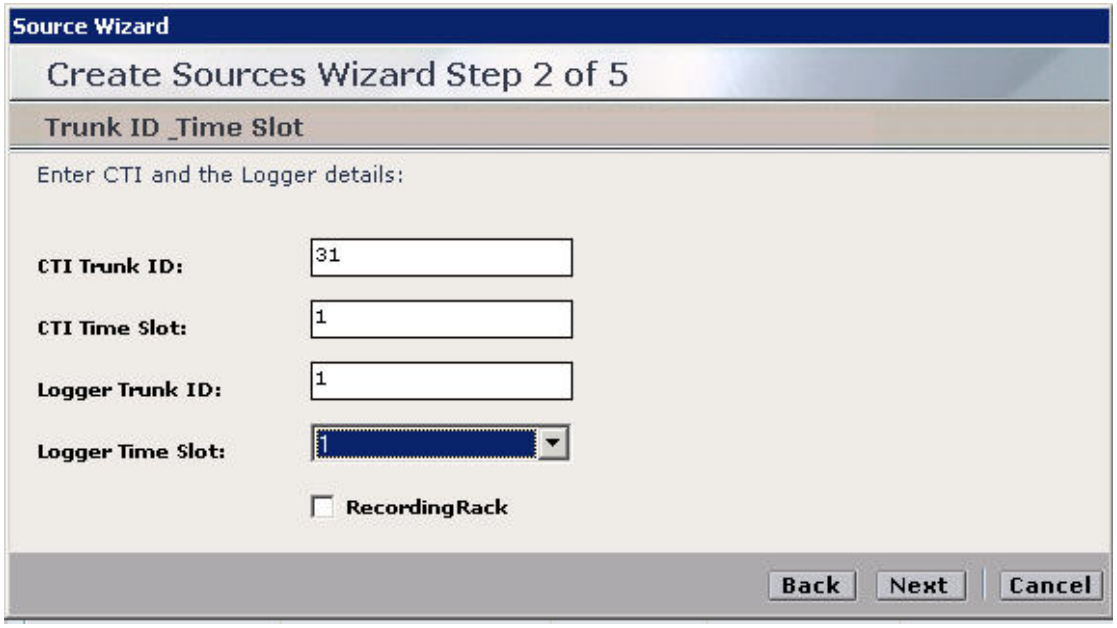
To record data sent from the T1 trunk to the NiceLog server, the Logger channels must be defined and mapped to sources of data between Avaya Communication Manager and Avaya Proactive Contact 3.0.

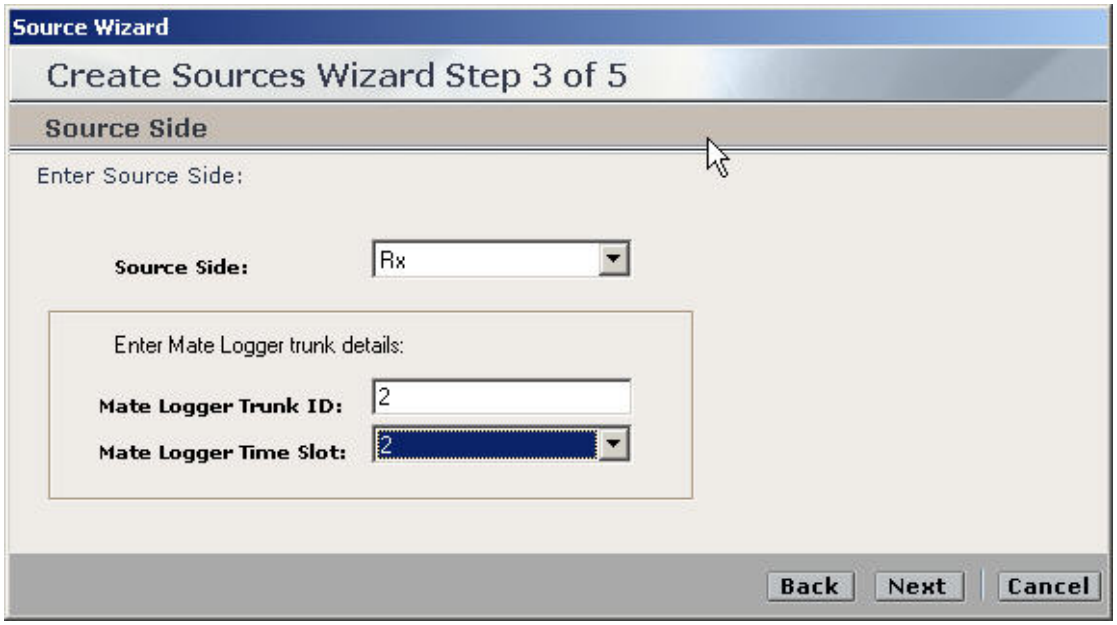
Step	Description
1.	In the left pane, select **CLS Definitions → Channel Mapping → Channel Definition.** Click "145" to expand the **Channel Definition** section. Click **Edit Channel Properties**. 

Step	Description
2.	Configure the following. • **Recording Type** – set to "Plain" • **Summation Support** – set to "Yes" from the drop down list. • **Inserter Support –** set to "No" from the drop down list. Click **OK**. Click **Save**. 

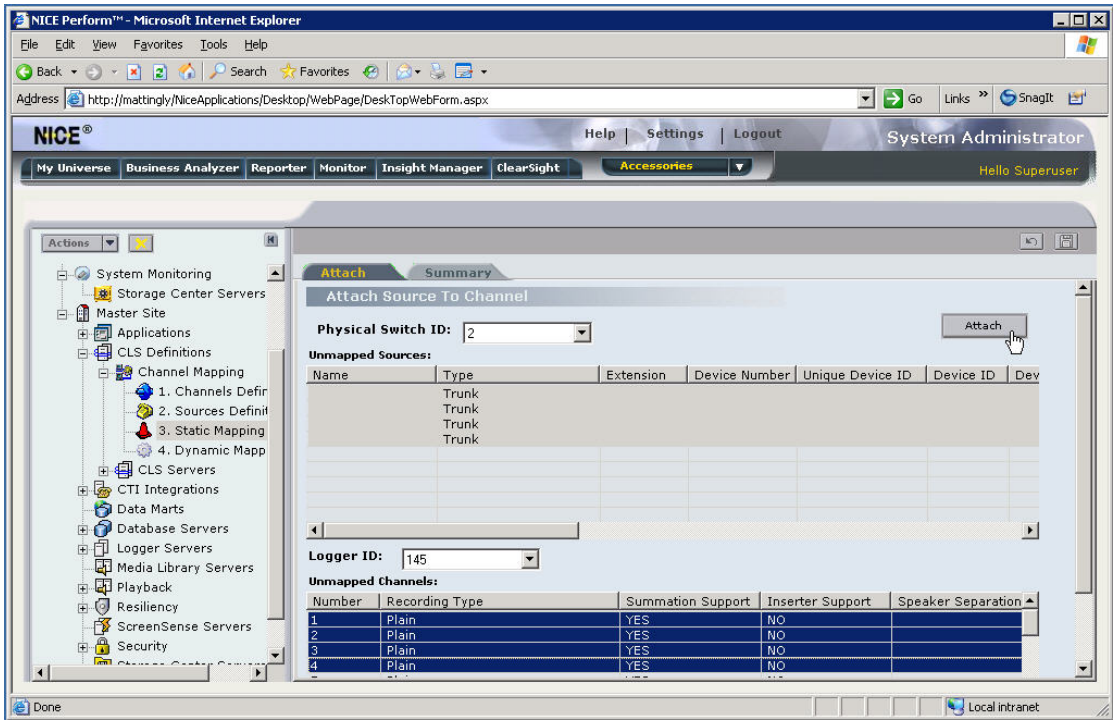
Step	Description
3.	In the left pane, select **CLS Definitions → Channel Mapping → Sources Definition.** Click the **Add sources by wizard** button. 
4.	The **Create Sources Wizard** window is displayed. Click **Next**. 

Step	Description
5.	Select **Trunk**. Click **Next**. 
6.	Configure the following. • **Logger ID** – set to the Logger ID shown in **Section 6.3 Step 1**. • **Trunk Type** – set to "T1" from the drop down list. • **CTI Details Type –** select "Decimal" Click **Next**. 

Step	Description
7.	Configure the following. • **CTI Trunk ID** – set to the trunk group number from **Section 3**. • **CTI Time Slot** - set to "1". • **Logger Trunk ID** - set to "1". • **Logger Time Slot** – set to "1". Click **Next**. 

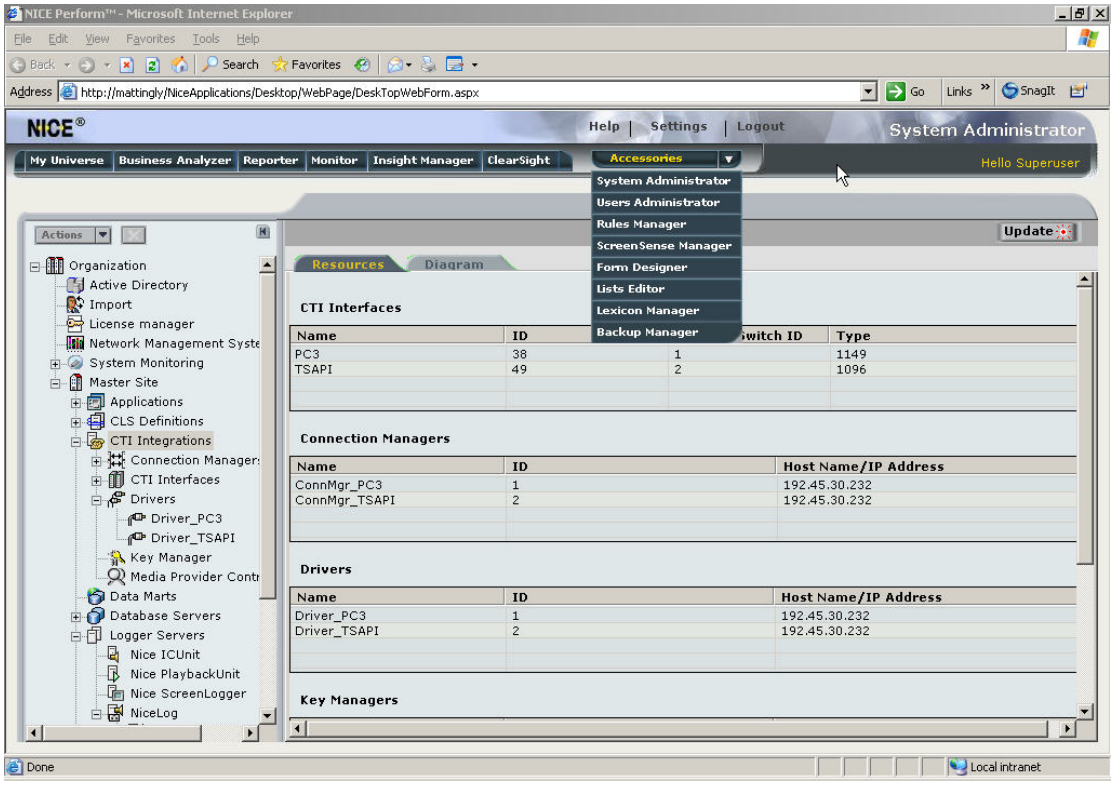
Step	Description
8.	Configure the following. • **Source Side** – set to "Rx" from the drop down list.. • **Mate Logger Trunk ID** – set to "2". • **Mate Logger Time Slots –** set to "2" from the drop down list. Click **Next**. 

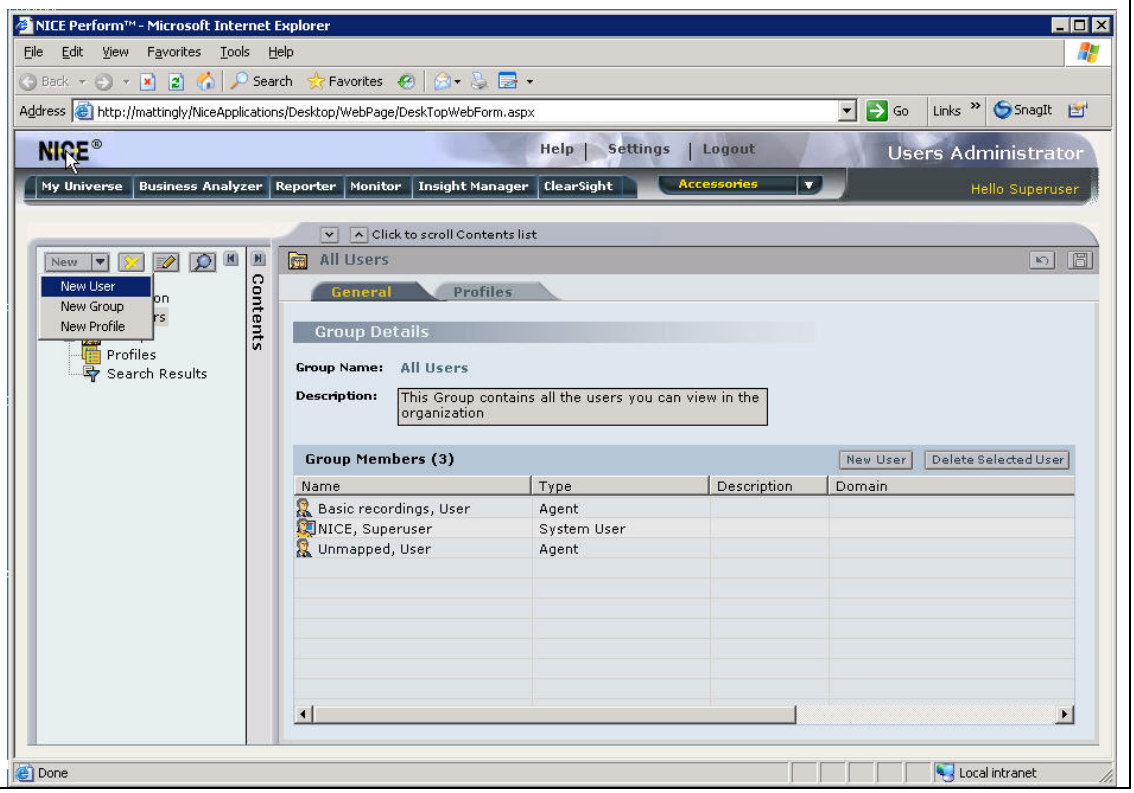
Step	Description
9.	Configure the following. • **Number of sources** – set to the number of trunks in the trunk group as shown in **Section 3**. • **Step** – set to "1". Click **Next**. Then click **Finish**. Click **Save**. 

Step	Description
10.	Select the **Physical Switch ID** from the drop down list as configured in **Section 6.2 Step 5.** Highlight all the trunks. Select the **Logger ID** from the drop down list as configured in **Section 6.3 Step 1**. Highlight the same number of trunks as above. Click **Attach**. Click **Save**. 

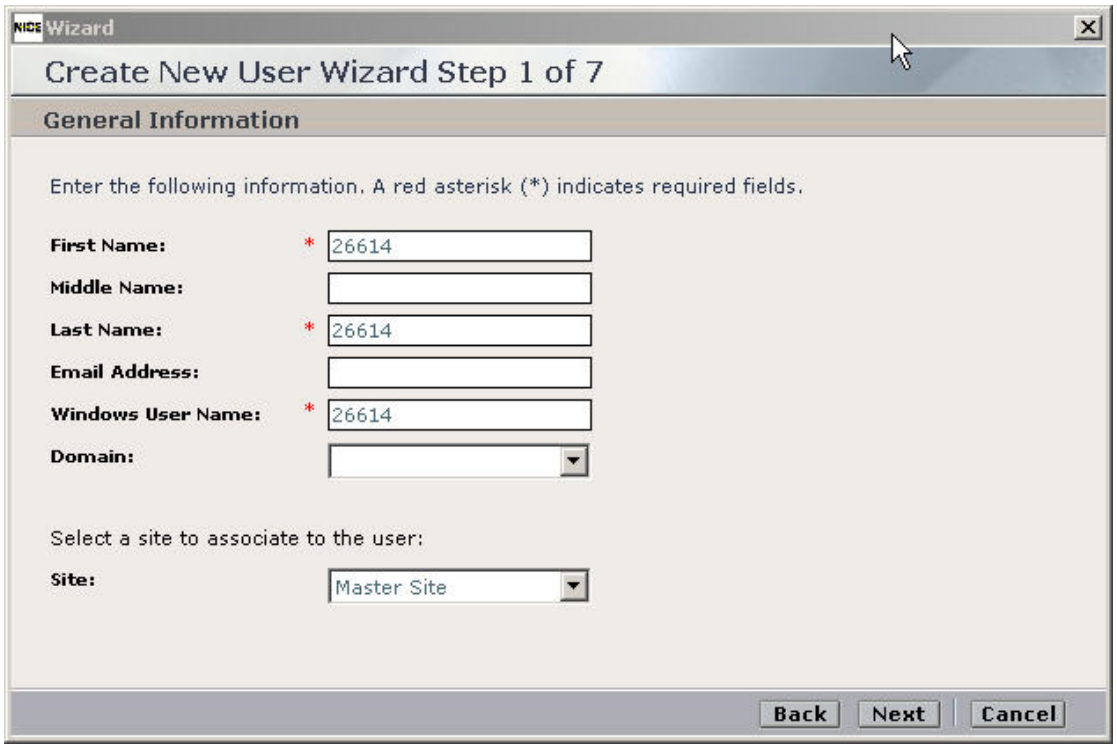
6.4. Configure Users

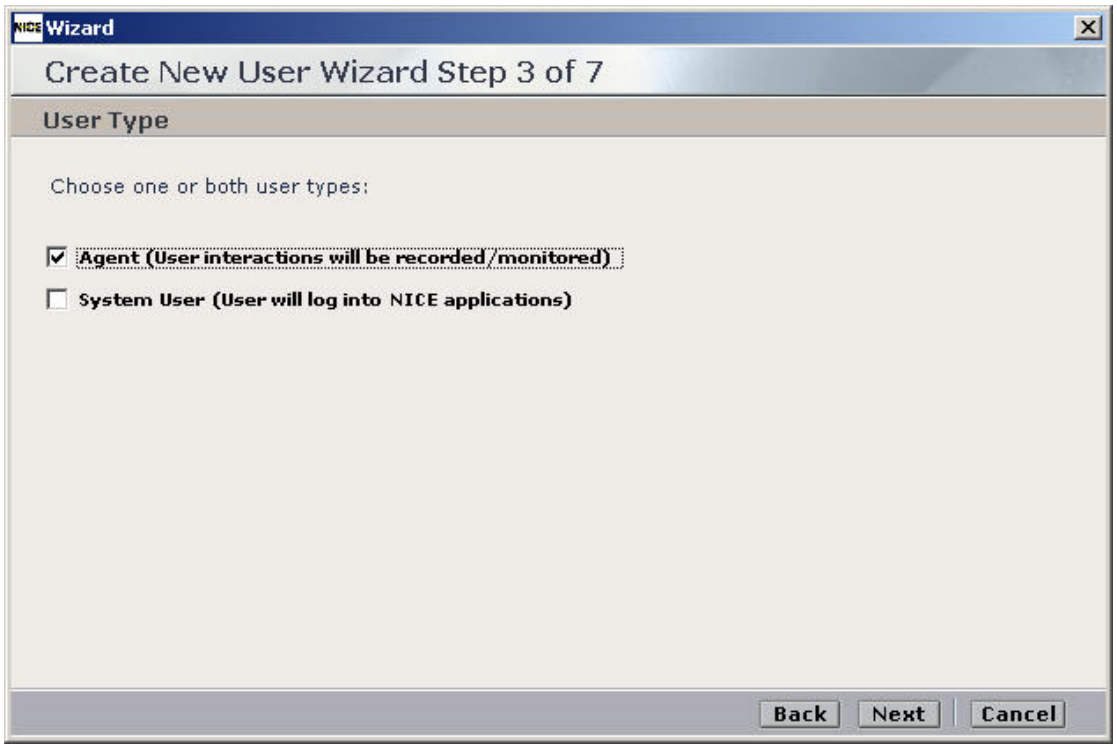
This section is used to administer Avaya PC3 agents on the NiceCLS server. Any agent whose interactions need to be recorded should be administered as a user. There are two types of users that can be administered; outbound user and ACD user. The outbound user is administered with the extension of their physical phone. The ACD user is administered with the ACD agent ID configured on Avaya Communication Manager. When the Predictive Agent Blending feature is used on Avaya PC3, both types of users need to be administered for the agent in order to record the outbound and inbound calls.

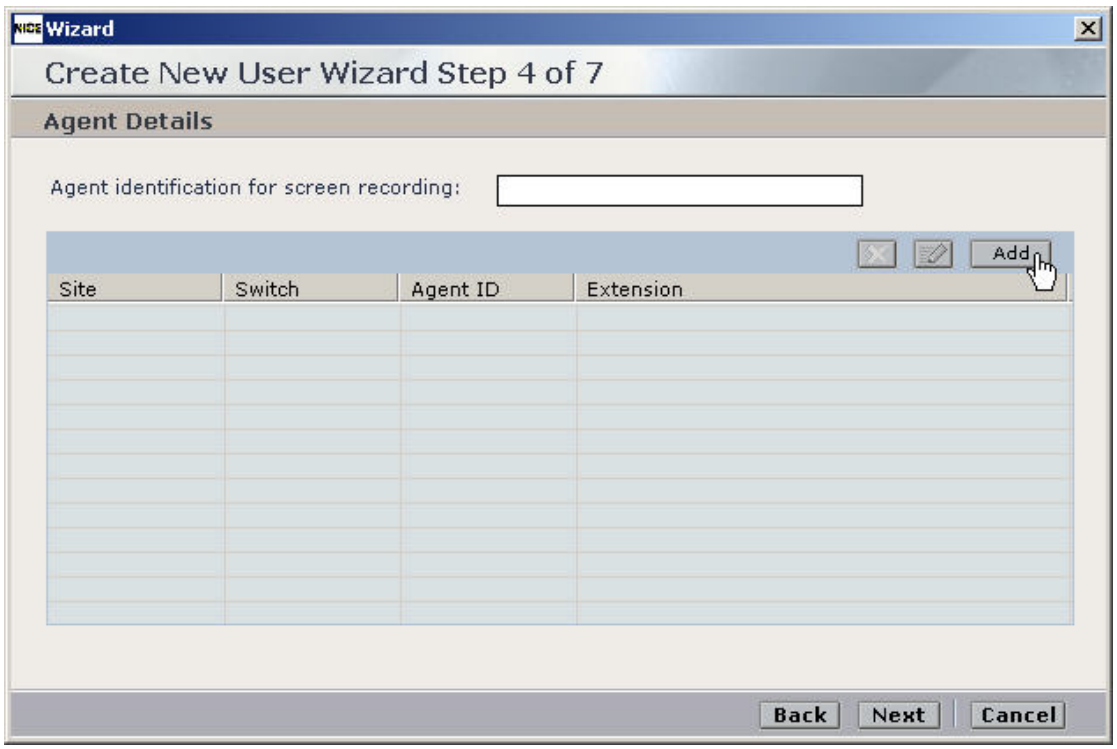
Step	Description
1.	In the **NICE System Administrator** window, select **Accessories → Users Administrator.** 

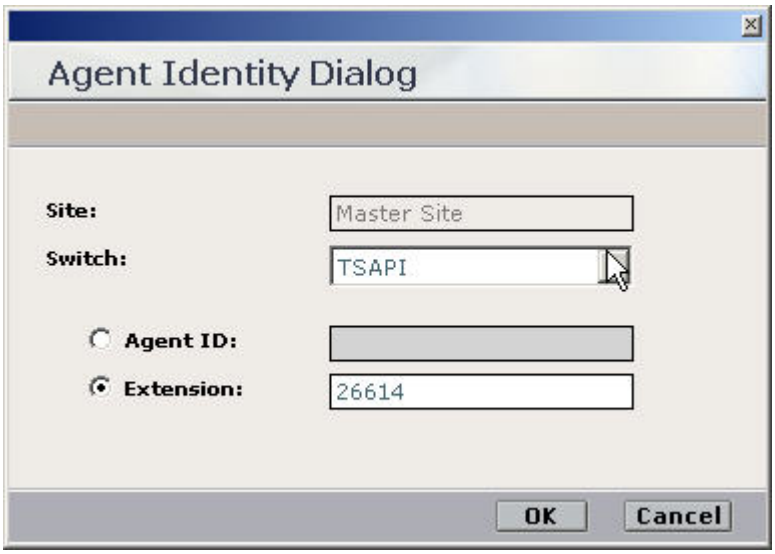
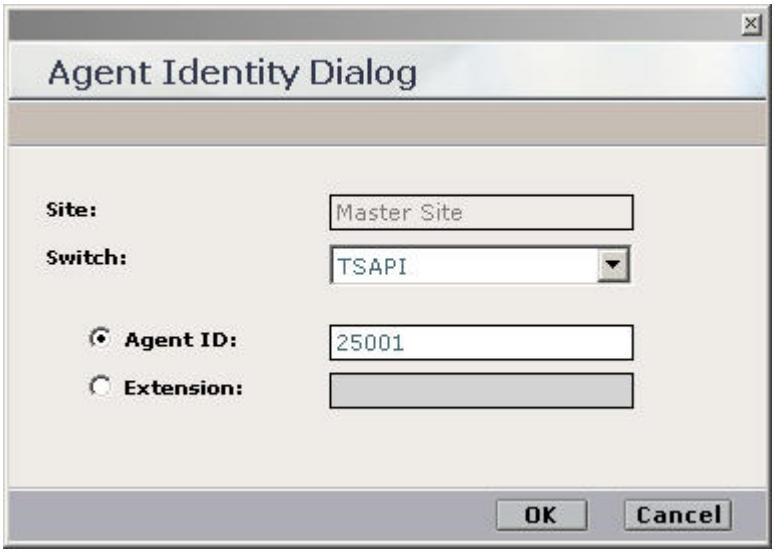
Step	Description
2.	In the **NICE Users Administrator** window, select **New → New User** from the left pane. 

Step	Description
3.	The **Create New User Wizard** window is displayed. Click **Next**. 

Step	Description
4.	Enter any unique name for the **First Name**, **Last Name** and **Windows User Name** fields. Click **Next**. Click **Next** on **Step 2** of the Wizard. 

Step	Description
5.	Check the checkbox for **Agent (User interactions will be recorded/monitored).** Click **Next**. 

Step	Description
6.	Click **Add**. 

Step	Description
7.	For Outbound Users: Set the **Switch** field to "TSAPI" from the dropdown list. Set the **Extension** field to the extension of the agent's physical phone. Click **OK**. Click **Next** and then click **Finish**.  For Inbound ACD Users: Set the **Switch** field to "TSAPI" from the dropdown list. Set the **Agent ID** field to the ACD Agent ID configured on Avaya Communication Manager. Click **OK**. Click **Next** and then click **Finish**.  Repeat **Step 2** to create a new user account for additional Avaya PC3 agents. Click **Save**.

Step	Description
8.	From the NiceCLS server, go to **Start → Programs → Nice CLS Server → CLS Server Manager.** Click the button for **Start NICE CLS** to start the NICE services. 

7. Interoperability Compliance Testing

This interoperability compliance testing covered feature functionality, serviceability and basic load testing. Feature functionality focused on verifying that NICE Perform 3.0 could successfully record calls when using events from Avaya AES TSAPI CTI link. Serviceability testing verified that the NiceCLS and NiceLog servers recovered from adverse conditions, such as rebooting, power failure and network disconnect. Basic load testing verified that NICE could successfully record calls for an extended period of time.

7.1. General Test Approach

All feature functionality test cases were performed manually to verify proper operation. The general test approach entailed:

- Establishing connectivity between NICE and Avaya AES using TSAPI.
- Verifying calls could be recorded using the T1 Trunk tapping method.
- Verifying call recording using basic telephony operations such as answer, hold/retrieve, transfer, consult, conference, and disconnect.
- Verifying call recording with outbound calls.
- Verifying inbound call recording with the Predictive Agent Blending Feature on Avaya PC3.

The basic load testing was automated with outbound calls delivered to agents from Avaya PC3. The Avaya PC3 executed a calling list which delivered answered calls to agents.

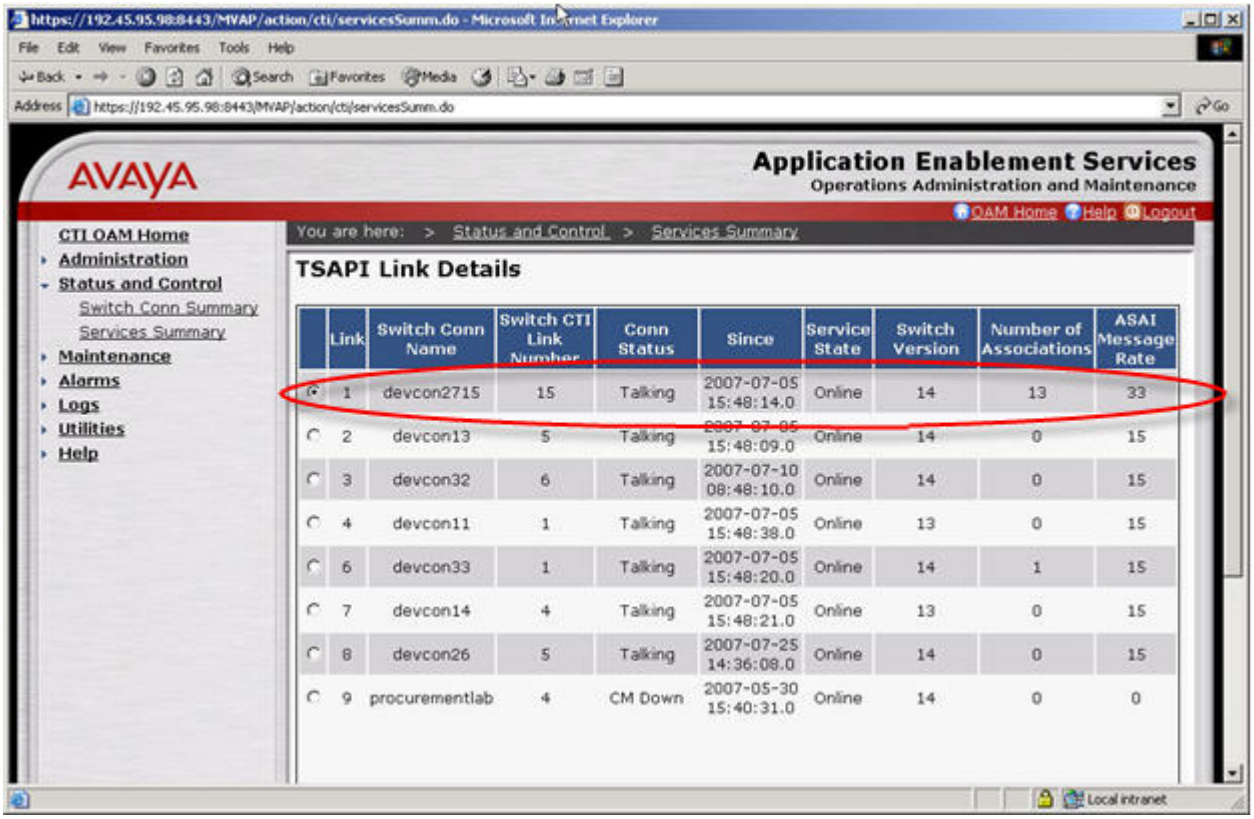
7.2. Test Results

All feature and performance tests passed. The NICE Perform 3.0 successfully recorded, displayed and replayed the recordings of agents. For serviceability testing, NICE was able to resume call recording after restoration of connectivity to the PC3 server, to the AES server, from network disconnect/re-connect, and NICE server resets. For performance testing, NICE successfully recorded calls for a sustained period of time.

8. Verification Steps

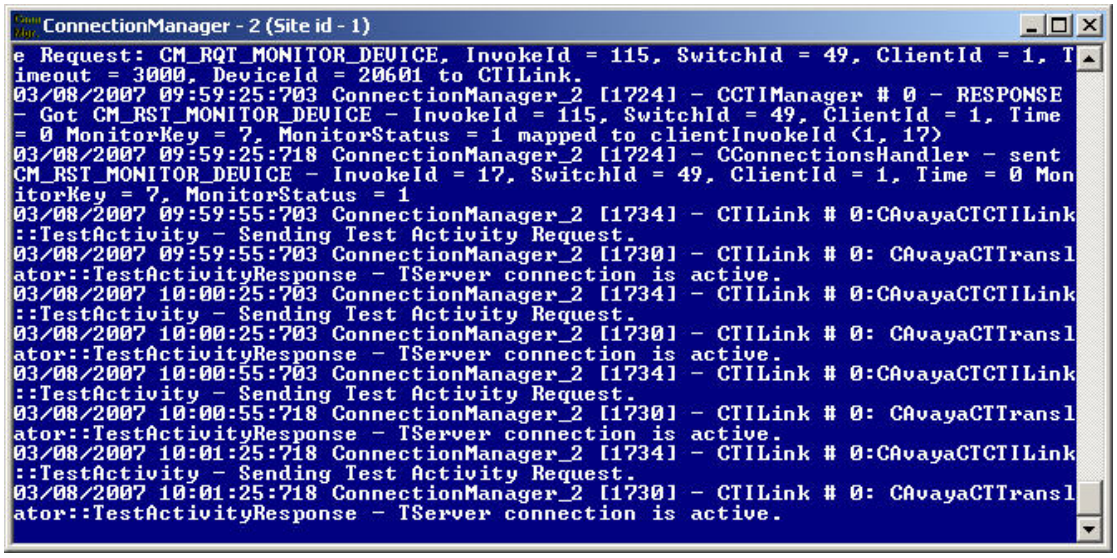
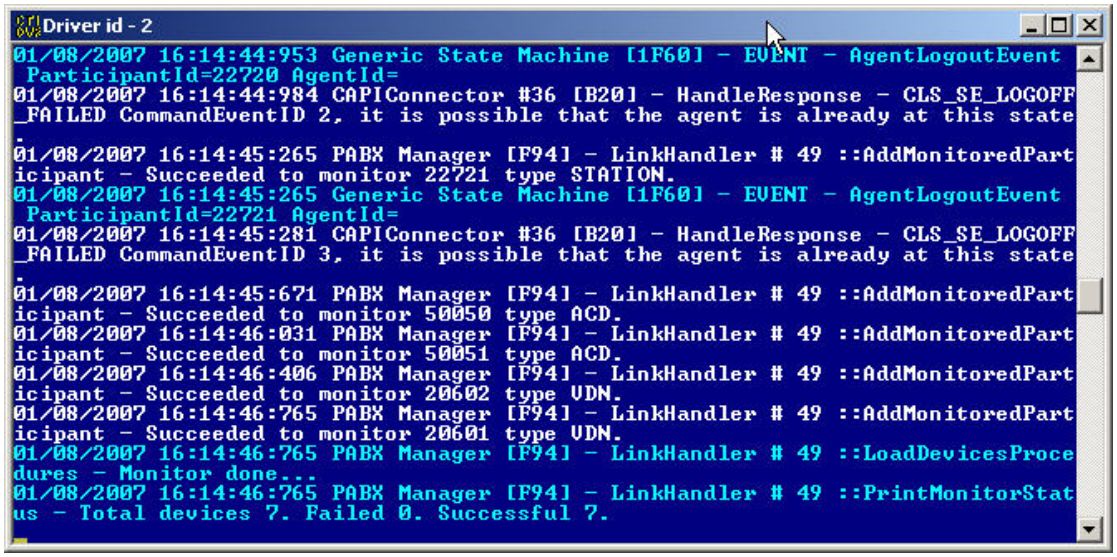
8.1. Avaya Verification

From the **AES OAM** page, click **Status and Control → Services Summary**. Select **TSAPI Service** and click **Details**. This summary gives the status of the connection between Avaya Communication Manager and the AES Server. Verify that the **Conn Status** indicates "Talking" and the **Service State** indicates "Online".

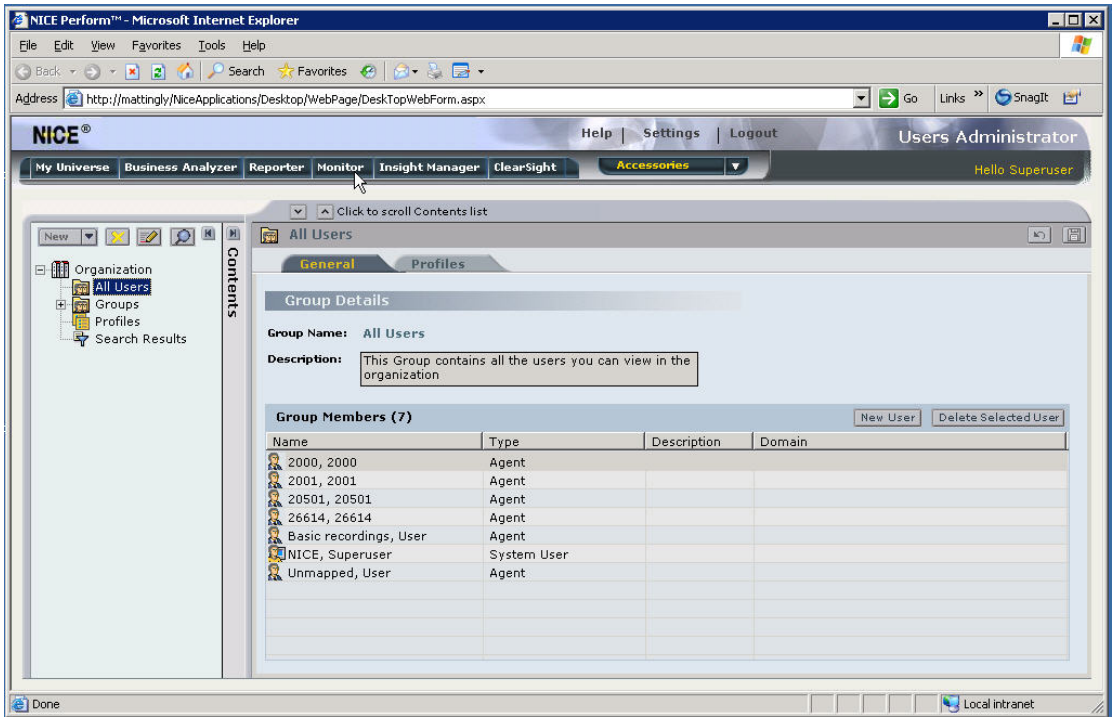


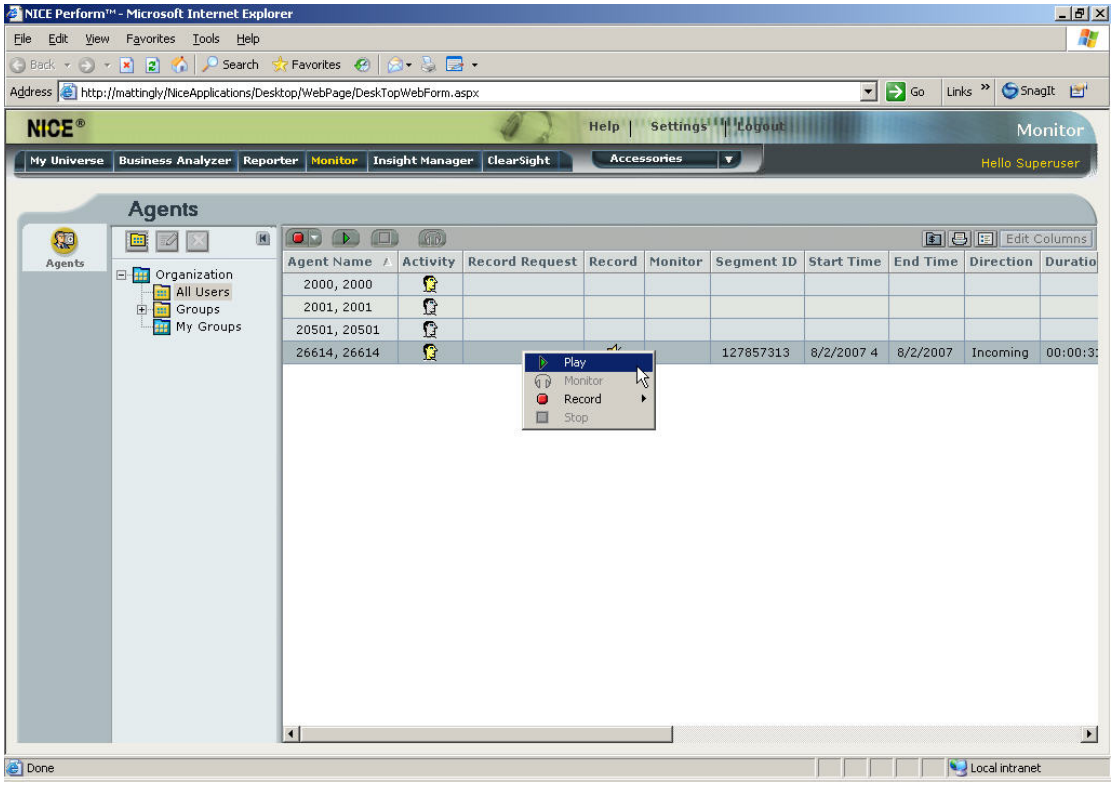
8.2. Nice Verification

The following steps can ensure that the communication between NICE, Avaya Application Enablement Services, and Avaya Proactive Contract 3.0 is working.

Step	Description
1.	On the NiceCLS server, when the processes start, the **ConnectionManager** and **Driver id** windows will automatically appear.
2.	In the **ConnectionManager** window, verify the following message is displayed "TServer connection is active". 
3.	In the **Driver id** window, verify the following message is displayed "Total devices 7. Failed 0. Successful 0." The **Total devices** are the phone extensions, ACD hunt groups and VDNs that are being monitored. 

8.3. Replaying the Voice Recordings

Step	Description
1.	On the NiceCLS server, select the **Monitor** tab**.** 

Step	Description
2.	Select an agent, then right click and select **Play**. Verify the agent's call recording can be heard from the server's speakers. 

9. Support

If technical support is required for the NICE Perform 3.0 solution, then contact NICE Technical Support. Full details are available at https://www.extranice.com.

10. Conclusion

These Application Notes describe the required configuration steps for NICE Perform 3.0 to successfully interoperate with Avaya Proactive Contact 3.0 with CTI for outbound and inbound call recording. NICE Perform 3.0 used the Telephony Services API of Avaya Application Enablement Services to extract agent and call event information, and the T1 Trunk Tapping method to perform the recording. Functionality and performance were successfully validated. The configuration described in these Application Notes has been successfully compliance tested.

11. Additional References

The following documents may be found at http://support.avaya.com:

[1] *Administrator Guide for Avaya Communication Manager*, Document ID: 03-300509, Issue 3.0, February 2007

[2] *Avaya Proactive Contact 3.0 Installation and Configuration*, Doc ID 07-300491, November 2005

[3] *Avaya Proactive Contact 3.0 Administration (UNIX-based)*, Doc ID 07-300488, October 2005

[4] *Avaya MultiVantage Application Enablement Services Administration and Maintenance Guide*, Document ID 02-300357, Issue 7.0, July 2007

The following document may be found at http://devconnect.avaya.com.

[5] *Sample Avaya Proactive Contact 3.0 (PC3) with CTI Installation and Configuration*, Issue 1.0, Avaya Solution and Interoperability Test Lab

NICE product documentation is available on request from https://www.extranice.com.

[6] *NiceCLS Installation Guide 8.9* – Rev. A2

Please e-mail any questions or comments pertaining to these Application Notes along with the full title name and filename, located in the lower right corner, directly to the Avaya Developer*Connection* Program at devconnect@avaya.com.