



## **Avaya Solution & Interoperability Test Lab**

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# **Application Notes for Cleo Legacy Host Interface with Avaya Interactive Response – Issue 1.0**

### **Abstract**

These Application Notes describe the configuration steps required for Cleo Legacy Host Interface to interoperate with Avaya Interactive Response. Cleo Legacy Host Interface is an optional host software package that is installed on Avaya Interactive Response, and enables application developers to use Avaya IVR Designer to create Transaction Assembly Script applications that can retrieve and modify data on the host mainframes.

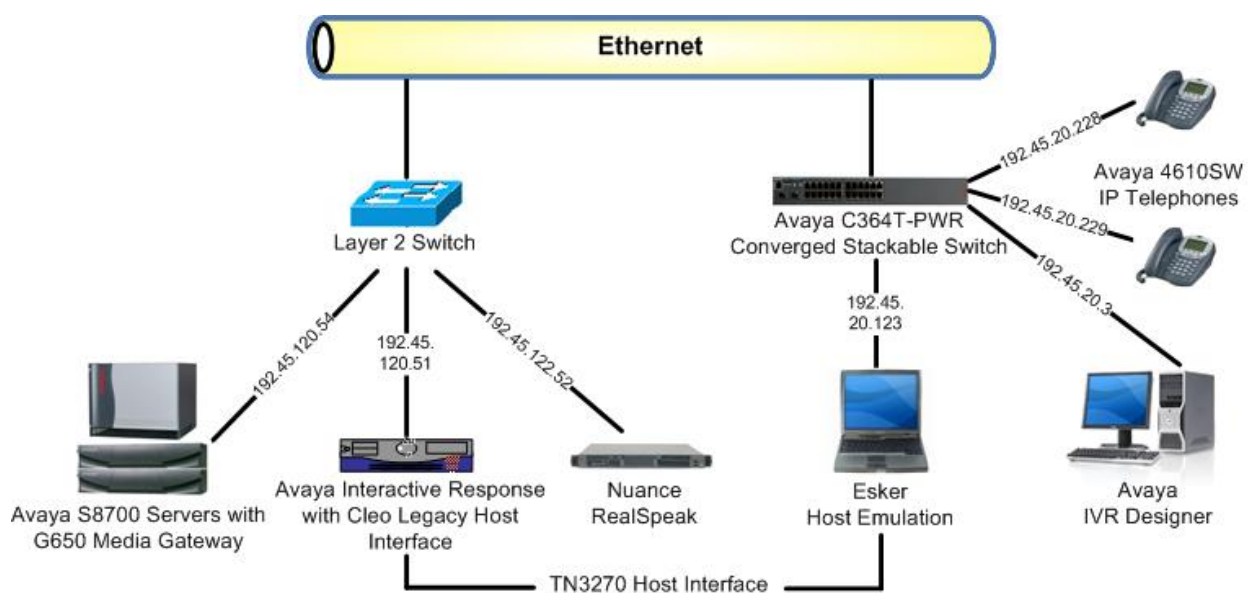
Information in these Application Notes has been obtained through DevConnect compliance testing and additional technical discussions. Testing was conducted via the DevConnect Program at the Avaya Solution and Interoperability Test Lab.

# 1. Introduction

These Application Notes describe the configuration steps required for Cleo Legacy Host Interface to interoperate with Avaya Interactive Response. Cleo Legacy Host Interface is an optional host software package that is installed on Avaya Interactive Response (IR), and enables application developers to use Avaya IVR Designer to create Transaction Assembly Script (TAS) applications that can retrieve and modify data on host mainframes.

Cleo Legacy Host Interface supports the TN3270 and SNA3270 host connections to IBM mainframes, and the TN5250 host connection to AS400 mainframes. The compliance testing used the TN3270 host connection.

In the test configuration shown in **Figure 1**, Cleo Legacy Host Interface emulates an IBM 3270 terminal client, which has a TCP/IP connection to a TN3270 server. The TN3270 server is a function of the mainframe, and can reside on the mainframe or reside on network servers or routers. In the compliance testing, the Esker Host Emulation software was used to provide the TN3270 server functionality and to emulate the IBM mainframe.



**Figure 1: Cleo Legacy Host Interface with Avaya Interactive Response**

The compliance testing used a fictitious stock quote speech application. The application collects a stock identification number from the caller, and then sends the identification number to the host mainframe to obtain the current price quote, which will then be played back to the caller.

A TAS script was built for the fictitious stock quote speech application using Avaya IVR Designer. The creation of the script is outside the scope of this document, and will not be described. To test the speech application, manual calls were placed to the pilot number that corresponds to the application. The calls were delivered to Avaya IR over available lines, administered as IP soft phones with type “7434ND” on Avaya Communication Manager. Avaya IR ran the stock quote speech application that was installed on Avaya IR, used Nuance RealSpeak to provide Automatic Speech Recognition (ASR) and Text-To-Speech (TTS) capabilities, and used the Esker Host Emulation server to perform stock price quote retrieval.

On Avaya IR, a speech application is assigned to channels, and each channel corresponds to an IP soft phone administered on Avaya Communication Manager. The IP soft phones can then be placed into a hunt group, with the hunt group extension serving as the pilot number for the speech application. When a call arrives on Avaya Communication Manager for the speech application, the call gets delivered over an available Avaya IR channel, and the application assigned to the channel will then execute.

## 2. Equipment and Software Validated

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

| Equipment   | Software   |
|---|--|
| Avaya S8700 Servers   | Avaya Communication Manager 4.0,<br>R014x.00.1.731.2 |
| Avaya G650 Media Gateway <ul style="list-style-type: none"><li>• TN799DP C-LAN</li></ul>                                | HW01 FW024   |
| Avaya Interactive Response on SunBlade 150 <ul style="list-style-type: none"><li>• Cleo Legacy Host Interface</li></ul> | 3.0.327<br>4.3                                       |
| Avaya IVR Designer on<br>Dell Precision 380   | 6.0<br>Windows XP Professional SP2                   |
| Avaya C363T-PWR Converged Stackable Switches  | 4.5.14   |
| Avaya 4610SW IP Telephones  | 2.7 (H.323)  |
| Esker Host Emulation on<br>Dell Latitude D600   | 2.01<br>Windows XP Professional SP2                  |

### 3. Configure Avaya Communication Manager

This section provides the procedures for configuring Avaya Communication Manager, which includes the following:

- Verify Avaya Communication Manager License
- Administer system parameters features
- Obtain C-LAN information
- Administer IP network region
- Administer IP codec set
- Administer IP soft phones
- Administer hunt group

#### 3.1. Verify Avaya Communication Manager License

Log into the System Access Terminal (SAT) to verify that the Avaya Communication Manager license has proper permissions for features illustrated in these Application Notes. Use the “display system-parameters customer-options” command, and navigate to **Page 10**. Verify that there are sufficient **IP\_API\_A** licenses. One such license is required for each Avaya IR channel.

```
display system-parameters customer-options                               Page 10 of 11
                                MAXIMUM IP REGISTRATIONS BY PRODUCT ID

Product ID  Rel. Limit      Used
IP_API_A    : 1000        29
IP_API_B    : 0           0
IP_API_C    : 0           0
```

#### 3.2. Administer System Parameters Features

Use the “change system-parameters features” command to enable **7434ND**, which is located on **Page 6**. This parameter allows for the use of “7434ND” as a station type.

```
change system-parameters features                                     Page 6 of 17
                                FEATURE-RELATED SYSTEM PARAMETERS

Public Network Trunks on Conference Call: 5                        Auto Start? y
Conference Parties with Public Network Trunks: 6                  Auto Hold? n
Conference Parties without Public Network Trunks: 6              Attendant Tone? y
Night Service Disconnect Timer (seconds): 180                    Bridging Tone? n
Short Interdigit Timer (seconds): 3                              Conference Tone? n
Unanswered DID Call Timer (seconds):                             Intrusion Tone? n
Line Intercept Tone Timer (seconds): 30                         Mode Code Interface? n
Long Hold Recall Timer (seconds): 0
Reset Shift Timer (seconds): 0
Station Call Transfer Recall Timer (seconds): 0                 Recall from VDN? n
DID Busy Treatment: tone

Allow AAR/ARS Access from DID/DIOD? y
Allow ANI Restriction on AAR/ARS? n
Use Trunk COR for Outgoing Trunk Disconnect? n
7405ND Numeric Terminal Display? y                               7434ND? y
DISTINCTIVE AUDIBLE ALERTING
Internal: 1 External: 2 Priority: 3
```

### 3.3. Obtain C-LAN Information

Use the “list ip-interface clan” command to display all administered C-LANs. Select a C-LAN from the listing for the Avaya IR channels to use for registration. Note the corresponding **IP-Address** and **Net Rgn** field values for the selected C-LAN. In the compliance testing, the first C-LAN with IP address of “192.45.120.75” and network region of “1” was used.

```
list ip-interface clan
```

| IP INTERFACES |       |       |     |                            |               |                 |             |            |      |
|---------------|-------|-------|-----|----------------------------|---------------|-----------------|-------------|------------|------|
| ON            | Slot  | Code  | Sfx | Node Name/<br>IP-Address   | Subnet Mask   | Gateway Address | Num<br>Srts | Net<br>Rgn | VLAN |
| y             | 01A04 | TN799 | D   | clancrm<br>192.45.120.75   | 255.255.255.0 | 192.45.120.1    | 400         | 1          | n    |
| y             | 01A12 | TN799 | D   | clan-1a12<br>192.45.120.78 | 255.255.255.0 | 192.45.120.1    | 400         | 5          | n    |

### 3.4. Administer IP Network Region

Use the “change ip-network-region n” command, where “n” is the network region number assigned to the selected C-LAN from **Section 3.3**. For the **Codec Set** field, enter an existing codec set to be used for the Avaya IR channels. Retain the default values in the remaining fields.

```
change ip-network-region 1
```

Page 1 of 19

```
IP NETWORK REGION

Region: 1
Location:      Authoritative Domain:
Name:
MEDIA PARAMETERS      Intra-region IP-IP Direct Audio: yes
Codec Set: 1          Inter-region IP-IP Direct Audio: yes
UDP Port Min: 2048    IP Audio Hairpinning? y
UDP Port Max: 65531
DIFFSERV/TOS PARAMETERS      RTCP Reporting Enabled? y
Call Control PHB Value: 34    RTCP MONITOR SERVER PARAMETERS
Audio PHB Value: 46          Use Default Server Parameters? y
Video PHB Value: 26
```

### 3.5. Administer IP Codec Set

Use the “change ip-codec-set n” command, where “n” is the codec set number from **Section 3.4**. Enter “G.711MU” in the **Audio Codec** field. Note that only “G.711MU” and “G.711A” codecs are supported for the Avaya IR channels.

```
change ip-codec-set 1
```

Page 1 of 2

```
IP Codec Set

Codec Set: 1

Audio      Silence      Frames      Packet
Codec      Suppression Per Pkt   Size(ms)
1: G.711MU      n           2          10
2:
```

### 3.6. Administer IP Soft Phones

For each Avaya IR channel, add a corresponding IP soft phone using the “add station n” command, where “n” is an available extension. Enter “7434ND” for **Type**, “IP” for **Port**, and desired values for **Name** and **Security Code**. Enable **Display Module** and **IP SoftPhone**.

|                                 |                                 |             |
|---------------------------------|---------------------------------|-------------|
| add station 79304               |                                 | Page 1 of 6 |
| STATION                         |                                 |             |
| Extension: 79304                | Lock Messages? n                | BCC: 0      |
| <b>Type: 7434ND</b>             | <b>Security Code: 1234</b>      | TN: 1       |
| <b>Port: IP</b>                 | Coverage Path 1:                | COR: 1      |
| <b>Name: Cleo IR channel 51</b> | Coverage Path 2:                | COS: 1      |
|                                 | Hunt-to Station:                |             |
| STATION OPTIONS                 |                                 |             |
| Loss Group: 2                   | Time of Day Lock Table:         |             |
| Data Module? n                  | Personalized Ringing Pattern: 1 |             |
| <b>Display Module? y</b>        | Message Lamp Ext: 79304         |             |
| Display Language: english       | Coverage Module? n              |             |
| Survivable COR: internal        | Media Complex Ext:              |             |
| Survivable Trunk Dest? y        | <b>IP SoftPhone? Y</b>          |             |

Navigate to **Page 2**, and set **Multimedia Mode** to “enhanced”.

|                                  |  |             |
|----------------------------------|--|-------------|
| add station 79304                |  | Page 2 of 6 |
| STATION                          |  |             |
| FEATURE OPTIONS                  |  |             |
| LWC Reception: spe               | Auto Select Any Idle Appearance? n     |             |
| LWC Activation? y                | Coverage Msg Retrieval? y              |             |
| LWC Log External Calls? n        | Auto Answer: none                      |             |
| CDR Privacy? n                   | Data Restriction? n                    |             |
| Redirect Notification? y         | Idle Appearance Preference? n          |             |
| Per Button Ring Control? n       | Bridged Idle Line Preference? n        |             |
| Bridged Call Alerting? n         | Restrict Last Appearance? y            |             |
| Active Station Ringing: single   |  |             |
| H.320 Conversion? n              | Per Station CPN - Send Calling Number? |             |
| Service Link Mode: as-needed     |  |             |
| <b>Multimedia Mode: enhanced</b> | Audible Message Waiting? N             |             |

Navigate to **Page 6**, and assign a “normal” button to enable sending of Automatic Number Identification (ANI) and Dialed Number Identification Service (DNIS) information to Avaya IR. Repeat this section to add an IP soft phone for each Avaya IR channel associated with the speech application. For the compliance testing, three Avaya IR channels were used to support three simultaneous calls, and therefore three IP soft phones with extensions 79304-79306 were created. For ease of administration, the same security code value was used.

|                            |  |             |
|----------------------------|--|-------------|
| add station 79304          |  | Page 6 of 6 |
| STATION                    |  |             |
| DISPLAY BUTTON ASSIGNMENTS |  |             |
| 1: <b>normal</b>           |  |             |

### 3.7. Administer Hunt Group

Add a hunt group using the “add hunt n” command, where “n” is an available hunt group number. Enter a descriptive **Group Name**, and an available **Group Extension**. The extension of the hunt group will be used as the pilot number for the speech application.

|                            |  |                            |  |
|----------------------------|--|----------------------------|--|
| add hunt-group 333         |  | Page 1 of 60               |  |
| HUNT GROUP                 |  |                            |  |
| Group Number: 333          |  | ACD? n                     |  |
| Group Name: Cleo IR Card 7 |  | Queue? n                   |  |
| Group Extension: 79333     |  | Vector? n                  |  |
| Group Type: ucd-mia        |  | Coverage Path:             |  |
| TN: 1                      |  | Night Service Destination: |  |
| COR: 1                     |  | MM Early Answer? n         |  |
| Security Code:             |  | Local Agent Preference? n  |  |
| ISDN/SIP Caller Display:   |  |                            |  |

Navigate to **Page 3**. In the **GROUP MEMBER ASSIGNMENTS** section, enter the extensions of the IP soft phones from **Section 3.6**.

|                                 |                     |                                      |                     |
|---------------------------------|---------------------|--------------------------------------|---------------------|
| add hunt-group 333              |                     | Page 3 of 60                         |                     |
| HUNT GROUP                      |                     |                                      |                     |
| Group Number: 333               |                     | Group Extension: 79333               |                     |
| Group Type: ucd-mia             |                     |                                      |                     |
| Member Range Allowed: 1 - 1500  |                     | Administered Members (min/max): 0 /0 |                     |
|                                 |                     | Total Administered Members: 0        |                     |
| <b>GROUP MEMBER ASSIGNMENTS</b> |                     |                                      |                     |
| Ext                             | Name(19 characters) | Ext                                  | Name(19 characters) |
| 1: 79304                        |                     | 14:                                  |                     |
| 2: 79305                        |                     | 15:                                  |                     |
| 3: 79306                        |                     | 16:                                  |                     |
| 4:                              |                     | 17:                                  |                     |



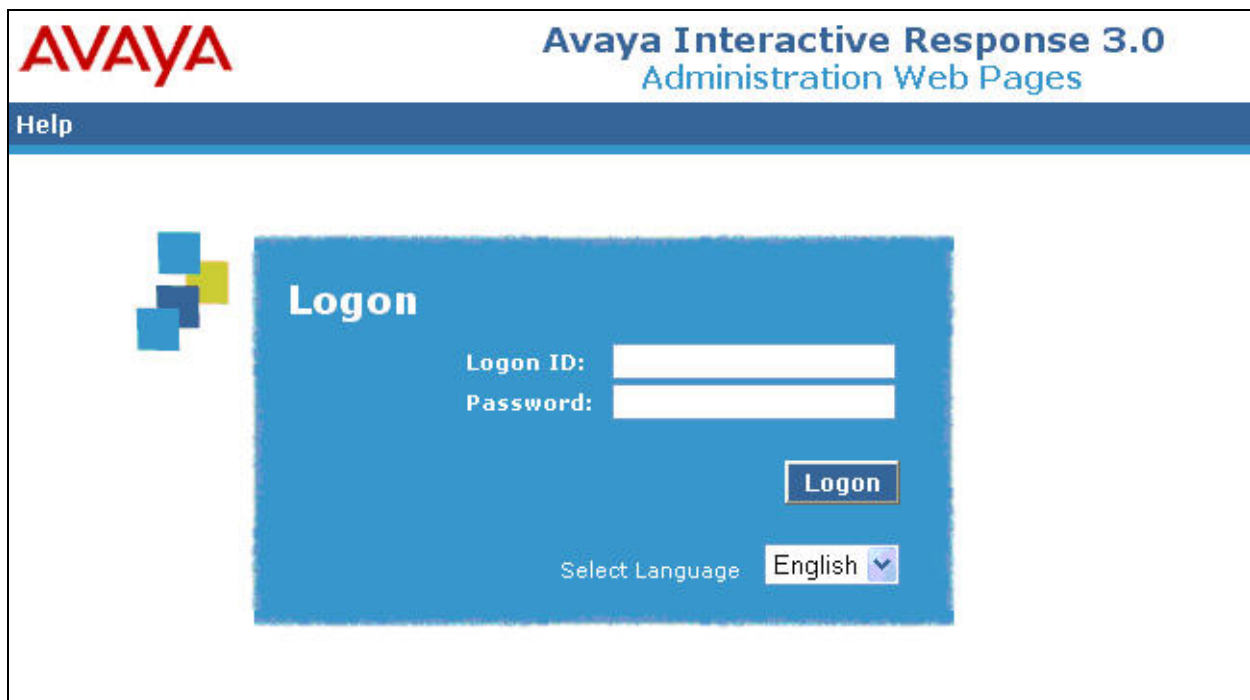
## 4. Configure Avaya Interactive Response

This section assumes that the basic configuration of Avaya IR is already in place, which includes connectivity to the ASR and TTS server components. The section provides the procedures for configuring Avaya IR in the following areas:

- Verify IR license
- Administer voice over IP
- Restart voice system
- Obtain channel numbers
- Administer phone number
- Administer equipment state

### 4.1. Verify IR License

Access the Avaya IR administration web-based interface by using the URL “http://ip-address” in an Internet browser window, where “ip-address” is the IP address of Avaya IR. The **Logon** screen is displayed as shown below. Log on with appropriate credentials.



The screenshot displays the Avaya Interactive Response 3.0 Administration Web Pages. At the top left is the AVAYA logo in red. To its right, the text "Avaya Interactive Response 3.0" is in blue, with "Administration Web Pages" in a smaller blue font below it. A dark blue horizontal bar contains the word "Help" in white. The main content area is white and features a blue rectangular login box. To the left of this box is a small graphic of four squares (blue, blue, blue, yellow) arranged in a cluster. The blue box has the word "Logon" in white at the top left. Below it are two white input fields: "Logon ID:" and "Password:". To the right of the "Password:" field is a blue "Logon" button. At the bottom of the blue box, it says "Select Language" followed by a dropdown menu currently showing "English".

The **Backup Information** screen is displayed next, as shown below.

**AVAYA** Avaya Interactive Response 3.0  
Administration Web Pages

Help Log out

**ASG Security Administration**  
ASG Security Login Administration  
**Backup/Restore**  
Backup  
Backup Scheduling  
Delete Backup Files  
Backup History  
Default Backup Parameters  
Restore  
**Configuration Management**  
Alarm Administration  
Alarms  
Dialout Configuration  
CDH Scheduling  
Feature Licensing  
License Configurations  
JDBC Administration  
Message Administration  
VXML Log Administration  
SNMP Configuration  
**System Control**  
Renumber Voice Channels  
Report Voice System Status  
Start Voice System

**Backup Information**

\*\*\*\*\* NOTICE \*\*\*\*\*

No complete backup has been done.  
No partial backup has been done.

**System Status**

Normal mode

Select **Configuration Management > Feature Licensing** from the left pane, to display the feature license information in the right pane. Verify that there are sufficient **VALUE\_IR\_PORTS** licenses. One such license is required for each Avaya IR channel. In the compliance testing, each Avaya IR channel also required a **VALUE\_IR\_ASR\_PORTS** and a **VALUE\_IR\_TTS\_PORTS** license for ASR and TTS capabilities.

**AVAYA** Avaya Interactive Response 3.0  
Administration Web Pages

Help Log out

**ASG Security Administration**  
ASG Security Login Administration  
**Backup/Restore**  
Backup  
Backup Scheduling  
Delete Backup Files  
Backup History  
Default Backup Parameters  
Restore  
**Configuration Management**  
Alarm Administration  
Alarms  
Dialout Configuration  
CDH Scheduling  
**Feature Licensing**  
License Configurations

| Feature Type       | Primary Tot | Primary Free | Secondary Tot | Secondary Free | Feature Name                       |
|--------------------|-------------|--------------|---------------|----------------|------------------------------------|
| VALUE_IR_ASR_PORTS | 500         | 495          | *S            |                | Advanced Speech Recognition        |
| VALUE_IR_TTS_PORTS | 500         | 495          | *S            |                | Text To Speech (Speech Synthesis)  |
| VALUE_IR_PORTS     | 500         | 436          | *S            |                | Digital and Voice Over IP          |
| VALUE_IR_SNMP      | 500         | 499          | *S            |                | Simple Network Management Protocol |

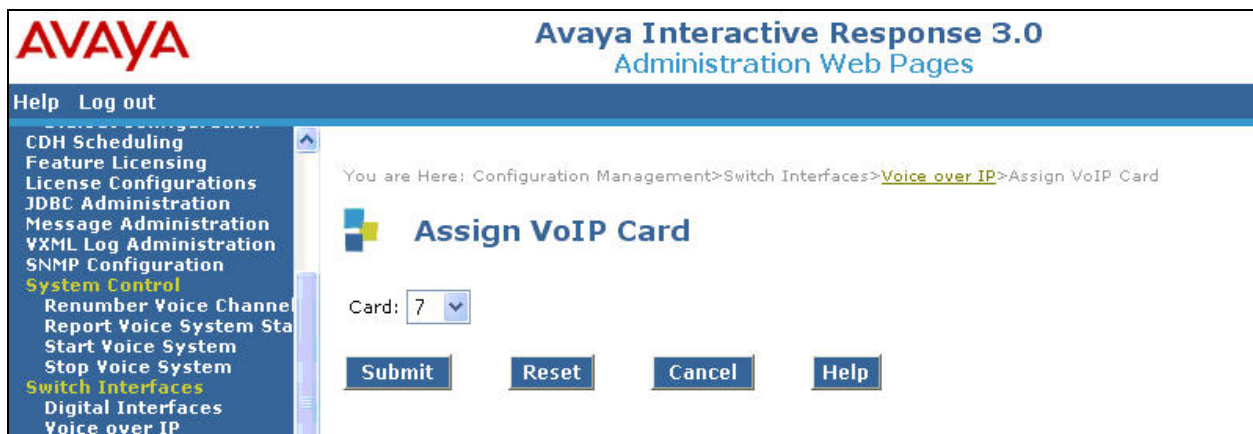
\*S: Secondary WebLM server is not configured

## 4.2. Administer Voice Over IP

Select **Configuration Management > Switch Interfaces > Voice over IP** from the left pane. The **Voice over IP** screen is displayed in the right pane. Select **Assign Card**.



The **Assign VoIP Card** screen is displayed next. In the **Card** field, select an available card number, in this case "7". Click **Submit**.



The **Assign VoIP Card: 7** screen is displayed. Enter the following values for the specified fields, and retain the default values for the remaining fields. Note that this change requires a manual restart of the voice system, which will be performed later. Click **Submit**.

- **Card Name:** A unique name for this VoIP card.
- **Card IP Address:** The IP address of Avaya IR, in this case “192.45.120.51”.
- **Gatekeeper IP Address:** The IP address of the selected C-LAN from **Section 3.3**.
- **No of Ports:** The number of IR channels administered in **Section 3.6**.
- **Avaya CM Version:** The closest software version of Avaya Communication Manager.

**AVAYA** Avaya Interactive Response 3.0  
Administration Web Pages

Help Log out

You are Here: Configuration Management>Switch Interfaces>Voice over IP>Assign VoIP Card

### Assign VoIP Card: 7

Card Name:

Card Enabled?:

Card IP Address:

Gatekeeper IP Address:

H.323 Gatekeeper Port:

Backup Gatekeeper IP:

Low RTP Port:

High RTP Port:

RTP Packet Size:

RTCP Monitor Enabled?:

RTCP Monitor IP Address:

RTCP Monitor Port:

Station Authentication Enabled?:

Avaya CM Name:

No of Ports:

Avaya CM Version:

Media Encryption:

### 4.3. Restart Voice System

Select **Configuration Management > System Control > Stop Voice System** from the left pane, to display the **Stop Voice System** screen. Click **Submit** to stop the voice system.

The screenshot shows the Avaya Interactive Response 3.0 Administration Web Pages. The left navigation pane lists various configuration options, with 'Stop Voice System' highlighted under the 'System Control' section. The main content area displays the 'Stop Voice System' screen, which includes a breadcrumb trail 'You are Here: Configuration Management>System Control>Stop Voice System', a 'Wait Time in Seconds' input field set to 180, and three buttons: 'Submit', 'Reset', and 'Help'.

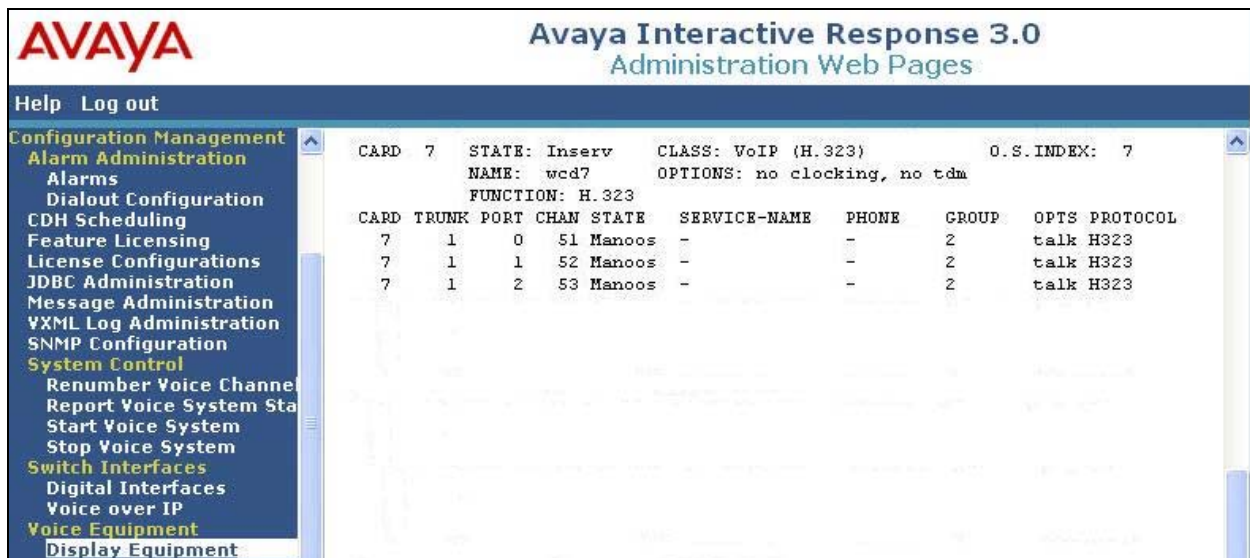
Next, restart the voice system by selecting **Configuration Management > System Control > Start Voice System** from the left pane. In the **Start Voice System** screen, click **Submit** to start the voice system.

The screenshot shows the Avaya Interactive Response 3.0 Administration Web Pages. The left navigation pane lists various configuration options, with 'Start Voice System' highlighted under the 'System Control' section. The main content area displays the 'Start Voice System' screen, which includes a breadcrumb trail 'You are Here: Configuration Management>System Control>Start Voice System', a message 'Click on Submit to start the voice system.', and two buttons: 'Submit' and 'Help'.



## 4.4. Obtain Channel Numbers

Select **Configuration Management > Voice Equipment > Display Equipment** from the left pane to display the equipment assignments. Scroll down the right pane as necessary to display the card number administered in **Section 4.2**. Make a note of the channel numbers in the **CHAN** field that are automatically assigned to the card by Avaya IR. In the compliance testing, channels 51-53 were assigned to card 7.



**AVAYA** Avaya Interactive Response 3.0  
Administration Web Pages

Help Log out

**Configuration Management**  
Alarm Administration  
Alarms  
Dialout Configuration  
CDH Scheduling  
Feature Licensing  
License Configurations  
JDBC Administration  
Message Administration  
VXML Log Administration  
SNMP Configuration  
**System Control**  
Renumber Voice Channel  
Report Voice System Sta  
Start Voice System  
Stop Voice System  
**Switch Interfaces**  
Digital Interfaces  
Voice over IP  
**Voice Equipment**  
Display Equipment

CARD 7 STATE: Inserv CLASS: VoIP (H.323) O.S. INDEX: 7  
NAME: wcd7 OPTIONS: no clocking, no tdm  
FUNCTION: H.323

| CARD | TRUNK | PORT | CHAN | STATE  | SERVICE-NAME | PHONE | GROUP | OPTS | PROTOCOL |
|------|-------|------|------|--------|--------------|-------|-------|------|----------|
| 7    | 1     | 0    | 51   | Manoos | -            | -     | 2     | talk | H323     |
| 7    | 1     | 1    | 52   | Manoos | -            | -     | 2     | talk | H323     |
| 7    | 1     | 2    | 53   | Manoos | -            | -     | 2     | talk | H323     |

## 4.5. Administer Phone Number

Select **Configuration Management > Voice Equipment > Phone Number** from the left pane, to display the **Phone Number – Channel Assignment** screen. Select **Assign**.

The screenshot shows the Avaya Interactive Response 3.0 Administration Web Pages. The left navigation pane is expanded to 'Phone Number' under 'Voice Equipment'. The main content area displays the 'Phone Number - Channel Assignment' screen. The breadcrumb trail is 'You are Here: Configuration Management>Voice Equipment>Phone Number'. The screen has a title 'Phone Number - Channel Assignment' and two links: 'Assign' and 'Unassign'. A 'Help' button is also present.

The **Assign Phone Number to a Channel** screen is displayed next. For the **Phone Number** fields, enter the range of extensions for the IP soft phones from **Section 3.6**. For the **Channel Number** fields, enter the range of channels from **Section 4.4**. For the **VoIP H.323 MultiVantage Station Password** fields, enter the range of security codes for the IP soft phones from **Section 3.6**. Click **Submit**.

The screenshot shows the Avaya Interactive Response 3.0 Administration Web Pages. The left navigation pane is expanded to 'Assign Phone Number to a Channel' under 'Voice Equipment'. The main content area displays the 'Assign Phone Number to a Channel' screen. The breadcrumb trail is 'You are Here: Configuration Management>Voice Equipment>Phone Number>Assign'. The screen has a title 'Assign Phone Number to a Channel' and three input fields: 'Phone Number' (79304 to 79306), 'Channel Number' (51 to 53), and 'VoIP H.323 MultiVantage Station Password' (1234 to ). There are four buttons: 'Submit', 'Reset', 'Cancel', and 'Help'.

## 4.6. Administer Equipment State

Select **Configuration Management > Voice Equipment > Equipment State** from the left pane, to display the **Change State of Voice Equipment** screen. For the **Equipment Number** field, enter the card number from **Section 4.2**. Retain the default values in the remaining fields, and click **Submit** to place the new card in service.

The screenshot displays the Avaya Interactive Response 3.0 Administration Web Pages. The top header features the Avaya logo and the title 'Avaya Interactive Response 3.0 Administration Web Pages'. Below the header is a navigation bar with 'Help' and 'Log out' links. A left-hand navigation pane lists various configuration and system control options, including 'Configuration Management', 'Alarm Administration', 'System Control', 'Switch Interfaces', and 'Voice Equipment'. The 'Voice Equipment' section is expanded, showing 'Display Equipment', 'Equipment State', 'Channels to Groups', 'Phone Number', and 'Display Passwords'. The main content area shows the 'Change State of Voice Equipment' screen. It includes a breadcrumb trail: 'You are Here: Configuration Management>Voice Equipment>Equipment State'. The form contains four fields: 'New State' (dropdown menu set to 'inserv'), 'Equipment' (dropdown menu set to 'card'), 'Equipment Number' (text input field containing '7'), and 'Change Immediately?' (dropdown menu set to 'YES'). At the bottom of the form are three buttons: 'Submit', 'Reset', and 'Help'.



## 5. Configure Cleo Legacy Host Interface

This section provides the procedures for installing and configuring Cleo Legacy Host Interface on Avaya IR. The procedures include the following areas:

- Administer hosts file
- Stop voice system and host interface
- Install cleotn package
- Install CLEOTDIP3 package
- Install license
- Configure host sessions
- Restart Avaya IR

The installation and configuration of Cleo Legacy Host Interface is performed via the Command Line Interface (CLI) of Avaya IR. The output from the Avaya IR CLI interface has been trimmed down in the subsequent sections in order to focus on the key settings for the configuration. Values highlighted in bold represent values entered by the system administrator.

### 5.1. Administer Hosts File

Open a Telnet session to Avaya IR, and log in with administrator credentials. Use the “vi /etc/hosts” command to edit the /etc/hosts file.

```
devconnectivr# vi /etc/hosts
```

In the /etc/hosts file that is displayed, add an entry that contains the IP address and name of the host mainframe, as shown below. Note that the IP address and name for the host may vary, and in this case “192.45.20.123” is the IP address of the Esker Host Emulator server. In the case that the network configuration has the TN3270 server function outside of the host mainframe, then use the IP address of the TN3270 server. For network configurations that include a DNS server, the host mainframe name and IP address mapping may be defined on the DNS server instead.

```
#
# Internet host table
#
127.0.0.1      localhost
192.45.120.51  devconnect    loghost
192.45.20.123  ESKER
```

## 5.2. Stop Voice System and Host Interface

Use the “stop\_vs” command to stop the voice system.

```
devconnectivr# stop_vs

The Voice System is now stopping
.
.
The Voice System has completely stopped, use the
"Start Voice System" choice from the System Control menu
To restart the Voice System
```

Use the “stop\_hi” command to stop the host interface. If there is no previous version of Cleo Legacy Host Interface running on the system, then the “not found” message will be displayed.

```
devconnectivr# stop_hi

ksh: stop_hi: not found
```

## 5.3. Install Cleotn Package

Use the “pkgadd -d <path>” command to install the “cleotn” package, where <path> is the path to the software. If the Cleo software is on a CD in the CD Rom drive, then use the path “/dev/cdrom/cdrom0/cleotn”. Press the <ENTER> key at the first prompt, and enter “y” in the two subsequent prompts, as shown below.

```
devconnectivr# pkgadd -d /export/cleo/cleotn

The following packages are available:
 1  cleotn      Cleo TN3270(E) client package
                   (sparc) 6.0.7.17.2004.09.09

Select package(s) you wish to process (or 'all' to process
all packages). (default: all) [?,??,q]: <ENTER>
.
.
Do you want to install these as setuid/setgid files [y,n,?,q] y

This package contains scripts which will be executed with super-user permission during
the process of installing this package.

Do you want to continue with the installation of <cleotn> [y,n,?] y

Installing Cleo TN3270(E) client package as <cleotn>

## Executing preinstall script.
## Installing part 1 of 1.
.
.
Installation of <cleotn> was successful.
```

## 5.4. Install CLEOTDIP3 Package

Issue the “`pkgadd -d <path>`” command to install the “CLEOTDIP3” package, where `<path>` is the path to the software. If the Cleo software is on a CD in the CD Rom drive, then use the path “`/dev/cdrom/cdrom0/CLEOTDIP3`”. Press the **<ENTER>** key at the first prompt, and enter “y” in the two subsequent prompts, as shown below.

```
devconnectivr# pkgadd -d /export/cleo/CLEOTDIP3

The following packages are available:
  1  CLEOTDIP3      cleo_CLEOTDIP3 V4.3 for Avaya IR 2.0/3.0 Packages for Solaris 8&10
                        (sparc) 6.0.7.17.2004.09.09

Select package(s) you wish to process (or 'all' to process
all packages). (default: all) [?,??,q]: <ENTER>

Processing package instance <CLEOTDIP3> from >/export/cleo/CLEOTDIP3>
.
.
Do you want to install these as setuid/setgid files [y,n,?,q] y

This package contains scripts which will be executed with super-user permission during
the process of installing this package.

Do you want to continue with the installation of <CLEOTDIP3> [y,n,?] y

Installing cleo_CLEOTDIP3 V4.3 for Avaya IR 2.0/3.0 Packages for Solaris 8&10 as
<CLEOTDIP3>

## Executing preinstall script.
.
.
Installation of <CLEOTDIP3> was successful.
```

## 5.5. Install License

Enter the “/opt/tn3270/bin/tnaddlic” command to add the license. Provide the serial number for the Cleo Legacy Host Interface software and the path to the license file, as shown below. Enter “y” in the subsequent prompt to continue with the license installation.

```
devconnectivr# /opt/tn3270/bin/tnaddlic

Please enter the Cleo TN3270/TN5250 Serial Number
xyz

Enter the full path name of the license file to install:
/export/cleo/devconnect_license.conf

Contents of your license file:

*****
License type:      Permanent
Expiry date:      <none>
Shelf life:       <none>
Box name:         <none>
Total sessions:   254
*****

Do you wish to continue? (y/n): y

The license is now installed in /etc/opt/tn3270.
Starting the TN3270/TN5250 License Daemon
```

## 5.6. Configure Host Sessions

Issue the command “tnconfig -h <name>:<port> -n <session>” to configure the host sessions, where <name> is the host name from **Section 5.1**, <port> is the host port to connect to with “230” being the default port, and <session> is the number of host sessions. Note that the number of host sessions should match the number of Avaya IR channels.

```
devconnectivr# tnconfig -h ESKER:230 -n 3

A new /vs/data/hostsvc was created
.
.
Changed SESSIONS_TO_START to 3
```

## 5.7. Restart Avaya IR

Issue the command “shutdown -g0 -y -i6” to restart Avaya IR.

```
devconnectivr# shutdown -g0 -y -i6



Shutdown started. Thu Dec 13 10:36:20 EST 2007
.
.
Log off now or risk your files being damaged
```

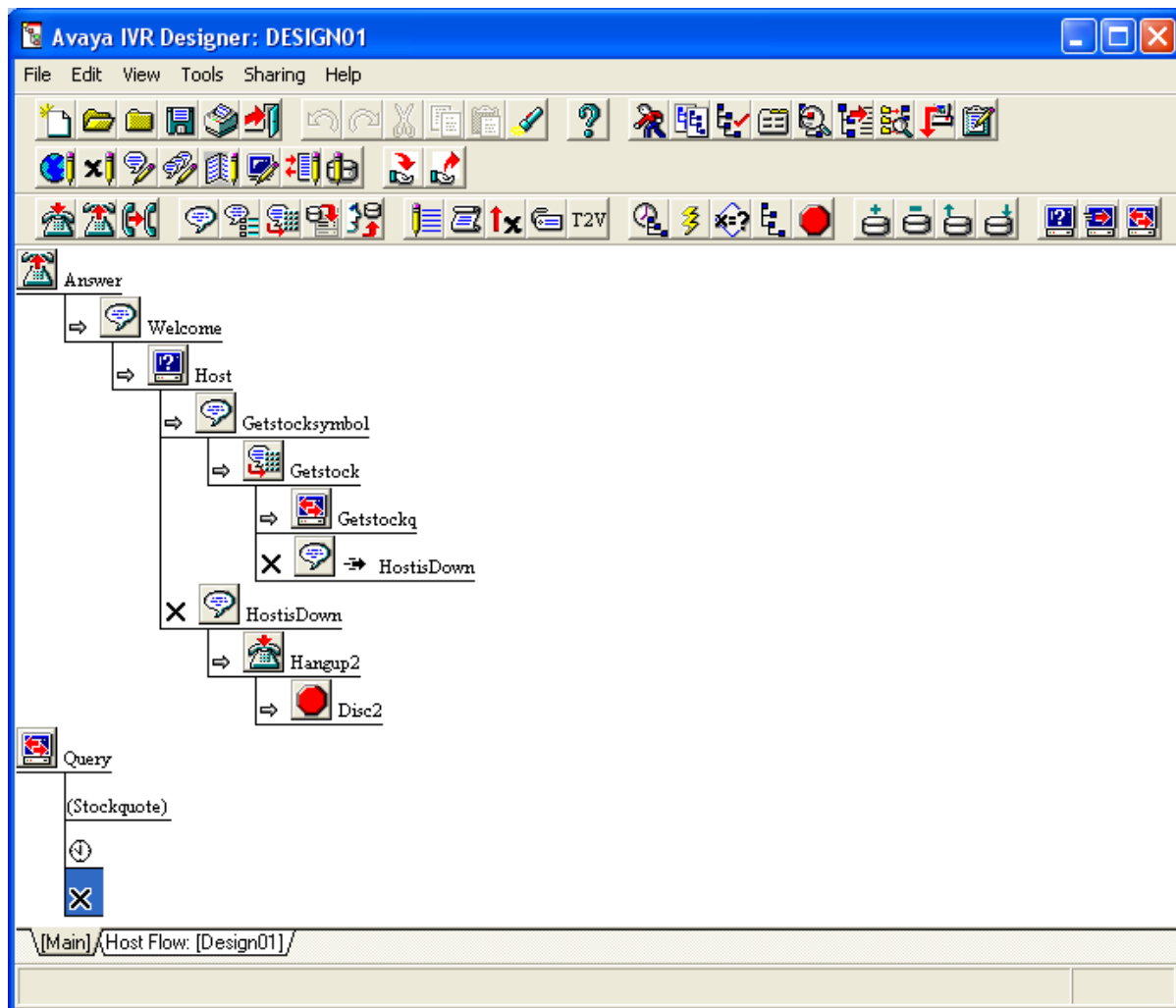
## 6. Configure Avaya IVR Designer

This section provides the procedures for deploying the TAS speech application script from Avaya IVR Designer to Avaya IR, and includes the following sections:

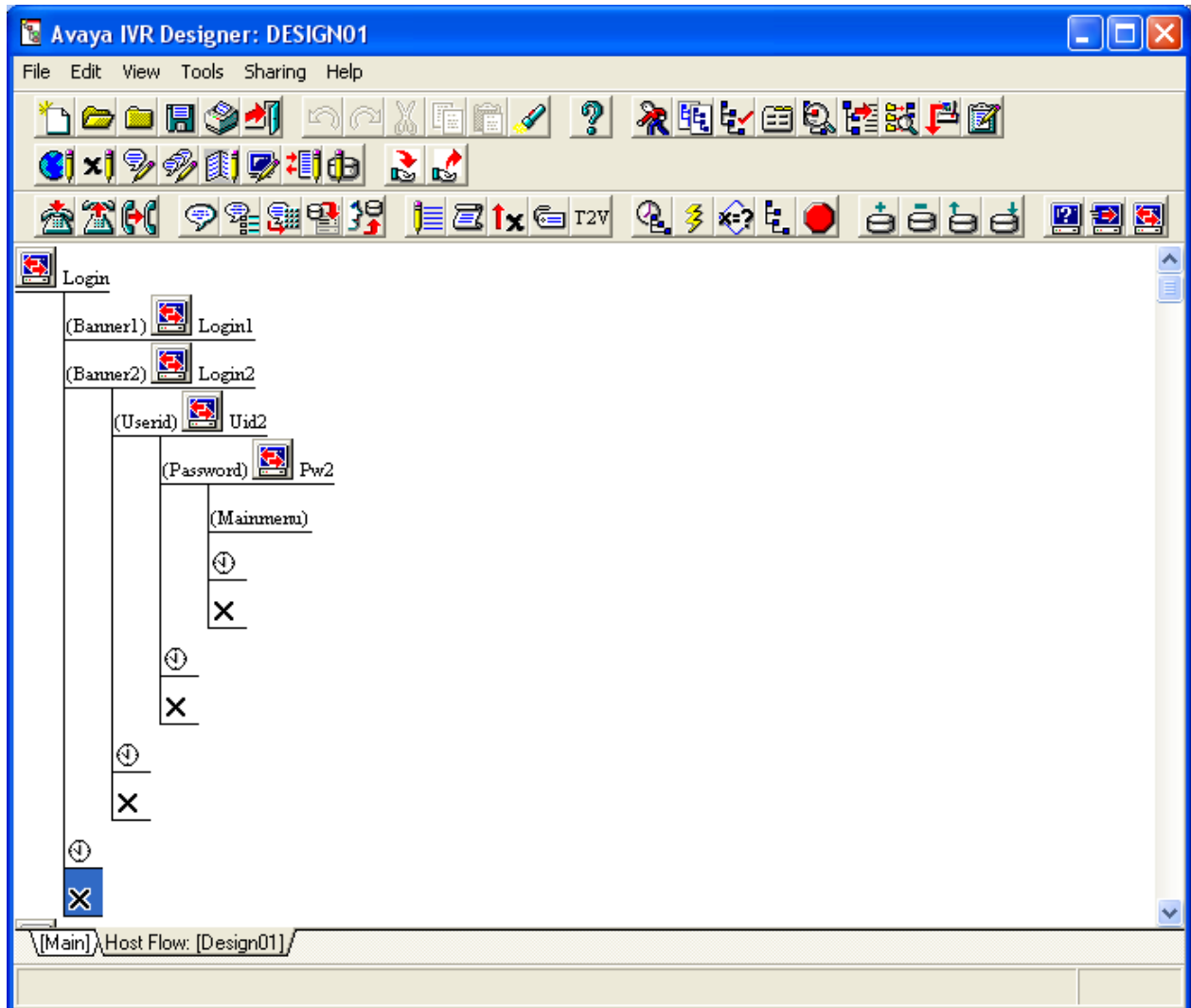
- TAS speech application script
- Administer code generation
- Administer application transfer
- Administer application install

### 6.1. TAS Speech Application Script

The creation of the TAS speech application script using Avaya IVR Designer is outside the scope of these Application Notes and will not be described. Below is a screen shot of the script main flow from the TAS speech application script used for the compliance testing. Note the use of the  **Host Connection** and  **Host Send/Receive** nodes.

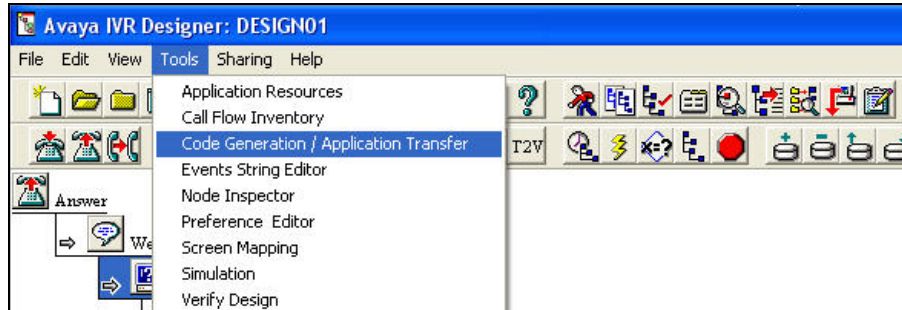


Below is a screen shot of the script host flow from the TAS speech application script used for the compliance testing. Note the use of the  **Host Send/Receive** nodes.

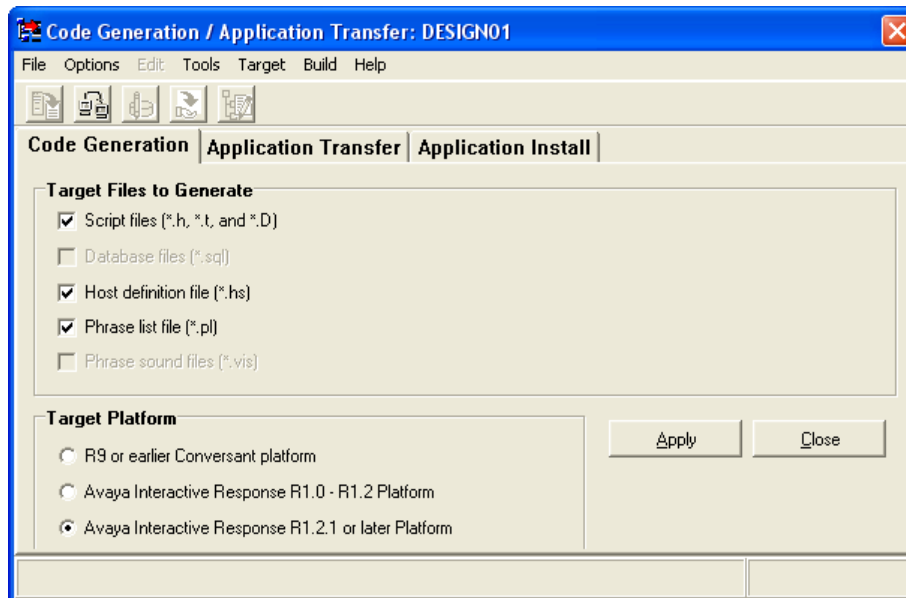


## 6.2. Administer Code Generation

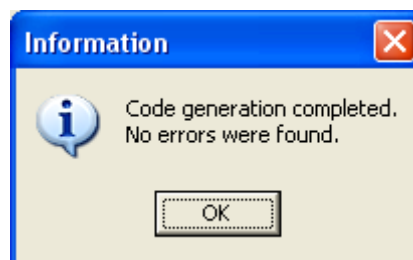
After the TAS speech application script has been created, select **Tools > Code Generation / Application Transfer** from the top menu.



The **Code Generation / Application Transfer: DESIGN01** screen is displayed, where “DESIGN01” is the name of the speech project. Select the **Code Generation** tab, and select the proper target files and target platform as shown below. Click **Apply** to generate the application code files that can be run on Avaya IR.



The **Information** pop up box is displayed at the completion of code generation. Click **OK**.

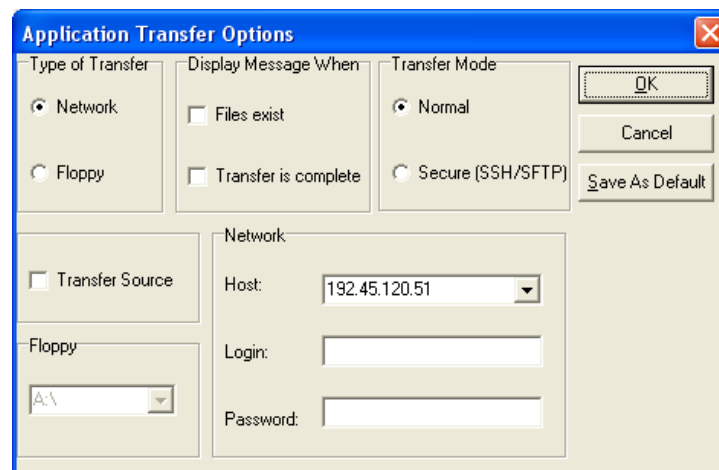


### 6.3. Administer Application Transfer

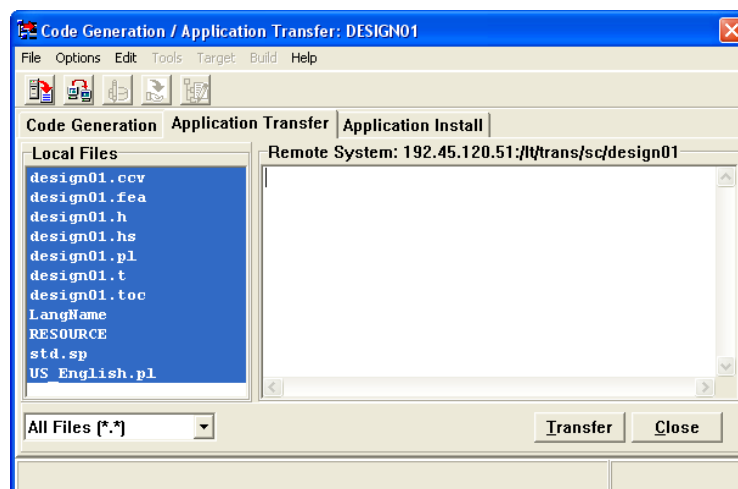
From the **Code Generation / Application Transfer: DESIGN01** screen, select the **Application Transfer** tab, followed by **Options > Application** from the top menu to set the transfer options.



The **Application Transfer Options** screen is displayed next. For the **Host** field, enter the IP address of Avaya IR. For the **Login** and **Password** fields, enter the Avaya IR administrator login credentials. Click **OK**.



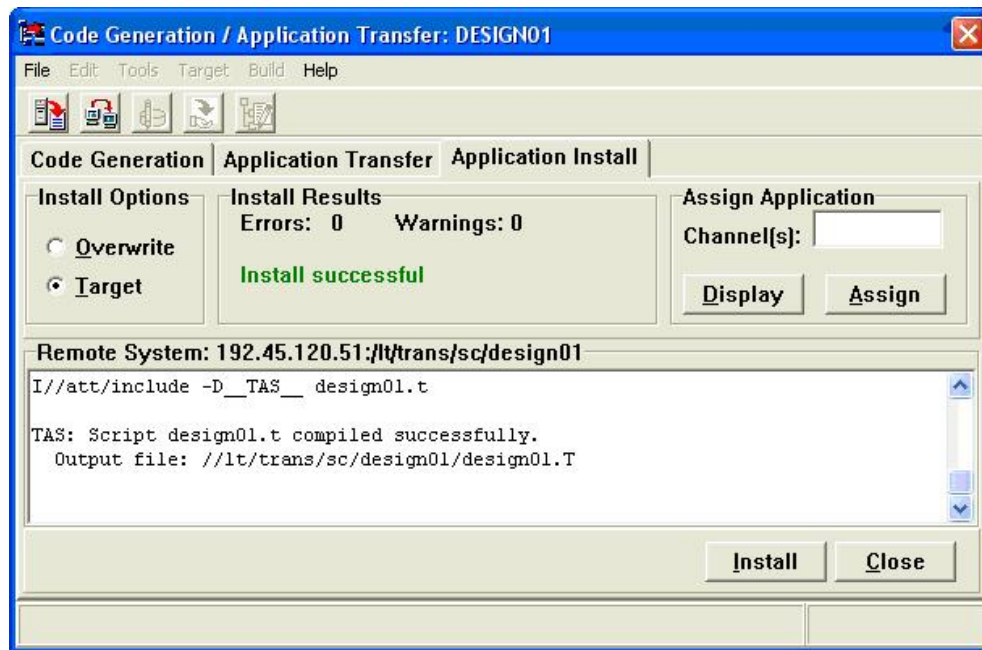
The **Code Generation / Application Transfer** screen will be displayed again, with the **Remote System** field showing Avaya IR as the target system. Click **Edit > Select All** from the top menu to select all files in the **Local Files** pane, and click **Transfer** to transfer the application code files to Avaya IR.



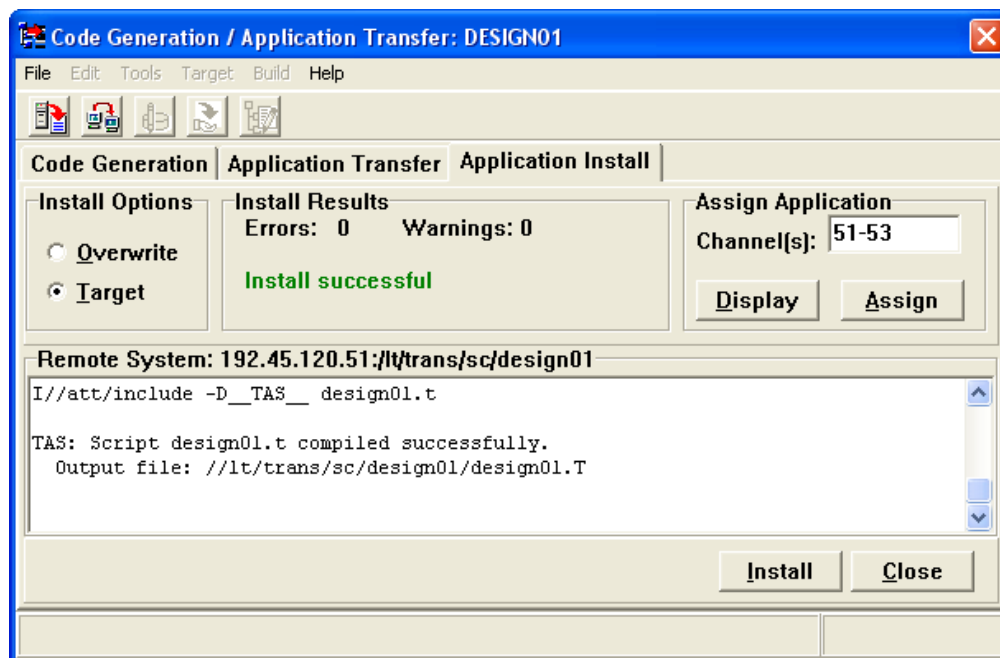


## 6.4. Administer Application Install

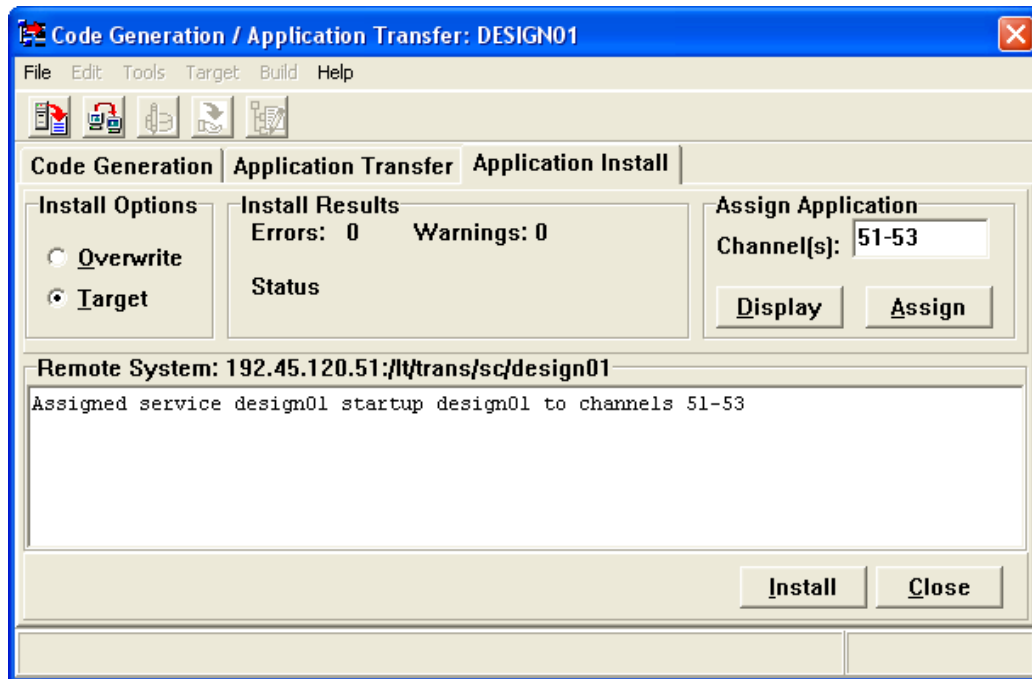
From the **Code Generation / Application Transfer: DESIGN01** screen, select the **Application Install** tab. Click **Install** toward the bottom of the screen to install the application code files on Avaya IR. The screen is updated with the results of the installation, as shown below, indicating successful compilation of the TAS application code files by the TAS compiler on Avaya IR.



In the **Assign Application** section, enter the range of the application channels from **Section 4.4** into the **Channel(s)** field. Click **Assign** to assign the application to these channels.



The screen is updated with the assignment results in the lower pane.



## 7. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing. The feature testing focused on verifying Cleo Legacy Host Interface with regard to the following:

- Support of host related CLI commands, such as “start\_hi” to start the host interface.
- Support of different terminal emulators mapping to different key sequences.
- Support of host related nodes in Avaya IVR Designer, with successful creation and execution of a TAS speech application script that sends and receives data from the host emulator.

The serviceability testing focused on verifying the ability of Cleo Legacy Host Interface to recover from adverse conditions, such as disconnecting the Ethernet cable from the host emulator.

### 7.1. General Test Approach

The feature test cases were performed manually. The CLI and terminal emulator tests were executed from the Avaya IR CLI interface. A TAS speech application script was built using Avaya IVR Designer and deployed to Avaya IR. Calls to the speech application were made manually, with manual input of stock identification numbers, and manual verification of stock price quotes that were retrieved from the Esker Host Emulation server and played back to the caller.

The serviceability test cases were performed manually by disconnecting and reconnecting the LAN cables.

### 7.2. Test Results

All feature test cases were executed and passed.

There was one observation from the serviceability testing. In order to successfully handle host connection drops, the application script needs to detect and recover from possible drops in all host communication nodes.

## 8. Verification Steps

This section provides the tests that can be performed to verify proper configuration of Avaya Communication Manager, Avaya Interactive Response, and Cleo Legacy Host Interface.

### 8.1. Verify Avaya Communication Manager

Verify the registration status of the Avaya IR channels by using the “list registered-ip-stations ext x count y” command, where “x” is the beginning extension number of the first Avaya IR channel, and “y” is the total number of channels. Verify that all extensions from **Section 3.6** are displayed, and hence successfully registered with Avaya Communication Manager.

```
list registered-ip-stations ext 79304 count 3
```

#### REGISTERED IP STATIONS

| Station | Ext/ | Set    | Product  | Prod  | Station       | Net | Gatekeeper    | TCP |
|---------|------|--------|----------|-------|---------------|-----|---------------|-----|
| Orig    | Port | Type   | ID       | Rel   | IP Address    | Rgn | IP Address    | Skt |
| 79304   |      | 7434ND | IP_API_A | 1.300 | 192.45.120.51 | 1   | 192.45.120.75 | y   |
| 79305   |      | 7434ND | IP_API_A | 1.300 | 192.45.120.51 | 1   | 192.45.120.75 | y   |
| 79306   |      | 7434ND | IP_API_A | 1.300 | 192.45.120.51 | 1   | 192.45.120.75 | y   |

### 8.2. Verify Avaya Interactive Response

From the Avaya IR administration web pages, verify the status of the VoIP card by selecting **Configuration Management > Voice Equipment > Display Equipment** from the left pane. Scroll down the right pane as necessary to display the relevant card number, in this case “7”. Verify that the **STATE** is “Inserv”, and that the **SERVICE-NAME** displays the name of the speech application for all channels.

**AVAYA** Avaya Interactive Response 3.0 Administration Web Pages

Help Log out

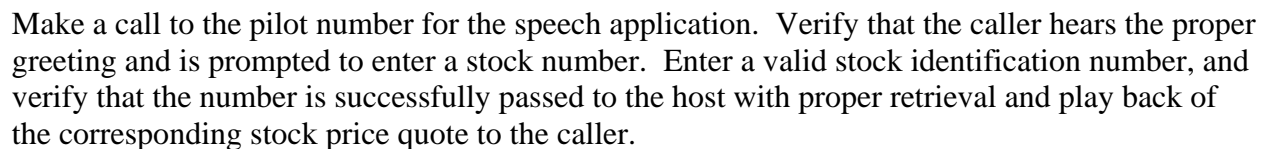
**Configuration Management**

- Alarm Administration
- Alarms
- Dialout Configuration
- CDH Scheduling
- Feature Licensing
- License Configurations
- JDBC Administration
- Message Administration
- VXML Log Administration
- SNMP Configuration
- System Control**
  - Renumber Voice Channel
  - Report Voice System Sta
  - Start Voice System
  - Stop Voice System
- Switch Interfaces**
  - Digital Interfaces
  - Voice over IP
- Voice Equipment**
  - Display Equipment**
  - Equipment State

CARD 7 STATE: Inserv CLASS: VoIP (H.323) O.S. INDEX: 7  
NAME: wcd7 OPTIONS: no clocking, no tdm  
FUNCTION: H.323

| CARD | TRUNK | PORT | CHAN | STATE  | SERVICE-NAME | PHONE  | GROUP | OPTS | PROTOCOL |
|------|-------|------|------|--------|--------------|--------|-------|------|----------|
| 7    | 1     | 0    | 51   | Inserv | design01     | 79304* | 2     | talk | H323     |
| 7    | 1     | 1    | 52   | Inserv | design01     | 79305* | 2     | talk | H323     |
| 7    | 1     | 2    | 53   | Inserv | design01     | 79306* | 2     | talk | H323     |

From the Avaya IR CLI interface, enter the command “cleo\_te n”, where “n” is a valid host session number. In this case, “cleo\_te 0” was entered to activate the TN3270 terminal emulation for host session “0”. Verify that the initial host screen is displayed, indicating a successful connection with the host. Below is the initial host screen from the Esker Host Emulation server. Note that the initial screen will vary, and that the host session numbers start with “0”.



## 9. Support

Technical support on Cleo Legacy Host Interface can be obtained through the following:

- **Phone:** (866) 444-2536
- **Web:** <http://www.cleo.com>
- **Email:** supportEN@cleo.com

## 10. Conclusion

These Application Notes describe the configuration steps required for Cleo Legacy Host Interface 4.3 to interoperate with Avaya Interactive Response 3.0. All feature and serviceability test cases were completed.

## 11. Additional References

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

- *Administrator Guide for Avaya Communication Manager*, Document 03-300509, Issue 3.1, February 2007, available at <http://support.avaya.com>.
- *Administering IR*, September 2007, available at <http://support.avaya.com>.
- *Avaya IVR Designer Help for TAS applications R6.0*, September 2007, available at <http://support.avaya.com>.
- *Cleo Host Interface for TCP/IP V4.3 TN3270 and TN5250 Quick Start Guide*, September 2007, available from <http://www.cleo.com>.

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