Avaya Solution & Interoperability Test Lab

Application Notes for Configuring CrystalVoice Click-To-Talk with Avaya Communication Manager - Issue 1.0

Abstract

These Application Notes describe the steps for configuring CrystalVoice Click-To-Talk to communicate with Avaya Communication Manager. The CrystalVoice Click-To-Talk solution consists of the Click-To-Talk client, the CrystalVoice ISS/IVX Server and a Web Server. The CrystalVoice Click-To-Talk client component is accessed through a Web Browser. Emphasis of the testing was placed on verifying good voice quality from Click-To-Talk and its ability to operate with Avaya Communication Manager. Information in these Application Notes has been obtained through compliance testing and additional technical discussions. Testing was conducted via the Developer*Connection* Program at the Avaya Solution and Interoperability Test Lab.

1. Introduction

With the ease of use and general availability of the Web browser and multimedia capable PC, CrystalVoice offers a unique solution to access telephone support and the telephone system in general. The CrystalVoice Click-To-Talk solution consists of two parts, a client PC with web browser and multimedia capability and a CrystalVoice ISS/IVX Server. The Click-To-Talk client is used to initiate calls to the CrystalVoice ISS/IVX Server. The server components of the CrystalVoice Click-To-Talk solution reside on the CrystalVoice ISS/IVX Server, which is located in the core network. The CrystalVoice Click-To-Talk client communicates with the CrystalVoice ISS/IVX Server, and the CrystalVoice ISS/IVX Server communicates with Avaya Communication Manager to setup a call. Click-To-Talk client is only capable of making out bound calls.

To access the system, a user clicks on an extension or icon (appearance depends on the Web Master's programming of Web pages). The first time a user clicks on a Click-To-Talk link on a web page, the Click-To-Talk client will be installed on the user's PC automatically. On subsequent Click-To-Talk calls, the web page will launch the Click-To-Talk client that is installed on the user's PC. Calls are established from the Click-To-Talk client through the CrystalVoice ISS/IVX Server to Avaya Communication Manager.

1.1. Configuration

Figure 1 illustrates the configuration used in these Application Notes. The CrystalVoice ISS/IVX Server has a dual Ethernet connection. One Ethernet port is connected into the private network, and the other Ethernet port is connected to the Internet. Two Click-To-Talk clients communicate with the ISS/IVX Server through a Linksys Router via a common Internet IP address. Click-To-Talk only supports outbound dialing, therefore, there are no inbound telephone numbers to be administered on the Click-To-Talk client. The telephone numbers that Click-To-Talk clients can dial are administered in web pages that reside on the Web Server.

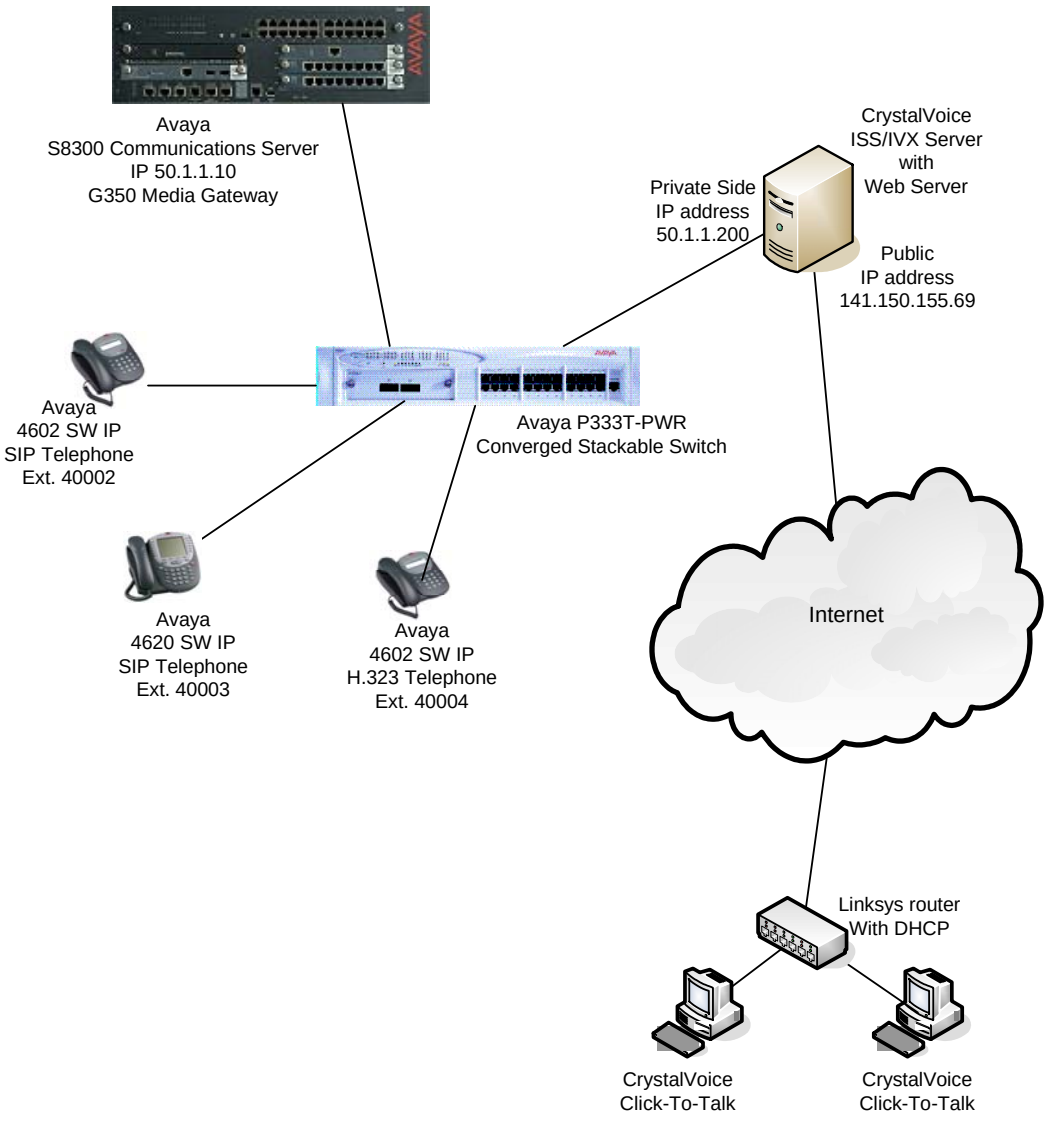


Figure 1: Sample Network Configuration

2. Equipment and Software Validated

The following equipment and software/firmware were used for the sample configurations provided:

Equipment	Software/Firmware
Avaya S8300 Media Server with a G650 Media Gateway	Communication Manager 3.0 (R0.13x.00.0.340.3) with update 00.0.340.3-10458
Avaya IA770 INTUITY AUDIX™	3.0-1.7
Avaya 4610SW/4620SW IP Telephones	2.2.3
Avaya P333T-PWR Converged Stackable Switch	3.12.1
CrystalVoice Click-To-Talk client	4.2.0.4
CrystalVoice Integrated System Services (ISS)	4.2.0.4
CrystalVoice Internet Voice Transcoder for H.323 (IVX)	4.2.0.4
Microsoft Internet Web Browser	6.0

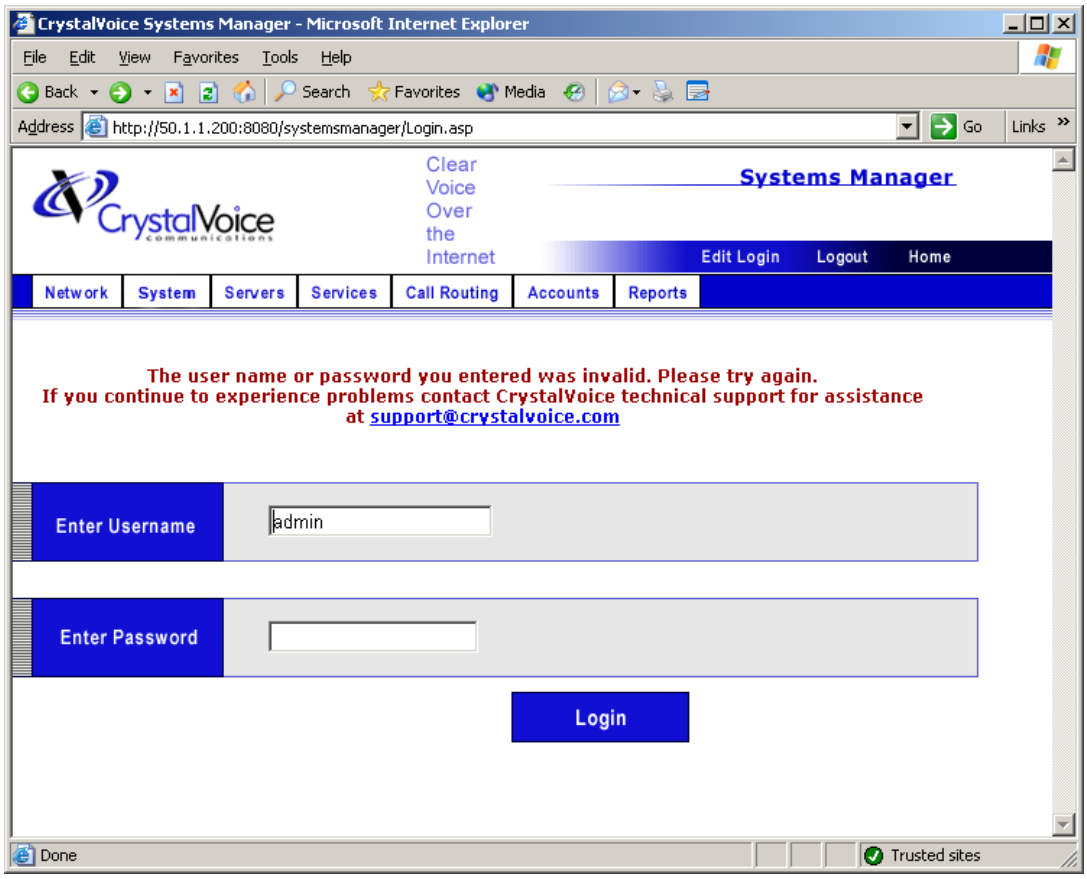
3. CrystalVoice Click-To-Talk

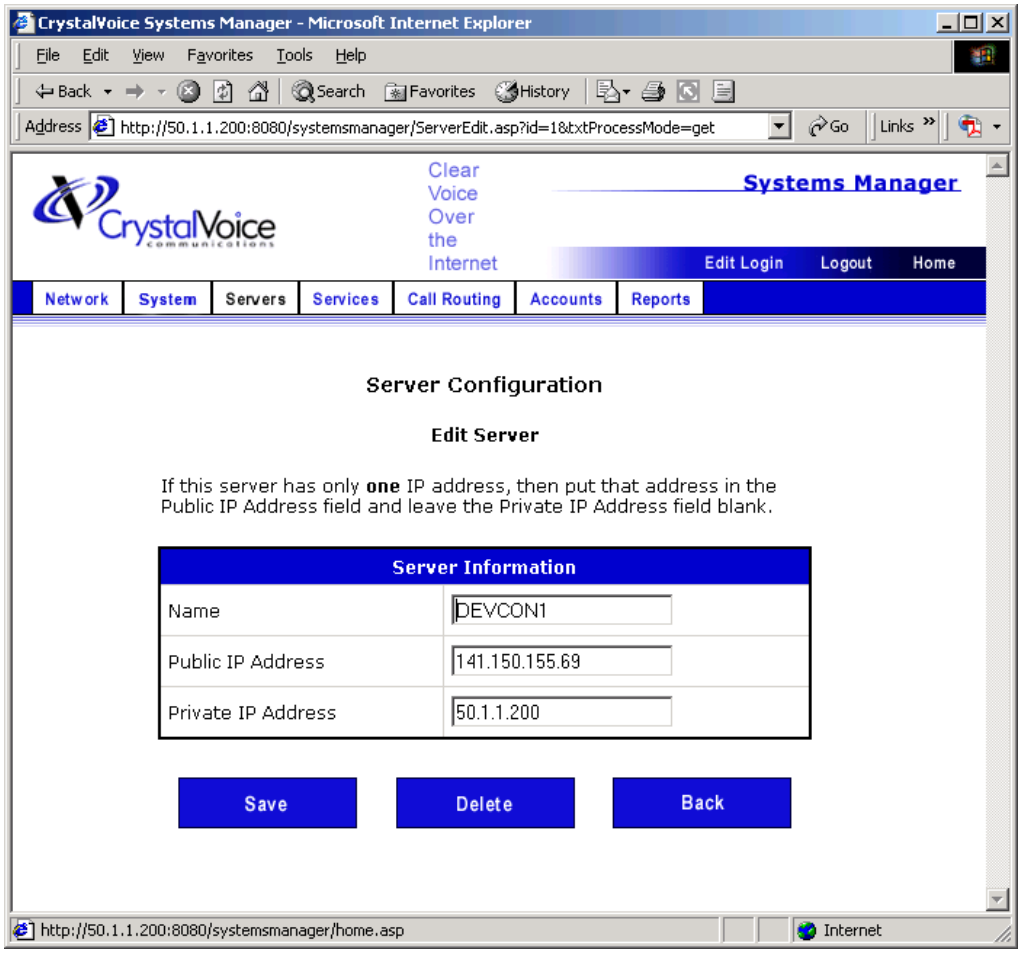
There are two parts to the CrystalVoice Click-To-Talk, the Click-To-Talk client and the CrystalVoice ISS/IVX Server. The CrystalVoice ISS/IVX Server transcodes voice traffic between Click-To-Talk client and Avaya Communication Manager. Although this sample configuration shows a dual Ethernet connected CrystalVoice ISS/IVX Server, it is possible to configure the CrystalVoice ISS/IVX Server with a single Ethernet Connection to support traffic to and from Avaya Communication Manager and the Internet.

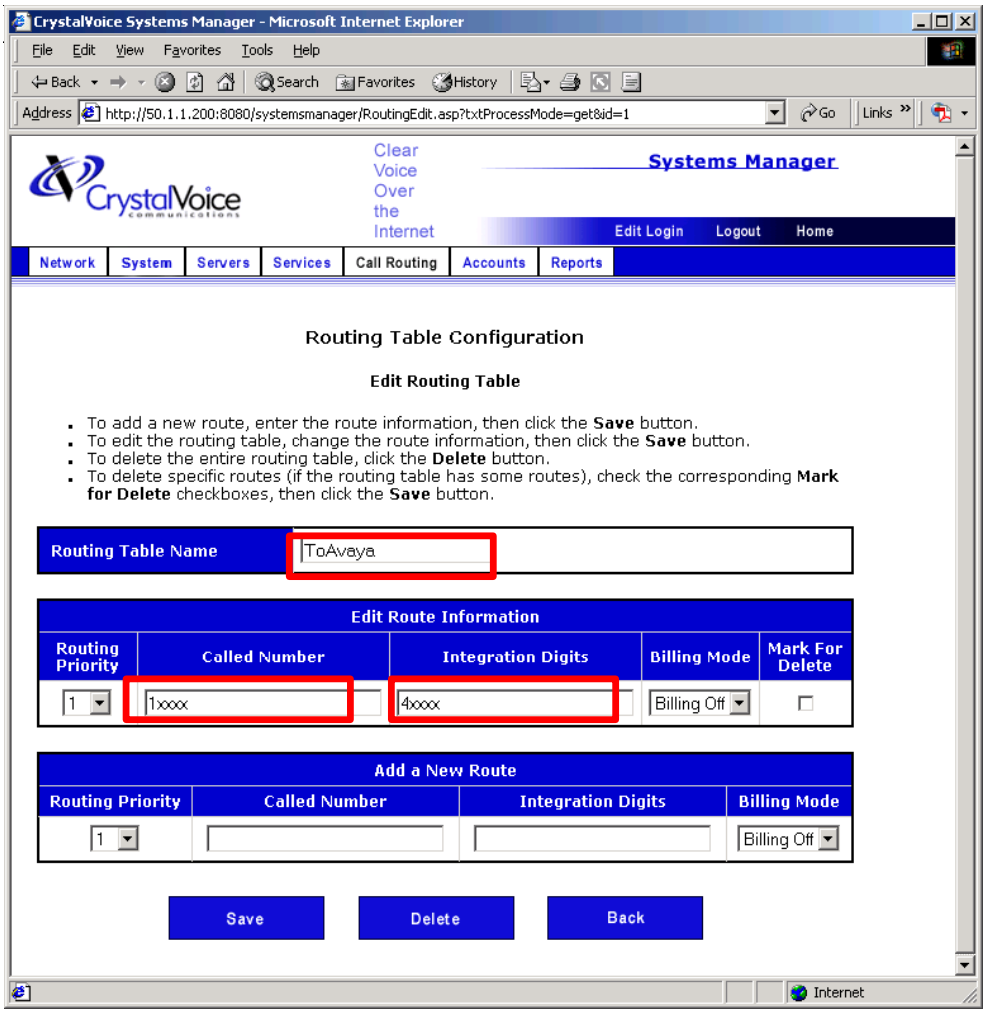
Microsoft Internet Web Browser was used in the sample network to access the CrystalVoice ISS/IVX Server. Other Internet browsers are supported. For additional information, please refer to CrystalVoice documentation[6].

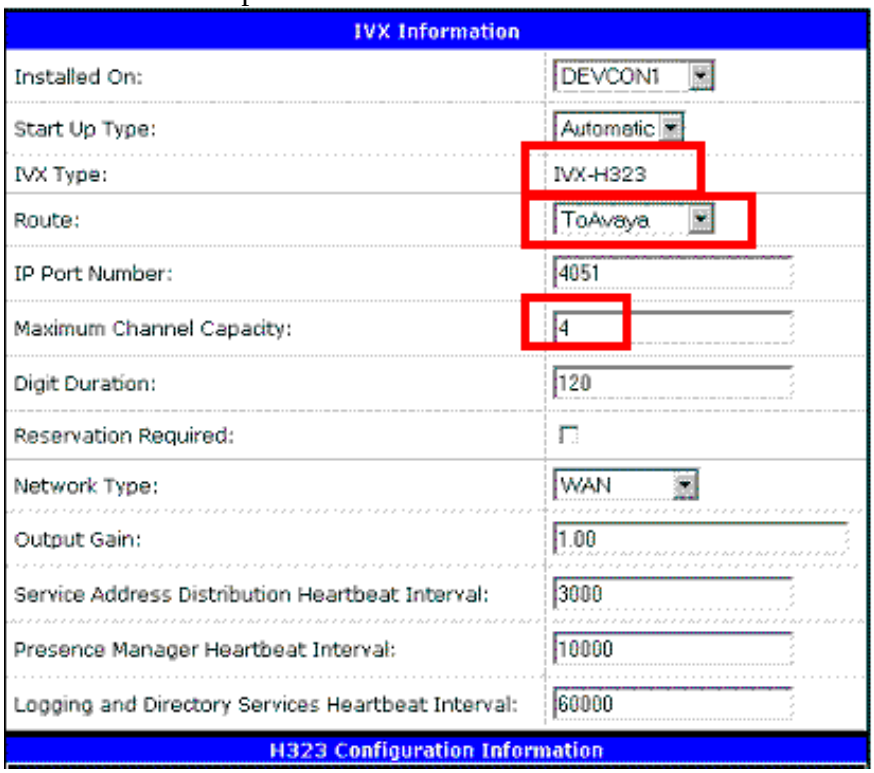
3.1. Configuring the ISS/IVX Server

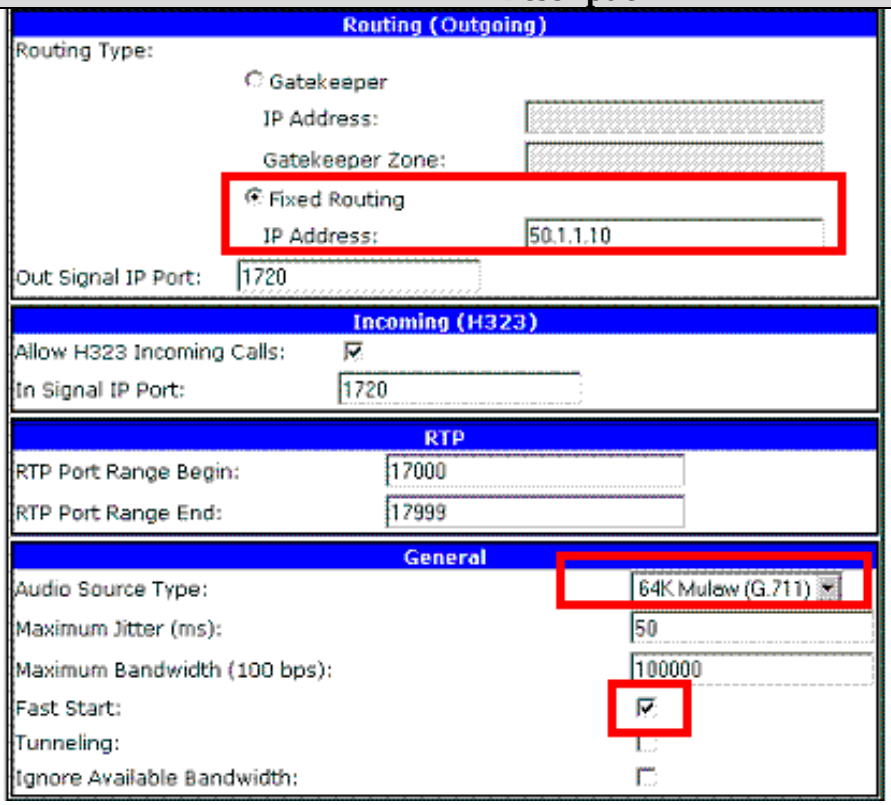
The following steps describe the configuration for CrystalVoice ISS/IVX Server to communicate with Avaya Communication Manager. A Web Server was installed on the same machine where the CrystalVoice ISS/IVX is running. The sample configuration uses Microsoft IIS.

Step	Description
1.	Log in to the CrystalVoice ISS/IVX Server via its private IP address using the Web browser. The CrystalVoice ISS/IVX installation process will automatically change the Web Server port to 8080. http://50.1.1.200:8080/systemsmanager/home.asp To log in to the system, enter the **Username** and **Password** and click **Login**. 

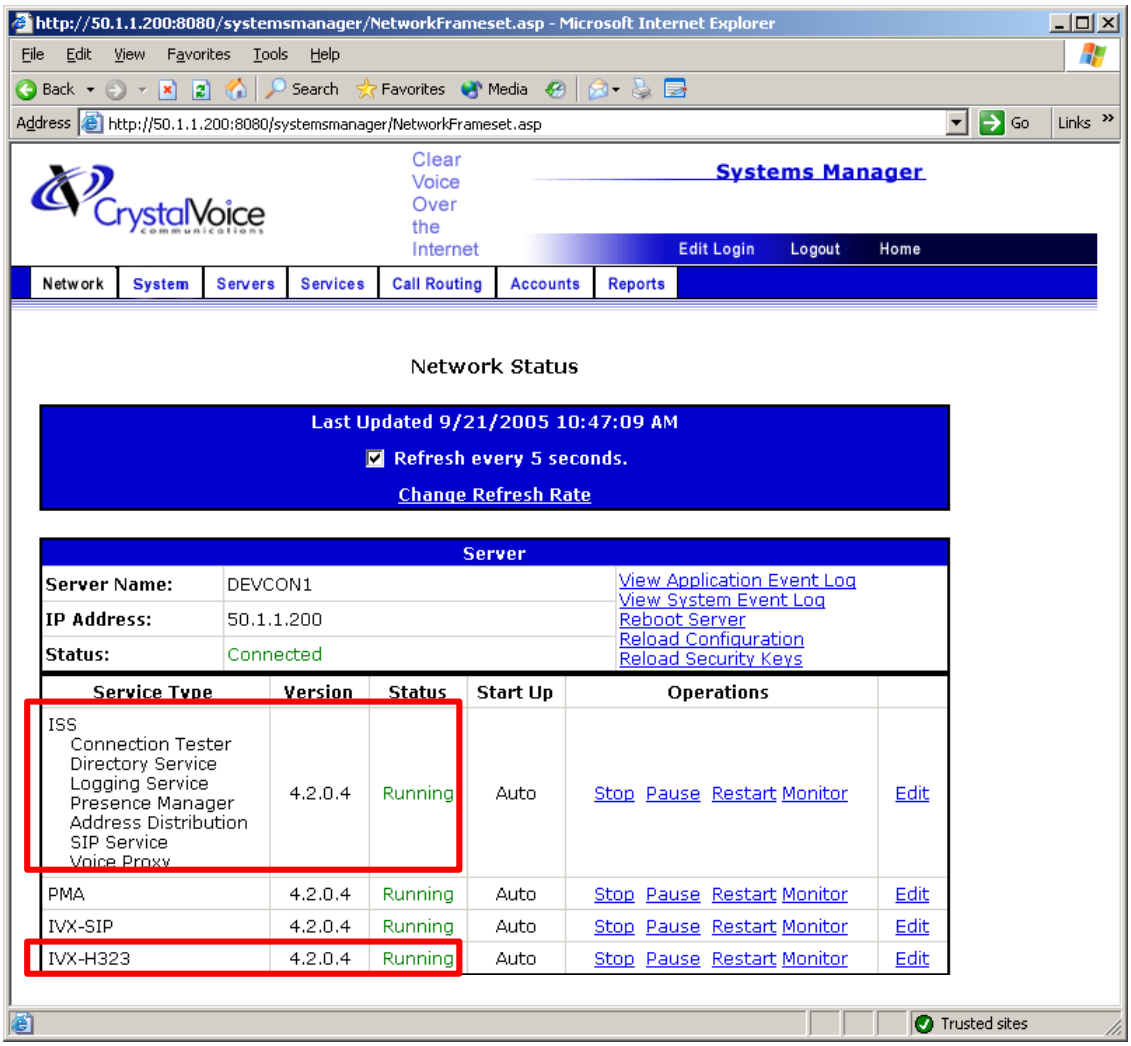
Step	Description
2.	Click **Servers** on the main menu bar and select **Add** Server. Note: • For a single Ethernet connection scenario, the IP address must be entered into the Public IP Address field. Click **Save** to complete. 

Step	Description
3.	Select **Call Routing → Routing** from the main menu bar, and click on **Add** to bring up the **Routing Table Configuration** form. This form sets the allowable numbers for incoming calls. The sample **Routing Table Name** for the sample network is ***ToAvaya***. Click **Save** to complete. **Called Number** This is the number that will be programmed into a Web Page for users to click on. In the sample configuration, the Web page can use any five digit number beginning with "1" to access the system. **Integration Digits** This maps the called number to an actual telephone extension that will be sent to Avaya Communication Manager. In this sample configuration, if a user clicks on a link that dials the number 12345, the CrystalVoice ISS/IVX Server will change the number to 42345 and send it to Avaya Communication Manager. 

Step	Description
4.	Select **Servers → IVX** from the main menu. Click on **Add** to add a new **IVX service**. This will bring up the **IVX Information** form to create a H.323 trunk between the CrystalVoice ISS/IVX Server and Avaya Communication Manager. Configure the following fields: Note: Due to the size of the screen capture, it is necessary to split the captured screen across two pages. The actual Web browser screen is one continuous page. **IVX Type**: ***IVX-H323*** This indicates that it is a H.323 trunk. **Route**: ***ToAvaya*** This indicates call routing for this trunk. **Maximum Channel Capacity**: ***4*** This needs to equal the number of members in the Trunk configuration in Avaya Communication Manager. **Routing Type**: "Fixed Routing" with IP Address ***50.1.1.10*** This is the IP address of Avaya Communication Manager terminating this trunk. **Audio Source Type**: ***G.711*** This needs to match the ip-codec-set setting in Avaya Communication Manager used for this trunk. If the G.729 codec is desired, the ip-codec-set used for this trunk in Avaya Communication Manager must be set to G.729AB. **Fast Start**: ***Checked*** Click **Save** to complete 

Step	Description
	

Step	Description
5.	To verify the CrystalVoice ISS/IVX is operational, click on **Network** from the main menu. This displays a list of all the services and their current status. Make sure the **ISS** and **IVX-H323** services are running.



3.2. Configuring the Web Server

The sample network uses the Microsoft IIS Web Server that comes with Windows 2000 Professional. When the CrystalVoice ISS is installed, it automatically changes the port number for accessing the IIS Web Server to port 8080. The CrystalVoice Click-To-Talk Web Components installation adds the following two configuration files onto the CrystalVoice Click-To-Talk Server.

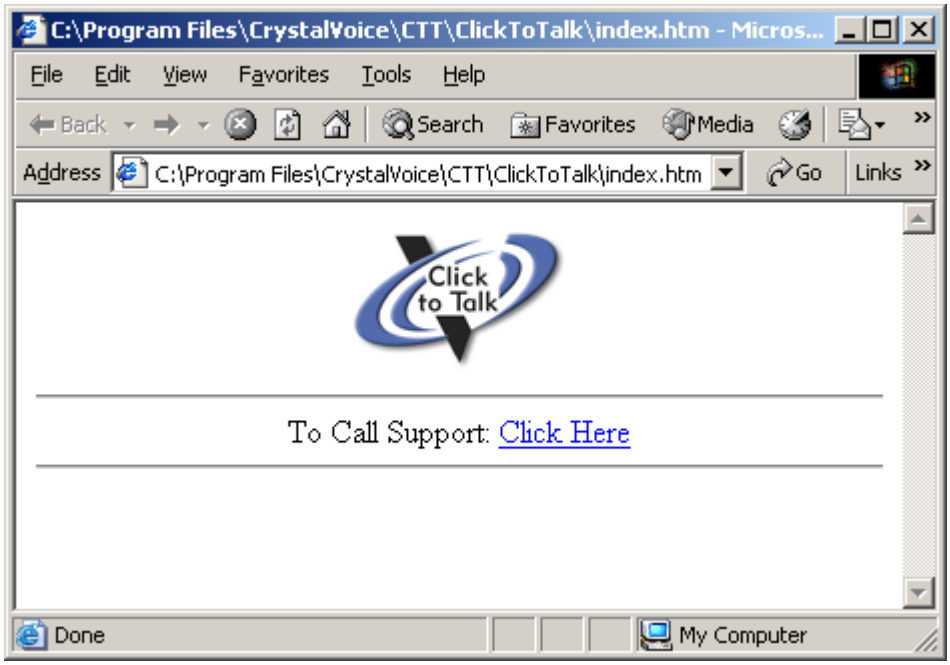
File name:	**File location**
index.htm	C:\program files\crystalVoice\CTT\ClickToTalk
config.txt	C:\program files\crystalVoice\CTT\ClickToTalk

The index.htm file above and as shown in step 1 is an initial web page used by the IIS Web Server and needs to be configured to dial the desired extension. There are some basic settings that need to be configured in the config.txt file before a call can be placed. At a minimum, the Click-To-Talk token must be configured.

The installation of the Microsoft IIS Web Server is beyond the scope of these Application Notes; please refer to Microsoft documentation for installation and configuration information of the Microsoft IIS Web Server.

Step	Description
1.	Below is a sample configuration of the **index.htm** file. Step 2 shows how the field in bold is displayed on the user's web browser. When the user clicks on the "**Click Here**" hyperlink, the Click-To-Talk client will launch and dial telephone number 10001. The CrystalVoice ISS/IVX will change the called number to 40001 and connect to Avaya Communication Manager to complete the call.

```
<HTML>
<BODY BGCOLOR="#FFFFFF">
<center>
<IMG SRC="images/Click-to-TalkButton.gif" BORDER=0>
</center>

<SCRIPT LANGUAGE='JavaScript'>
<!--
function displayPopup( url,name,width,height )
{
    var properties = 'menubar=no,toolbar=no,directories=no,scrollbars=no,status=no,' +


                     leftvar = (window.screen.availWidth - width) / 2;
                    rightvar = (window.screen.availHeight - height) / 2;

                             properties += ',left=' + leftvar;
                             properties += ',top=' + rightvar;

                                 open(url,name,properties);
}
function dialHardPhone( number )
{
      displayPopup( 'ClickToTalk.asp?dialednumber=' + number,'ClickToTalk',440,220);
}
function dialSoftPhone( phoneId )
{
      displayPopup( 'ClickToTalk.asp?destphoneid=' + phoneId,'ClickToTalk',440,220);
}
//-->
</SCRIPT>
<HR>

<center>

<TABLE>
<TR>
<TD WIDTH=200>
To Call Support:
</TD>
<TD>
<A HREF="javascript:dialHardPhone('10001');">
Click Here</A>
</TD>
</TR>
</TABLE>


</center>

<HR>
</BODY>
```

Step	Description
2.	This is an example of what the user's Web browser will show from the script in step 1. 
3.	Once the user clicks on the "**Click Here**" hyperlink, the following Click-To-Talk client GUI will display on the user's desktop. 

4. Avaya Communication Manager

This section highlights the important commands for configuring Avaya Communication Manager to connect to the CrystalVoice ISS/IVX Server. Use the System Access Terminal (SAT) interface to perform these steps. Log in with the appropriate permissions.

4.1. Configuring a H.323 Trunk in Avaya Communication Manager

The CrystalVoice Click-To-Talk solution does not support call shuffling. Therefore, Call shuffling will be disabled in the signaling group for this trunk. To simplify implementation, the sample network setup uses a new ip-codec-set for the H.323 trunk between the Avaya Communication Manager and the CrystalVoice ISS/IVX Server.

Use the **change node-names ip** command to add a new node name for the CrystalVoice ISS/IVX Server.

```
change node-names ip                                          Page   1 of   1
                                  IP NODE NAMES
    Name              IP Address
CCS                 50 .1  .1  .50
CrystalVoice        50 .1  .1  .200
EMMC                50 .1  .1  .10
default             0  .0  .0  .0
procr               50 .1  .1  .10
```

Use the **change ip-codec-set** command to configure a new codec set. This Audio Codec must match the configuration of the IVX Server described in section 3.1, Step 4. To support G.729 specify G.729AB as the Audio Codec and make the corresponding change in section 3.1 Step 4.

```
change ip-codec-set 2                                         Page   1 of   2
                          IP Codec Set
    Codec Set: 2
    Audio        Silence      Frames   Packet
    Codec        Suppression  Per Pkt  Size(ms)
 1: G.711             n         2        20
 2:
 3:
```

Use the change **ip-network-region** command to configure to use Codec Set 2 for the trunk between Avaya Communication Manager and CrystalVoice ISS/IVX Server.

```
change ip-network-region 1                                    Page   3 of  19
                  Inter Network Region Connection Management
 src dst  codec  direct                                  Dynamic CAC
 rgn rgn   set    WAN    WAN-BW-limits  Intervening-regions    Gateway    IGAR

 1   1     1
 1   2     2       y           :NoLimit                                    n
 1   3
 1   4
```

Use the **add signaling-group** command to define a new signaling group for the trunk between the CrystalVoice ISS/IVX Server and Avaya Communication Manager. Make sure that **Direct IP-IP Audio Connections** and **IP Audio Hairpining** are set to **n**. CrystalVoice Click-To-Talk does not support call shuffling.

```
add signaling-group 2                                          Page   1 of   5
                              SIGNALING GROUP
 Group Number: 2              Group Type: h.323
                            Remote Office? n
                                     SBS? n
                              IP Video? n
                            Remote Office? n          Max number of NCA TSC: 0
                                     SBS? n           Max number of CA TSC: 0
                              IP Video? n        Trunk Group for NCA TSC:
      Trunk Group for Channel Selection: 2
         Supplementary Service Protocol: a
                        T303 Timer(sec): 10

   Near-end Node Name: procr                 Far-end Node Name: CrystalVoice
 Near-end Listen Port: 1720                Far-end Listen Port: 1720
                                        Far-end Network Region: 2
        LRQ Required? n
        RRQ Required? n
        DTMF over IP: out-of-band
        LRQ Required? n                  Calls Share IP Signaling Connection? n
                                             Bypass If IP Threshold Exceeded? n
                                                      H.235 Annex H Required? n
        DTMF over IP: out-of-band             Direct IP-IP Audio Connections? n
                                                        IP Audio Hairpinning? n
                                                Interworking Message: PROGress
                                       DCP/Analog Bearer Capability: 3.1kHz
```

Use the **add trunk-group** command to create a new H.323 trunk between the CrystalVoice ISS/IVX Server and Avaya Communication Manager. Calls going into the CrystalVoice ISS/IVX Server from Click-To-Talk clients will be directed to Avaya Communication Manager through this trunk. Configure the same number of member(s) for this trunk as in the CrystalVoice ISS/IVX Server as shown in Section 3.1, step 4. This sample configuration has 4 members. Additional members can be added on both side of the H.323 trunk to support additional calls.

```
add trunk-group 2                                              Page   1 of  19
                              TRUNK GROUP
Group Number: 2                  Group Type: isdn          CDR Reports: y
  Group Name: IP Trunk to Crystal Voice   COR: 1        TN: 1        TAC: 102
   Direction: two-way        Outgoing Display? n         Carrier Medium: IP
 Dial Access? n                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
TRUNK PARAMETERS
         Codeset to Send Display: 6     Codeset to Send National IEs: 6
       Max Message Size to Send: 260   Charge Advice: none
  Supplementary Service Protocol: a     Digit Handling (in/out): enbloc/enbloc
            Trunk Hunt: cyclical
                                                  Digital Loss Group: 18
Incoming Calling Number - Delete:     Insert:                 Format:
              Bit Rate: 1200         Synchronization: async    Duplex: full
 Disconnect Supervision - In? y  Out? n
 Answer Supervision Timeout: 0
```

```
add trunk-group 2                                          Page   3 of  19
                                TRUNK GROUP
                                     Administered Members (min/max):   1/4
GROUP MEMBER ASSIGNMENTS                Total Administered Members:   4
       Port    Code Sfx Name        Night           Sig Grp
  1: IP                                              2
  2: IP                                              2
  3: IP                                              2
  4: IP                                              2
  5:
  6:
```

4.2. General Test Approach

The general approach was to attempt to access different types of Avaya IP telephones and system features from the Click-To-Talk client. These include the Avaya 4610/4620 SIP telephones, Avaya H.323 IP telephone, Voice mail, and a Meet-me conference. Both G.711 and G.729 codecs were exercised during the test. Call shuffling was not supported in all tested scenarios.

4.3. Test Results

CrystalVoice successfully completed test cases for all supported features. With call shuffling disabled, CrystalVoice Click-To-Talk successfully accessed the Avaya 4610/4620 SIP telephone, Avaya H.323 IP telephone, Voice mail, and Meet-me conference. Both Voice mail and Meet-me conference were used to verify DTMF support. The CrystalVoice ISS/IVX Server does not support any L2 (802.1Q) or L3 (DiffServ) tagging for its traffic.

5. Verification Steps

The following steps may be used to verify the configuration:

- Log in to the CrystalVoice Systems Manager via the web browser and select Network from the main menu. The following three (3) services should be in a running state.
  i) ISS
  ii) PMA
  iii) IVX-H323
- Place calls using Web Browser

6. Support

For technical support on the CrystalVoice product line, contact CrystalVoice Communications at support@CrystalVoice.com or 1-805-889-4260

7. Conclusion

These Application Notes describe the administration steps required to support CrystalVoice Click-To-Talk with Avaya Communication Manager. With a Web browser, a microphone and speaker, users can communicate via CrystalVoice Click-To-Talk from anywhere. Applications include, but are not limited to, access to a support center, a Voice mail system and a teleconference.

8. Additional References

Product documentation for Avaya products may be found at
http://support.avaya.com

Product documentation for CrystalVoice products may be found at
http://www.crystalvoice.com

[1] Administrator Guide for Avaya Communication Manager, Doc # 03-300509, Issue 1, June 2005
[2] Avaya Communication Manager Advanced Administration Quick Reference, Doc # 03-300364, Issue 2, June 2005 Release 3.0
[3] Expanded Meet-me Conference (EMMC) version 1.0 Installation and Troubleshooting Guide for the S8500, Doc # 04-300527, Issue 1, June 2005
[4] Avaya IA 770 INTUITY AUDIX Messaging Application, Doc # 585-313-159, Issue 4, December 2003
[5] CrystalVoice Click-To-Talk ISS/IVX Installation Notes, Doc #5900-1026
[6] CrystalVoice Click-To-Talk Web Components Installation Notes, Doc #5900-1004
[7] CrystalVoice Systems Manager Reference Guide, Doc #5900-1029

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.