



Avaya Solution & Interoperability Test Lab

How to Configure ISDN-PRI and Digital Loop Start T1 Interfaces between Avaya Communication Manager and Avaya Interactive Response (IR) using a single Telephony Card – Issue 1.0

Abstract

These Application Notes describe the steps for configuring ISDN-PRI and Digital Loop Start T-1 interfaces for interconnection between Avaya Communication Manager and an Avaya IR system with a single telephony card supporting different trunk parameters on each port.

1. Introduction

Avaya Interactive Response (IR) is an Interactive Voice Response (IVR) system that supports advanced applications of customer self-service solutions. Avaya IR Release 2.0 supports the assignment of different trunk parameters to each port on the quad (four T-1 or E-1 ports) telephony card. In previous releases of Avaya IR software, only one trunk protocol could be assigned to all the trunks of a T-1 telephony card. Telephony cards provide the telephony interface to the Avaya IR system.

Natural Microsystems (NMS) manufactures the commercial AG4040 T-1/E-1 telephony cards for the Avaya IR system. The Avaya IR 2.0 system supports a maximum of two quad-port AG4040 cards with either the Sun Fire 280R or the Sun Fire V240 platform. The AG4040 card offers T-1, E-1 (75 Ohm), and E-1 (120 Ohm) interfaces on a single card. The type of interface can be selected through Avaya IR system administration. A quad AG4040 telephony card can support the following:

- Four different T-1 protocols from amongst Integrated Service Digital Network (ISDN)-Primary Rate Interface (PRI), Digital Loop Start, and Digital Wink Start
- Four different E-1 protocols from amongst ISDN-PRI Interface, Digital Loop Start, and R2 MFC

The quad AG4040 telephony card cannot support both T-1 and E-1 interfaces on the same card. For more information on the NMS AG4040 telephony card, please refer to references [1] & [4] in **Section 7**.

These Application Notes also describe how to configure the T-1 interfaces on Avaya Communication Manager and describe how to use the Avaya IR Web Administration interface to administer the following:

- Digital interfaces including the assignment of a digital interface protocol on a T-1 telephony card.
- The assignment of telephone numbers to channels.
- The assignment of a service (application) to a channel or channels
- The assignment of Dialed Number Identification Service (DNIS) called numbers.

1.1. Reference Network Configuration

The configuration depicted in **Figure 1** is utilized to verify these Application Notes. **Figure 1** represents a typical multi-location enterprise with centralized control at the Main Office offered by the primary Avaya S8720 Media Server pair running Avaya Communication Manager. The Main Office also consists of an Avaya G650 Media Gateway and an Avaya IR system. Site 2 has an Enterprise Survivable Server (ESS) S8710 Media Server pair and an Avaya G650 Media Gateway as Port Network # 2. Site 4 contains a G350 Media Gateway and a Local Survivable Processor (LSP) S8500 Media Server. All site Port Networks, Media Gateways, and IP endpoints register to the C-LANs located in the Main Office G650 Media Gateway. Each site has Public Switched Telephone Network (PSTN) access via Time Division Multiplexed (TDM) trunks and private WAN access. There are three T-1 interfaces for interconnection between Avaya Communication Manager and the Avaya IR, which are the following:

- An ISDN-PRI T-1 between the Avaya G650 Media Gateway and Avaya IR within the Main Office
- A private Digital Loop Start T-1 between the Site 2 G650 Media Gateway and the Avaya IR located at the Main Office.
- A private Digital Loop Start T-1 between the Site 4 G350 Media Gateway and the Avaya IR located at the Main Office.

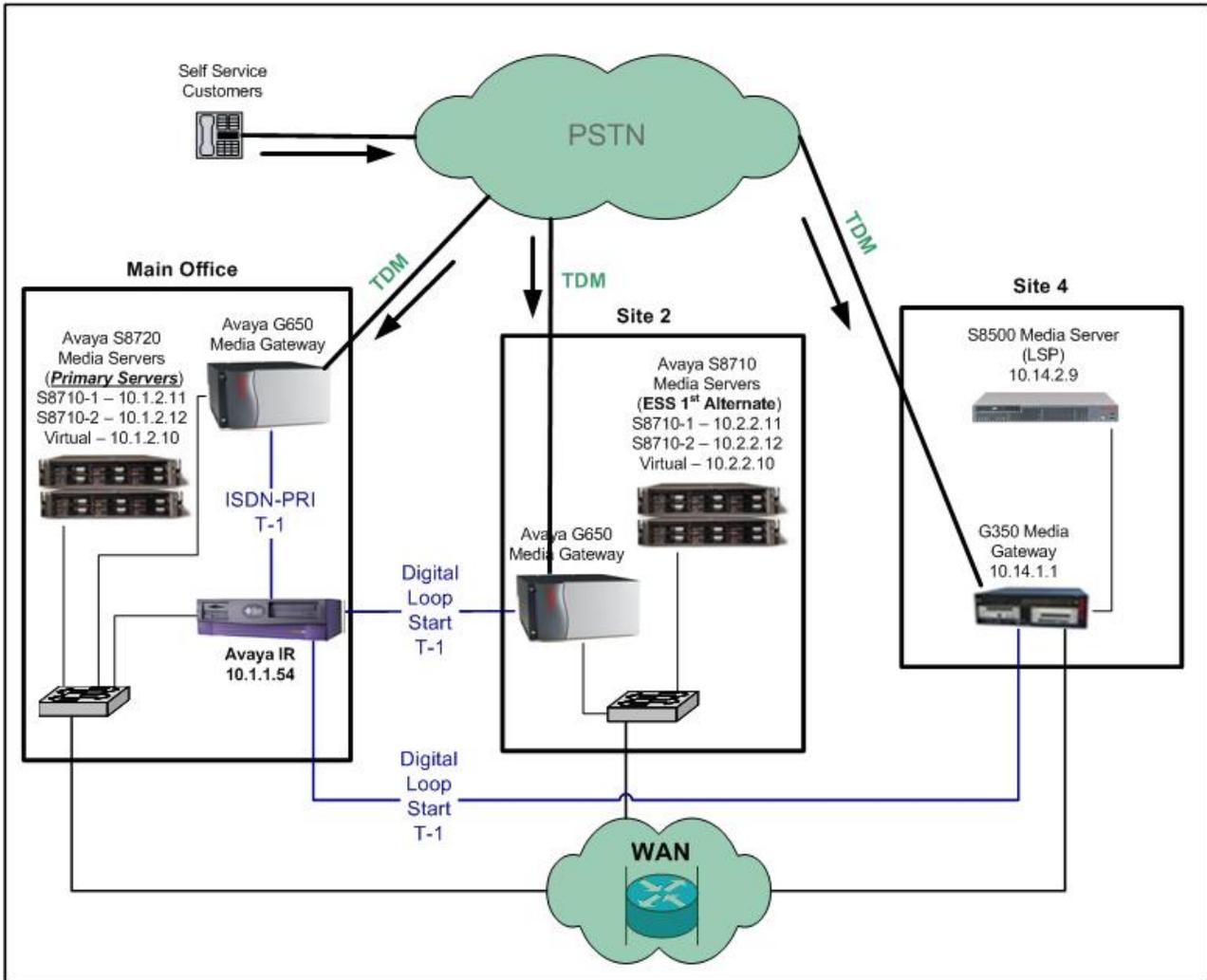


Figure 1: Reference Network Configuration

Note: These Application Notes assume that the configuration, excluding the T-1 interfaces to the Avaya IR, is already in place.

2. Equipment and Software Validated

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

Equipment – Main Office	Software
Avaya S8720 Media Server	Avaya Communication Manager R3.1.2 (R013x.01.2.632.1)
Avaya G650 Media Gateway <ul style="list-style-type: none"> • Avaya TN2312BP IPSI Circuit Pack • Avaya TN464F DS1 Circuit Packs (2) • Avaya TN779DP C-LAN Circuit Pack • Avaya TN2602AP MedPro Circuit Pack 	HW 12 FW 031 HW 20 FW 018 HW 01 FW 017 HW 02 FW 024
Avaya Converged Stackable Switch C363T-PWR (2)	4.5.14
Avaya Interactive Response (Sun Fire V240 platform) <ul style="list-style-type: none"> • Natural Microsystems (NMS) AG4040 T1 	R2.0.221 Natural Access 2005-1
Cisco 6506 Switch Router	12.4(5)

Table 1: Main Office

Equipment	Software
Avaya G650 Media Gateway <ul style="list-style-type: none"> • Avaya TN2312BP IPSI Circuit Pack • Avaya TN464F DS1 Circuit Packs (2) • Avaya TN779DP C-LAN Circuit Pack • Avaya TN2602AP Medpro Circuit Pack 	HW 12 FW 031 HW 20 FW 018 HW 01 FW 017 HW 02 FW 024
Avaya S8710 Media Server <ul style="list-style-type: none"> • Enterprise Survivable Server (ESS) 	Avaya Communication Manager R3.1.2 (R013x.01.2.632.1)
Avaya Converged Stackable Switch C363T-PWR	4.5.14
Cisco 1841 Router	12.4(5)

Table 2: Site 2

Equipment	Software
Avaya G350 Media Gateway <ul style="list-style-type: none"> • MM710AP (2) 	25.30.0 HW 05 FW 015
Avaya S8500 Media Server (LSP)	Avaya Communication Manager R3.1.2 (R013x.01.2.632.1)

Table 3: Site 4

Equipment	Software
Avaya Site Administration (ASA)	3.1.13
Cisco 3845 WAN Router (2)	12.4(5)
PC Workstations: Microsoft Windows XP Professional	Version 2002

Table 4: Common Use Equipment and Software

3. Configure Avaya Communication Manager

These Application Notes assume all equipment in **Table 1** through **Table 4** has been previously administered with the exception of the configuration parameters required to interconnect the Avaya IR system to multiple Avaya Media Gateways. The following pages detail instructions on how to verify and administer the required configuration parameters. For additional information, please refer to reference [3] in **Section 7**.

3.1. Verify Avaya Communication Manager Licenses

To set up ISDN-PRI T-1 connectivity to the Avaya IR system, certain Avaya Communication Manger licenses must be active. The next steps verify these required licenses. If any licenses are missing, contact your Avaya Authorized Sales representative.

All commands were entered on an Avaya Communication Manager System Access Terminal (SAT) connected to the active S8720 Media Server at the Main Office. Use a login and password with the appropriate access permissions.

Step	Description
1.	<p>Issue the command “display system-parameters customer options” to display the active licensed features. On page 1, the “Platform Maximum Ports” and “Maximum Stations” fields display the maximum number of station and ports allowed in the system. Verify that there are stations and ports available to configure the ISDN-PRI and Digital Loop Start T1 interfaces between the Avaya IR and Avaya Communication Manager.</p> <pre data-bbox="253 1079 1430 1698"> display system-parameters customer-options Page 1 of 11 OPTIONAL FEATURES G3 Version: V13 Location: 1 RFA System ID (SID): 1 Platform: 8 RFA Module ID (MID): 1 USED Platform Maximum Ports: 44000 732 Maximum Stations: 36000 544 Maximum XMOBILE Stations: 0 0 Maximum Off-PBX Telephones - EC500: 0 0 Maximum Off-PBX Telephones - OPS: 50 0 Maximum Off-PBX Telephones - SCCAN: 0 0 (NOTE: You must logoff & login to effect the permission changes.) </pre>

Step	Description
2.	<p data-bbox="240 247 1437 317">Go to Page 4 and verify that the “ISDN Feature Plus” and “ISDN-PRI” fields are set to “y”. These fields provide ISDN-PRI software and signaling.</p> <div data-bbox="253 331 1433 961" style="border: 1px solid black; padding: 10px;"> <pre data-bbox="272 346 1414 940"> display system-parameters customer-options Page 4 of 11 OPTIONAL FEATURES Emergency Access to Attendant? y IP Stations? y Enable 'dadmin' Login? y Internet Protocol (IP) PNC? y Enhanced Conferencing? y ISDN Feature Plus? y Enhanced EC500? y ISDN Network Call Redirection? y Enterprise Survivable Server? n ISDN-BRI Trunks? y Enterprise Wide Licensing? n ISDN-PRI? y ESS Administration? y Local Survivable Processor? n Extended Cvg/Fwd Admin? n Malicious Call Trace? y External Device Alarm Admin? n Media Encryption Over IP? y Five Port Networks Max Per MCC? n Mode Code for Centralized Voice Mail? n Flexible Billing? n Forced Entry of Account Codes? n Multifrequency Signaling? y Global Call Classification? n Multimedia Appl. Server Interface (MASI)? n Hospitality (Basic)? y Multimedia Call Handling (Basic)? y Hospitality (G3V3 Enhancements)? y Multimedia Call Handling (Enhanced)? y IP Trunks? y IP Attendant Consoles? y (NOTE: You must logoff & login to effect the permission changes.) </pre> </div>
3.	<p data-bbox="240 1020 1437 1089">Go to Page 5 and verify that the “Uniform Dialing Plan” field is set to “y”. This provides 3- to 7- digit Uniform Dial Plan (UDP) and 1 to 7 digit steering.</p> <div data-bbox="253 1104 1433 1734" style="border: 1px solid black; padding: 10px;"> <pre data-bbox="272 1119 1414 1713"> display system-parameters customer-options Page 5 of 11 OPTIONAL FEATURES Multinational Locations? n Station and Trunk MSP? n Multiple Level Precedence & Preemption? n Station as Virtual Extension? n Multiple Locations? y Personal Station Access (PSA)? y System Management Data Transfer? n Posted Messages? y Tenant Partitioning? n PNC Duplication? n Terminal Trans. Init. (TTI)? y Port Network Support? y Time of Day Routing? y Uniform Dialing Plan? y Usage Allocation Enhancements? y Processor and System MSP? n TN2501 VAL Maximum Capacity? y Private Networking? y Processor Ethernet? y Wideband Switching? y Wireless? n Remote Office? y Restrict Call Forward Off Net? y Secondary Data Module? y (NOTE: You must logoff & login to effect the permission changes.) </pre> </div>

3.2. ISDN-PRI DS1 Board, Trunk Group and Routing Administration for the Main Office to Avaya IR Link

Step	Description
1.	<p>Enter the command “add ds1 x” where <i>x</i> is the location for the unassigned TN464F DS1-board in the Main Office G650 Media Gateway for the ISDN-PRI T-1 interface to the Avaya IR. Assign the following DS1 parameters:</p> <ol style="list-style-type: none"> a. In the “Name” field, enter a descriptive name for the DS1 circuit pack. b. Set the “Line Coding” field to “b8zs” for bipolar eight zero substitution support on the T-1 facility. This setting must match the “Line Code” setting in the Avaya IR ISDN-PRI T1 parameters screen (step 4 in Section 4.3). c. Leave the “Framing Mode” field at the default of “esf” for Extended Superframe. This setting must match the “Frame Type” setting in the Avaya IR ISDN-PRI T1 parameters screen (step 4 in Section 4.3). d. Set the “Signaling Mode” field to “isdn-pri” for T-1 ISDN service. e. Set the “Connect” field to “pbx” since the ISDN connection to the Avaya IR will be on a private network. f. Set the “Interface” field to “network”. The Avaya IR must have the complementary setting of “user” for the “PRI Side” setting in the Avaya IR ISDN-PRI T1 parameters screen (step 4 in Section 4.3). g. Set the “Protocol Version” field to “b” for ISDN interconnectivity on a private network. <p>All other fields may be left at the default setting.</p> <pre data-bbox="253 1213 1433 1787"> add ds1 01a12 Page 1 of 2 DS1 CIRCUIT PACK Location: 01A12 Name: IR Port 1 Bit Rate: 1.544 Line Coding: b8zs Line Compensation: 1 Framing Mode: esf Signaling Mode: isdn-pri Connect: pbx Interface: network TN-C7 Long Timers? n Country Protocol: 1 Interworking Message: PROGRESS Protocol Version: b 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 Block Progress Indicator? n </pre>

Step	Description
2.	<p>Enter the command “add signaling-group y” where y is an unassigned Signaling Group number. Set the “Primary D-Channel” field to “x24” where x is the assigned TN464F DS1-board in step 1, and 24 is the standard signaling port (D-Channel) for the ISDN PRI. Leave all other fields at the default setting.</p> <pre data-bbox="256 401 1435 688"> add signaling-group 12 Page 1 of 5 SIGNALING GROUP Group Number: 12 Group Type: isdn-pri Associated Signaling? y Max number of NCA TSC: 0 Primary D-Channel: 01A1224 Max number of CA TSC: 0 Trunk Group for NCA TSC: Trunk Group for Channel Selection: Supplementary Service Protocol: a Network Call Transfer? n </pre>
3.	<p>Enter the command “add trunk-group z” where z is an unassigned Trunk Group number. Assign the following Trunk Group parameters:</p> <ul style="list-style-type: none"> a. In the “Group Name” field, enter a descriptive name for the Trunk Group. b. Set the “Group-Type” field to “isdn”. c. Based on the format defined in the Dial Plan Analysis table (to view, use the “display dial-plan analysis” command) for dial access codes, assign a number in the “TAC” field for the Trunk Group. d. Set the “Service Type” field to “tie” to designate general-purpose use. <p>The remaining fields on page 1 through page 4 may be left at the default settings.</p> <p>Note: To send the Calling Party number from the incoming call to Avaya IR, set the “Send Calling Number” field on page 3 (not shown) to “y”.</p> <pre data-bbox="256 1209 1435 1528"> add trunk-group 12 Page 1 of 21 TRUNK GROUP Group Number: 12 Group Type: isdn CDR Reports: y Group Name: Main Office to IR COR: 1 TN: 1 TAC: 1112 Direction: two-way Outgoing Display? n Carrier Medium: PRI/BRI 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 </pre>

Step	Description																																																																																																																																																						
4.	<p data-bbox="240 247 1453 317">Go to Page 5 and assign the following parameters for each Trunk Group Member 1 through 15 and 16 through 23 on Page 6:</p> <ol data-bbox="289 338 1453 636" style="list-style-type: none"> Set the “Port” field to “x01” where x is the assigned TN464F DS1-board in step 1, and 01 is the first Trunk Group Member of the ISDN-PRI (B-Channels). In the “Name” field, enter a descriptive name for the Trunk Group Member. Set the “Sig Grp” field to “y” where y is the assigned Signaling Group number in step 2. Repeat steps a through c for each Trunk Group Member of the ISDN-PRI (23 B-Channels total). <div data-bbox="253 667 1433 1262" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <pre data-bbox="272 680 1409 705">add trunk-group 12 Page 5 of 21</pre> <pre data-bbox="743 709 1349 785"> TRUNK GROUP Administered Members (min/max): 0/0 Total Administered Members: 0 GROUP MEMBER ASSIGNMENTS</pre> <table border="1" data-bbox="289 814 1122 1245"> <thead> <tr> <th>Port</th> <th>Code</th> <th>Sfx</th> <th>Name</th> <th>Night</th> <th>Sig Grp</th> </tr> </thead> <tbody> <tr><td>1: 01A1201</td><td>TN464</td><td>F</td><td>IR CH-00</td><td></td><td>12</td></tr> <tr><td>2: 01A1202</td><td>TN464</td><td>F</td><td>IR CH-01</td><td></td><td>12</td></tr> <tr><td>3: 01A1203</td><td>TN464</td><td>F</td><td>IR CH-02</td><td></td><td>12</td></tr> <tr><td>4: 01A1204</td><td>TN464</td><td>F</td><td>IR CH-03</td><td></td><td>12</td></tr> <tr><td>5: 01A1205</td><td>TN464</td><td>F</td><td>IR CH-04</td><td></td><td>12</td></tr> <tr><td>6: 01A1206</td><td>TN464</td><td>F</td><td>IR CH-05</td><td></td><td>12</td></tr> <tr><td>7: 01A1207</td><td>TN464</td><td>F</td><td>IR CH-06</td><td></td><td>12</td></tr> <tr><td>8: 01A1208</td><td>TN464</td><td>F</td><td>IR CH-07</td><td></td><td>12</td></tr> <tr><td>9: 01A1209</td><td>TN464</td><td>F</td><td>IR CH-08</td><td></td><td>12</td></tr> <tr><td>10: 01A1210</td><td>TN464</td><td>F</td><td>IR CH-09</td><td></td><td>12</td></tr> <tr><td>11: 01A1211</td><td>TN464</td><td>F</td><td>IR CH-10</td><td></td><td>12</td></tr> <tr><td>12: 01A1212</td><td>TN464</td><td>F</td><td>IR CH-11</td><td></td><td>12</td></tr> <tr><td>13: 01A1213</td><td>TN464</td><td>F</td><td>IR CH-12</td><td></td><td>12</td></tr> <tr><td>14: 01A1214</td><td>TN464</td><td>F</td><td>IR CH-13</td><td></td><td>12</td></tr> <tr><td>15: 01A1215</td><td>TN464</td><td>F</td><td>IR CH-14</td><td></td><td>12</td></tr> </tbody> </table> </div> <div data-bbox="253 1287 1433 1692" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <pre data-bbox="272 1299 1409 1325">add trunk-group 12 Page 6 of 21</pre> <pre data-bbox="743 1329 1349 1404"> TRUNK GROUP Administered Members (min/max): 0/0 Total Administered Members: 0 GROUP MEMBER ASSIGNMENTS</pre> <table border="1" data-bbox="289 1434 1122 1675"> <thead> <tr> <th>Port</th> <th>Code</th> <th>Sfx</th> <th>Name</th> <th>Night</th> <th>Sig Grp</th> </tr> </thead> <tbody> <tr><td>16: 01A1216</td><td>TN464</td><td>F</td><td>IR CH-15</td><td></td><td>12</td></tr> <tr><td>17: 01A1217</td><td>TN464</td><td>F</td><td>IR CH-16</td><td></td><td>12</td></tr> <tr><td>18: 01A1218</td><td>TN464</td><td>F</td><td>IR CH-17</td><td></td><td>12</td></tr> <tr><td>19: 01A1219</td><td>TN464</td><td>F</td><td>IR CH-18</td><td></td><td>12</td></tr> <tr><td>20: 01A1220</td><td>TN464</td><td>F</td><td>IR CH-19</td><td></td><td>12</td></tr> <tr><td>21: 01A1221</td><td>TN464</td><td>F</td><td>IR CH-20</td><td></td><td>12</td></tr> <tr><td>22: 01A1222</td><td>TN464</td><td>F</td><td>IR CH-21</td><td></td><td>12</td></tr> <tr><td>23: 01A1223</td><td>TN464</td><td>F</td><td>IR CH-22</td><td></td><td>12</td></tr> </tbody> </table> </div>	Port	Code	Sfx	Name	Night	Sig Grp	1: 01A1201	TN464	F	IR CH-00		12	2: 01A1202	TN464	F	IR CH-01		12	3: 01A1203	TN464	F	IR CH-02		12	4: 01A1204	TN464	F	IR CH-03		12	5: 01A1205	TN464	F	IR CH-04		12	6: 01A1206	TN464	F	IR CH-05		12	7: 01A1207	TN464	F	IR CH-06		12	8: 01A1208	TN464	F	IR CH-07		12	9: 01A1209	TN464	F	IR CH-08		12	10: 01A1210	TN464	F	IR CH-09		12	11: 01A1211	TN464	F	IR CH-10		12	12: 01A1212	TN464	F	IR CH-11		12	13: 01A1213	TN464	F	IR CH-12		12	14: 01A1214	TN464	F	IR CH-13		12	15: 01A1215	TN464	F	IR CH-14		12	Port	Code	Sfx	Name	Night	Sig Grp	16: 01A1216	TN464	F	IR CH-15		12	17: 01A1217	TN464	F	IR CH-16		12	18: 01A1218	TN464	F	IR CH-17		12	19: 01A1219	TN464	F	IR CH-18		12	20: 01A1220	TN464	F	IR CH-19		12	21: 01A1221	TN464	F	IR CH-20		12	22: 01A1222	TN464	F	IR CH-21		12	23: 01A1223	TN464	F	IR CH-22		12
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Step	Description
5.	<p>Enter the command “change route-pattern z” where <i>z</i> is an unassigned Route Pattern Number. The first row indicates the preference trunk group and the subsequent rows indicate the alternate trunk groups in respective order (if any). Assign the following parameters:</p> <ol style="list-style-type: none"> In the “Pattern Name” field, enter a descriptive name for the Route Pattern that will be utilized to route incoming calls to the Avaya IR. For the first row “1” under the “Grp No” field, enter the Trunk Group Number “<i>z</i>” assigned in step 3. For the first row “1” under the “FRL” field, enter the Facility Restriction Level (FRL) number (0 to 7, 0 being the least restrictive) associated with this trunk group preference. The calling party’s FRL must be higher or equal to the entered FRL to allow access to the trunk group. <p>The remaining fields on page 1 through page 3 may be left at the default settings.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <pre> change route-pattern 12 Page 1 of 3 Pattern Number: 12 Pattern Name: Main to IR SCCAN? n Secure SIP? n Grp FRL NPA Pfx Hop Toll No. Inserted DCS/ IXC No Mrk Lmt List Del Digits QSIG Dgts Intw 1: 12 0 2: 3: 4: 5: 6: DCS/ IXC n user n user n user n user n user n user BCC VALUE TSC CA-TSC ITC BCIE Service/Feature PARM No. Numbering LAR 0 1 2 3 4 W Request Dgts Format Subaddress 1: y y y y y n n rest none 2: y y y y y n n rest none 3: y y y y y n n rest none 4: y y y y y n n rest none 5: y y y y y n n rest none 6: y y y y y n n rest none </pre> </div>

Step	Description
6.	<p>Enter the command “change uniform-dialplan 0” to enter and list the parameters that provide uniform dialing between Avaya Communication Manager and Avaya IR. Assign the following parameters:</p> <ol style="list-style-type: none"> Set the “Matching Pattern” field to the leading digits that Avaya Communication Manager will match to the user-dialed numbers. For this example, the entry “432075” is for the extension range 4320750 through 4320759. Set the “Len” field to the number of user-dialed digits Avaya Communication Manager collects to match to the “Matching Pattern” field. Set the “Del” field to the number of digits to delete before routing the call. For this example, “0” is entered and all entered digits will be used to route the call. Set the “Net” field to “aar” so that the digit string is forwarded to the Automatic Alternate Routing (AAR) table (Step 7) for analysis. Repeat steps a through d for each extension range that will route to the Avaya IR. <div data-bbox="253 825 1433 1108" style="border: 1px solid black; padding: 5px;"> <pre> change uniform-dialplan 0 Page 1 of 2 UNIFORM DIAL PLAN TABLE Percent Full: 0 Matching Insert Node Matching Insert Node Pattern Len Del Digits Net Conv Num Pattern Len Del Digits Net Conv Num 3 5 0 aar n 432075 7 0 aar n n 432075 7 0 aar n 432076 7 0 aar n n 432076 7 0 aar n 432077 7 0 aar n n </pre> </div>

Step	Description
7.	<p>Enter the command “change aar analysis 0” to list and add additional AAR table entries. Avaya Communication Manager utilizes the AAR table to compare the user-dialed number with the “Dialed String” entry that most closely matches, which then determines the route pattern to use. Assign the following parameters:</p> <ol style="list-style-type: none"> Set the “Dialed String” field to the digits that the call processing server analyzes. For this example, the entry “432075” is for the extension range 4320750 through 4320759. Set the “Total Min” and “Total Max” fields to the minimum number and maximum number of user-dialed digits Avaya Communication Manager collects to determine a match to the “Dialed String” entry. Set the “Route Pattern” field to the route pattern number assigned in Step 5. Set the “Call Type” field to “aar” for regular AAR calls. Repeat steps a through d for each extension range that will route to the Avaya IR.
	<pre data-bbox="256 779 1433 1226"> change aar analysis 0 Page 1 of 2 AAR DIGIT ANALYSIS TABLE Percent Full: 2 Dialed Total Route Call Node ANI String Min Max Pattern Type Num Reqd 3 5 5 1 aar n 30331 5 5 30 aar n 38 5 5 14 aar n 4 5 5 11 aar n 40 5 5 13 aar n 401 3 3 401 aar n 5 7 7 999 aar n 432075 7 7 12 aar n 432076 7 7 12 aar n 432077 7 7 12 aar n </pre>

3.3. Digital Loop DS1 Board and Station Administration for the Site 2 to Avaya IR Link

Step	Description
1.	<p>Enter the command “add ds1 w” where w is the location for the unassigned TN464F DS1-board in the Site 2 G650 Media Gateway for the T-1 interface to the Avaya IR. Assign the following T-1 parameters:</p> <ol style="list-style-type: none"> a. In the “Name” field, enter a descriptive name for the DS1 circuit pack. b. Leave the “Line Coding” field at the default setting of “ami-zcs” for Alternate Mark Inversion – Zero Code Suppression support on the T-1 facility. c. Set the “Framing Mode” field to “d4” for basic DS1 Superframe. d. Set the “Signaling Mode” field to “robbed-bit” for in-band signaling with the T-1 service. <p>These settings must match in the Avaya IR Digital Loop-Start T1 screen (step 7 in Section 4.3) for “Trunk 2”. All other fields may be left at the default setting.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <pre> change ds1 02a04 Page 1 of 2 DS1 CIRCUIT PACK Location: 02A04 Name: IR Port 3 Bit Rate: 1.544 Line Coding: ami-zcs Line Compensation: 1 Framing Mode: d4 Signaling Mode: robbed-bit Interface Companding: mulaw Idle Code: 11111111 Slip Detection? n Near-end CSU Type: other </pre> </div>

Step	Description
<p>2.</p>	<p>A station must be administered for each Avaya IR Digital-Loop Channel. Enter the command “add station v”, where v is an available extension for the station. The extension of this station must match the assigned “Phone Number” in Avaya IR for the Digital-Loop channel (Refer to step 2 in Section 4.5). Assign the following parameters for the station:</p> <ul style="list-style-type: none"> a. Set the “Type” field to “DS1FD”. b. Set the “Port” field to “w01” where w is the location for the assigned TN464F DS1-board in the Site 2 G650 Media Gateway for the T-1 interface to the Avaya IR (step 1), and 01 is the first port on that board. c. In the “Name” field, enter a descriptive name for the station. <p>All other fields on pages 1 through 3 may be left at the default setting.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <pre> add station 4322750 Page 1 of 3 STATION Extension: 4322750 Lock Messages? n BCC: 0 Type: DS1FD Security Code: TN: 1 Port: 02A0401 Coverage Path 1: COR: 1 Name: B02 IR Station 1 Coverage Path 2: COS: 1 Hunt-to Station: Tests? y STATION OPTIONS Loss Group: 4 Off Premises Station? y R Balance Network? n Survivable COR: internal Survivable Trunk Dest? y </pre> </div>
<p>3.</p>	<p>Repeat step 2 using the “duplicate station” command to add a station extension for each Avaya IR Digital Loop Start channel and port on the assigned TN464F DS1-board.</p>

Step	Description
4.	<p>Enter the command “add hunt-group s”, where <i>s</i> is an available hunt group number. Assign the following parameters:</p> <ol style="list-style-type: none"> In the “Group Name” field, enter a descriptive name for the hunt group Assign an available extension number in the “Group Extension” field. The Avaya IR Digital Loop Start channels are accessed via this assigned extension number. Set the “Group Type” field to “ucd-mia”. <pre data-bbox="256 531 1435 863"> add hunt-group 92 Page 1 of 60 HUNT GROUP Group Number: 92 ACD? n Group Name: IR (TDM) Ports Queue? n Group Extension: 4322590 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: grp-name </pre>
5.	<p>Go to Page 3 and enter the station extensions assigned in steps 2 and 3 as group members under the “Ext” fields as shown below.</p> <pre data-bbox="256 999 1435 1612"> add hunt-group 92 Page 3 of 60 HUNT GROUP Group Number: 92 Group Extension: Group Type: ucd-mia Member Range Allowed: 1 - 1500 Administered Members (min/max): 0 /0 Total Administered Members: 0 GROUP MEMBER ASSIGNMENTS Ext Name (24 characters) Ext Name (24 characters) 1: 4322750 2: 4322751 3: 4322752 4: 4322753 5: 4322754 6: 4322755 7: 4322756 8: 4322757 9: 4322758 10: 4322759 11: 4322760 12: 4322761 13: 4322762 14: 4322763 15: 4322764 16: 4322765 17: 4322766 18: 4322767 19: 4322768 20: 4322769 21: 4322770 22: 4322771 23: 4322772 24: 4322773 25: 26: At End of Member List </pre>

3.4. Digital Loop DS1 Board and Station Administration for the Site 4 to Avaya IR Link

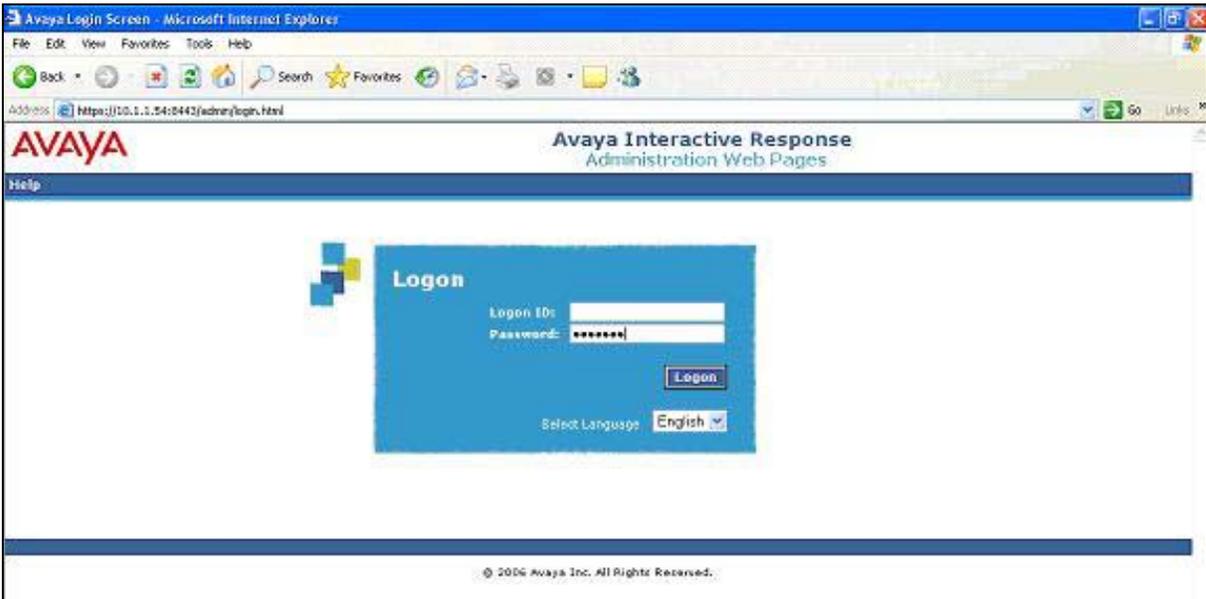
Step	Description
1.	<p>Enter the command “add ds1 u” where <i>u</i> is the location for the unassigned DS1 Media Module (MM710AP) in the Site 4 G350 Media Gateway for the T-1 interface to the Avaya IR. Assign the following T-1 parameters:</p> <ol style="list-style-type: none"> In the “Name” field, enter a descriptive name for the DS1 circuit pack. Set the “Line Coding” field to “b8zs” for bipolar eight zero substitution support on the T-1 facility. Set the “Signaling Mode” field to “robbed-bit” for in-band signaling with the T-1 service. <p>These settings must match in the Avaya IR Digital Loop-Start T1 screen (step 10 in Section 4.3) for “Trunk 3”. All other fields may be left at the default setting.</p> <div data-bbox="253 789 1433 1352" style="border: 1px solid black; padding: 10px;"> <pre> add ds1 004v3 Page 1 of 2 DS1 CIRCUIT PACK Location: 004V3 Name: IR Port 2 Bit Rate: 1.544 Line Coding: b8zs Line Compensation: 1 Framing Mode: esf Signaling Mode: robbed-bit Interface Companding: mulaw Idle Code: 11111111 Slip Detection? n Near-end CSU Type: other Echo Cancellation? n </pre> </div>

Step	Description
<p>2.</p>	<p>A station must be administered for each Avaya IR Digital-Loop Channel. Enter the command “add station t”, where t is an available extension for the station. The extension of this station must match the assigned “Phone Number” in Avaya IR for the Digital Loop Start channel (Refer to step 2 in Section 4.6). Assign the following parameters for the station:</p> <ul style="list-style-type: none"> a. Set the “Type” field to “DS1FD”. b. Set the “Port” field to “u01” where u is the location for the assigned DS1 Media Module (MM710AP) in the Site 4 G350 Media Gateway for the T-1 interface to the Avaya IR (step 1), and 01 is the first port on that board. c. In the “Name” field, enter a descriptive name for the station. <p>All other fields on pages 1 through 3 may be left at the default setting.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <pre> add station 4324750 Page 1 of 3 STATION Extension: 4324750 Lock Messages? n BCC: 0 Type: DS1FD Security Code: TN: 1 Port: 004V301 Coverage Path 1: COR: 1 Name: B04 IR Station 1 Coverage Path 2: COS: 1 Hunt-to Station: Tests? y STATION OPTIONS Loss Group: 4 Off Premises Station? y R Balance Network? n Survivable COR: internal Survivable Trunk Dest? y </pre> </div>
<p>3.</p>	<p>Repeat step 2 using the “duplicate station” command to add a station extension for each Avaya IR Digital Loop Start channel and port on the assigned DS1 Media Module.</p>

Step	Description
4.	<p>Enter the command “add hunt-group r”, where <i>r</i> is an available hunt group number. Assign the following parameters:</p> <ol style="list-style-type: none"> In the “Group Name” field, enter a descriptive name for the hunt group Assign an available extension number in the “Group Extension” field. The Avaya IR Digital Loop Start channels are accessed via this assigned extension number. Set the “Group Type” field to “ucd-mia”. <pre data-bbox="256 527 1435 856"> add hunt-group 94 Page 1 of 60 HUNT GROUP Group Number: 94 ACD? n Group Name: IR (TDM) Ports Queue? n Group Extension: 4324590 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: grp-name </pre>
5.	<p>Go to Page 3 and enter the station extensions assigned in steps 2 and 3 as group members under the “Ext” fields as shown below.</p> <pre data-bbox="256 989 1435 1604"> add hunt-group 94 Page 3 of 60 HUNT GROUP Group Number: 94 Group Extension: Group Type: ucd-mia Member Range Allowed: 1 - 1500 Administered Members (min/max): 0 /0 Total Administered Members: 0 GROUP MEMBER ASSIGNMENTS Ext Name (24 characters) Ext Name (24 characters) 1: 4324750 14: 4324763 2: 4324751 15: 4324764 3: 4324752 16: 4324765 4: 4324753 17: 4324766 5: 4324754 18: 4324767 6: 4324755 19: 4324768 7: 4324756 20: 4324769 8: 4324757 21: 4324770 9: 4324758 24: 4324771 10: 4324759 23: 4324772 11: 4324760 24: 4324773 12: 4324761 25: 13: 4324762 26: At End of Member List </pre>

4. Configure Avaya Interactive Response

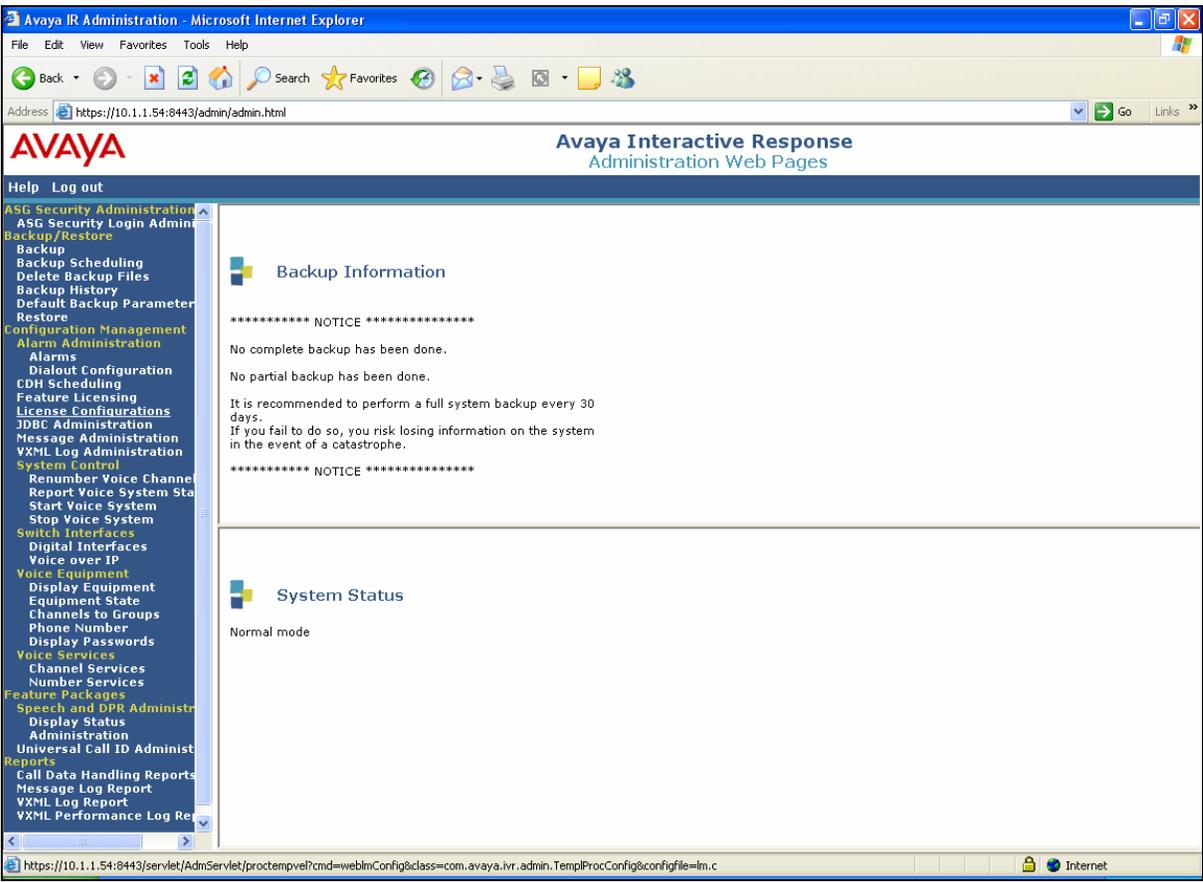
The following steps illustrate how to configure Avaya IR using a Web Graphical User Interface (GUI).

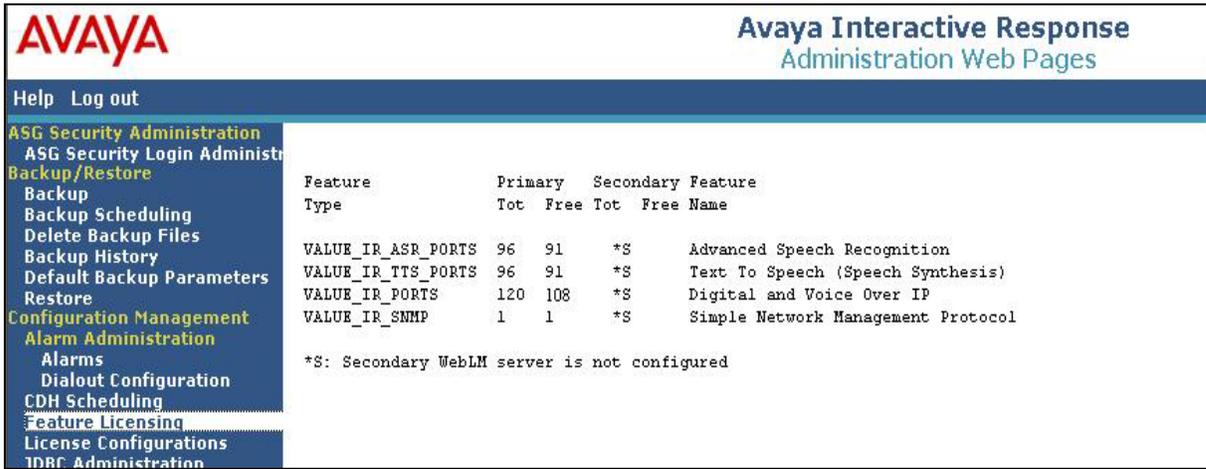
Step	Description
1.	<p>Open a Windows Explorer browser and enter the IP address or DNS entry of the Avaya IR system (For Example http://10.1.1.54 or http://sa-ir.solar.com) to display the main Web Administration page. Click the “Web Administration” button to enter the secure Web Administration pages.</p> 
2.	<p>Enter a username and password with administrator privileges as shown below. Click the “Logon” button to enter Web Administration.</p> 

4.1. Verifying Licenses

Avaya IR R2.0 utilizes Primary and Secondary WebLM servers for implementation of feature licenses. If activation of additional features or ports is required, an updated license file must be obtained and installed on WebLM server. The license file contains details about the features and number of ports purchased. To obtain an updated license file, please contact your Avaya Authorized Sales representative.

The following illustrates how to verify the feature licenses on the Avaya IR.

Step	Description
1.	<p>Upon successful login to Web Administration, the following page appears. The windowpane on the left of the web page contains all the Avaya IR Web Administration functions.</p> <p>To administer additional digital or VoIP (Channel) ports on the Avaya IR system requires the availability of free feature port licenses. To verify the Avaya IR System feature licenses, click on “Feature Licensing” under the “Configuration Management” section.</p> 

Step	Description																														
2.	<p>Verify that the number of free licenses for the feature type “VALUE_IR_PORTS” is a value equal to or greater than the number of ports/channels to be configured on the Avaya IR system.</p> <p>Note: Licenses will be requested by the Avaya IR system for only the number of “Enabled Channels” starting with channel 0. Refer to steps 4, 7 & 10 in Section 4.3.</p>  <p>The screenshot shows the Avaya Interactive Response Administration Web Pages interface. The left sidebar contains a navigation menu with categories like ASG Security Administration, Backup/Restore, Configuration Management, Alarm Administration, Dialout Configuration, CDH Scheduling, Feature Licensing (highlighted), License Configurations, and IDRF Administration. The main content area displays a table of feature licenses:</p> <table border="1"> <thead> <tr> <th>Feature Type</th> <th>Primary Tot</th> <th>Primary Free</th> <th>Secondary Tot</th> <th>Secondary Free</th> <th>Feature Name</th> </tr> </thead> <tbody> <tr> <td>VALUE_IR_ASR_PORTS</td> <td>96</td> <td>91</td> <td>*S</td> <td></td> <td>Advanced Speech Recognition</td> </tr> <tr> <td>VALUE_IR_TTS_PORTS</td> <td>96</td> <td>91</td> <td>*S</td> <td></td> <td>Text To Speech (Speech Synthesis)</td> </tr> <tr> <td>VALUE_IR_PORTS</td> <td>120</td> <td>108</td> <td>*S</td> <td></td> <td>Digital and Voice Over IP</td> </tr> <tr> <td>VALUE_IR_SNMP</td> <td>1</td> <td>1</td> <td>*S</td> <td></td> <td>Simple Network Management Protocol</td> </tr> </tbody> </table> <p>*S: Secondary WebLM server is not configured</p>	Feature Type	Primary Tot	Primary Free	Secondary Tot	Secondary Free	Feature Name	VALUE_IR_ASR_PORTS	96	91	*S		Advanced Speech Recognition	VALUE_IR_TTS_PORTS	96	91	*S		Text To Speech (Speech Synthesis)	VALUE_IR_PORTS	120	108	*S		Digital and Voice Over IP	VALUE_IR_SNMP	1	1	*S		Simple Network Management Protocol
Feature Type	Primary Tot	Primary Free	Secondary Tot	Secondary Free	Feature Name																										
VALUE_IR_ASR_PORTS	96	91	*S		Advanced Speech Recognition																										
VALUE_IR_TTS_PORTS	96	91	*S		Text To Speech (Speech Synthesis)																										
VALUE_IR_PORTS	120	108	*S		Digital and Voice Over IP																										
VALUE_IR_SNMP	1	1	*S		Simple Network Management Protocol																										

4.2. Verifying Installed NMS Package

Log into the Avaya IR Command Line Interface (CLI) and issue the command “**naver**” to verify that the installed NMS package is “**Natural Access 2005-1**” or later version.

```

*****
*   Natural Access software version utility   *
*   This program will list the installed NMS Communications software *
*****

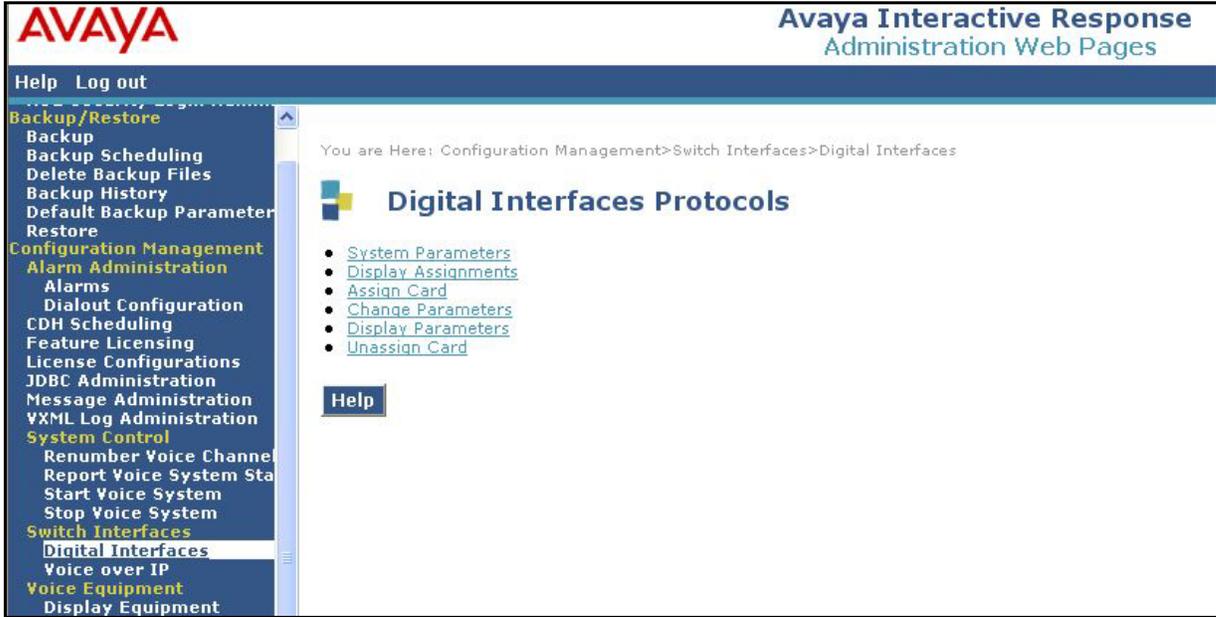
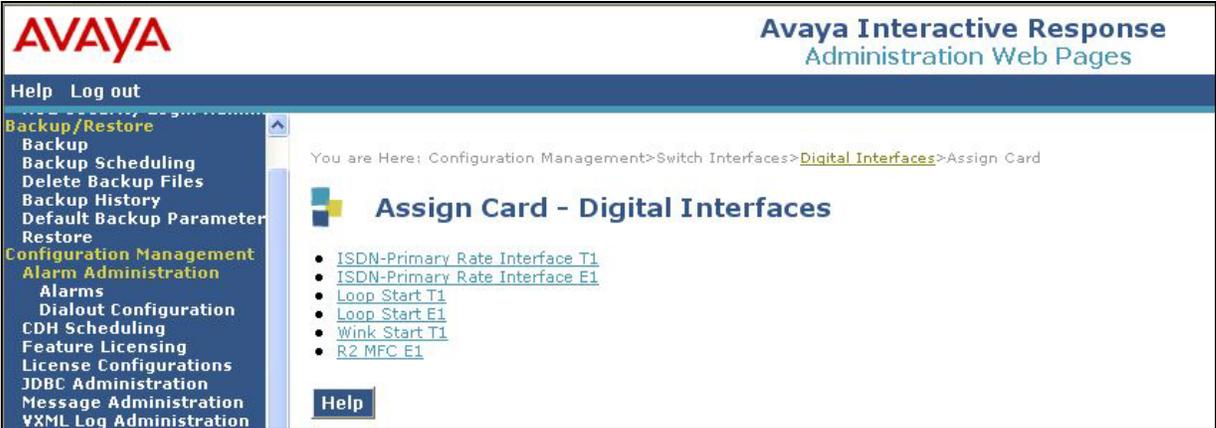
Natural Access 2005-1

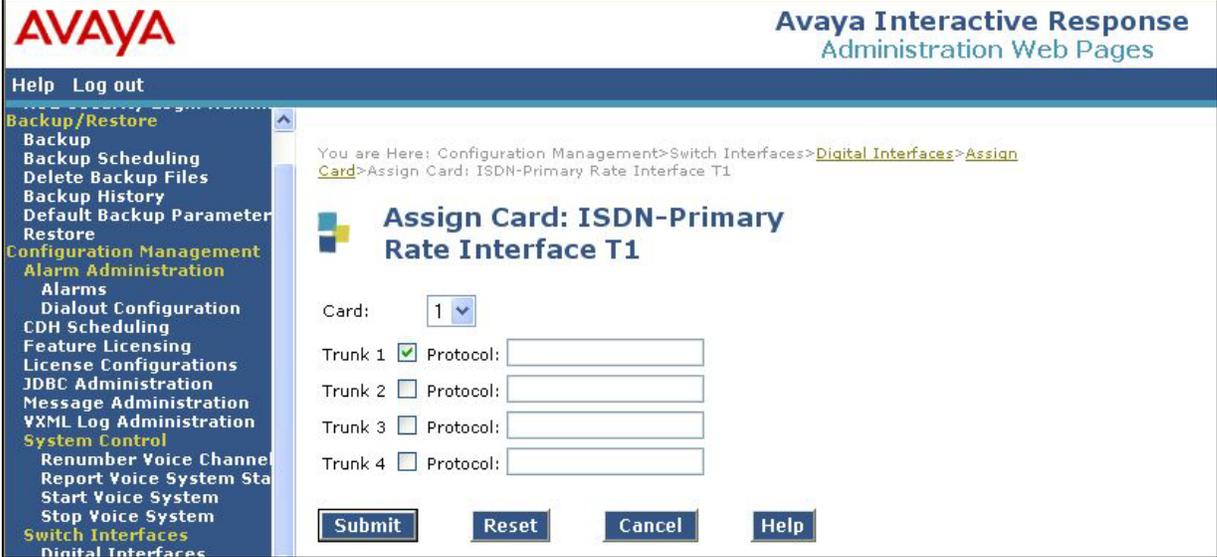
ag-cas version 2.29
ag-isdn version 1.92
cnf version 2.15
ctaccess version 4.16
dlcp-cg version 1.15
naabstrct version 4.16
nabase version 4.16
nacore version 4.16
nademos version 4.16
nadriverv version 4.16
nadriv64 version 4.16
nadsp version 4.16
naruntime version 4.16
nfx version 4.25
oam version 1.15
sa-ir(root)#

```

4.3. Digital Interface Configuration

Continue by returning to Avaya IR Web Graphical User Interface (GUI).

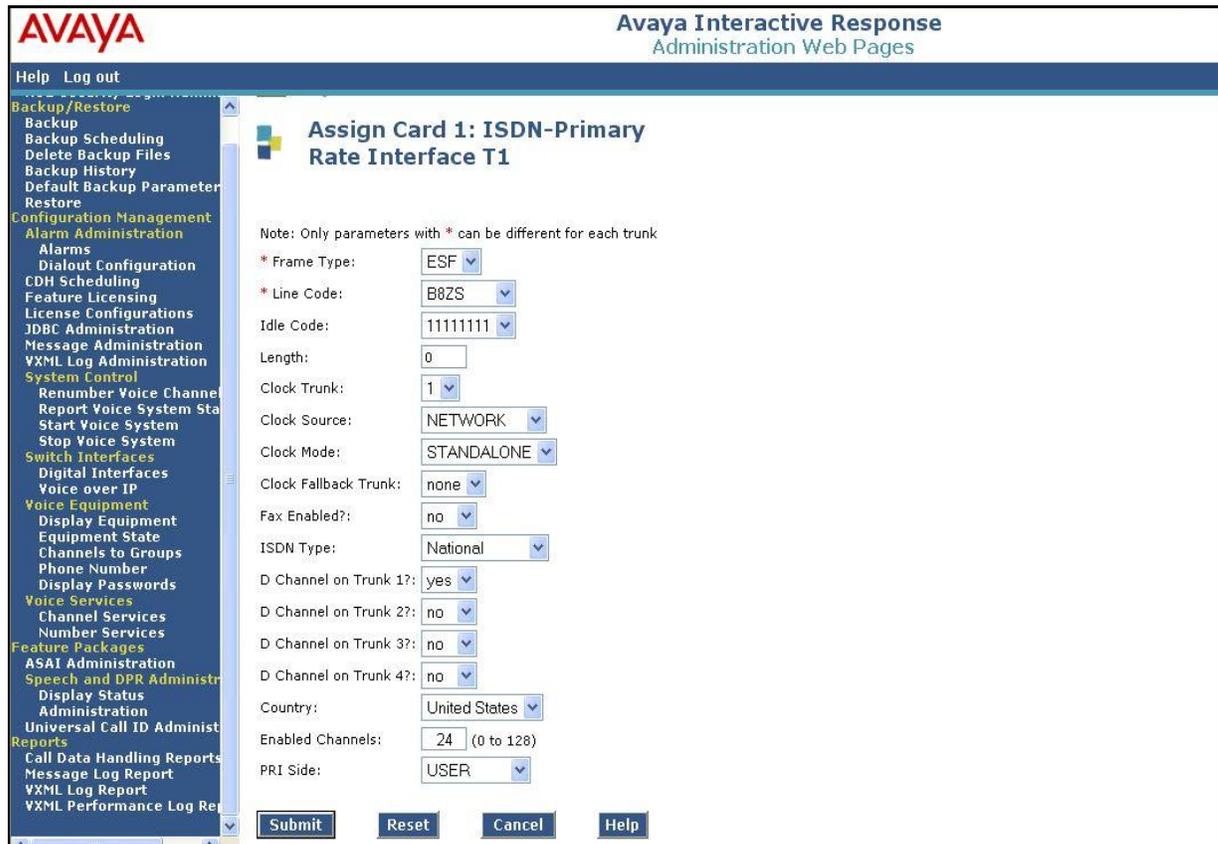
Step	Description
1.	<p>To configure the NMS AG 4040 card, click on “Digital Interfaces” under the “Switch Interfaces” section. Click on the “Assign Card” link.</p> 
2.	<p>Click on the “ISDN-Primary Rate Interface T1” link to assign ISDN-PRI interface to the NMS AG 4040 card.</p> 

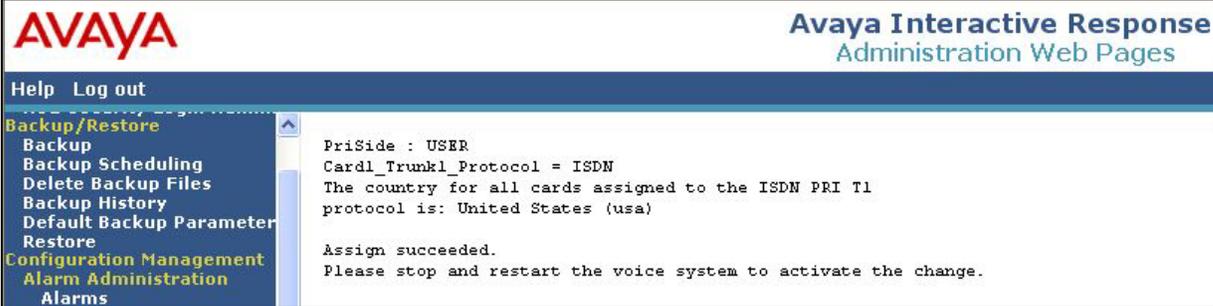
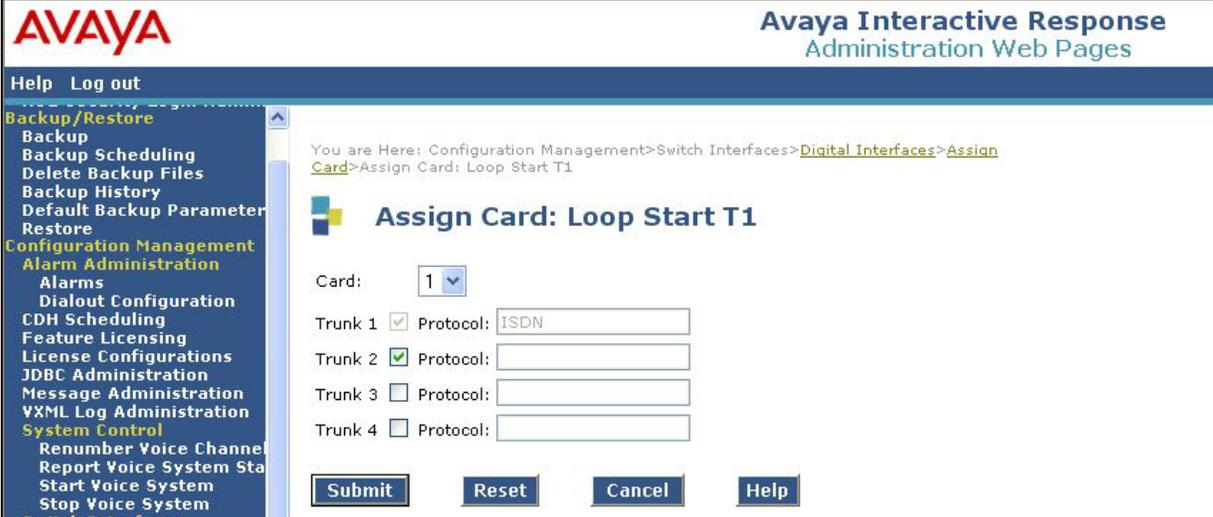
Step	Description
3.	<p>The NMS AG 4040 card is the first card in the Avaya IR. To select the first trunk to configure on the NMS AG 4040 card, click on the check box to the right of the “Trunk 1” field (as shown below). Then click the “Submit” button when complete.</p> 

Step	Description
------	-------------

4. Assign the following ISDN-PRI T-1 parameters for the Avaya IR to Main Office Link:
- The table below contains the ISDN-PRI T-1 parameters that must match the settings in Avaya Communication Manager for the Main Office DS1 configuration (Refer to **step 1 in Section 3.1**):
- | Avaya IR | Avaya Communication Manager | Field |
|------------|-----------------------------|----------|
| Frame Type | Framing Mode | ESF |
| Line Code | Line Coding | B8ZS |
| Idle Code | Idle Code | 11111111 |
- Set the “**ISDN Type**” field to “**National**”.
 - Set the “**D Channel on Trunk <2 to 4>**” to “**No**”.
 - Set the “**Enabled Channels**” field to “**24**” to enable the first 24 channels.
 - Set the “**PRI Side**” field to “**USER**”. Avaya Communication Manager must have the complementary setting of “**network**” for the Main Office DS1 configuration (Refer to **step 1 in Section 3.1**).

All other fields may be left at the default setting. Click on the “**Submit**” button to save the changes.



Step	Description
5.	<p>Avaya IR confirms the assignment of “Trunk 1” for the NMS AG 4040 “Card 1”.</p>  <p>The screenshot shows the Avaya Interactive Response Administration Web Pages interface. The left navigation menu includes Backup/Restore, Configuration Management, Alarm Administration, and Alarms. The main content area displays the following text: PriSide : USER, Card1_Trunk1_Protocol = ISDN, The country for all cards assigned to the ISDN PRI T1 protocol is: United States (usa), Assign succeeded., and Please stop and restart the voice system to activate the change.</p>
6.	<p>Repeat step 1 and then click on the “Loop Start T1” link to assign a Digital Loop Start interface to the NMS AG 4040 card. To select the second trunk to configure on the NMS AG 4040 card, click on the check box to the right of the “Trunk 2” field (as shown below). Then click the “Submit” button when complete.</p>  <p>The screenshot shows the Avaya Interactive Response Administration Web Pages interface for the 'Assign Card: Loop Start T1' configuration page. The left navigation menu includes Backup/Restore, Configuration Management, Alarm Administration, and Alarms. The main content area displays the following text: You are Here: Configuration Management>Switch Interfaces>Digital Interfaces>Assign Card>Assign Card: Loop Start T1, Assign Card: Loop Start T1, Card: 1, Trunk 1 [checked] Protocol: ISDN, Trunk 2 [checked] Protocol: [text box], Trunk 3 [unchecked] Protocol: [text box], Trunk 4 [unchecked] Protocol: [text box], and buttons for Submit, Reset, Cancel, and Help.</p>

Step	Description
------	-------------

7. The Loop Start T1 parameters must match the settings in Avaya Communication Manager for the Site 2 DS1 configuration (Refer to **step 1** in **Section 3.3**). Set the **“Enabled Channels”** field to **“48”** to enable all the channels for Trunk 1 and Trunk 2 on the NMS AG 4040 card. All other fields may be left at the default setting. Click on the **“Submit”** button to save the changes.

AVAYA Avaya Interactive Response Administration Web Pages

Help Log out

Backup/Restore
 Backup
 Backup Scheduling
 Delete Backup Files
 Backup History
 Default Backup Parameter
 Restore
 Configuration Management
 Alarm Administration
 Alarms
 Dialout Configuration
 CDH Scheduling
 Feature Licensing
 License Configurations
 JDBC Administration
 Message Administration
 YXML Log Administration
 System Control
 Renumbr 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
 Channels to Groups
 Phone Number
 Display Passwords
 Voice Services
 Channel Services
 Number Services
 Feature Packages
 ASAI Administration
 Speech and DPR Administr
 Display Status

You are Here: Configuration Management>Switch Interfaces>Digital Interfaces>Assign Card>Assign Card: Loop Start T1>Assign Card 1

Assign Card 1 : Loop Start T1

Note: Only parameters with * can be different for each trunk

* Frame Type: D4
 * Line Code: AMI_ZCS
 Idle Code: 11111111
 Length: 0
 Clock Trunk: 1
 Clock Source: NETWORK
 Clock Mode: STANDALONE
 Clock Fallback Trunk: none
 Fax Enabled?: no
 Country and Region: United States
 Enabled Channels: 48 (0 to 128)

Submit Reset Cancel Help

8. Avaya IR confirms the assignment of **“Trunk 2”** for the NMS AG 4040 **“Card 1”**.

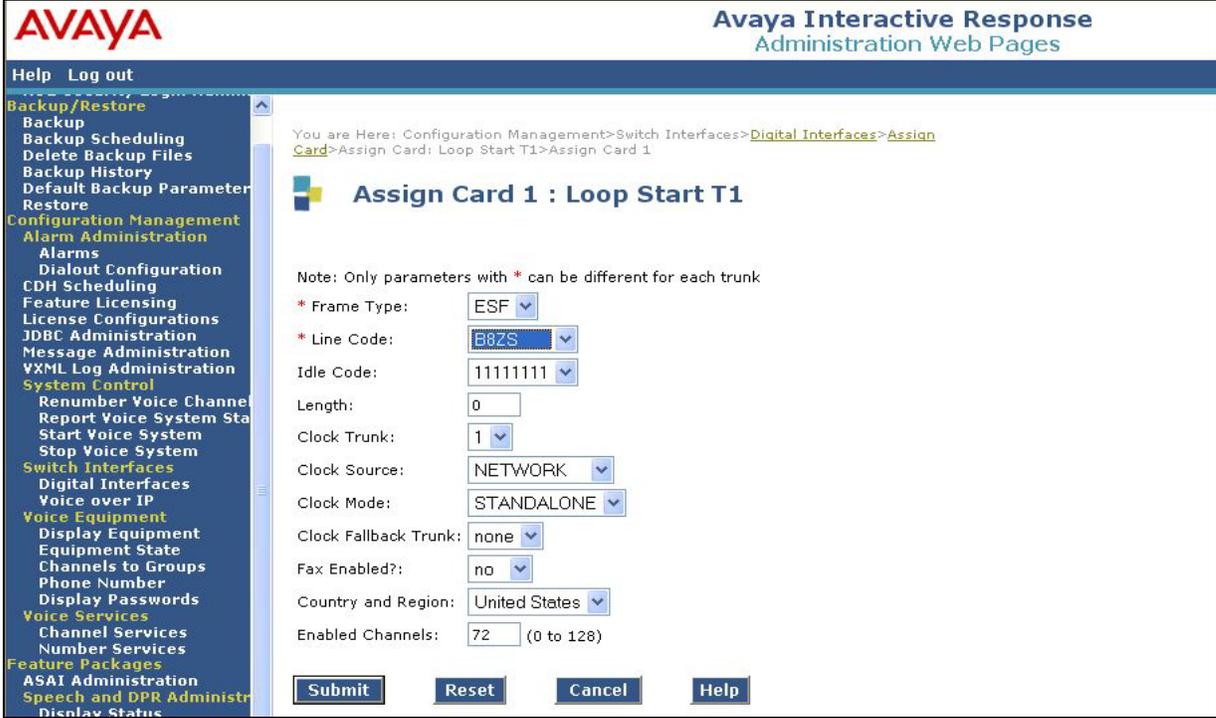
AVAYA Avaya Interactive Response Administration Web Pages

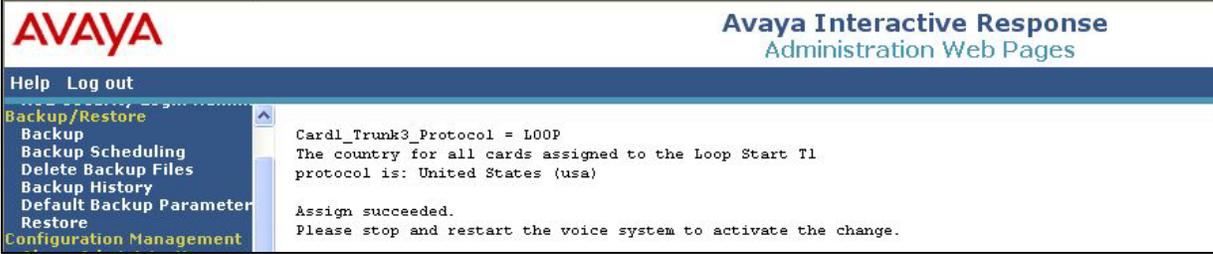
Help Log out

Backup/Restore
 Backup
 Backup Scheduling
 Delete Backup Files
 Backup History
 Default Backup Parameter
 Restore
 Configuration Management
 Alarm Administration

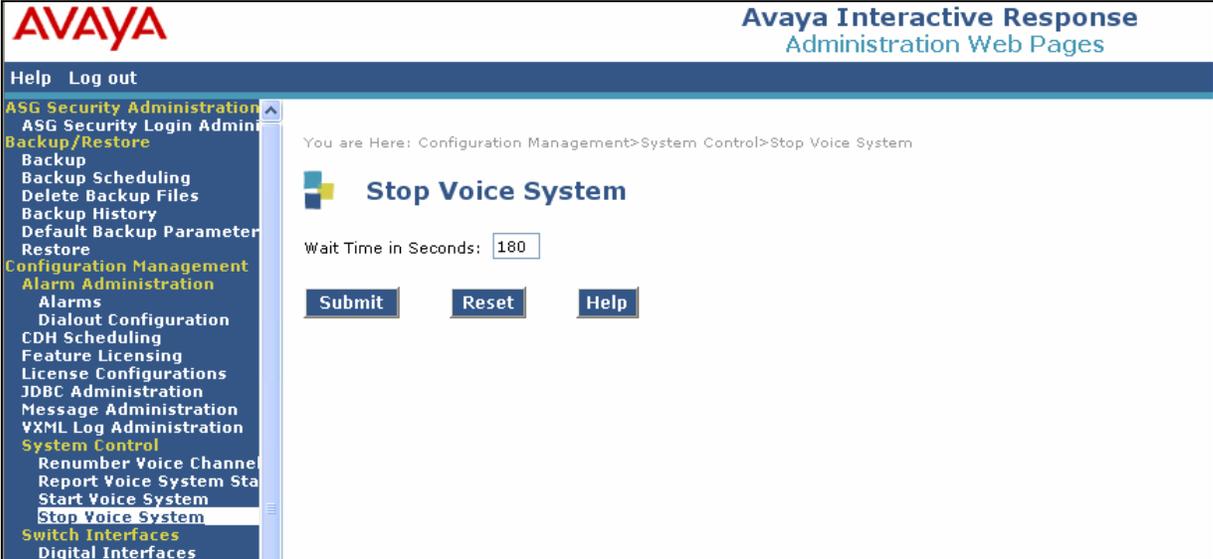
Card1_Trunk3_Protocol = LOOP
 The country for all cards assigned to the Loop Start T1 protocol is: United States (usa)

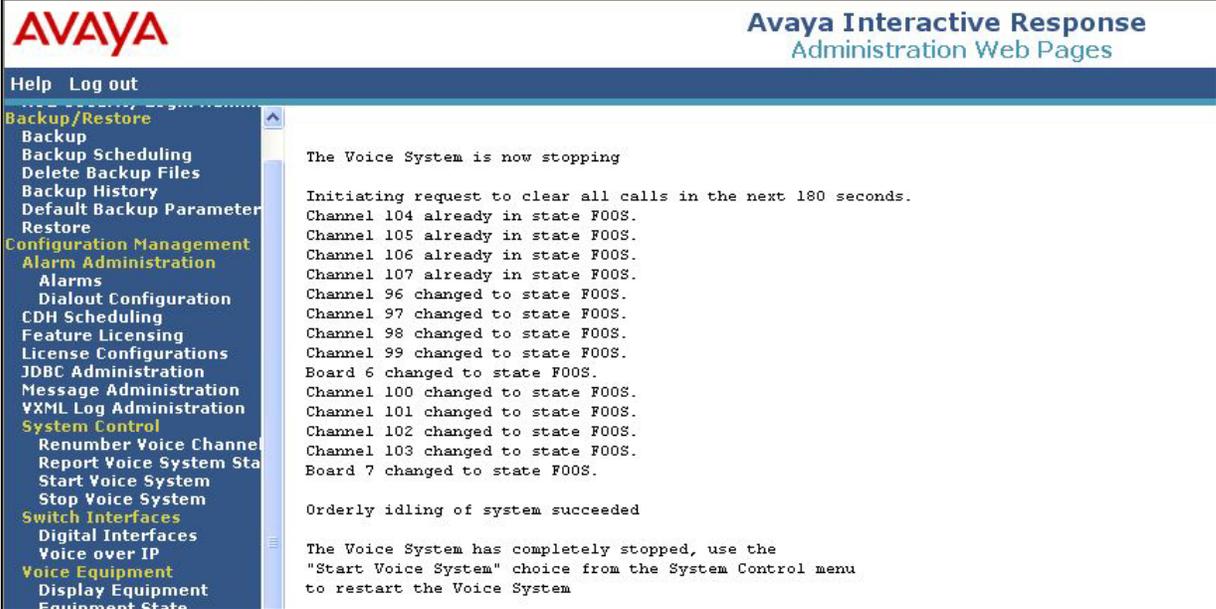
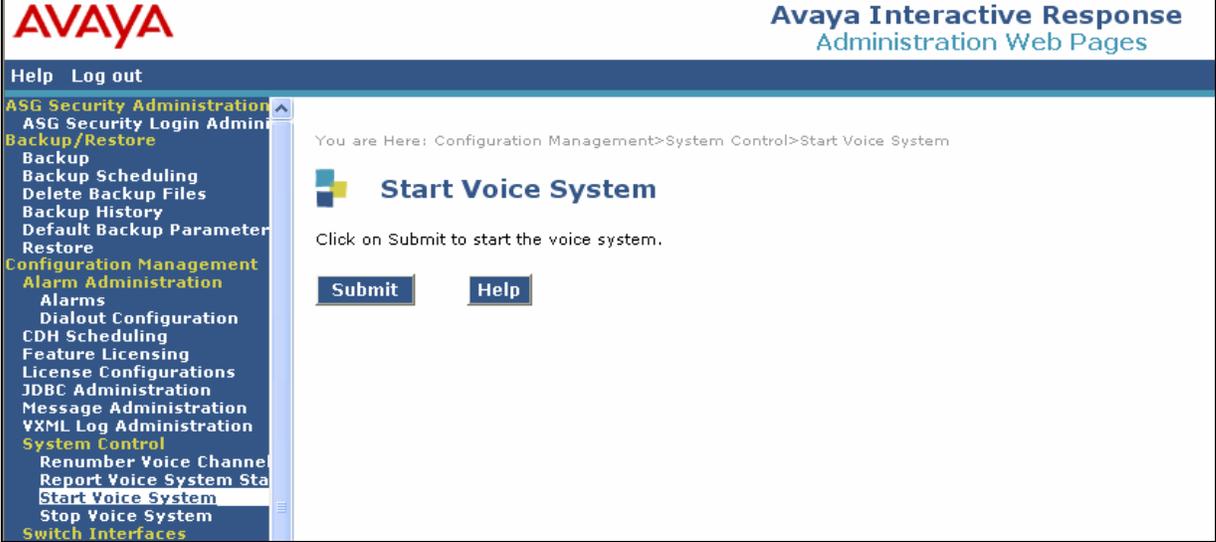
Assign succeeded.
 Please stop and restart the voice system to activate the change.

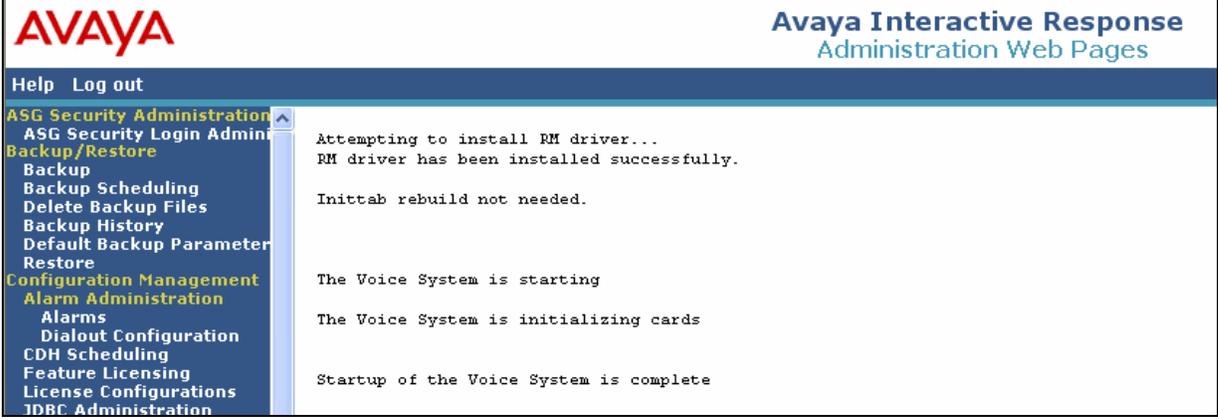
Step	Description
9.	<p>Repeat step 1 and then click on the “Loop Start T1” link to assign the second Digital Loop Start interface to the NMS AG 4040 card. To select the third trunk to configure on the NMS AG 4040 card, click on the check box to the right of the “Trunk 3” field (as shown below). Then click the “Submit” button when complete.</p> 
10.	<p>The Loop Start T1 parameters must match the settings in Avaya Communication Manager for the Site 4 DS1 configuration (Refer to step 1 in Section 3.4). Set the “Enabled Channels” field to “72” to enable all the channels for Trunk 1, Trunk 2, and Trunk 3 on the NMS AG 4040 card. All other fields may be left at the default setting. Then click the “Submit” button when complete.</p> 

Step	Description
11.	<p>Avaya IR confirms the assignment of “Trunk 3” for the NMS AG 4040 “Card 1”.</p>  <p>The screenshot shows the Avaya Interactive Response Administration Web Pages interface. The top left features the AVAYA logo. The top right displays the page title 'Avaya Interactive Response Administration Web Pages'. Below the title is a navigation bar with 'Help' and 'Log out' links. A left-hand menu lists various configuration categories, with 'Backup/Restore' and 'Configuration Management' highlighted. The main content area displays a message: 'Card1_Trunk3_Protocol = L00P', 'The country for all cards assigned to the Loop Start TL protocol is: United States (usa)', and 'Assign succeeded. Please stop and restart the voice system to activate the change.'</p>

4.4. Activating the Digital Interface Configuration

Step	Description
1.	<p>To activate the configuration changes, stop and then restart the voice system. Click on “Stop Voice System” under the “System Control” section to stop the voice system.</p>  <p>The screenshot shows the Avaya Interactive Response Administration Web Pages interface. The top left features the AVAYA logo. The top right displays the page title 'Avaya Interactive Response Administration Web Pages'. Below the title is a navigation bar with 'Help' and 'Log out' links. A left-hand menu lists various configuration categories, with 'System Control' highlighted. The main content area displays the 'Stop Voice System' configuration page. The page title is 'Stop Voice System'. Below the title is a breadcrumb trail: 'You are Here: Configuration Management>System Control>Stop Voice System'. There is a 'Wait Time in Seconds' field with the value '180'. Below the field are three buttons: 'Submit', 'Reset', and 'Help'.</p>

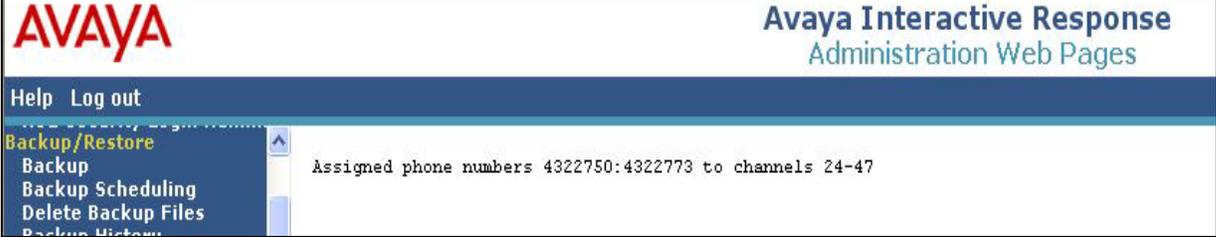
Step	Description
2.	<p>Click on the “Submit” button. Avaya IR confirms the voice system has completely stopped.</p> 
3.	<p>To restart the voice system, click on “Start Voice System” under the “System Control” section. Click on the “Submit” button.</p> 

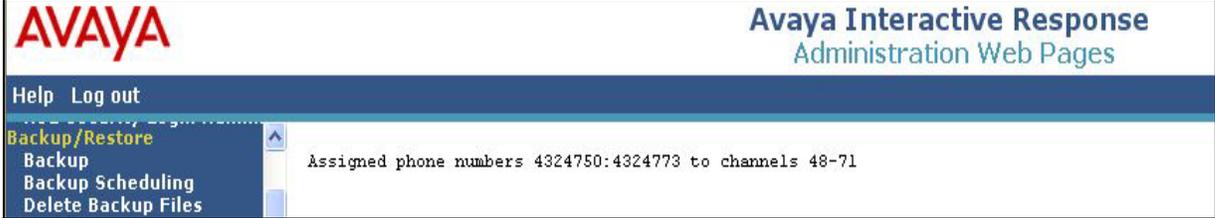
Step	Description
4.	<p>Avaya IR confirms the voice system has completed Voice System startup.</p>  <p>The screenshot shows the Avaya Interactive Response Administration Web Pages interface. The left navigation pane is expanded to 'Backup/Restore'. The main content area displays the following status messages:</p> <pre> Attempting to install RM driver... RM driver has been installed successfully. Inittab rebuild not needed. The Voice System is starting The Voice System is initializing cards Startup of the Voice System is complete </pre>

4.5. Assigning Phone Numbers

For Digital Loop Start channels, each channel must be assigned a phone number that matches the assigned station extension and corresponding port address in Avaya Communication Manager. This does not apply to the ISDN-PRI channels.

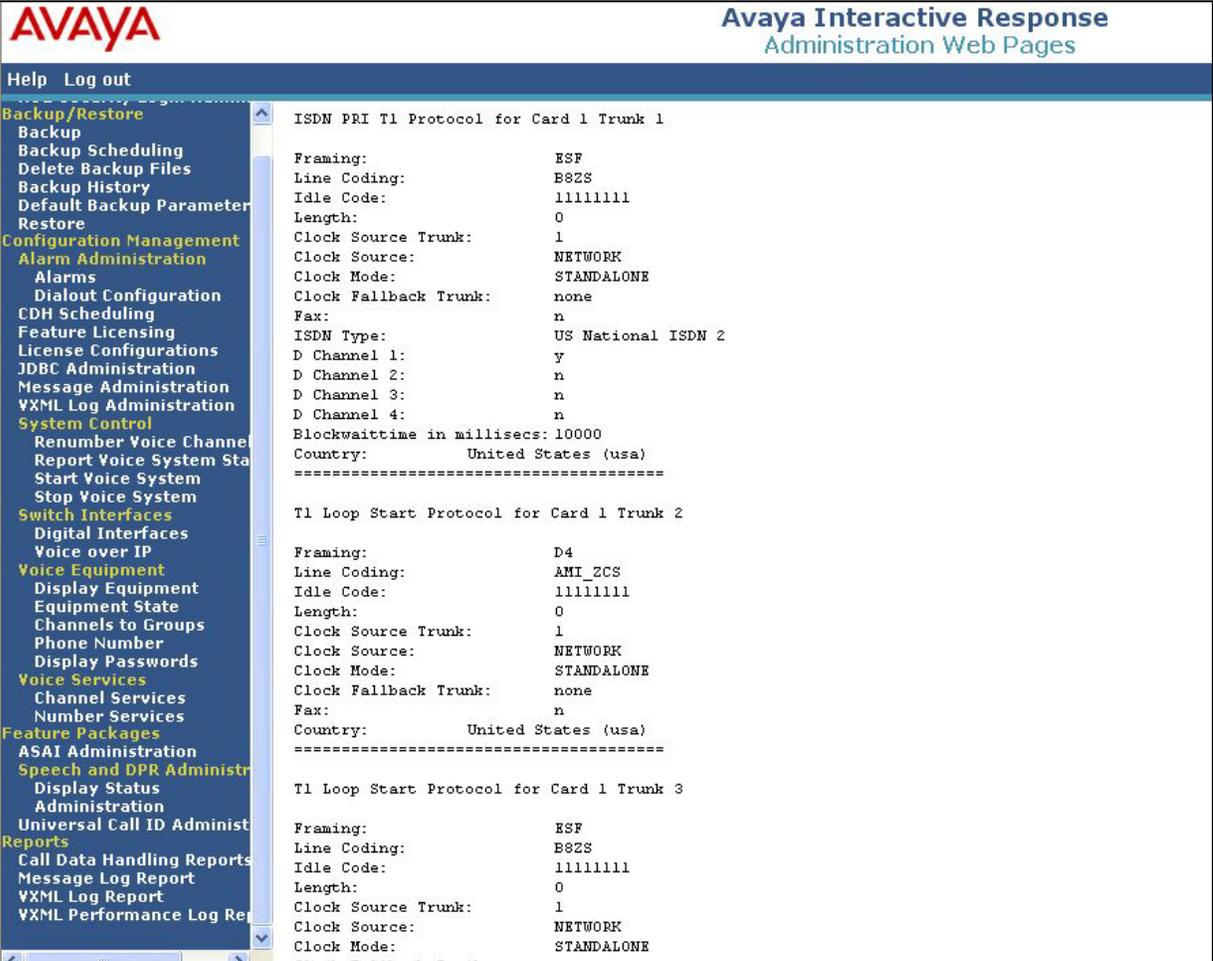
Step	Description
1.	<p>To assign phone numbers to Digital Loop Start channels, click on “Phone Number” under the “Voice Equipment” section. Click on the “Assign” link to continue.</p>  <p>The screenshot shows the Avaya Interactive Response Administration Web Pages interface. The left navigation pane is expanded to 'Voice Equipment'. The main content area displays the following page:</p> <pre> You are Here: Configuration Management>Voice Equipment>Phone Number Phone Number - Channel Assignment • Assign • Unassign Help </pre>

Step	Description
2.	<p>Enter the extension range for the Site 2 Digital Loop Start channels in the “Phone Number” fields and the channel range in the “Channel Number” fields as shown below. Click the “Submit” button.</p> <p>Note: Phone Number range must be the same length as the Channel Number range.</p> 
3.	<p>Avaya IR confirms the assignment of the phone number to each channel for the submitted range.</p> 

Step	Description
<p>4.</p>	<p>Repeat step 1 to enter the extension range for the Site 4 Digital Loop Start channels in the “Phone Number” fields, the channel range in the “Channel Number” fields as shown below. Click the “Submit” button.</p> <p>Note: Phone Number range must be the same length as the Channel Number range.</p> 
<p>5.</p>	<p>Avaya IR confirms the assignment of the phone number to each channel for the submitted range.</p> 

5. Verification Steps

Perform the following steps to test and verify the Avaya IR Digital Interface Configuration.

Step	Description
1.	<p>To display the assigned NMS AG 4040 Card 1 parameters, click on “Digital Interfaces” and click the “Display Parameters” link. Click on the “Submit” button. (output shown below)</p>
	
 <pre> ISDN PRI T1 Protocol for Card 1 Trunk 1 Framing: ESF Line Coding: B8ZS Idle Code: 11111111 Length: 0 Clock Source Trunk: 1 Clock Source: NETWORK Clock Mode: STANDALONE Clock Fallback Trunk: none Fax: n ISDN Type: US National ISDN 2 D Channel 1: y D Channel 2: n D Channel 3: n D Channel 4: n Blockwaittime in millisecs: 10000 Country: United States (usa) ===== T1 Loop Start Protocol for Card 1 Trunk 2 Framing: D4 Line Coding: AMI_2CS Idle Code: 11111111 Length: 0 Clock Source Trunk: 1 Clock Source: NETWORK Clock Mode: STANDALONE Clock Fallback Trunk: none Fax: n Country: United States (usa) ===== T1 Loop Start Protocol for Card 1 Trunk 3 Framing: ESF Line Coding: B8ZS Idle Code: 11111111 Length: 0 Clock Source Trunk: 1 Clock Source: NETWORK Clock Mode: STANDALONE Clock Fallback Trunk: none </pre>	

Step	Description
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- To terminate a call to Avaya IR, an application must be assigned to the Avaya IR channels. Click on “**Channel Services**” under the “**Voice Services**” section. The resulting Web administration page is shown below. Click on the “**Assign Selected**” button without selecting any channels. This will bring up the “**Assign Services to Channels**” Web page.

Select	Chan	Service/URI	Type	Startup Service/URI	Type
<input type="checkbox"/>	0	-	unassigned	-	unassigned
<input type="checkbox"/>	1	-	unassigned	-	unassigned
<input type="checkbox"/>	2	-	unassigned	-	unassigned
<input type="checkbox"/>	3	-	unassigned	-	unassigned
<input type="checkbox"/>	4	-	unassigned	-	unassigned
<input type="checkbox"/>	5	-	unassigned	-	unassigned
<input type="checkbox"/>	6	-	unassigned	-	unassigned
<input type="checkbox"/>	7	-	unassigned	-	unassigned
<input type="checkbox"/>	8	-	unassigned	-	unassigned
<input type="checkbox"/>	9	-	unassigned	-	unassigned

- Select “**chantst**” for the “**Service**” and “**Startup Service**” fields as the test application, and enter the channel range “**24-72**” in the “**To Chan(s)**” field. Click on the “**Submit**” button to complete the administration.

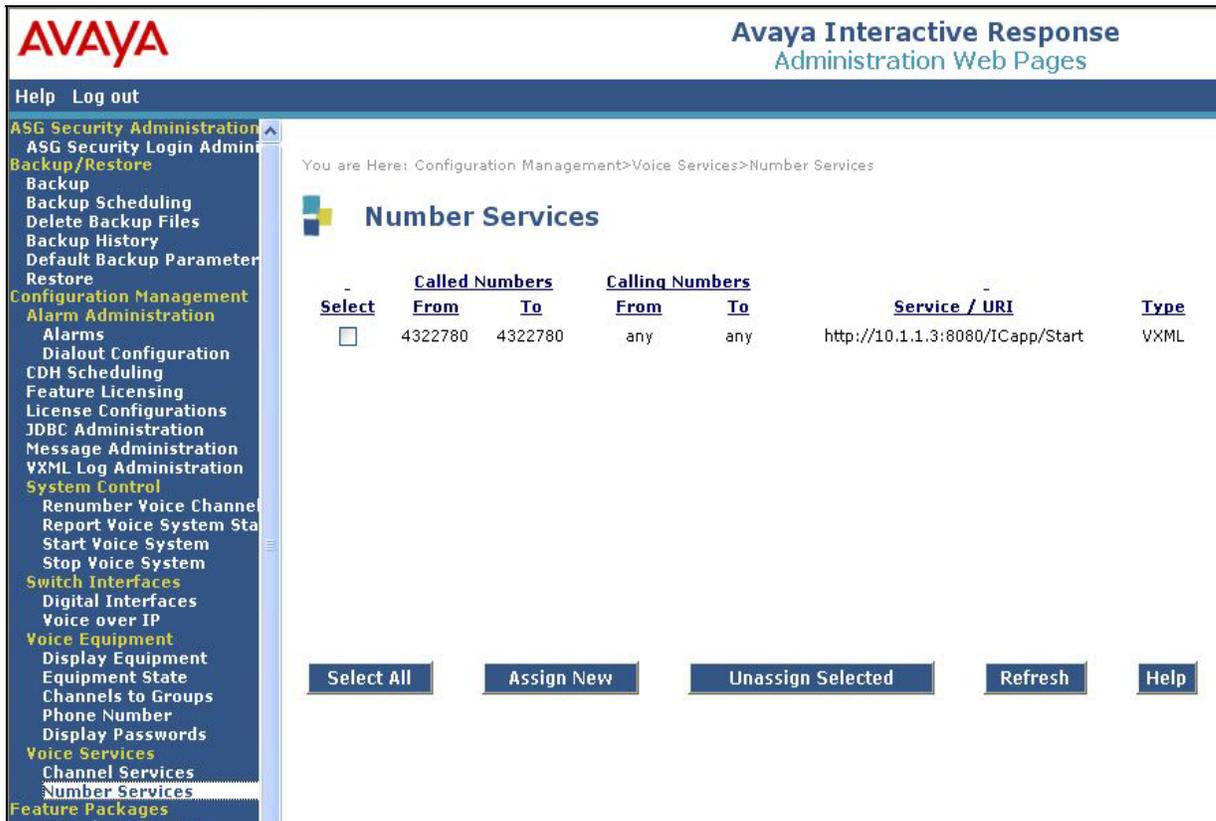
Note: The “**chantst**” is one of the Transaction Assembler Script (TAS) applications installed by default on the Avaya IR system for testing purposes.

Step	Description
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4. Repeat **step 2** to assign DNIS Service application to the ISDN-PRI channels. Select “*DNIS_SVC” for the “**Service**” and “**Startup Service**” fields and enter the channel range “0-22” (channel 23 is the d-channel) in the “**To Chan(s)**” field. Click on the “**Submit**” button to complete the administration.



5. To assign a DNIS number or range of numbers, click on “**Number Services**” under the “**Voice Services**” section. Click on the “**Assign New**” button.



Step	Description
6.	Enter the DNIS number (Example: “4320770”) or DNIS range in the “Called Numbers” field. In the “Calling Numbers” field, enter “any” so that the Avaya IR accepts any incoming calling party via the ISDN-PRI T-1. Select “chantst” for the “Service Name” field as the test application. Click on the “Submit” button to complete the administration. (output shown below)

The screenshot shows the Avaya Interactive Response Administration Web Pages interface. The page title is "Assign Number Services". The breadcrumb trail is "You are Here: Configuration Management>Voice Services>Number Services>Assign Number Services". The left sidebar contains a navigation menu with categories like "ASG Security Administration", "Backup/Restore", "Configuration Management", and "Alarm Administration". The main content area has the following fields:

- Assign: TAS Service (dropdown)
- Called Numbers: 4320770 to []
- Calling Numbers: any to []
- Service Name: chantst (dropdown)

At the bottom of the form are buttons for "Submit", "Reset", "Cancel", and "Help".

The screenshot shows the Avaya Interactive Response Administration Web Pages interface. The page title is "Number Services". The breadcrumb trail is "You are Here: Configuration Management>Voice Services>Number Services". The left sidebar is the same as in the previous screenshot. The main content area displays a table of services:

Select	Called Numbers		Calling Numbers		Service / URI	Type
	From	To	From	To		
<input type="checkbox"/>	4322780	4322780	any	any	http://10.1.1.3:8080/ICapp/Start	VXML
<input type="checkbox"/>	4320770	4320770	any	any	chantst	TAS

Step Description

- Click on “**Display Equipment**” under the “**Voice Equipment**” section. View and verify that all assigned channels (“**CHAN**”) for the Main Office (0 – 23), Site 2 (24 – 47) and Site 4 (48-71) locations are in the “**Inserv**” (in-service) state. (Only the enabled channels are displayed.)



Avaya Interactive Response
Administration Web Pages

Help Log out
ASG Security Administration
CARD 1 STATE: Inserv CLASS: Digital NMS(T1) O.S.INDEX: 1

ASG Security Login Administration
NAME: AG20 OPTIONS: standalone clocking, no tdm

Backup/Restore
FUNCTION: NMS

	CARD	TRUNK	PORT	CHAN	STATE	SERVICE-NAME	PHONE	GROUP	OPTS	PROTOCOL
Backup	1	1	0	0	Inserv	*DNIS_SVC	-		talk	PRIE
Backup Scheduling	1	1	1	1	Inserv	*DNIS_SVC	-	1	talk	PRIE
Delete Backup Files	1	1	2	2	Inserv	*DNIS_SVC	-	1	talk	PRIE
Backup History	1	1	3	3	Inserv	*DNIS_SVC	-	1	talk	PRIE
Default Backup Parameters	1	1	4	4	Inserv	*DNIS_SVC	-	1	talk	PRIE
Restore	1	1	5	5	Inserv	*DNIS_SVC	-	1	talk	PRIE
Configuration Management	1	1	6	6	Inserv	*DNIS_SVC	-	1	talk	PRIE
Alarm Administration	1	1	7	7	Inserv	*DNIS_SVC	-	1	talk	PRIE
Alarms	1	1	8	8	Inserv	*DNIS_SVC	-	1	talk	PRIE
Dialout Configuration	1	1	9	9	Inserv	*DNIS_SVC	-	1	talk	PRIE
CDH Scheduling	1	1	10	10	Inserv	*DNIS_SVC	-	1	talk	PRIE
Feature Licensing	1	1	11	11	Inserv	*DNIS_SVC	-	1	talk	PRIE
License Configurations	1	1	12	12	Inserv	*DNIS_SVC	-	1	talk	PRIE
JDBC Administration	1	1	13	13	Inserv	*DNIS_SVC	-	1	talk	PRIE
Message Administration	1	1	14	14	Inserv	*DNIS_SVC	-	1	talk	PRIE
VXML Log Administration	1	1	15	15	Inserv	*DNIS_SVC	-	1	talk	PRIE
System Control	1	1	16	16	Inserv	*DNIS_SVC	-	1	talk	PRIE
Renumber Voice Channels	1	1	17	17	Inserv	*DNIS_SVC	-	1	talk	PRIE
Report Voice System Status	1	1	18	18	Inserv	*DNIS_SVC	-	1	talk	PRIE
Start Voice System	1	1	19	19	Inserv	*DNIS_SVC	-	1	talk	PRIE
Stop Voice System	1	1	20	20	Inserv	*DNIS_SVC	-	1	talk	PRIE
Switch Interfaces	1	1	21	21	Inserv	*DNIS_SVC	-	1	talk	PRIE
Digital Interfaces	1	1	22	22	Inserv	*DNIS_SVC	-	1	talk	PRIE
Voice over IP	1	1	23	23	Inserv	-	-	1	talk	PRID
Voice Equipment	1	2	24	24	Inserv	chantst	4322750	2	talk	LOOP
Display Equipment	1	2	25	25	Inserv	chantst	4322751	2	talk	LOOP
Equipment State	1	2	26	26	Inserv	chantst	4322752	2	talk	LOOP
Channels to Groups	1	2	27	27	Inserv	chantst	4322753	2	talk	LOOP
Phone Number	1	2	28	28	Inserv	chantst	4322754	2	talk	LOOP
Display Passwords	1	2	29	29	Inserv	chantst	4322755	2	talk	LOOP
Voice Services	1	2	30	30	Inserv	chantst	4322756	2	talk	LOOP
Channel Services	1	2	31	31	Inserv	chantst	4322757	2	talk	LOOP
Number Services	1	2	32	32	Inserv	chantst	4322758	2	talk	LOOP
Feature Packages	1	2	33	33	Inserv	chantst	4322759	2	talk	LOOP
ASAI Administration	1	2	34	34	Inserv	chantst	4322760	2	talk	LOOP
Speech and DPR Administration	1	2	35	35	Inserv	chantst	4322761	2	talk	LOOP
Display Status	1	2	36	36	Inserv	chantst	4322762	2	talk	LOOP
Administration	1	2	37	37	Inserv	chantst	4322763	2	talk	LOOP
Universal Call ID Administration	1	2	38	38	Inserv	chantst	4322764	2	talk	LOOP
Reports	1	2	39	39	Inserv	chantst	4322765	2	talk	LOOP
Call Data Handling Reports	1	2	40	40	Inserv	chantst	4322766	2	talk	LOOP
Message Log Report	1	2	41	41	Inserv	chantst	4322767	2	talk	LOOP
VXML Log Report	1	2	42	42	Inserv	chantst	4322768	2	talk	LOOP
VXML Performance Log Report	1	2	43	43	Inserv	chantst	4322769	2	talk	LOOP
	1	2	44	44	Inserv	chantst	4322770	2	talk	LOOP
	1	2	45	45	Inserv	chantst	4322771	2	talk	LOOP
	1	2	46	46	Inserv	chantst	4322772	2	talk	LOOP
	1	2	47	47	Inserv	chantst	4322773	2	talk	LOOP
	1	3	48	48	Inserv	chantst	4324750	4	talk	LOOP
	1	3	49	49	Inserv	chantst	4324751	4	talk	LOOP
	1	3	50	50	Inserv	chantst	4324752	4	talk	LOOP
	1	3	51	51	Inserv	chantst	4324753	4	talk	LOOP
	1	3	52	52	Inserv	chantst	4324754	4	talk	LOOP
	1	3	53	53	Inserv	chantst	4324755	4	talk	LOOP
	1	3	54	54	Inserv	chantst	4324756	4	talk	LOOP
	1	3	55	55	Inserv	chantst	4324757	4	talk	LOOP
	1	3	56	56	Inserv	chantst	4324758	4	talk	LOOP
	1	3	57	57	Inserv	chantst	4324759	4	talk	LOOP
	1	3	58	58	Inserv	chantst	4324760	4	talk	LOOP
	1	3	59	59	Inserv	chantst	4324761	4	talk	LOOP
	1	3	60	60	Inserv	chantst	4324762	4	talk	LOOP
	1	3	61	61	Inserv	chantst	4324763	4	talk	LOOP
	1	3	62	62	Inserv	chantst	4324764	4	talk	LOOP
	1	3	63	63	Inserv	chantst	4324765	4	talk	LOOP
	1	3	64	64	Inserv	chantst	4324766	4	talk	LOOP
	1	3	65	65	Inserv	chantst	4324767	4	talk	LOOP
	1	3	66	66	Inserv	chantst	4324768	4	talk	LOOP
	1	3	67	67	Inserv	chantst	4324769	4	talk	LOOP
	1	3	68	68	Inserv	chantst	4324770	4	talk	LOOP
	1	3	69	69	Inserv	chantst	4324771	4	talk	LOOP
	1	3	70	70	Inserv	chantst	4324772	4	talk	LOOP

Step	Description
8.	<p data-bbox="248 247 1455 390">From the Avaya Communication Manager SAT terminal, enter the command “status signaling-group y”, where y is the assigned signaling-group number (step 2 in Section 3.2) for the d-channel associated with the Main Office to Avaya IR ISDN-PRI T-1. Verify that the “Group State” and “Level 3 State” fields display “in-service”.</p> <pre data-bbox="269 407 1446 953"> status signaling-group 12 STATUS SIGNALING GROUP Group ID: 12 Active NCA-TSC Count: 0 Group Type: isdn-pri Active CA-TSC Count: 0 Signaling Type: facility associated signaling Group State: in-service Primary D-Channel Port: 01A1224 Level 3 State: in-service Secondary D-Channel Port: Level 3 State: no-link </pre>
9.	<p data-bbox="248 995 1455 1104">Enter the command “status trunk z”, where z is the assigned trunk group number (step 3 in Section 3.2) for the Main Office to Avaya IR ISDN-PRI T-1. Verify that the “Service State” fields display “in-service/idle” for each trunk group “Member”.</p> <pre data-bbox="269 1121 1446 1766"> status trunk 12 Page 1 TRUNK GROUP STATUS Member Port Service State Mtce Connected Ports Busy 0012/001 01A1201 in-service/idle no 0012/002 01A1202 in-service/idle no 0012/003 01A1203 in-service/idle no 0012/004 01A1204 in-service/idle no 0012/005 01A1205 in-service/idle no 0012/006 01A1206 in-service/idle no 0012/007 01A1207 in-service/idle no 0012/008 01A1208 in-service/idle no 0012/009 01A1209 in-service/idle no 0012/010 01A1210 in-service/idle no 0012/011 01A1211 in-service/idle no 0012/012 01A1212 in-service/idle no 0012/013 01A1213 in-service/idle no 0012/014 01A1214 in-service/idle no press CANCEL to quit -- press NEXT PAGE to continue </pre>

Step	Description
<p>10.</p>	<p>Enter the command “status station v”, where v is the assigned station (step 2 in Section 3.3) for the Site 2 to Avaya IR Digital Loop Start T-1. Verify that the “Service State” field should display “in-service/on-hook”. Repeat command to verify each station/channel.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <pre> status station 4322750 Page 1 of 3 GENERAL STATUS Administered Type: DS1FD Service State: in-service/on-hook Connected Type: N/A Extension: 4322750 Port: 02A0401 Parameter Download: not-applicable Call Parked? no SAC Activated? no Ring Cut Off Act? no CF Destination Ext: Active Coverage Option: 1 EC500 Status: N/A Off-PBX Service State: N/A Message Waiting: Connected Ports: User Cntrl Restr: none Group Cntrl Restr: none HOSPITALITY STATUS Awaken at: User DND: not activated Group DND: not activated Room Status: non-guest room </pre> </div>
<p>11.</p>	<p>Enter the command “status station t”, where t is the assigned station (step 2 in Section 3.4) for the Site 4 to Avaya IR Digital Loop Start T-1. Verify that the “Service State” field should display “in-service/on-hook”. Repeat command to verify each station/channel.</p>
<p>12.</p>	<p>Log into the Avaya IR system using a Terminal Emulator Application with a terminal type of 615 and appropriate login credentials. At the prompt, type “sysmon” to run the “System Monitor – Voice Channels” application that provides real-time monitoring service. Place an incoming call using the DNIS number assigned in step 5 (4320770). Verify that Avaya IR answers the call within the (0 to 22) channel range, and by the “chantst” voice application.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <pre> System Monitor - Voice Channels ----- Channel Calls Voice Service Caller Dialed Today Service Status Input Digits ----- 0 1 chantst *On Hook 1 1 chantst Talking 2 0 *ON Hook 3 0 *On Hook 4 0 *On Hook 5 0 *On Hook 6 0 *On Hook 7 0 *On Hook 8 0 *On Hook 9 0 *On Hook 10 0 *On Hook 11 0 *On Hook </pre> </div>

Step	Description
<p>13.</p>	<p>Place an incoming call using the “Group Extension” (4322590) assigned for Site 2 (step 4 in Section 3.3). Verify that Avaya IR answers the call within the (24 to 47) channel range, and by the “chantst” voice application.</p> <div data-bbox="269 380 1446 856" style="border: 1px solid black; padding: 5px;"> <pre> System Monitor - Voice Channels Channel Calls Today Voice Service Caller Dialed Service Status Input Digits ----- 24 1 1 chantst *ON Hook 25 0 1 chantst Talking 26 0 0 *ON Hook 27 0 0 *On Hook 28 0 0 *On Hook 29 0 0 *On Hook 30 0 0 *On Hook 31 0 0 *On Hook 32 0 0 *On Hook 33 0 0 *On Hook 34 0 0 *On Hook 35 0 0 *On Hook </pre> </div>
<p>14.</p>	<p>Place an incoming call using the “Group Extension” (4324590) assigned for Site 4 (step 4 in Section 3.4). Verify that Avaya IR answers the call within the (48 to 71) channel range, and by the “chantst” voice application.</p> <div data-bbox="269 1024 1446 1501" style="border: 1px solid black; padding: 5px;"> <pre> System Monitor - Voice Channels Channel Calls Today Voice Service Caller Dialed Service Status Input Digits ----- 42 0 0 *On Hook 43 0 0 *On Hook 44 0 0 *On Hook 45 0 0 *On Hook 46 0 0 *On Hook 47 0 0 *On Hook 48 1 0 *On Hook 49 0 1 chantst Talking 50 0 0 *On Hook 51 0 0 *On Hook 52 0 0 *On Hook 53 0 0 *On Hook </pre> </div>

6. Conclusion

These Application Notes described the steps for configuring ISDN-PRI and Digital Loop Start T-1 interfaces on an Avaya IR system that supports multiple trunk parameter administration with a single quad-port T-1 telephony card. Administration details were shown on both Avaya Communication Manager and Avaya IR products including steps that verified their configuration.

7. References

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

1. “*Avaya Interactive Response (IR), Release 2.0, Documentation CD-ROM*”, Issue 1.0, April 2006, Comcode: 700397003
2. “*Avaya Interactive Response, Release 2.0, Security*”, Issue 1.0, April 2006
3. “*Administrator Guide for Avaya Communication Manager*”, Issue 2, February 2006, Document ID 03-300509.
4. “*AG 4040 Installation and Developer’s Manual*”, NMS Communications Corporation, P/N 9000-62337-14.

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