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Avaya Solution and Interoperability Test Lab

Sample Avaya S8700 Media Server IP Connect High Reliability Configuration - Issue 1.0

Abstract

These Application Notes describe how to configure a sample Avaya S8700 Media Server IP Connect High Reliability configuration for Hosted Solutions. The sample IP Connect High Reliability configuration depicted in these Application Notes is composed of two Avaya G650 carriers, two TN2312BP IPSI circuit packs (one for each G650 carrier), and separate control networks for each Avaya S8700 Media Server. Although these Application Notes were written at the request of the Avaya Hosted Contact Center (HCC) solution team, they are also applicable for enterprise customers.

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1. Introduction

These Application Notes describe how to configure a sample Avaya S8700 Media Server IP Connect High Reliability configuration. The configuration has been designed so that each control network component is duplicated, therefore eliminating single points of failure.

High Reliability is available in an IP Connect configuration only when using Avaya G650 carriers, TN2312BP IP Server Interface (IPSI) circuit packs, and Avaya Communication Manager Release 2.0 or higher. An IP Connect High Reliability configuration requires that the customer provide two Ethernet switches, one for control network A (CNA), and one for control network B (CNB). The control network switches do not need to be dedicated. The configuration also requires two TN2312BP IPSI circuit packs per port network, one for G650 carrier A, and one for G650 carrier B.

Figure 1 illustrates the components of the Avaya S8700 Media Server IP Connect High Reliability configuration used to verify these Application Notes. The control network, which is separate from the bearer network, consists of the Cisco Catalyst 3500-1 and 3500-2 switches. These Application Notes were verified as part of the Avaya Hosted Contact Center (HCC) Release 2.0 Solution testing.
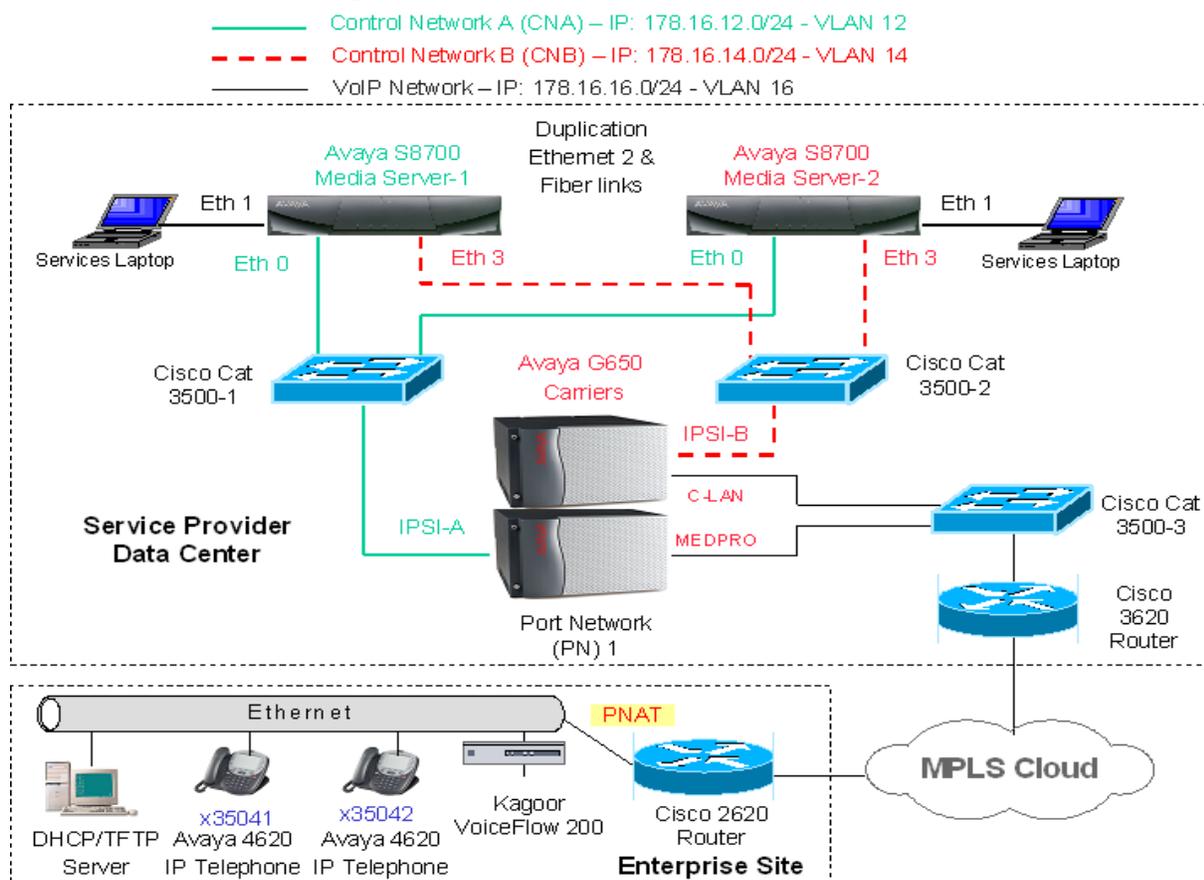
Figure 1: Sample Avaya IP Connect High Reliability Configuration

Note: These Application Notes assume the Layer 2 and Layer 3 network configuration depicted in **Figure 1** is already in place. Furthermore, it is assumed that the bearer VoIP network configuration is also already in place. Consequently, only the configuration related to Avaya IP Connect High Reliability is addressed. Please consult the appropriate User Guides for more information on how to setup the remaining components.

Table 1 below shows the IP address assignment for each control network.

Equipment	IP Network/Mask	Comments
S8700 Media Server - 1		
Ethernet 0 (Eth 0)	178.16.12.2/24	Control Network A (CNA) Interface
Ethernet 1 (Eth 1)	192.11.13.6/30	Services Interface
Ethernet 2 (Eth 2)	192.11.13.13/30	Server Duplication Link Interface
Ethernet 3 (Eth 3)	178.16.14.2/24	Control Network B (CNB) Interface
S8700 Media Server - 2		
Ethernet 0 (Eth 0)	178.16.12.3/24	Control Network A (CNA) Interface
Ethernet 1 (Eth 1)	192.11.13.6/30	Services Interface
Ethernet 2 (Eth 2)	192.11.13.14/30	Server Duplication Link Interface
Ethernet 3 (Eth 3)	178.16.14.3/24	Control Network B (CNB) Interface
IPSI-A	178.16.12.16/24	IPSI connected to CNA
IPSI-B	178.16.14.16/24	IPSI Connected to CNB

Table 1: IP Address Assignment

2. Hardware and Software Validated

Hardware and Software	Version
Avaya S8700 Media Servers	2.0
Avaya G650 Media Gateways	
• Avaya TN2312BP IPSI Circuit Packs	HW03 FW006
• Avaya TN799DP C-LAN Circuit Pack	HW01 FW009
• Avaya TN2302AP MEDPRO Circuit Pack	HW03 FW055
Avaya 4620 IP Telephones	1.8
Cisco Catalyst 3500 Switches	12.0(5.2)XU
DHCP/TFTP Server: Microsoft Windows 2000 Server	5.00.2195 (SP3)

Table 2: Hardware and Software Versions

3. IP Server Interface (IPSI) Card Configuration

The following procedure shows how to configure the IPSI IP address and default gateway.

- There are two Ethernet ports on each IPSI card. The upper one is the service port with the pre-configured IP address 192.11.13.6/255.255.255.252 and the lower one is the control network port. The control network port can be configured through the service port. Configure a laptop's IP address to 192.11.13.5/255.255.255.252 and connect its Ethernet interface to the service port with a crossover Ethernet cable.
- Telnet to the service port IP address 192.11.13.6 and type **ipsilogin** at the IPSI prompt. Log in to the IPSI card with the default login and password.

Figure 2 shows how to configure the IP address and default gateway for the IPSI connected to Control Network A. Repeat this configuration for the IPSI connected to Control Network B.

```
TN2312 IPSI-2 IP Admin Utility
Copyright Avaya Inc, 2003, All Rights Reserved
[IPSI-2]: ipsilogin
Login: craft
Password:
[IPADMIN]: set control interface 178.16.12.16 255.255.255.0
WARNING!! The control network interface will change upon exiting IPADMIN
[IPADMIN]:
[IPADMIN]: set control gateway 178.16.12.1
WARNING!! The control network interface will change upon exiting IPADMIN
IPSI is not configured for DHCP IP Address Administration
[IPADMIN]:
[IPADMIN]: exit
```

Figure 2: Avaya TN2312BP IPSI Circuit Pack Configuration

4. Avaya S8700 Media Server Configuration

This section presents configuration steps for the S8700 Media Servers. It is assumed that an appropriate license file and authentication file have been installed on the server, and that login and password credentials are available.

The IP identity of the S8700 Media Server is configured using a Web interface. While details of the web interface are beyond the scope of this document, a few pertinent procedures and screens are presented here.

To access the web interface, connect a laptop to the services port of one of the S8700 Media Servers (Ethernet port 1). The services port uses the pre-configured IP address 192.11.13.6 with mask 255.255.255.252. Configure the laptop's IP address as 192.11.13.5 with mask 255.255.255.252. Connect the laptop's Ethernet interface to the services port with a crossover Ethernet cable. Launch a web browser, turn proxies off, and connect to the URL http://192.11.13.6. Supply appropriate login and password credentials when prompted to do so.

After login, a main menu is presented along the left hand side. Click "Configure Server" from the lower left of this main menu. The instructions on the web screens are self-explanatory, and the relevant screen for server identities and IP address assignment are shown below in **Figures 3** and **4**. Repeat the procedures described above for the second Avaya S8700 Media Server. The only difference is to select "2" for the "This is server" field in **Figure 3**.
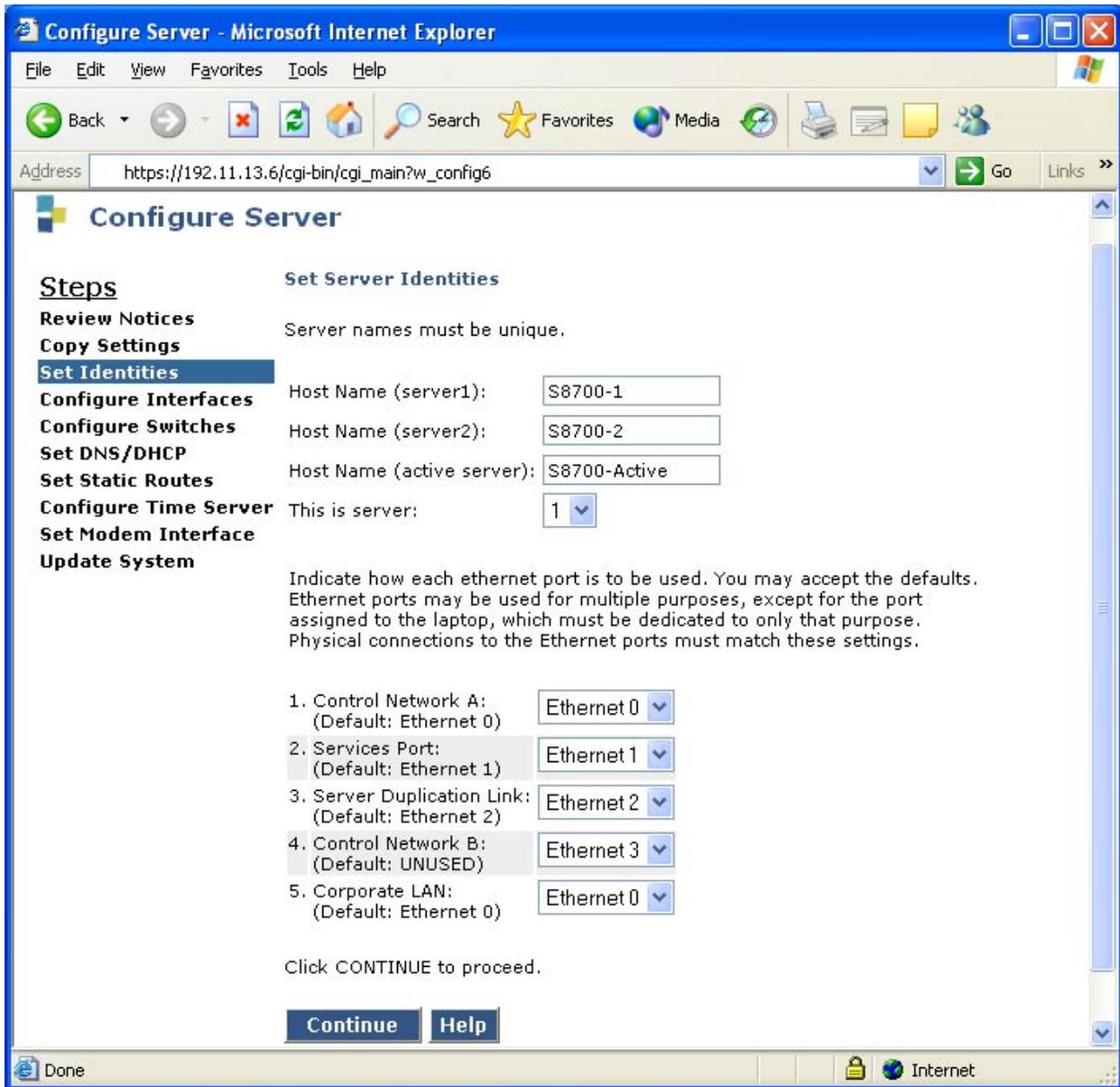
Figure 3: Avaya S8700 Media Server Identity Configuration
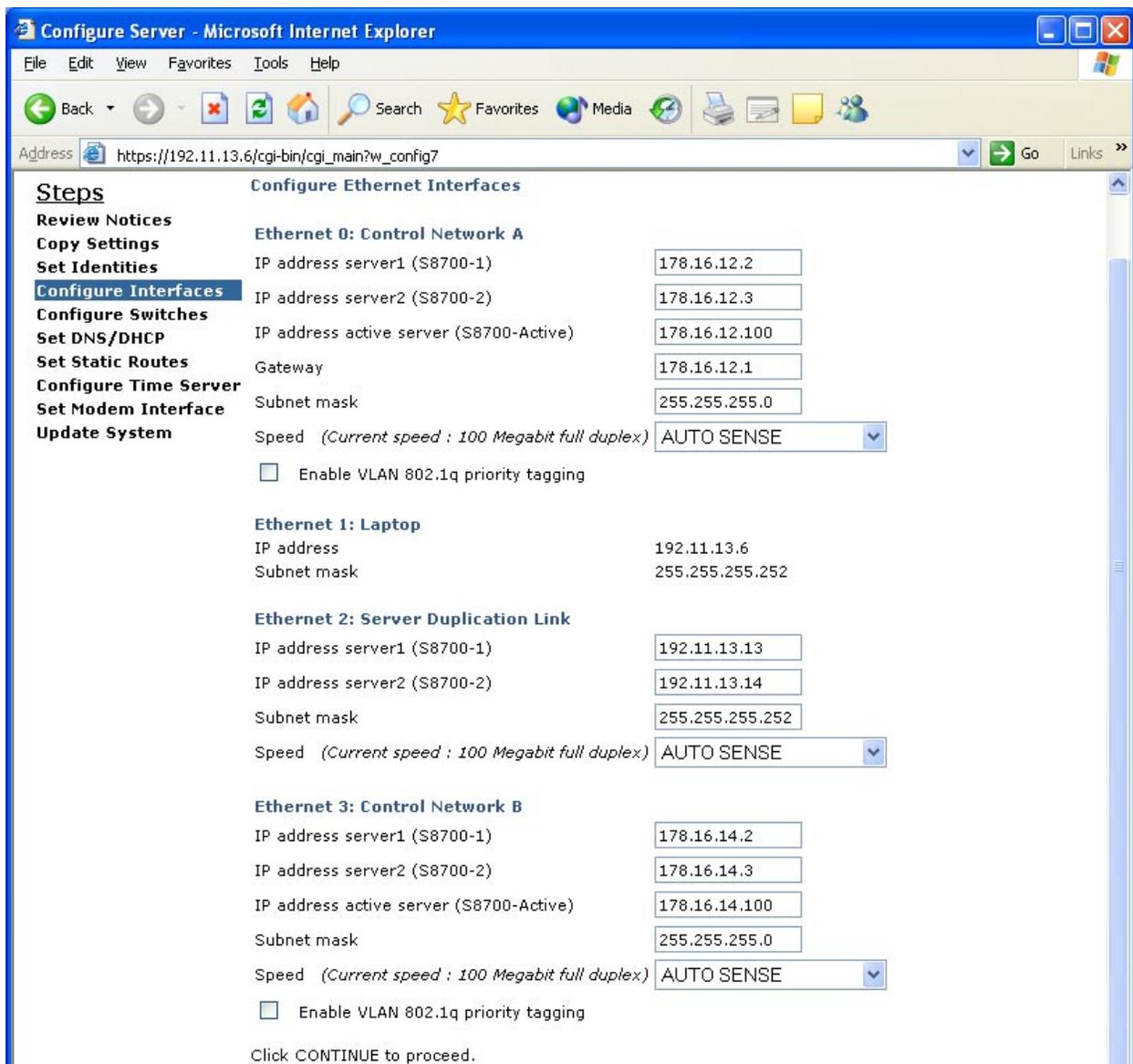
Figure 4: Avaya S8700 Media Server Interface Configuration

5. Avaya Communication Manager Configuration

The next series of steps are performed through the SAT interface. When prompted, supply an appropriate login and password to log in to the SAT. There are a variety of ways to access the SAT login prompt. These include:

- Using "telnet 192.11.13.6 5023" from the computer connected to the services port of the S8700 Media Server. Using 5023 as an argument to telnet brings the user directly to the SAT without presenting the Linux command line interface. If 5023 is omitted from the telnet command, simply type "sat" from the Linux prompt.
- Using telnet to one of the active IP addresses just assigned to the S8700 Media Server from the customer's network (e.g., telnet 178.16.12.100 5023, telnet 178.16.14.100 5023). This approach would not use the direct connection to the services port of the S8700 Media Server, but rather could be performed from a computer connected to the data control networks.

5.1. Enable IP Port Network Support

Use the **change system-parameters customer-options** command to enable IP Port Network support. To enable IP Port Network support, set the "Internet Protocol (IP) PNC?" and the "Port Network Support?" fields on Pages 4 and 5 to "y". **Figures 5** and **6** display the fields necessary to enable IP Port Network support.

```
change system-parameters customer-options                    Page   4 of  11
                          OPTIONAL FEATURES

   Emergency Access to Attendant? y                      ISDN Feature Plus? y
            Enable 'dadmin' Login? n        ISDN Network Call Redirection? y
            Enhanced Conferencing? y                       ISDN-BRI Trunks? y
                Enhanced EC500? y                                ISDN-PRI? y
            Extended Cvg/Fwd Admin? y              Local Spare Processor? n
      External Device Alarm Admin? y                 Malicious Call Trace? y
   Five Port Networks Max Per MCC? n            Media Encryption Over IP? y
                  Flexible Billing? y    Mode Code for Centralized Voice Mail? n
   Forced Entry of Account Codes? y
        Global Call Classification? y                 Multifrequency Signaling? y
              Hospitality (Basic)? y  Multimedia Appl. Server Interface (MASI)? y
   Hospitality (G3V3 Enhancements)? y        Multimedia Call Handling (Basic)? y
                    IP Trunks? y        Multimedia Call Handling (Enhanced)? y
                                              Multinational Locations? n
         IP Attendant Consoles? y   Multiple Level Precedence & Preemption? y
                  IP Stations? y                        Multiple Locations? y
     Internet Protocol (IP) PNC? y          Personal Station Access (PSA)? y

        (NOTE: You must logoff & login to effect the permission changes.)
```

Figure 5: Customer Options Configuration – Page 4

```
change system-parameters customer-options                    Page   5 of  11
                          OPTIONAL FEATURES

              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
      Processor and System MSP? y       Usage Allocation Enhancements? y
           Private Networking? y           TN2501 VAL Maximum Capacity? y
           Processor Ethernet? y

                                                   Wideband Switching? y
               Remote Office? y                              Wireless? y
   Restrict Call Forward Off Net? y
        Secondary Data Module? y
        Station and Trunk MSP? y
   Station as Virtual Extension? y

   System Management Data Transfer? y

           (NOTE: You must logoff & login to effect the permission changes.)
```

Figure 6: Customer Options Configuration – Page 5

5.2. Cabinet Configuration

Use the **add cabinet** command to add the cabinet. After the cabinet has been added and the G650 carriers have been configured, use the command **change cabinet** to view the cabinet configuration. **Figure 7** displays the information configured for this cabinet. Note that the "G650-rack-mount-stack" is used for this "Cabinet Layout".

```
change cabinet 1                                             Page   1 of   1
                              CABINET
 CABINET DESCRIPTION
            Cabinet: 1
      Cabinet Layout: G650-rack-mount-stack
        Cabinet Type: expansion-portnetwork


           Location: 1

Rack:              Room:              Floor:            Building:


 CARRIER DESCRIPTION
   Carrier     Carrier Type        Number

      E        not-used            PN  01
      D        not-used            PN  01
      C        not-used            PN  01
      B        G650-port           PN  01
      A        G650-port           PN  01
```

Figure 7: Cabinet Configuration

5.3. IP Server Interface (IPSI) Configuration

Use the **add ipserver-interface** command to administer the primary and secondary IPSIs for cabinet 1, also known as "Port Network 1". After the IPSIs have been added, use the command **change ipserver-interface** to view the IPSI configuration. **Figure 8** displays the IPSI configuration for Port Network 1.

```
change ipserver-interface 1                                    Page   1 of   1
            IP SERVER INTERFACE (IPSI) ADMINISTRATION - PORT NETWORK 1

 IP Control? y                                             Socket Encryption? y
                            Administer secondary ip server interface board? y
                                                              Enable QoS? y

 Primary IPSI                                       QoS Parameters
 ------------                                       --------------
  Location:  1A01                                     Call Control 802.1p: 6
     Host: 178.16.12.16                             Call Control DiffServ: 46
   DHCP ID: ipsi-A01a


 Secondary IPSI
 --------------
  Location:  1B01
     Host: 178.16.14.16
   DHCP ID: ipsi-A01b
```

Figure 8: IPSI Administration – Port Network 1

5.4. Enable IPSI Control of Port Networks

Use the **change system-parameters ipserver-interface** command to enable IPSI control of Port Networks. Select a "Switch Identifier" and set the "IPSI Control of Port Networks:" field to "enabled".

```
change system-parameters ipserver-interface                    Page   1 of   1
                 IP SERVER INTERFACE (IPSI) SYSTEM PARAMETERS

SERVER INFORMATION

              IPSI Host Name Prefix:
      Primary Control Subnet Address: 178. 16. 12.  0
    Secondary Control Subnet Address: 178. 16. 14.  0

OPTIONS

                  Switch Identifier: A
        IPSI Control of Port Networks: enabled
```

Figure 9: IPSI Control of Port Networks Configuration

5.5. Enable IPSI Duplication

IPSI Duplication requires that all IPSI-connected port networks have both primary (CNA) and secondary (CNB) IPSI circuit packs in each G650 carrier. IPSI Duplication is not supported in a single G650 carrier. Use the **change system-parameters duplication** command to enable the IPSI Control Duplication feature.

```
change system-parameters duplication                        Page   1 of   1
                      DUPLICATION RELATED SYSTEM PARAMETERS




        Enable Operation of IPSI Duplication? y
```

Figure 10: IPSI Duplication Configuration

Please note that when the "IPSI Duplication" field is set to "y", the CMC1 and G600 carriers are blocked from administration. Conversely, if CMC1 and G600 carriers exist in a configuration, the "IPSI Duplication" field cannot be set to "y".

5.6. Save Configuration

Use the **save translation** command to save the Avaya Communication Manager configuration. **Figure 11** shows the output of a successful **save translation** command.

```
save translation

                            SAVE TRANSLATION

        Command Completion Status                            Error Code

        Success                                              0
```

Figure 11: Saving the Translations

6. Verification Steps

In the field, the following tests can be performed to verify the Avaya S8700 Media Server IP Connect High Reliability configuration is working:

Step	Description

1.	Use the **status port-network** command to verify the status of the port network. Verify the "Active" and "Standby" fields are in the "up" state.
	
	<pre>status port-network 1
	                          PORT NETWORK STATUS
	
	    Major Minor Warning Carrier PN Control Internet Protocol (IP)
	 PN Alarms Alarms Alarms Locs Active Standby Connected Port Network
	
	 1 0 0 0 01A up up
	                            01B
	
	 TDM Service Control Dedicated TONE/ Service System System
	 Bus State Channel Tones CLOCK State Clock Tones
	
	  A in y n 01B in standby standby
	  B in n y 01A in active active
	
	             Service Major Minor Bus Open Bus
	         PKT State Alarms Alarms Faults Leads
	
	          1 in n n</pre>

2.	Use the **list ipserver-interface** command to verify the service and control states of the IPSI circuit packs. Verify the "Serv State" field is in the "IN" state for both IPSIs. The "Control State" field should be set to "actv-aa" for the active IPSI and "standby" for the standby IPSI.
	
	<pre>list ipserver-interface
	
	                   IP SERVER INTERFACE INFORMATION
	
	 Port Pri/ Primary/ Primary/ Primary/ State Of
	 Ntwk Sec Secondary Secondary Secondary Serv Control Health
	 Num Bd Loc IP Address Host Name DHCP ID State State C P E G
	 ---- ------ --------------- --------------- --------- ----- ------- -------
	  1 1A01 178.16.12.16 178.16.12.16 ipsi-A01a IN actv-aa 0.0.0.0
	      1B01 178.16.14.16 178.16.14.16 ipsi-A01b IN standby 0.0.0.0</pre>

3.	Make a phone call from extension 35041 to extension 35042. Verify the 35042 extension rings and can be answered. Verify two-way talk path exists.
4.	Disconnect the cable connected to the active IPSI. Use the **list ipserver-interface** command to verify the control state of the "standby" IPSI in Step 2 has changed to "actv-aa".
5.	Verify the call stayed up between the two stations. Likewise, verify two way talk path between the two stations.

7. Conclusion

As illustrated in these Application Notes, Avaya S8700 Media Servers with Avaya G650 Media Gateways running in an IP Connect configuration can now support a high reliability control network using the existing customer data infrastructure. Support for the IP Connect High Reliability configuration was introduced as part of the Avaya Communication Manager Release 2.0. High Reliability was previously only supported in MultiConnect configurations.

8. References

- *"Sample Avaya S8700 Media Server IP Connect Configuration – Issue 1.0, Avaya Solution and Interoperability Test Lab"*
- *"Overview for the Avaya S8700 Media Server with Avaya G650 Media Gateways, Issue 1, November 2003", Document ID: 555-245-204*
- *"Installing an Avaya S8700 Media Server with an Avaya G650 Media Gateway, Issue 1.1, December 2003", Document ID: 555-245-109*