



Configuring the Avaya™ S8300 Media Server with Avaya™ G700 Media Gateway in a Stack With Other Avaya™ P330 Multilayer Stackable Switches – Issue 1.0

Abstract

These Application Notes describe the setup and configuration of devices in the Avaya P330 Stacked environment consisting of the Avaya™ S8300 Media Server with Avaya™ G700 Media Gateway, Avaya™ X330W-2DS1 Module, Avaya™ X330W-2USP Module, Avaya™ P333T-PWR Power over Ethernet Switch and Avaya™ P330R Multilayer Stackable Switch.

1. Introduction

These Application Notes describe the setup and configuration of devices in the Avaya P330 Stacked environment consisting of the Avaya™ S8300 Media Server with Avaya™ G700 Media Gateway, Avaya™ X330W-2DS1 Module, Avaya™ X330W-2USP Module, Avaya™ P333T-PWR Power over Ethernet Switch and Avaya™ P330R Multilayer Stackable Switch. The configuration also includes T1/PPP, T1/FrameRelay and Serial/FrameRelay to a remote location with Avaya™ IP403 Office Server and Cisco 2621 router.

These Application Notes focus on configuring the P330 stack components and the connectivity to the Cisco router. See Section 11 for information on configuring the Avaya IP Office.

Figure 1 represents the sample stacked network environment, including the Avaya S8300 Media Server with Avaya G700 Media Gateway, and Avaya IP403 Office Server interoperability network. Two Avaya WAN modules (X330W-2DS1 and X330W-2USP) were included in the sample configuration. The following WAN access scenarios were verified:

Scenario 1: T1/PPP connection between Avaya G700 Media Gateway with X330-2DS1 WAN module and Cisco 2621 router

Scenario 2: T1 / FrameRelay connection with OSPF protocol between Avaya G700 Media Gateway with X330W-2DS1 WAN module and Cisco 2621 router

Scenario 3: Serial / FrameRelay connection with OSPF protocol between Avaya P330R switch with X330W-2USP WAN module and Cisco 2621 router

Only one T1 configuration (PPP or FrameRelay) was active in the network, although both appear active in **Figure 1**. A Cisco 2621 router was included in the test to provide T1 and serial connection to the Avaya WAN modules.

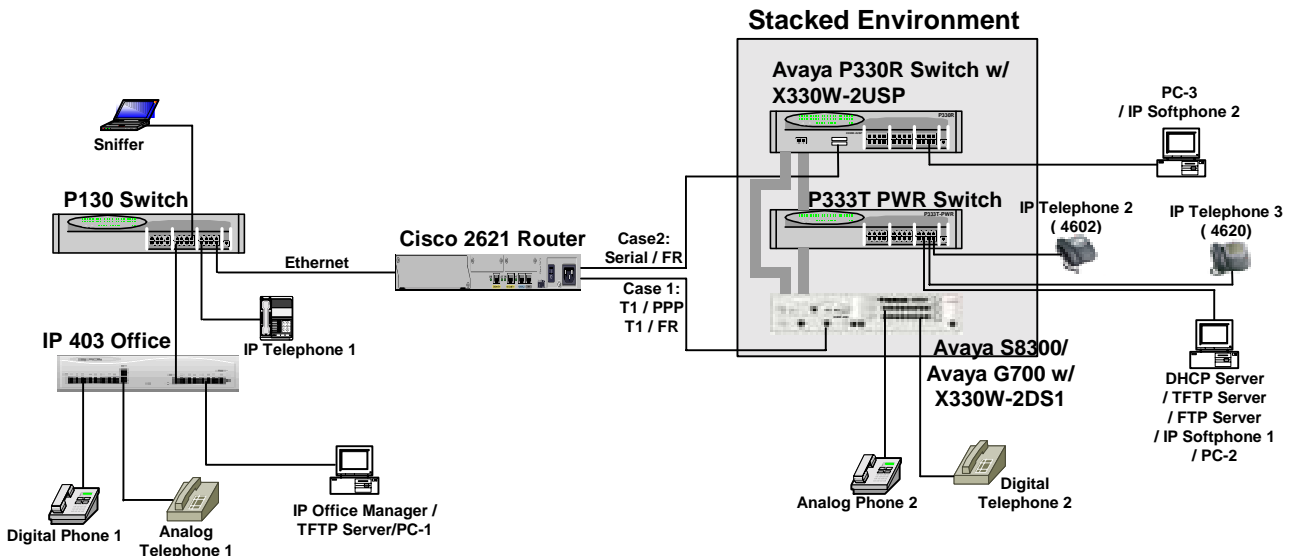


Figure 1: Network Configuration

Note: The IP addresses in the table below were used for the configuration shown in **Figure 1**. Some IP addresses may be displayed as duplicates, but the devices with conflicting addresses were **not** connected at the same time.

Device Name	IP Address	Comments
Avaya P330 Stack Processor Media Gateway Processor (MGP) VoIP Module Media Processor (S8300)	192.16.6.2 192.16.6.3 192.16.6.4 192.16.6.5	Default Gateway is 192.16.6.1
X330W-2DS1 WAN module FabricFastEthernet T1	192.16.6.254 192.16.7.2	
IP 403 Office Controller	192.16.8.2	Default Gateway is 192.16.8.1
IP Office Manager / PC-1	192.16.8.199	
Cisco 2621 router Ethernet T1 / Serial	192.16.8.1 192.16.7.1	Connection to the IP 403 Controller. Connection to the T1 port of the X330W WAN modules.
Avaya P330R Switch X330W-2USP WAN module FabricFastEthernet Serial 1	Default VLAN VLAN 2 192.16.6.254 192.16.7.2	192.16.6.0 / 24 192.16.7.0 / 24
Avaya P130	-	-
Avaya P333T –PWR	-	Default VLAN
DHCP Server / TFTP Server / FTP Server / PC-2 / IP Softphone 2	192.16.6.199	The range of the DHCP pool was set at 192.16.6.201-192.16.6.205
Chariot Server / Chariot Endpoint / IP Softphone 1 / PC-3	DHCP	
Avaya IP Telephone 1 (4624/4612)	DHCP	
Avaya IP Telephone 2 (4620)	DHCP	
Avaya IP Telephone 3 (4602)	DHCP	

Table 1 – IP address configuration for Figure 1

2. Equipment and Software Validated

Table 2 shows the software/firmware versions were used during the verification:

Devices	Version
Avaya™ S8300 Media Server with Avaya G700 Media Gateway	R011x.01.2.065.3
Avaya™ P330R Multilayer Stackable Switch	3.12.0

Devices	Version
Avaya™ P333T-PWR Inline Power Layer 2 Network Switch	3.12.1
Avaya™ P130 Workgroup Ethernet Switch	2.5.3
Avaya™ X330W-2DS1 Wan module	3.12.10
Avaya™ X330W-2USP Wan module	3.12.10
Avaya™ IP403 Office Server	
Manager	3.3(10)
Controller	1.3(10)
Analog Pots30+	3.3(10)
Avaya™ IP Telephone(s)	
IP Telephone 1 (4624 /4612)	def24r1_669
IP Telephone 2 (4602)	ap4602r1_6
IP Telephone 3 (4620)	def20r1_71
Avaya™ IP Softphone(s)	4.1.3.6
Cisco 2621 router	12.2
DHCP Turbo Manager	2.3

Table 2 – Equipment & Software Validated

Table 3 represents the stack and redundant cables connectivity. No configuration is needed for stack cable connection. The system will auto-sense the connection. When an Avaya S8300/G700 is stacked with other Cajun network switches, it is recommended that the S8300/G700 be placed at the bottom of the stack.

Avaya P333R Switch ↔ Avaya P333T-PWR Switch	Cajun X330STK Cable
Avaya P333T-PWR Switch ↔ Avaya S8300/G700	Cajun X330STK Cable
Avaya P333R Switch ↔ Avaya S8300/G700	Cajun X330RC Cable

Table 3 – Stacked Cable connectivity

3. Configuring the Avaya™ P330R Multilayer Stackable Switch

Steps	Description
1	Start a HyperTerminal session to the Console Port <ul style="list-style-type: none"> • Bits per second 9600 • Data bits 8 • Parity None • Stop bits 1 • Flow control None
2	Enter User Name and Password.
3	Set the P330 to routing (Layer III) mode. <ul style="list-style-type: none"> • P330-1(super)# session router

	<p>Enter the configuration mode.</p> <ul style="list-style-type: none"> Router-1(super)# configure <p>Only one VLAN, the default VLAN, was configured for this example. If more than the default VLAN is needed, use the command “ set vlan <IfIndex> name <IfName> “</p>
4	<p>Create an interface for the default VLAN using “interface <interface name>”.</p> <ul style="list-style-type: none"> Router-1(configure)# interface int-192.16.6.0 Router-1(config-if:int-192.16.6.0)# ip address 192.16.6.1 255.255.255.0 Router-1(config-if:int-192.16.6.0)# ip vlan 1 Router-1(config-if:int-192.16.6.0)# exit
5	<p>Create the default gateway. This default gateway is the FabricFastEthernet IP address.</p> <ul style="list-style-type: none"> Router-1(configure)# ip default-gateway 192.16.6.254
6	<p>Copy the running configuration to the startup configuration.</p> <ul style="list-style-type: none"> Router-1(configure)# copy run start

4. Configuring the Avaya™ X330 WAN Modules

This section shows three different configurations for the X330 WAN modules

4.1. X330W-2DS1 WAN Module in the G700 (T1 / PPP)

Steps	Description
1	<p>Start a HyperTerminal session to the WAN module</p> <ul style="list-style-type: none"> Bits per second 9600 Data bits 8 Parity None Stop bits 1 Flow control None
2	Enter User Name and Password.
3	<p>Enter configuration mode.</p> <ul style="list-style-type: none"> X330WAN-2DS1-1 (super)# configure <p>Set up T1 parameters in the Controller.</p> <ul style="list-style-type: none"> X330WAN-2DS1-1 (configure)# controller T1 1 X330WAN-2DS1-1 (configure-controller:1)# linecode b8zs X330WAN-2DS1-1 (configure-controller:1)# framing esf X330WAN-2DS1-1 (configure-controller:1)# channel-group timeslots 1-24 speed 64 X330WAN-2DS1-1 (configure-controller:1)# exit
4	<p>Create a sub-interface for the FabricFastEthernet.</p> <ul style="list-style-type: none"> X330WAN-2DS1-1 (configure)# interface FabricFastEthernet 1:1 X330WAN-2DS1-1 (configure-if:FabricFastEthernet1:1)# ip address

	<ul style="list-style-type: none"> • 192.16.6.254 255.255.255.0 • X330WAN-2DS1-1 (configure-if:FabricFastEthernet1:1)# ip routing-mode rt_primary_mgmt • X330WAN-2DS1-1 (configure-if:FabricFastEthernet1:1)# exit
5	<p>Configure the serial interface.</p> <ul style="list-style-type: none"> • X330WAN-2DS1-1 (configure)# interface serial 1:1 • X330WAN-2DS1-1 (configure-if:serial1:1)# encapsulation ppp • X330WAN-2DS1-1 (configure-if:serial1:1)# ip address 192.16.7.2 255.255.255.0 • X330WAN-2DS1-1 (configure)# exit
6	<p>Create the default gateway IP address. This default gateway is the Cisco router T1 port.</p> <ul style="list-style-type: none"> • X330WAN-2DS1-1 (configure)# ip default-gateway 192.16.7.1
7	<p>Copy the running configuration to the startup configuration.</p> <ul style="list-style-type: none"> • X330WAN-2DS1-1 (configure)# copy run start

4.2. X330W-2DS1 WAN Module in the G700 (T1 / FrameRelay with OSPF)

Steps	Description
1	<p>Start a HyperTerminal session to the WAN module</p> <ul style="list-style-type: none"> • Bits per second 9600 • Data bits 8 • Parity None • Stop bits 1 • Flow control None
2	Enter User Name and Password.
3	<p>Enter configuration mode.</p> <ul style="list-style-type: none"> • X330WAN-2DS1-1 (super)# configure <p>Set up T1 parameters in the Controller.</p> <ul style="list-style-type: none"> • X330WAN-2DS1-1 (configure)# controller T1 1 • X330WAN-2DS1-1 (configure-controller:1)# linecode b8zs • X330WAN-2DS1-1 (configure-controller:1)# framing esf • X330WAN-2DS1-1 (configure-controller:1)# channel-group timeslots 1-24 speed 64 • X330WAN-2DS1-1 (configure-controller:1)# exit
4	<p>Create a sub-interface for the FabricFastEthernet.</p> <ul style="list-style-type: none"> • X330WAN-2DS1-1 (configure)# interface FabricFastEthernet 1:1 • X330WAN-2DS1-1 (configure-if:FabricFastEthernet1:1)# ip address 192.16.6.254 255.255.255.0 • X330WAN-2DS1-1 (configure-if:FabricFastEthernet1:1)# ip routing-mode rt_primary_mgmt • X330WAN-2DS1-1 (configure-if:FabricFastEthernet1:1)# exit

5	<p>Configure the serial interface.</p> <ul style="list-style-type: none"> • X330WAN-2DS1-1 (configure)# interface serial 1:1 • X330WAN-2DS1-1 (configure-if:serial1:1)# encapsulation frame-relay ietf • X330WAN-2DS1-1 (configure-if:serial1:1)# frame-relay lmi-type q933a • X330WAN-2DS1-1 (configure-if:serial1:1)# frame-relay lmi-n393dte 10 • X330WAN-2DS1-1 (configure-if:serial1:1)# exit
6	<p>Configure an IP address for the serial sub-interface</p> <ul style="list-style-type: none"> • X330WAN-2DS1-1 (configure)# interface serial 1:1.1 • X330WAN-2DS1-1 (configure-subif:Serial1:1)# ip address 192.16.7.2 255.255.255.0 • X330WAN-2DS1-1 (configure-subif:Serial1:1.1)# ip routing-mode rt_primary_mgmt • X330WAN-2DS1-1 (configure-subif:Serial1:1.1)# frame-relay interface-dlci 100 • X330WAN-2DS1-1 (configure-subif:Serial1:1.1)# exit
7	<p>Set up the OSPF protocol with an area being 0.</p> <ul style="list-style-type: none"> • X330WAN-2DS1-1 (configure)# router ospf • X330WAN-2DS1-1 (configure router:ospf)# network 192.16.6.0 0.0.0.255 area 0.0.0.0 • X330WAN-2DS1-1 (configure router:ospf)# network 192.16.7.0 0.0.0.255 area 0.0.0.0 • X330WAN-2DS1-1 (configure router:ospf)#exit
8	<p>Since the OSPF protocol is implemented, the default gateway need not be included.</p> <ul style="list-style-type: none"> • X330WAN-2DS1-1 (configure)# no ip default-gateway
9	<p>Copy the running configuration to the startup configuration.</p> <ul style="list-style-type: none"> • X330WAN-2DS1-1 (configure)# copy run start

4.3. X330W-2USP WAN Module in the P330 Switch (Serial / FrameRelay with OSPF)

Steps	Description
1	<p>Start a HyperTerminal session to the WAN module</p> <ul style="list-style-type: none"> • Bits per second 9600 • Data bits 8 • Parity None • Stop bits 1 • Flow control None
2	Enter User Name and Password.
3	<p>Enter configuration mode.</p> <ul style="list-style-type: none"> • X330WAN-2USP-1 (super)# configure <p>Create a sub-interface for the FabricFastEthernet.</p> <ul style="list-style-type: none"> • X330WAN-2USP-1 (configure)# interface FabricFastEthernet 1:1

	<ul style="list-style-type: none"> • X330WAN-2USP-1 (configure-if:FabricFastEthernet1:1)# ip address 192.16.6.254 255.255.255.0 • X330WAN-2USP-1 (configure-if:FabricFastEthernet1:1)# exit
4	<p>Configure the Serial port 1.</p> <ul style="list-style-type: none"> • X330WAN-2USP-1 (configure)# interface serial 1 • X330WAN-2USP-1 (configure-if:serial1)# encapsulation frame-relay ietf • X330WAN-2USP-1 (configure-if:serial1)# frame-relay lmi-type q933a <p><i># If no lmi-type is specified here, the module will select the default, which is autosense. The module will match the other side frame-relay type.</i></p> <ul style="list-style-type: none"> • X330WAN-2USP-1 (configure-if:serial1)# exit
5	<p>Configure the serial 1 sub-interface with IP address.</p> <ul style="list-style-type: none"> • X330WAN-2USP-1 (configure-if:serial1)# interface serial 1.1 point-to-point • X330WAN-2USP-1 (configure-if:serial1:1)# ip address 192.16.7.2 255.255.255.0 • X330WAN-2USP-1 (configure-if:serial1:1)# ip routing-mode rt_primary_mgmt • X330WAN-2USP-1 (configure-if:serial1:1)# frame-relay interface-dlci 100 • X330WAN-2USP-1 (configure-if:serial1:1)# exit
6	<p>Set up the OSPF protocol with an area being 0.</p> <ul style="list-style-type: none"> • X330WAN-2USP-1 (configure)# router ospf • X330WAN-2USP-1 (configure router:ospf)# network 192.16.6.0 0.0.0.255 area 0.0.0.0 • X330WAN-2USP-1 (configure router:ospf)# network 192.16.7.0 0.0.0.255 area 0.0.0.0 • X330WAN-2USP-1 (configure router:ospf)#exit
7	<p>Copy the running configuration to the startup configuration.</p> <ul style="list-style-type: none"> • X330WAN-2DS1-1 (configure)# copy run start

5. Configuring the Cisco 2621 router

This section shows three different configurations for the Cisco 2621 router.

5.1 T1 Module / PPP Configuration

Steps	Description
1	<p>Start a HyperTerminal session to the Cisco router.</p> <ul style="list-style-type: none"> • Bits per second 9600 • Data bits 8 • Parity None • Stop bits 1 • Flow control None

2	Enter the enable mode by providing the password. Cisco2621> enable Password: enter password
3	Enter the configuration mode <ul style="list-style-type: none"> • Cisco2621# configure Terminal Configure the Fast Ethernet interface. <ul style="list-style-type: none"> • Cisco2621(config)# interface FastEthernet0/0 • Cisco2621(config-if)# ip address 192.16.8.1 255.255.255.0 • Cisco2621(config-if)# exit
4	Configure the T1 interface. <ul style="list-style-type: none"> • Cisco2621(config)# interface serial 0/0 • Cisco2621(config-if)# ip address 192.16.7.1 255.255.255.0 • Cisco2621(config-if)# encapsulation ppp • Cisco2621(config-if)# service-module t1 source internal • Cisco2621(config-if)# exit
5	Create a static route for the network 192.16.6.0. The forwarding router IP address should be pointed to the P330 WAN module T1 IP address. <ul style="list-style-type: none"> • Cisco2621(config)# ip route 192.16.6.0 255.255.255.0 192.16.7.2
6	Copy the running configuration to the startup configuration. <ul style="list-style-type: none"> • Cisco2621(config)# write memory Verify the setting by displaying the running configuration. <ul style="list-style-type: none"> • Cisco2621(config)# show run

5.2 T1 Module / FrameRelay with OSPF Configuration

Steps	Description
1	Start a HyperTerminal session to the Cisco router. <ul style="list-style-type: none"> • Bits per second 9600 • Data bits 8 • Parity None • Stop bits 1 • Flow control None
2	Enter the enable mode by providing the password. Cisco2621> enable Password: enter password
3	Enter the configuration mode <ul style="list-style-type: none"> • Cisco2621# configure Terminal Configure the Fast Ethernet interface. <ul style="list-style-type: none"> • Cisco2621(config)# interface FastEthernet0/0 • Cisco2621(config-if)# ip address 192.16.8.1 255.255.255.0

	<ul style="list-style-type: none"> • Cisco2621(config-if)# exit
4	<p>The only changes that apply for this configuration will be on the serial port configuration.</p> <p>Set the Cisco router to the FrameRelay mode.</p> <ul style="list-style-type: none"> • Cisco2621(config)# frame-relay switching
5	<p>Configure the serial port.</p> <ul style="list-style-type: none"> • Cisco2621(config)# interface serial0/0 • Cisco2621(config-if)# ip address 192.16.7.1 255.255.255.0 • Cisco2621(config-if)# encapsulation frame-relay ietf • Cisco2621(config-if)# ip ospf network point-to-point <p><i># The above command is needed since OSPF in frame-relay does not broadcast. An alternative is to create a sub-interface (not shown here).</i></p> <ul style="list-style-type: none"> • Cisco2621(config-if)# service-module t1 clock source internal • Cisco2621(config-if)# frame-relay interface-dlci 100 • Cisco2621(config-if)# frame-relay lmi-type q933a • Cisco2621(config-if)# frame-relay intf-type dce • Cisco2621(config-if)# exit
6	<p>Set up the OSPF protocol with area 0.</p> <ul style="list-style-type: none"> • Cisco2621(config)# router ospf 1 • Cisco2621(config-router)# network 192.16.0.0 0.0.255.255 area 0 • Cisco2621(config-router)# exit
7	<p>Copy the running configuration to the startup configuration.</p> <ul style="list-style-type: none"> • Cisco2621(config)# write memory

5.3 Serial Port / FrameRelay with OSPF Configuration

Steps	Description
1	<p>Start a HyperTerminal session to the Cisco router</p> <ul style="list-style-type: none"> • Bits per second 9600 • Data bits 8 • Parity None • Stop bits 1 • Flow control None
2	Enter User Name and Password.
3	<p>The only changes that apply for this configuration will be on the serial port configuration.</p> <p>Set the Cisco router to the FrameRelay mode.</p> <ul style="list-style-type: none"> • Cisco2621(config)# frame-relay switching
4	<p>Configure the serial port</p> <ul style="list-style-type: none"> • Cisco2621(config)# interface serial0/0 • Cisco2621(config-if)# ip address 192.16.7.1 255.255.255.0 • Cisco2621(config-if)# encapsulation frame-relay IETF • Cisco2621(config-if)# clockrate 2000000 <p><i># Clock rates between 512,000 to 2,000,000 can be specified.</i></p>

	<ul style="list-style-type: none"> • Cisco2621(config-if)# ip ospf network point-to-point <p><i># The above command is needed since OSPF in frame-relay does not broadcast. An alternative is to create a sub-interface (not shown here).</i></p> <ul style="list-style-type: none"> • Cisco2621(config-if)# service-module t1 clock source internal • Cisco2621(config-if)# frame-relay interface-dlci 100 • Cisco2621(config-if)# frame-relay lmi-type q933a • Cisco2621(config-if)# frame-relay type-type dce • Cisco2621(config-if)# exit
5	Set up the OSPF protocol with an area being 0. <ul style="list-style-type: none"> • Cisco2621(config)# router ospf 1 • Cisco2621(config-router)# network 192.16.0.0 0.0.255.255 area 0 • Cisco2621(config-router)# exit
6	Copy the running configuration to the startup configuration. <ul style="list-style-type: none"> • Cisco2621(config)# write memory

6. Configuring Avaya™ S8300 Media Server with Avaya™ G700 Media Gateway

6.1. Configuring the G700 Media Gateway

This section illustrates the steps to configure the G700 Media Gateway. The following components within the G700 Media Gateway need to be configured.

- 1) Avaya™ Cajun P330 stack processor
- 2) G700 Media Gateway Processor (MGP)
- 3) VoIP v0 Module on the G700 Media Gateway

Step	Description
Configuring the Avaya Cajun P330 stack processor	
1	Start a HyperTerminal session to P333R switch. <ul style="list-style-type: none"> • Bits per second 9600 • Data bits 8 • Parity None • Stop bits 1 • Flow control None Provide Login and Password at the prompt.
2	<ul style="list-style-type: none"> • Cajun_P330-1 (super)# configure Assign an IP Address to the P330 stack processor. <ul style="list-style-type: none"> • Cajun_P330-1 (configure)# set interface inband 1 192.16.6.2 255.255.255.0 • Cajun_P330-1 (configure)# reset Assign a static route for the P330 stack processor <ul style="list-style-type: none"> • Cajun_P330-1 (configure)# set ip route 0.0.0.0 192.16.6.1
Configuring the MGP	
3	<ul style="list-style-type: none"> • Cajun_P330-1 (configure)# session mgp • MG-001-1 (super)# configure

Step	Description
	Assign an IP Address to the media gateway processor. <ul style="list-style-type: none"> MG-001-1 (configure)# set interface mgp 1 192.16.6.3 255.255.255.0 MG-001-1 (configure)# reset mgp Assign the default route for the media gateway processor <ul style="list-style-type: none"> MG-001-1 (configure)# set ip route 0.0.0.0 0.0.0.0 192.16.6.1
Configuring the VoIP Module	
4	<ul style="list-style-type: none"> MG-001-1 (configure)# set interface voip v0 182.16.6.4
5	Before exiting the MGP configuration, use the “show system” to obtain the serial number. This serial number will be required when the media gateway is added at the S8300 Media Server SAT administration interface. <ul style="list-style-type: none"> MG-001-1 (configure)# show system Serial No: 01DR11131336 Model No: G700

6.2 Configuring the Avaya™ S8300 Media Server

This section presents configuration steps for the Avaya S8300 Media Server. It is assumed that an appropriate license file and Avaya authentication file have been installed on the server, and that login and password credentials are available.

- 1) Set up an S8300 Media Server
- 2) Set up udp (Uniform Dialing Plan)
- 3) Set up ip-network-region
- 4) Set up Media Gateway
- 5) Set up ip-codecs
- 6) Set up node-names ip
- 7) Set up ip-interfaces
- 8) Set up signal-group
- 9) Set up trunk-group
- 10) Set up aar (Automatic Alternate Routing)
- 11) Set up route-pattern
- 12) Set up stations

After login, a main menu is presented along a task list on the left hand side. Click “**Configure Server**”. The instructions on the web screens are self-explanatory, and the relevant screen for IP address assignment is shown below.

Step	Description
1	The IP identity of the Avaya S8300 Media Server is configured using a web interface. To access the web interface, use a crossover Ethernet cable to connect a computer to the services port of the Avaya S8300 Media Server. Since the default IP address of the Server is 192.11.13.6 / 255.255.255.252, the computer needs to be configured with the following parameters before connecting to the Server. IP Address = 192.11.13.5 Subnet Mask = 255.255.255.252

Step	Description																																																																																																																					
	<p>Address https://192.11.13.6/cgi-bin/cgi_main?w_config7 Go</p> <h3>Configure Server</h3> <p>Progress</p> <ul style="list-style-type: none"> Review Notices Copy Settings Set Identities Configure Interfaces Configure Switches Set DNS/DHCP Set Static Routes Configure Time Server Set Modem Interface Update System <p>Configure Ethernet Interfaces:</p> <p>Ethernet 0:</p> <p>IP address: Laptop 192.11.13.6 Subnet mask: 255.255.255.252</p> <p>Ethernet 1:</p> <p>IP address server1 (s8300-icc): <input type="text" value="192.16.6.5"/> Gateway: <input type="text" value="192.16.6.1"/> Subnet mask: <input type="text" value="255.255.255.0"/> Speed (Current speed : 100 Megabit full duplex): <input type="text" value="AUTO SENSE"/></p> <p>Click CONTINUE to proceed.</p> <p><input type="button" value="Continue"/> <input type="button" value="About This Screen"/></p>																																																																																																																					
	<p><i>Note: The next series of steps are performed through the MultiVantage Software's SAT interface. From the laptop, use "telnet 192.11.13.6 5023" from the computer connected to the services port of the Avaya™ S8300 Media Server. When prompted, supply an appropriate login and password to login to the SAT. Using 5023 as an argument to telnet brings the user directly to the SAT without presenting the Linux command line interface.</i></p>																																																																																																																					
	<h3>Configure the Uniform Dial Plan</h3>																																																																																																																					
2	<p>In this configuration, a 5-digit dial plan is used with the following extension ranges:</p> <pre> display dialplan analysis Page 1 of 3 DIAL PLAN ANALYSIS TABLE Percent Full: 4 </pre> <table border="1"> <thead> <tr> <th>Dialed String</th> <th>Total Length</th> <th>Call Type</th> <th>Dialed String</th> <th>Total Length</th> <th>Call Type</th> <th>Dialed String</th> <th>Total Length</th> <th>Call Type</th> </tr> </thead> <tbody> <tr><td>10</td><td>3</td><td>dac</td><td>7</td><td>5</td><td>ext</td><td></td><td></td><td></td></tr> <tr><td>11</td><td>3</td><td>dac</td><td>*</td><td>2</td><td>fac</td><td></td><td></td><td></td></tr> <tr><td>12</td><td>3</td><td>dac</td><td>#</td><td>3</td><td>fac</td><td></td><td></td><td></td></tr> <tr><td>13</td><td>3</td><td>dac</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>14</td><td>3</td><td>fac</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>15</td><td>3</td><td>fac</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>16</td><td>3</td><td>fac</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>2</td><td>5</td><td>ext</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>3</td><td>3</td><td>dac</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>4</td><td>5</td><td>ext</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>5</td><td>5</td><td>ext</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>6</td><td>5</td><td>ext</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table> <p>The routing configuration to the Avaya IP Office Site will be shown in later steps. It should be noted that the dialplan and routing configuration to the Avaya IP Office Site is dependent on what is already configured at the IP Office Site. This is an example of what was used to verify the configuration. In this example, extension 7XXXX was used for all</p>	Dialed String	Total Length	Call Type	Dialed String	Total Length	Call Type	Dialed String	Total Length	Call Type	10	3	dac	7	5	ext				11	3	dac	*	2	fac				12	3	dac	#	3	fac				13	3	dac							14	3	fac							15	3	fac							16	3	fac							2	5	ext							3	3	dac							4	5	ext							5	5	ext							6	5	ext						
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Step	Description
	<p>phones in the IP Office site, mapped to AARCode 700</p> <p>At the prompt, type change uniform-dialplan 700. Match the parameters of the screen shown below, then press Enter to apply the changes. This sets the five-digit dial plan.</p> <pre> change uniform-dialplan 700 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 700 5 1 700 aar n 716 5 1 715 aar n 701 5 1 700 aar n 717 5 1 715 aar n 702 5 1 700 aar n 718 5 1 715 aar n 703 5 1 700 aar n 719 5 1 715 aar n 704 5 1 700 aar n 720 5 1 720 aar n </pre>
	Configuring the IP-Network Region
3	<p>At the prompt, type change ip-network-region 1. Match the parameters of the screen shown below, then press Enter to apply the changes.</p> <pre> change ip-network-region 1 Page 1 of 2 IP Network Region Region: 1 Name: IP Office Site Audio Parameters Direct IP-IP Audio Connections? y Codec Set: 1 IP Audio Hairpinning? y Location: UDP Port Range RTCP Enabled? y Min: 2048 RTCP Monitor Server Parameters Max: 65535 Use Default Server Parameters? y DiffServ/TOS Parameters Call Control PHB Value: 34 VoIP Media PHB Value: 46 BBE PHB Value: 43 Resource Reservation Parameters RSVP Enabled? n 802.1p/Q Enabled? n </pre>
	Configuring the Media Gateway
4	<p>At the prompt, type change media-gateway 1. Provide the following information:</p> <p>Name= S8300-icc Identifier= 01DR11131336 (This was noted in a previous step) Network Region= 1 Slot V1= icc V2= dcp (This can be changed depending on the module type in the system) V3= analog (This can be changed depending on the module type in the system)</p> <pre> change media-gateway 1 Page 1 of 1 MEDIA GATEWAY Number: 1 Name: s8300-icc Identifier: 01DR11131336 IP Address: 192.16 .6 .3 MAC Address: 00:04:0d:02:06:7a </pre>

Step	Description
	<pre> Network Region: 1 Location: 1 Site Data: Registered? y Slot Module Type V1: icc V2: dcp V3: analog V4: Submit changes </pre>
	Configuring the IP-Codec-set
5	<p>At the prompt, type change ip-codec-set 1. Match the parameters of the screen shown below, then press Enter to apply the changes. All the codecs that may be used are listed here. Assign them in order of preference.</p> <pre> change ip-codec-set 1 Page 1 of 1 IP Codec Set Codec Set: 1 Audio Silence Frames Packet Codec Suppression Per Pkt Size(ms) 1: G.729 n 2 20 2: G.711MU n 3 30 </pre>
	IP Node-Name Configuration
6	<p>At the prompt, type change node-names ip. Create node names and IP addresses for each board as shown below, then press Enter to apply the changes. Note that an IP address for the IP Office, which is located in the IP Office Site is also created.</p> <pre> change node-names ip Page 1 of 1 IP NODE NAMES Name IP Address Name IP Address IP403-Office 192.16 .8 .2 . . . default 0 .0 .0 .0 . . . procr 192.16 .6 .5 . . . </pre>
	IP-Interface Configuration
7	<p>At the prompt, type change ip-interfaces, and enter the type, slot location, name, gateway address, and network region for each processor board. Then press Enter to apply the changes.</p> <pre> change ip-interfaces Page 1 of 15 IP INTERFACES Enable Eth Pt Type Slot Code Sfx Node Name Subnet Mask Gateway Address Net y PROCR 192.16 .6 .5 255.255.255.0 192.16 .6 .1 1 n 255.255.255.0 . . . </pre>

Step	Description
8	<p align="center">Signaling-Group Configuration</p> <p>At the prompt, type add signaling-group 2. The following information should be created or changed to match the other side network settings.</p> <p>Group Type = h.323 Near-end Node Name = procr Far-end Node Name = IP403-Office Far-end Listen Port = 1720 Calls Share IP Signaling Connection = Y - If IP Office release is 1.3(15) or older N - If IP Office release is 1.3(16) or later</p> <p>The field Trunk Group for Channel Selection must be left blank for now when adding the signaling group.</p> <pre> change signaling-group 2 Page 1 of 5 SIGNALING GROUP Group Number: 2 Group Type: h.323 Remote Office? n Max number of NCA TSC: 0 Max number of CA TSC: 0 Trunk Group for NCA TSC: Trunk Group for Channel Selection: Supplementary Service Protocol: a Near-end Node Name: procr Far-end Node Name: IP403-Office Near-end Listen Port: 1720 Far-end Listen Port: 1720 Far-end Network Region: 1 LRQ Required? n Calls Share IP Signaling Connection? y RRQ Required? n Bypass If IP Threshold Exceeded? n Direct IP-IP Audio Connections? y IP Audio Hairpinning? y Interworking Message: PROgress Submit changes </pre>
	<p align="center">Trunk-Group Configuration</p>
9	<p>At the prompt, type add trunk-group 2. The following information should be created or changed to match the far end network settings.</p> <p><u>On page 1 of 22:</u> Group Type = isdn TAC =102 (could be 1xx) Group Name = To IPOffice(any name) Service Type = Tie Carrier Medium = IP</p> <pre> change trunk-group 2 Page 1 of 22 TRUNK GROUP Group Number: 2 Group Type: isdn CDR Reports: y Group Name: To IPOffice COR: 1 TN: 1 TAC: 102 </pre>

Step	Description
	<pre> Direction: two-way Outgoing Display? y Carrier Medium: IP Dial Access? y Busy Threshold: 255 Night Service: Queue Length: 0 Service Type: tie Auth Code? n TestCall ITC: rest Far End Test Line No: TestCall BCC: 4 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 QSIG Value-Added? n Digital Loss Group: 13 Calling Number - Delete: Insert: Numbering Format: Bit Rate: 1200 Synchronization: async Duplex: full Disconnect Supervision - In? y Out? n Answer Supervision Timeout: 0 <u>On page 2 of 22:</u> Send Name = y Send Calling Number = y Send Connected Number = y change trunk-group 2 Page 2 of 22 TRUNK FEATURES ACA Assignment? n Measured: none Wideband Support? n Internal Alert? n Maintenance Tests? y Data Restriction? n NCA-TSC Trunk Member: Send Name: y Send Calling Number: y Used for DCS? n Suppress # Outpulsing? n Numbering Format: public Outgoing Channel ID Encoding: preferred UII IE Treatment: service-provider Replace Restricted Numbers? n Replace Unavailable Numbers? n Send Connected Number: y Send UII IE? y Send UCID? n Send Codeset 6/7 LAI IE? y Network (Japan) Needs Connect Before Disconnect? n <u>On page 6 of 22:</u> • Port = ip • Sig Grp = 2 Note: On the Port field, ip must be typed. After the configuration is applied, and issue the display or change trunk-group 2 command, the virtual IP port that was assigned (e.g.T00001) will be displayed. The number of ports entered determines the # of simultaneous calls that will be allowed over the trunk. change trunk-group 2 Page 6 of 22 TRUNK GROUP Administered Members (min/max): 1/24 </pre>

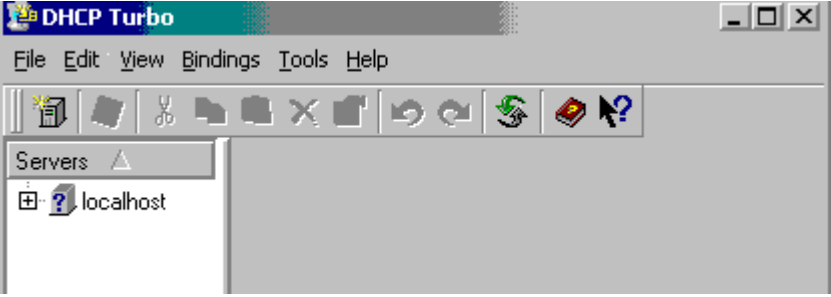

Step	Description																																																																						
	<p>GROUP MEMBER ASSIGNMENTS Total Administered Members: 24</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Port</th> <th>Code Sfx</th> <th>Name</th> <th>Night</th> <th>Sig</th> <th>Grp</th> </tr> </thead> <tbody> <tr> <td>1:</td> <td>T00025</td> <td></td> <td></td> <td>2</td> <td></td> </tr> <tr> <td>2:</td> <td>T00026</td> <td></td> <td></td> <td>2</td> <td></td> </tr> <tr> <td>3:</td> <td>T00027</td> <td></td> <td></td> <td>2</td> <td></td> </tr> <tr> <td>4:</td> <td>T00028</td> <td></td> <td></td> <td>2</td> <td></td> </tr> <tr> <td>5:</td> <td>T00029</td> <td></td> <td></td> <td>2</td> <td></td> </tr> </tbody> </table> <p>Submit the changes.</p> <p>At this point the Trunk Group for Channel Section field in the signal-group configuration must be set to 2. To accomplish this task, the following sequence of steps has to be typed:</p> <ul style="list-style-type: none"> • Type busy signaling-group 2 to take the link out of service. • Type change signaling-group 2 and set the Trunk Group for Channel Selection field to 2. Press Enter to apply the change. • Type release signal-group 2 to bring it into service. 	Port	Code Sfx	Name	Night	Sig	Grp	1:	T00025			2		2:	T00026			2		3:	T00027			2		4:	T00028			2		5:	T00029			2																																			
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5:	T00029			2																																																																			
	AAR Configuration																																																																						
10	<p>As stated in step 2, the extensions in the IP Office Site are assigned in the 7xxxx range and map to AARCode 700.</p> <p>At the prompt, type change aar analysis 700. Match the parameters shown below for the dialed string 700. The route pattern 702 is used to route the calls.</p> <pre>change aar analysis 700 Page 1 of 2</pre> <p style="text-align: center;">AAR DIGIT ANALYSIS TABLE Percent Full: 3</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Dialed String</th> <th>Total Min</th> <th>Total Max</th> <th>Route Pattern</th> <th>Call Type</th> <th>Node Num</th> <th>ANI Reqd</th> </tr> </thead> <tbody> <tr> <td>700</td> <td>7</td> <td>7</td> <td>702</td> <td>aar</td> <td></td> <td>n</td> </tr> </tbody> </table> <p>Submit changes</p>	Dialed String	Total Min	Total Max	Route Pattern	Call Type	Node Num	ANI Reqd	700	7	7	702	aar		n																																																								
Dialed String	Total Min	Total Max	Route Pattern	Call Type	Node Num	ANI Reqd																																																																	
700	7	7	702	aar		n																																																																	
	Route-Pattern Configuration																																																																						
11	<p>At the prompt, type change route-pattern 702. Set the Group No to match the Trunk Group previously configured (2). Set the FRL to 0. Set the No. Del Dgts to 3. Set the Inserted Digits to 7.</p> <pre>change route-pattern 702 Page 1 of 3</pre> <p style="text-align: center;">Pattern Number: 7</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Grp No</th> <th>FRL</th> <th>NPA</th> <th>Pfx Mrk</th> <th>Hop Lmt</th> <th>Toll List</th> <th>No. Del Dgts</th> <th>Inserted Digits</th> <th>DCS/ QSIG Intw</th> <th>IXC user</th> </tr> </thead> <tbody> <tr> <td>1:</td> <td>2</td> <td>0</td> <td></td> <td></td> <td></td> <td>3</td> <td>7</td> <td>n</td> <td>user</td> </tr> <tr> <td>2:</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>n</td> <td>user</td> </tr> <tr> <td>3:</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>n</td> <td>user</td> </tr> <tr> <td>4:</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>n</td> <td>user</td> </tr> <tr> <td>5:</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>n</td> <td>user</td> </tr> <tr> <td>6:</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>n</td> <td>user</td> </tr> </tbody> </table> <p style="text-align: center;">BCC VALUE TSC CA-TSC ITC BCIE Service/Feature BAND No. Numbering LAR</p>	Grp No	FRL	NPA	Pfx Mrk	Hop Lmt	Toll List	No. Del Dgts	Inserted Digits	DCS/ QSIG Intw	IXC user	1:	2	0				3	7	n	user	2:								n	user	3:								n	user	4:								n	user	5:								n	user	6:								n	user
Grp No	FRL	NPA	Pfx Mrk	Hop Lmt	Toll List	No. Del Dgts	Inserted Digits	DCS/ QSIG Intw	IXC user																																																														
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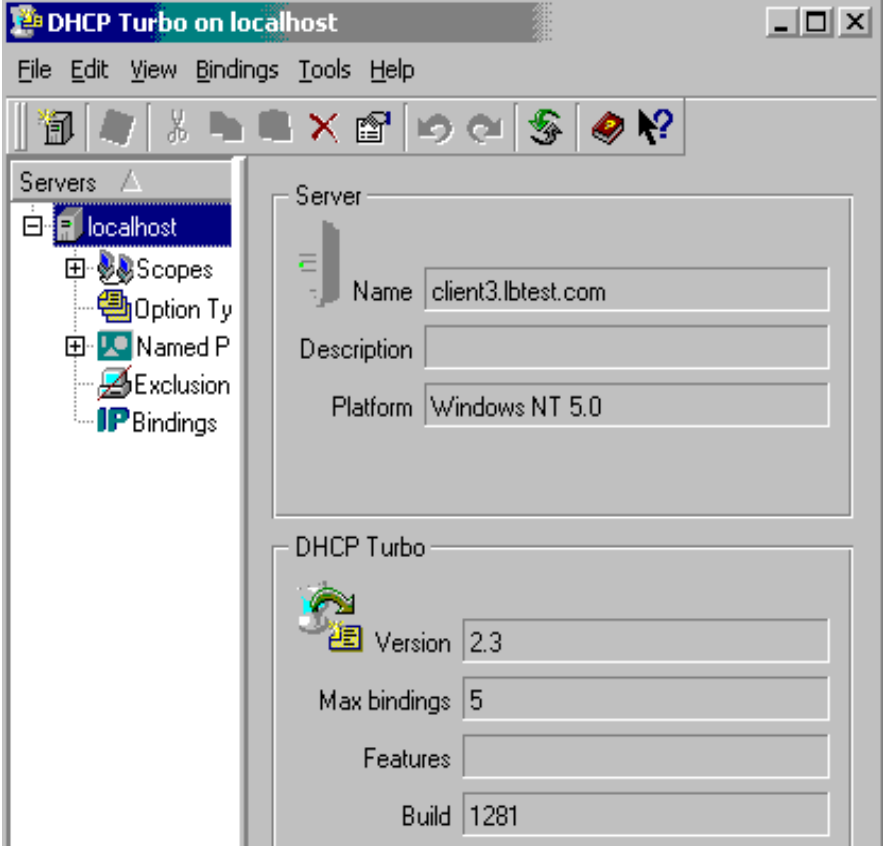
Step	Description
	<pre> 0 1 2 3 4 W Request Dgts Format Subaddress 1: y y y y y n n rest none 2: y y y y y n n rest none 3: y y y y y n n rest none 4: y y y y y n n rest none 5: y y y y y n n rest none 6: y y y y y n n rest none Submit changes </pre>
Configuring Stations	
12	<p>The add station command is used to add a new station. An IP station form is shown below. For IP stations, the port is automatically assigned. DCP and Analog stations are added in a similar manner, but the Port they are connected on must be specified. At the prompt, type add station 45042. Provide the following information:</p> <p>Name = IP1,CHAWK (Choose any name) Type = 4620 (This must match the IP Telephone type used) Security Code = 1234 (A value is needed for the IP Telephone to register)</p> <pre> add station 45042 Page 1 of 4 STATION Extension: 45042 Lock Messages? n BCC: 0 Type: 4620 Security Code: * TN: 1 Port: S00001 Coverage Path 1: COR: 4 Name: IP1,CHAWK Coverage Path 2: COS: 1 Hunt-to Station: STATION OPTIONS Loss Group: 2 Personalized Ringing Pattern: 1 Message Lamp Ext: 45042 Speakerphone: 2-way Mute Button Enabled? y Display Language: English Expansion Module? n Media Complex Ext: IP SoftPhone? n Submit changes </pre>

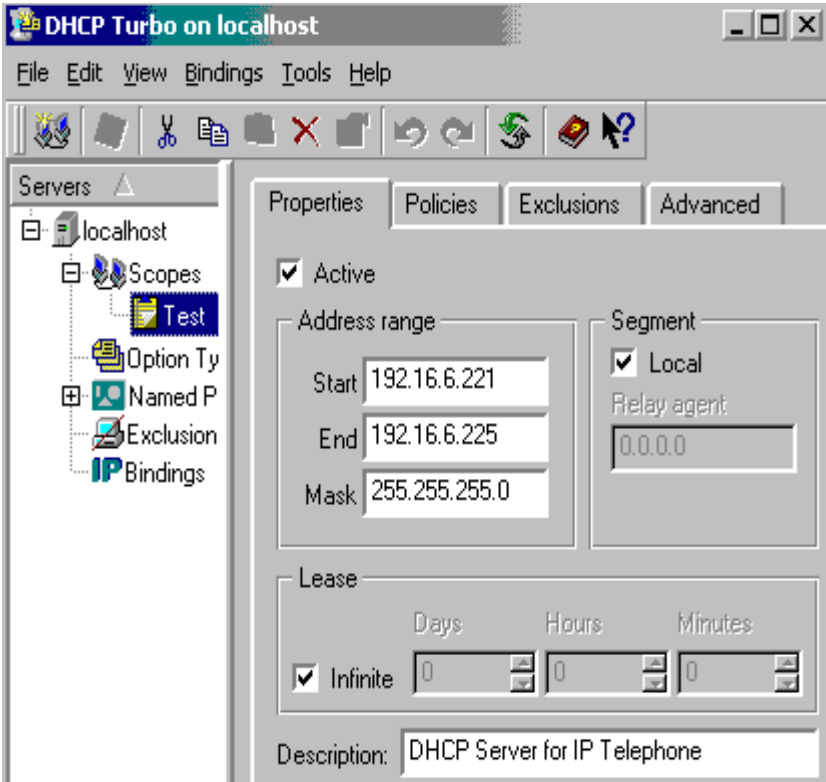
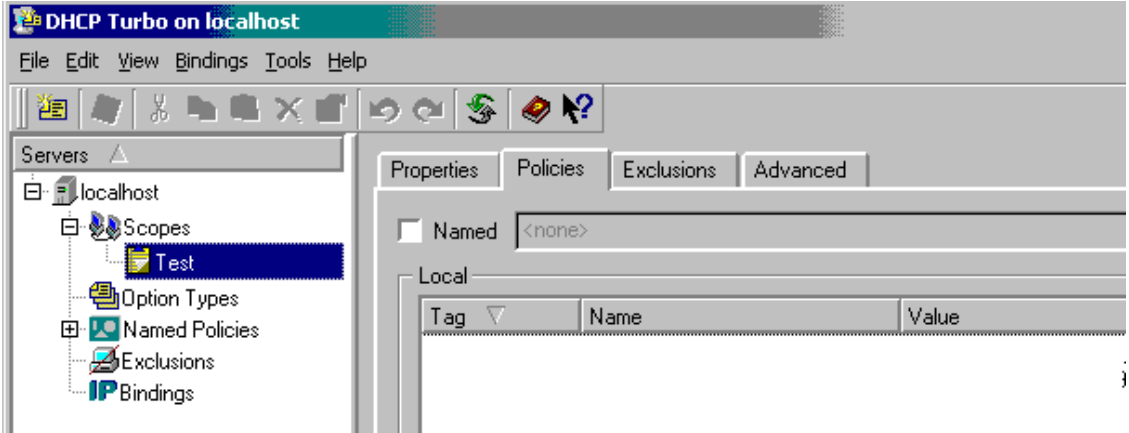
7. Configuring the DHCP Server.

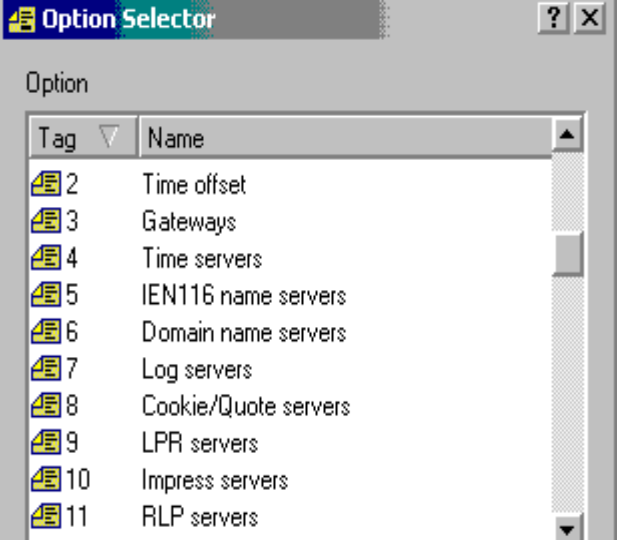
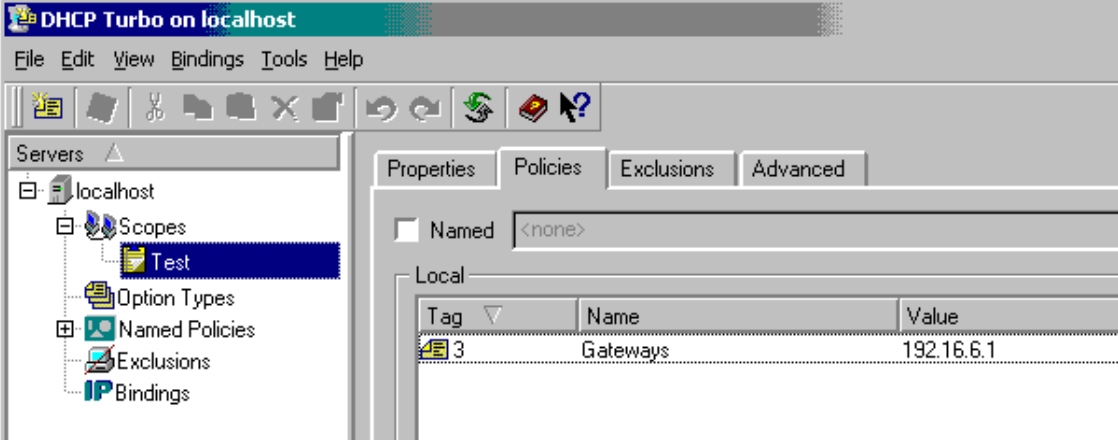
For this configuration, shareware software DHCP Turbo Manager version 2.3 was utilized as a DHCP server.

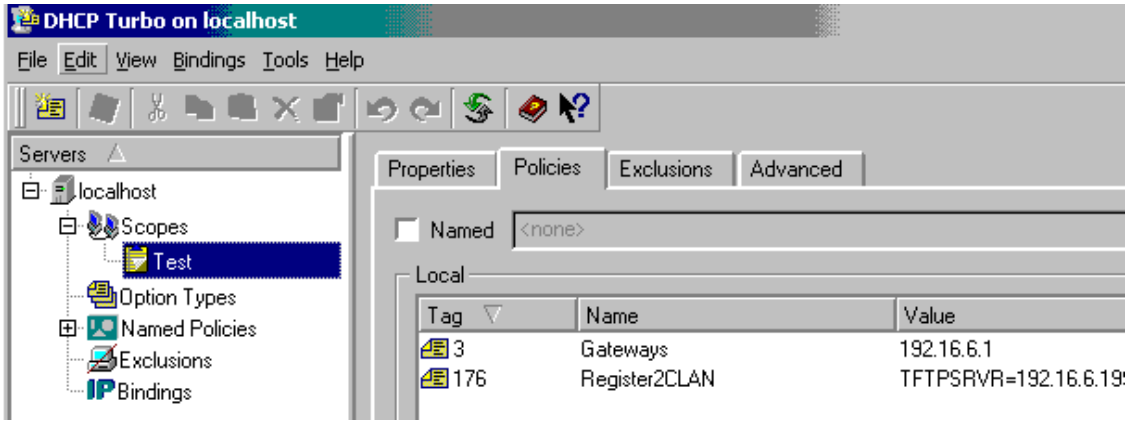
Step	Description
1.	Install the DHCP software on PC-2.

Step	Description
2.	<p>Start the server by selecting Start → Programs → Weird Solutions → DHCP Turbo → DHCP Turbo.</p> 
3	<p>Click localhost</p> 

Step	Description
4	<p>Provide the password and click Login. The default is no password.</p>  <p>The screenshot shows the DHCP Turbo application window titled "DHCP Turbo on localhost". The interface includes a menu bar (File, Edit, View, Bindings, Tools, Help) and a toolbar with various icons. On the left, a tree view shows the "Servers" folder expanded to "localhost", with sub-items for Scopes, Option Ty, Named P, Exclusion, and Bindings. The main area displays configuration for a server named "client3.lbtest.com". The "Server" section includes fields for Name (client3.lbtest.com), Description, and Platform (Windows NT 5.0). The "DHCP Turbo" section includes a Version field (2.3), Max bindings (5), Features, and Build (1281).</p>
5	<p>Select File → New → Scope... Provide the following information:</p> <ul style="list-style-type: none"> • Name of the Scope • Start address • End address • Subnet mask <p>Click OK</p>

Step	Description
6	<p>At this point, the created scope will appear under the Scopes menu bar. Select localhost → Scopes → “Newly created scope”. In this sample test case, the scope name was Test.</p> 
7	<p>Click the Policies Tab.</p> 

Step	Description																						
8	<p>With the right mouse button, click New Option...</p>  <p>The screenshot shows the 'Option Selector' dialog box with a list of options. The 'Gateways' option (Tag 3) is selected.</p> <table border="1" data-bbox="349 420 917 835"> <thead> <tr> <th>Tag</th> <th>Name</th> </tr> </thead> <tbody> <tr><td>2</td><td>Time offset</td></tr> <tr><td>3</td><td>Gateways</td></tr> <tr><td>4</td><td>Time servers</td></tr> <tr><td>5</td><td>IEP116 name servers</td></tr> <tr><td>6</td><td>Domain name servers</td></tr> <tr><td>7</td><td>Log servers</td></tr> <tr><td>8</td><td>Cookie/Quote servers</td></tr> <tr><td>9</td><td>LPR servers</td></tr> <tr><td>10</td><td>Impress servers</td></tr> <tr><td>11</td><td>RLP servers</td></tr> </tbody> </table>	Tag	Name	2	Time offset	3	Gateways	4	Time servers	5	IEP116 name servers	6	Domain name servers	7	Log servers	8	Cookie/Quote servers	9	LPR servers	10	Impress servers	11	RLP servers
Tag	Name																						
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9	<p>Select the Gateways Option from the Option Selector window. The Gateways Option will appear under Policies.</p>  <p>The screenshot shows the 'DHCP Turbo on localhost' interface. The 'Policies' tab is active, and the 'Gateways' option is listed in the 'Local' section.</p> <table border="1" data-bbox="727 1291 1432 1354"> <thead> <tr> <th>Tag</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>Gateways</td> <td>192.16.6.1</td> </tr> </tbody> </table>	Tag	Name	Value	3	Gateways	192.16.6.1																
Tag	Name	Value																					
3	Gateways	192.16.6.1																					
10	<p>The following steps will be needed for the IP Telephone setup. The Option 176 is needed for the Avaya IP Telephone.</p> <p>Select localhost → Option Types</p> <p>With the right mouse button, select New Option Type...</p> <p>Provide the following information:</p> <ul style="list-style-type: none"> • Tag = 176 • Name = Register2 CLAN (Optional) • Type = string • Select Arrayed <p>Click OK</p>																						

Step	Description
11	Select localhost → Scopes → Test → Policies With the right mouse button, click New Option... <ul style="list-style-type: none"> Select Tag 176 Click OK
12	Double click the Tag 176 , which was just created. Click the Advanced>> button. The following information needs to be added. <ul style="list-style-type: none"> TFTPSRVR = 192.16.6.199 MCPORT = 1719 MCIPADD = 192.16.6.5 BOOTFILE = 46XXUPGRADE.SCR Click OK
13	The Option 176 will appear under Policies.  <p>Select File → Save</p>

8. Configuring the Avaya™ IP Telephone Using DHCP Server.

Step	Description
1	Start the DHCP Server
2	Start the TFTP Server. Make sure the latest IP Telephone firmware is located in the TFTP directory.
3	Connect the Ethernet cable between the Avaya IP Telephone and P333T-PWR switch.
4	The process is automatic, and the status can be monitored from the TFTP monitor window.

9. Configuring Avaya™ IP Softphones Using DHCP Server

The following steps describe how to configure Avaya IP Softphone 2 in PC-3 using DHCP Server.

Step	Description
1	Install the IP Softphone software into PC-3.
2	Set up PC-3 as a DHCP client. Using PC-2 (DHCP Server), obtain an IP address.
3	Start the IP Softphone by double-clicking the IP Softphone icon.
4	<p><i>Note: The assumption was made that the extension for IP Softphone 2 was already created on the G700/S8300.</i></p> <p>From the <Login> window, enter the following information:</p> <ul style="list-style-type: none">• Extension 45061• Password 1234• Server Address 192.16.6.5 (S8300 Processor Address)• Bandwidth Setup Local Area Network• Click Login
Verify calls can be placed	
5	<p>From the <Avaya IP Softphone – 45061> window, enter the following information:</p> <ul style="list-style-type: none">• Extension 45042 (IP Telephone Set extension)• Press Return <p>The extension (x45042) will ring. When the phone is answered, the call is established between the IP Softphone (x45061) and the IP Telephone extension (x45042).</p>

10. Conclusion

These Application Notes illustrate how to configure various Avaya™ P330 Stackable Switching System devices in a PPP/FR environment with a Cisco 2621 router. Application Notes for configuring Avaya IP403 Office are available in separate documents.

11. References

This document, as well as, additional interoperability test plans and application notes can be found at <http://interop.usae.avaya.com>. For configuring the Avaya IP Office, please, refer to the following Application Notes:

- Configuring devices for the Avaya™ Disaster Recovery Unit (DRU) Solution – Issue 1.0

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