



Avaya Solution & Interoperability Test Lab

Application Notes for ESTOS CallControlGateway and Avaya IP Office – Issue 1.0

Abstract

These Application Notes describe the compliance testing of the ESTOS CallControlGateway with Avaya IP Office. These Application Notes contain an extensive description of the configurations for both CallControlGateway and Avaya IP Office which were used for testing. The testing which was performed tested the major functions of the ESTOS CallControlGateway.

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

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1. Introduction

These Application Notes describe the configuration used to test CallControlGateway with Avaya IP Office. CallControlGateway is a “connector” component which allows endpoints which are locally attached to Avaya IP Office to be controlled by Microsoft Office Communications Server (OCS).

1.1. Interoperability Compliance Testing

The following tests were performed as part of the compliance testing:

- Make Call
- Answer Call
- Clear Call
- Deflect Call
- Hold Call
- Retrieve Call
- Consultation Call
- Single Step Transfer
- Generate Digits DTMF
- Reconnect Call
- Interrupt LAN Connection to ESTOS Server
- Interrupt LAN Connection to IPO
- Interrupt LAN Connection to Client
- Restart PC on which ESTOS Server is running

1.2. Support

ESTOS GmbH
Petersbrunner Str. 3a
82319 Starnberg
Germany

Phone: +49 (8151) 368 561-77

Fax: +49 (8151) 368 561-99

Mail: Support@estos.de or:

<http://www.estos.de/metanavigation/kontakt/e-mail.html>

2. Reference Configuration

The following diagram shows the configuration used for conformance testing.

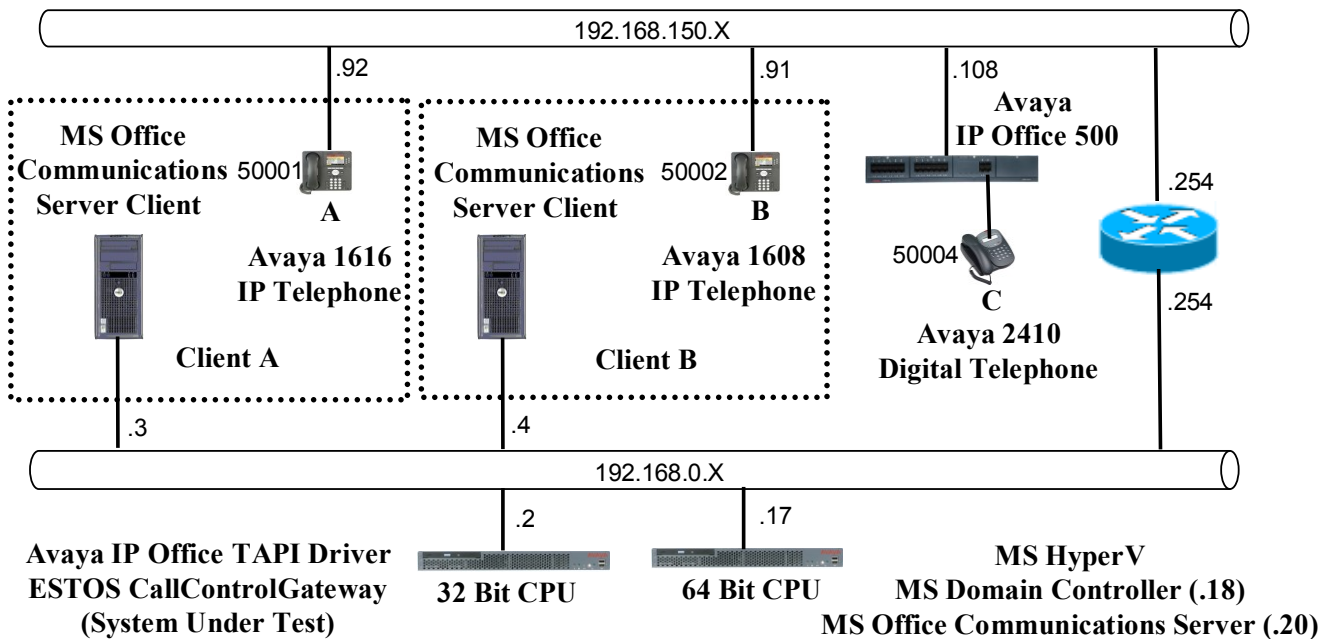


Figure 1: Test Configuration

A typical installation involving the ESTOS CallControlGateway would normally have a PSTN connection which is used to make and receive external calls. Since no PSTN connection was available for the test configuration, telephone “C” in the above diagram serves as an external endpoint for testing purposes.

The MS Hyper V component in the above is a virtualization platform which allows multiple servers to co-reside in a common PC. These co-resident servers can be run on individual platforms to avoid performance degradation if required.

The following is a list of configuration restrictions regarding the components shown in the above diagram:

- The Avaya IP Office TAPI Driver can only be run on a 32 bit PC.
- The ESTOS CallControlGateway and Avaya IP Office TAPI Driver must be run on the same PC.
- The MS Office Communications Server can only run on a 64 bit PC.
- The MS Office Communications Server, MS Office Communications Clients, and ESTOS CallControlGateway must all be run within the same network domain.

The following table shows the extensions which were used for testing.

Phone	Model	Extension
A	1616	50001
B	1608	50002
C	2410	50004

Table 1: Extensions Used for Testing

3. Equipment and Software Validated

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

Component	Software Component	Version
PBX	Avaya IP Office 500	5.0 (8)
	Avaya IP 500 Digital Interface	7.0 (8)
Terminals	Avaya 1608 IP Telephone	3.0
	Avaya 1616 IP Telephone	3.0
32 Bit Server	Avaya IP Office TAPI Driver	4.2.26
	Microsoft Server Enterprise Edition 2003	SP2
	ESTOS CallControlGateway	2.0.1.1557
64 Bit Server	Microsoft Windows Server 2008	R2
	Microsoft Office Communications Server 2007	R2
Clients	MS XP Professional 2002	SP3
	Microsoft Office Communications Client 2007	R2

Table 2: Equipment and Version Validated

4. Configuration

The relationship among the various components shown in **Figure 1** with respect to configuration information can be described as follows.

OCS Clients

- Each OCS Client is configured with the telephone number of the telephone associated with that Client.
- Each OCS Client is configured with the URL assigned to the OCS Server.

OCS Server

- The OCS Server is configured with the domain name of the ESTOS CallControlGateway.

ESTOS CallControlGateway

- The ESTOS CallControlGateway uses the TAPI driver to interface to Avaya IP Office 500, which provides a list of local telephone extensions.
- The ESTOS CallControlGateway is configured with a list of telephone extensions which it is to control.

TAPI Driver

- The TAPI driver is configured with the IP address of Avaya IP Office 500.
- The TAPI driver is configured with the country code and exchange number assigned to the Avaya IP Office 500.

Avaya IP Office

- The Avaya IP Office is configured with a list of telephones, and extension for each telephone.

IP Telephones

- Each IP telephone is configured with the IP address of the Avaya IP Office 500. The configuration of telephones is not described further within this document.

The following diagram depicts the above-described relationships among the components shown in **Figure 1**, in that each component has arrows pointing to the other components for which it has configuration information.

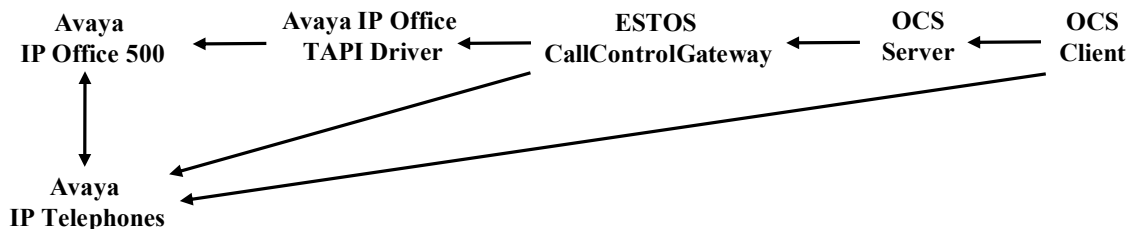


Figure 2: Component Configuration Relationships

4.1. Avaya IP Office

All configuration steps for Avaya IP Office were performed using the IP Office Manager program.

4.1.1. Licenses

The following table contains a list of licenses which are required for the Avaya IP Office. Available licenses can be confirmed by selecting the “Licenses” icon.

License
1600 Series Phones
CTI Link Pro

Table 3: License Requirements

4.1.2. System

Select the “System” icon and enter the parameters shown in the following table. Figure 3 shows the LAN1 tab.

Parameter	Usage
IP Address	Enter the IP address assigned to IP Office.
IP Mask	Enter the network mask assigned to IP Office.

Table 4: IP Office System Parameters

The screenshot shows the IP Office Manager interface for the LAN1 tab. The IP Address field is highlighted with a red box and contains the value 192 . 168 . 150 . 108. The IP Mask field is also highlighted with a red box and contains the value 255 . 255 . 255 . 0. Other settings include Primary Trans. IP Address (0 . 0 . 0 . 0), RIP Mode (None), Enable NAT (unchecked), and Number of DHCP IP Addresses (200). The DHCP Mode is set to Disabled.

Figure 3: IP Office System: LAN1 Settings Tab

4.1.3. Default Gateway

Select the “IP-Route” icon and create a route with the parameters shown in the following table.

Parameter	Usage
IP Address	Enter “0.0.0.0”.
IP Mask	Enter “0.0.0.0”.
Gateway IP Address	Enter the address of the router which is used to attach IP Office to the Visionutveckling VoIP Network.
Destination number	Select “LAN1” from the drop-down list.

Table 5: Default Gateway Parameters

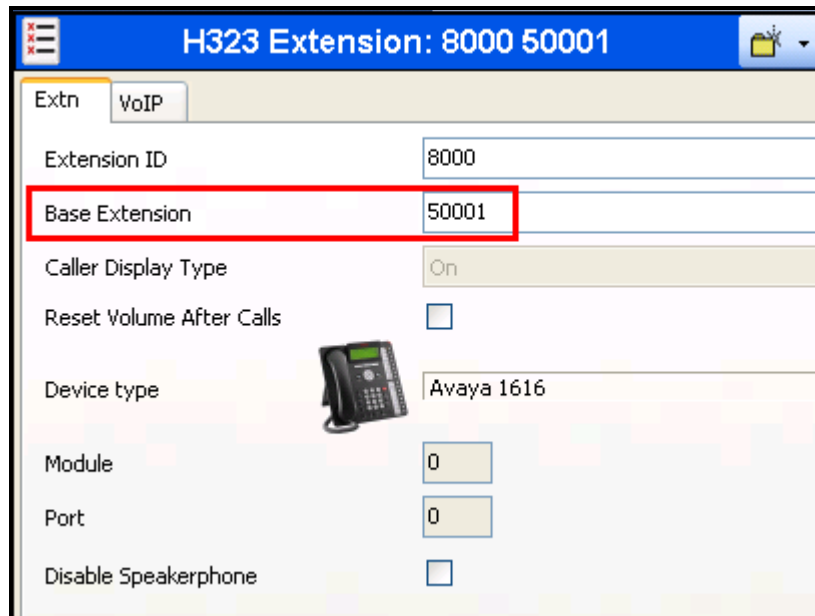
The screenshot shows a configuration window for an IP Office route. The title bar displays '0.0.0.0'. The window contains the following fields and values:

- IP Address: 0 . 0 . 0 . 0
- IP Mask: 0 . 0 . 0 . 0
- Gateway IP Address: 192 . 168 . 150 . 254
- Destination: LAN1 (selected from a dropdown menu)
- Metric: 0 (selected from a dropdown menu)
- Proxy ARP:

Figure 4: IP Office Route: Default Gateway

4.1.4. Local Telephone

From the “Extensions” icon, create an extension for each the User and Operator extensions shown in **Table 1** and enter the extension in the “Base Extension” field.



The screenshot shows a web interface for configuring an H323 extension. The title bar indicates 'H323 Extension: 8000 50001'. There are two tabs: 'Extn' (selected) and 'VoIP'. The configuration fields are as follows:

Field	Value
Extension ID	8000
Base Extension	50001
Caller Display Type	On
Reset Volume After Calls	<input type="checkbox"/>
Device type	Avaya 1616
Module	0
Port	0
Disable Speakerphone	<input type="checkbox"/>

Figure 5: IP Office Local Telephone Extension: Extn Tab

From the “User” tab, add a new user for each of the local telephones show in **Table 1**, using the parameters shown in the following table.

Parameter	Usage
Name	Enter the name of the user.
Extension	Enter the local extension to be assigned to the user.

Table 6: System-Parameters Features Parameters

The screenshot shows the configuration page for a user with extension 50001. The 'User' tab is active. The 'Name' field contains 'Extn50001' and the 'Extension' field contains '50001'. Other visible fields include 'Password', 'Confirm Password', 'Full Name', 'Locale', 'Priority' (set to 5), 'Device Type' (Avaya 1616), and 'User Rights' (set to User data). There are also checkboxes for 'Ex Directory' and 'Enable one-X Portal Services'.

Figure 6: IP Office User: User Tab

4.2. Configure TAPI Client

Configure the Avaya IP Office TAPI driver on the server on which the ESTOS CallControlGateway resides via the Windows “Phone and Modem Options” configuration applet. From the “Dialing Rules” tab, edit the default “My Location” entry. Specify the “Country/region” and “Area code” for location in which the system is installed.

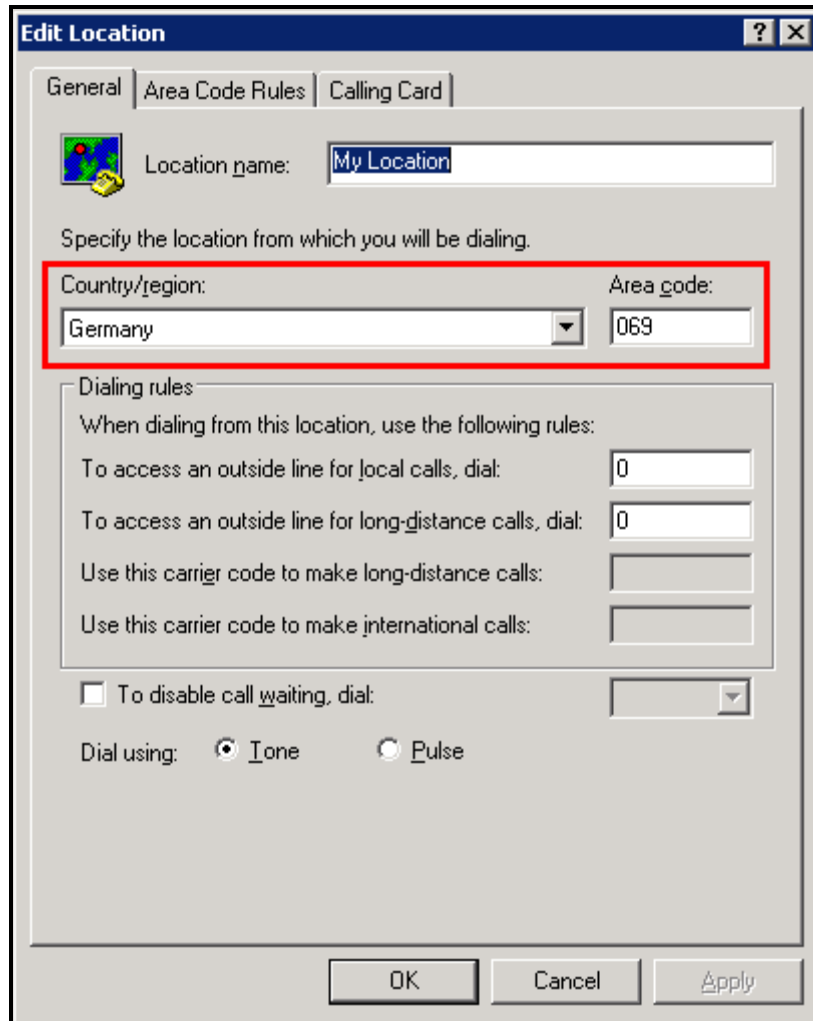


Figure 7: TAPI Location Parameters Screen

Select the “Advanced” tab of the Windows “Phone and Modem Options” configuration applet and configure the “Avaya IP Office TAPI2 Service Provider” entry using the configuration parameters shown in the following table.

Parameter	Usage
Switch IP Address	Enter the IP address of the Avaya IP Office main unit.
Third Party	Select this radio button.
Switch Password	Enter the password assigned to Avaya IP Office.
ACD Queues	Check this box.

Table 7: TAPI Client Configuration Parameters

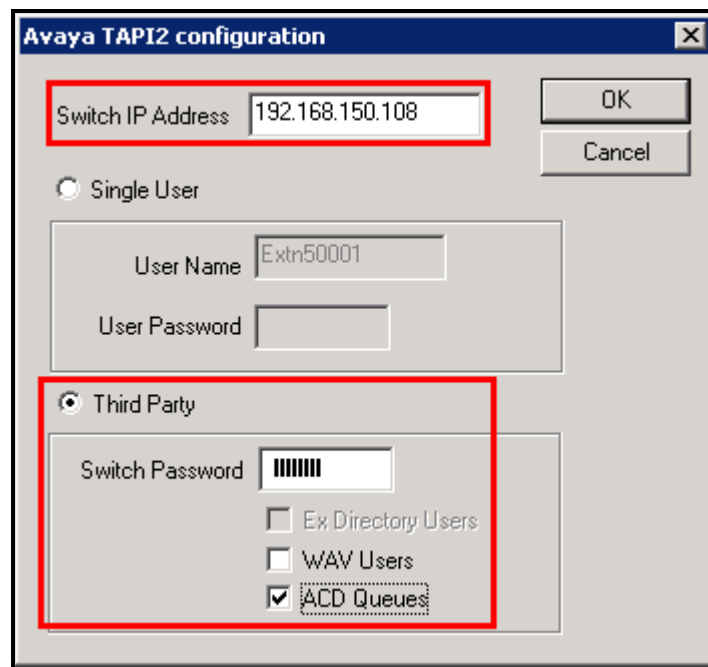


Figure 8: TAPI Client Configuration Screen

4.3. Configure CallControlGateway

Start the ESTOS CallControlGateway, and select the “Leitung” (“Lines”) menu from the left frame of the program display.

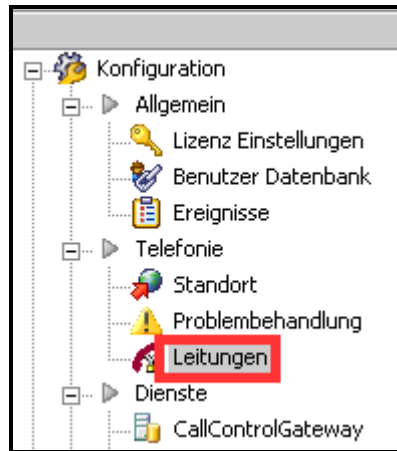


Figure 9: IP Line Selection Display

Activate those “lines” for Phones A, B, and D which are listed in **Table 1**, by selecting the checkboxes adjacent to the line containing the extension number. Note that the telephone number list was received from the Avaya IP Office 500 via the TAPI Driver.

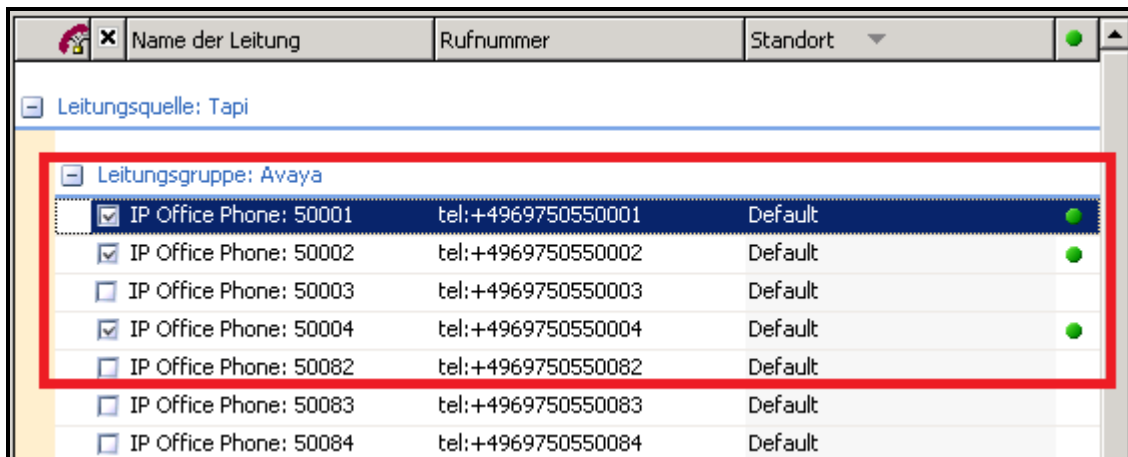


Figure 10: Line Activation

Select the “Standort” (“Location”) menu from the left frame of the program display.

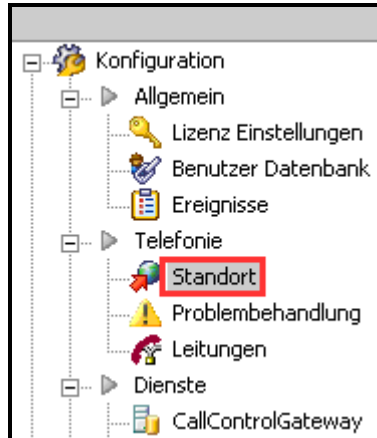


Figure 11: Location Menu Selection

Select the “Allgemein” (“General”) entry from the hierarchy tree contained in the box on the left side on the “Standort” control. Enter the local area code in the “Vorwahl” field, the number assigned to the PBX in the “Anlagenrufnummer” field, and click “OK”.

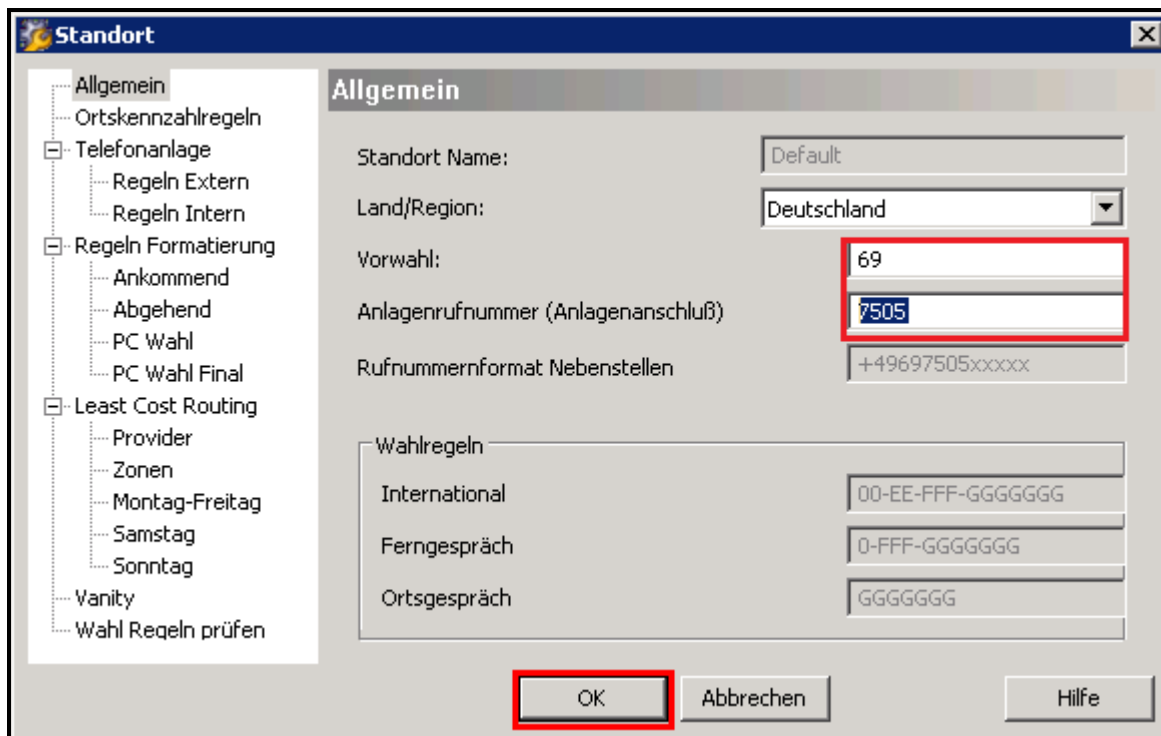


Figure 12: Location General Properties

4.4. Configure OCS Server

Start the OCS Server console on the PC on which the OCS Server is running. From the left frame of the program display, right click on “Office Communications Server 2007” → “Forest → <domain name> → “Standard Edition Servers” → “OCS-Pool”, and select “Properties” → “Front End Properties”.

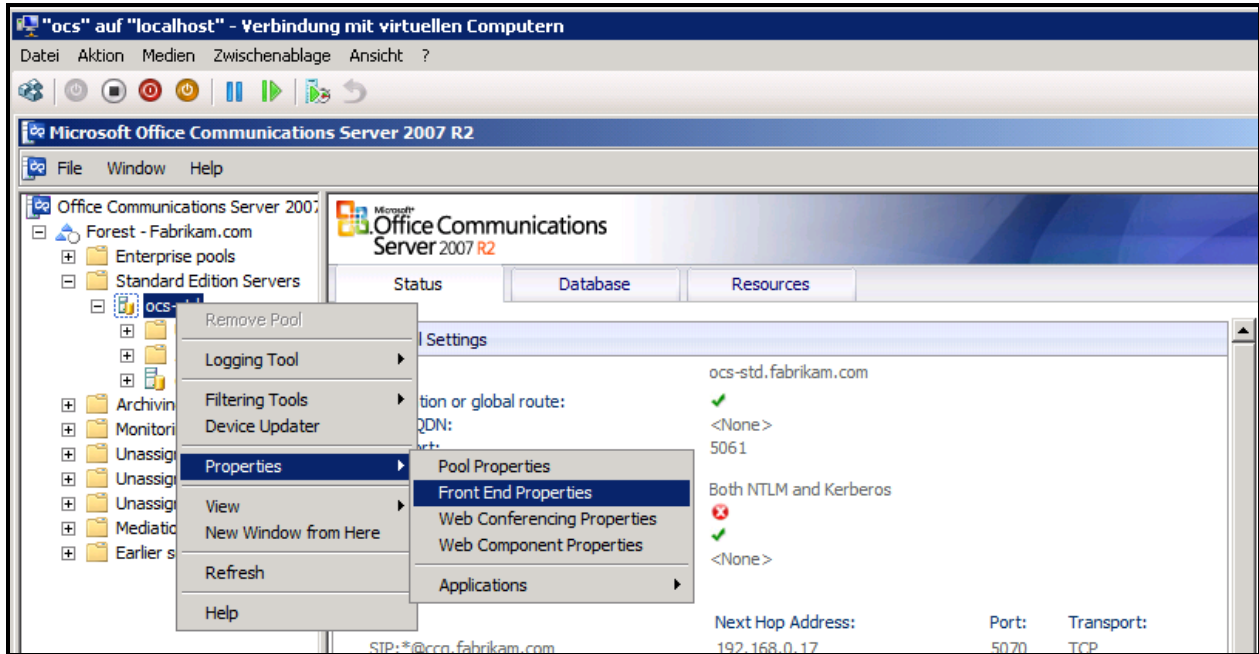


Figure 13: OCS Server Console

From the “Host Authorization” tab, click “new” and enter the IP address of the PC on which the ESTOS CallControlGateway is running.

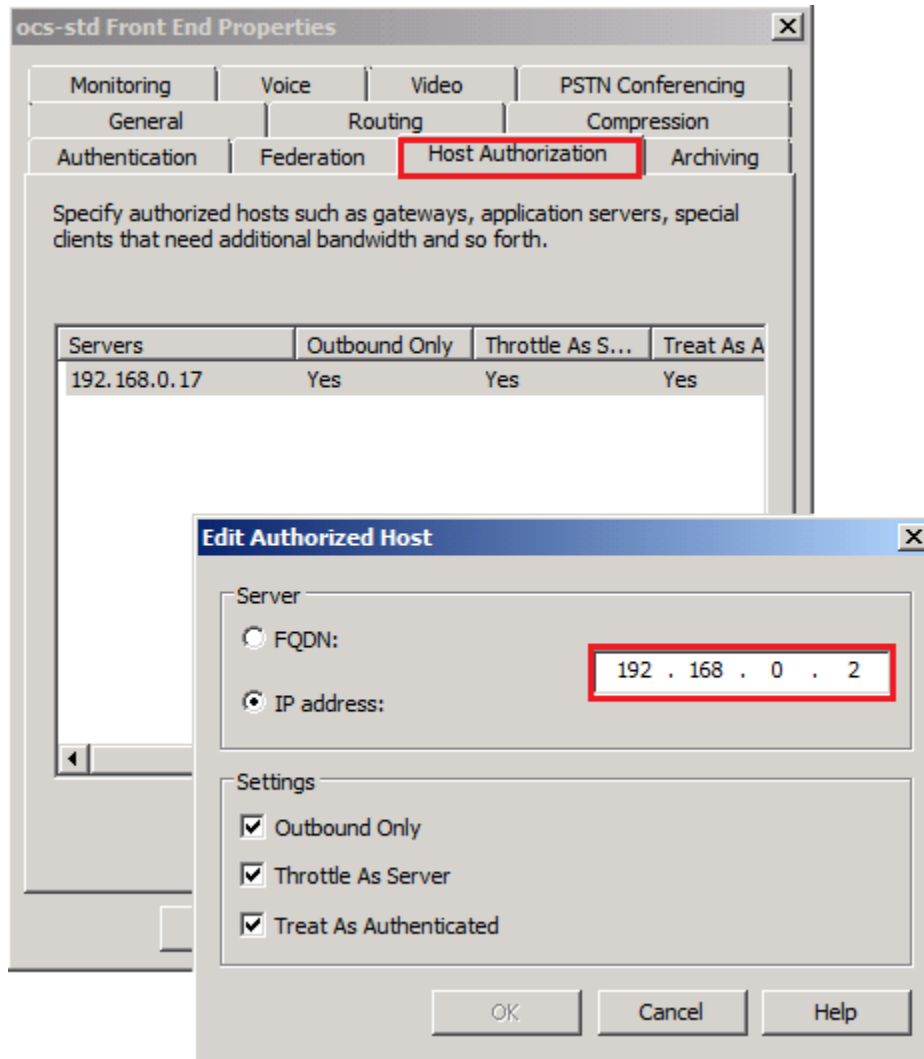


Figure 14: OCS Server Add Host Server Display

From the “Routing” tab, click “New” and enter the domain name, IP address, and port number assigned to the ESTOS CallControlGateway.

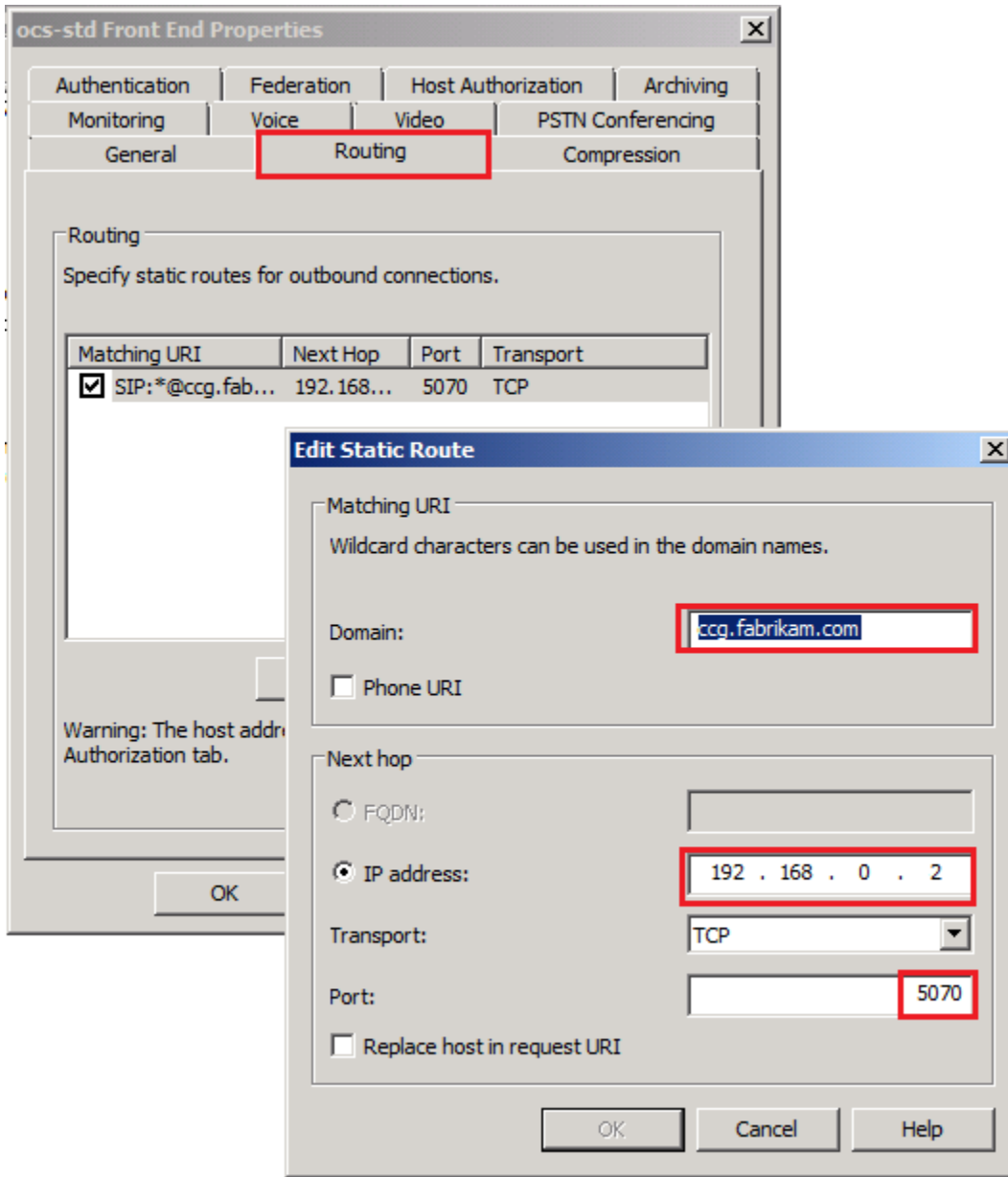


Figure 15: OCS Server Status Route Display

4.5. Configure OCS Clients

Start the OCS Client console, and select Telephone Options. Select “Enable Remote call control” radio button; enter the URI assigned to the server, and the telephone number assigned to the Client.

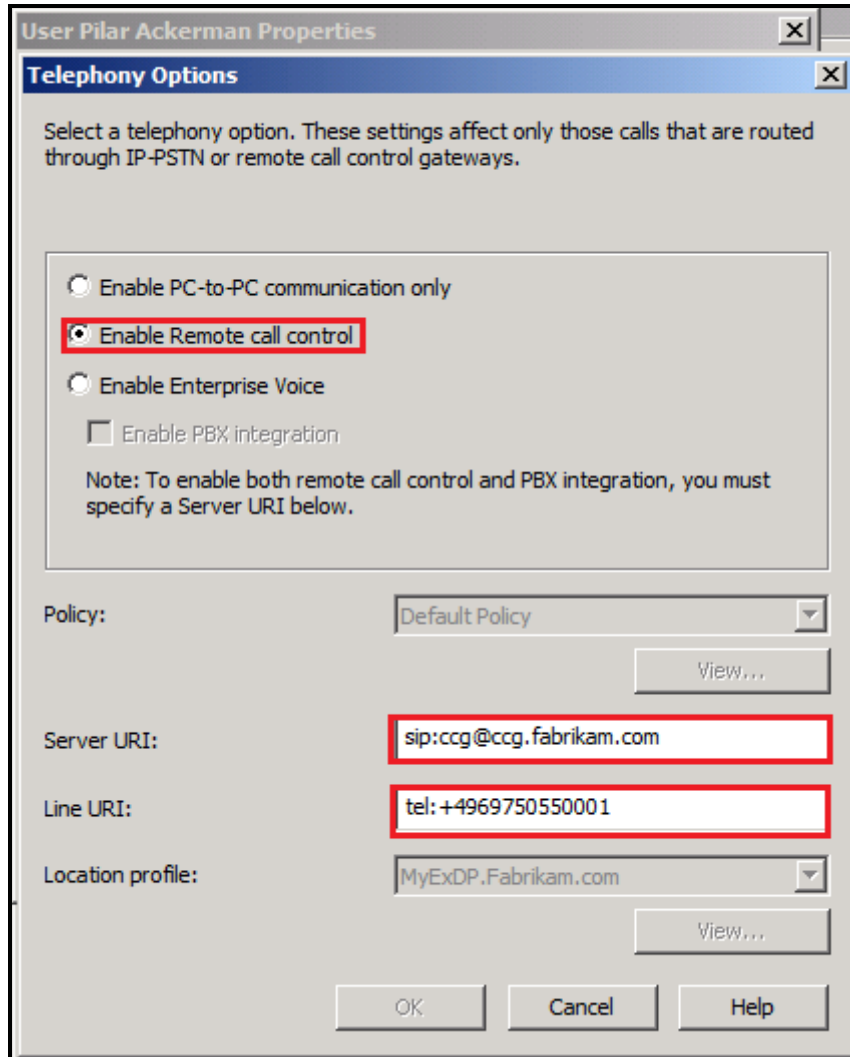


Figure 16: OCS Client Telephony Options Display

5. General Test Approach and Test Results

The compliance testing done between ESTOS CallControlGateway and Avaya IP Office was performed manually. The tests were all functional in nature, and no performance testing was done. The tests which were performed are shown in **section 1.1**. All tests which were performed produced the expected result, with the following exceptions:

- If the LAN connection to the PC on which the ESTOS Server is running is interrupted, the OCS Client programs stop responding to telephone events. The recover procedure for this problem is to restart the OCS Client program.
- If the PC on which the ESTOS Server is running is restarted, the OCS Client programs stop responding to telephone events. The recover procedure for this problem is to restart the OCS Client program.

6. Verification Steps

The correct installation and configuration of CallControlGateway can be verified by performing the following steps:

- Run the ESTOS TAPI Capabilities browser [3] on the PC where the IPO TAPI driver is installed to verify that the TAPI interface is operational.

7. Conclusion

These Application Notes contain instructions for configuring Avaya IP Office to connect to the ESTOS CallControlGateway. A list of instructions is provided to enable the user to verify that the various components have been correctly configured.

8. Additional References

This section references documentation relevant to these Application Notes. Additional information can be found at <http://marketingtools.avaya.com/knowledgebase/>.

- [1] *Avaya IP Office Installation*, July 2009, Issue 20b, Document Number 15-601042
- [2] *Avaya IP Office 5.0 Manager 7.0*, July 2009, Issue 32h, Document Number 15-601011
- [3] *ESTOS TAPI Capabilities Browser*: <http://www.estos.de/software-downloads/action/open-download/download/estos-tapicaps-tapi-treiber-browser.html>
- [4] *ESTOS CallControlGateway Description*, <http://www.estos.com/uc>

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