



ALTIGEN
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AltiGen Communications

MS OCS 2007 & MAXCS Integration Guide

Integrate Microsoft Office Communications Server 2007 R2
With AltiGen MAX Communication Server 6.5
Via Enterprise Voice

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Table of Contents

Introduction	3
Enterprise Voice	3
Mediation Server Required	3
Integration Steps Synopsis	4
Configure OCS front end server (Location Profile, & Normalization Rule).....	4
Deploy an OCS Mediation Server and configure to Altigen specs.....	5
Configure remaining OCS front end server properties (Routes).....	7
Configure MAX Communication Server.....	8
Enable users for Enterprise Voice	9
Verify the integration	9
Concepts	10
OCS calling an Altigen Extension	10
Digit Length Match, Consistent Numbering Plan	10
Digit Length Mismatch.....	10
Altigen as the PSTN Gateway	11
Configuration Notes	11
Voicemail	11
Routing.....	11
Business Hours & Holiday Profiles.....	12
Limitations	12
Altigen as the Call Center for OCS	13
Configuration Notes	13
Groups	13
Voicemail	13
Supervisory Capability	13
Reporting	13
Limitations	13

Introduction

Microsoft Office Communications Server (OCS) 2007 is an enterprise product that integrates real-time communication media with user presence awareness, including Web conferencing (sharing data, audio, and video), instant messaging, and audio/video conversations.

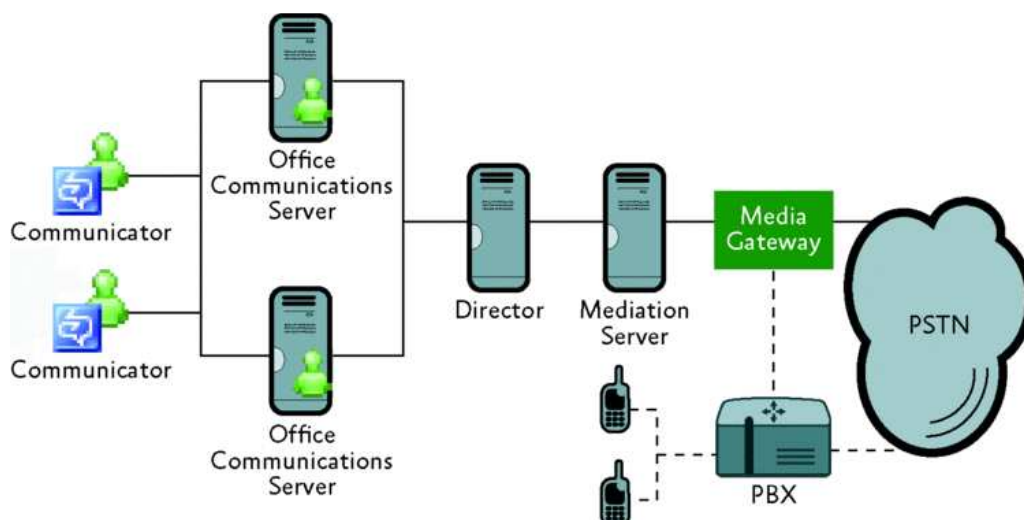
To provide the flexibility that administrators need to create the optimal individual or company telephony integration strategy, Office Communications Server 2007 provides three configuration scenarios for integration with existing telephony environments. These scenarios are: Remote Call Control, Enterprise Voice, and Enterprise Voice with PBX integration. AltiGen requires that users be enabled for Enterprise Voice, without PBX Integration.

Enterprise Voice

When a user is enabled for Enterprise Voice, their OCS endpoint becomes their primary phone instead of the AltiGen phone. The user will have a unique phone number assigned to them in their enterprise's Active Directory database, and this number will be used for reverse number lookups to route incoming calls. In this scenario, Office Communications Server 2007 R2 routes calls among OCS endpoints on the IP network (IP-IP calls) and routes calls to the PSTN/PBX (IP-PSTN calls). Enterprise Voice enables users to place calls over the IP network from PC to PC, PC to PBX/PSTN phone, or PBX/PSTN phone to PC.

Mediation Server Required

OCS uses a Microsoft proprietary SIP implementation over MTLS, and an OCS Mediation Server is required for translation between the OCS server and the MAX Communication server. Another task of the Mediation server is to handle codec translations between the standard VoIP codecs (G.711 & G.723) and the Microsoft real-time audio codec (RT Audio). One Mediation Server is paired with one PBX gateway, as the following figure of a typical OCS deployment shows. Please refer to the Microsoft OCS documentation for OCS server setup instructions.



Integration Steps Synopsis

- Deploy an Office Communications server and verify functionality of Office Communicator presence, IM, and PC to PC calls. (Not covered in this document. Please reference Microsoft's documentation for help with this subject. For instance: <http://technet.microsoft.com/en-us/library/dd425168%28office.13%29.aspx>)
- Configure the OCS front-end server to Altigen specs.
- Deploy an OCS Mediation server and configure to Altigen specs.
- Configure MAX Communication Server for inbound and outbound OCS traffic.
- Enable users for Enterprise Voice.

Configure OCS front end server (Location Profile, & Normalization Rule)

- 1) Add Location Profile.
 - a. In the OCS admin tools (located in Start > Administrative Tools > Office Communications Server 2007 R2), right-click on Forest, select Properties and choose Voice Properties.
 - b. On the Location Profiles tab, click Add, populate the name of your Location Profile and add display text (description).

Edit Location Profile

Name:

Display text:

☐ Optimize device dialing

External access prefix:

Normalization Rules

Normalization rules are processed in the order listed. Use the up and down buttons to adjust the order.

Local Numbers
Any Number of Digits

Up
Down

Add... Edit... Remove

OK Cancel Help

- c. Under Normalization Rules, click Add, populate the name of your Normalization Rule and add a description.
- d. Enter the Phone Pattern Regular Expression & Translation Pattern Regular Expression and test functionality using the Test Translation tool at the bottom of the window. (Training on and samples of Regular Expressions are available in the Altigen Regular Expressions for Dialplans document.)

Edit Phone Number Normalization Rule

Name:

Copy rule...

Description:

Translation

Phone pattern regular expression:

Translation pattern regular expression:

Valid translation characters are +, numbers, and \$. Example: +1425\$1.

☐ Internal enterprise extension

☒ Use translation when dialing from device

Guide to creating common phone number translations:

Test translation

To test the translation, enter a sample dialed number. If it matches the phone pattern, the translation will be shown.

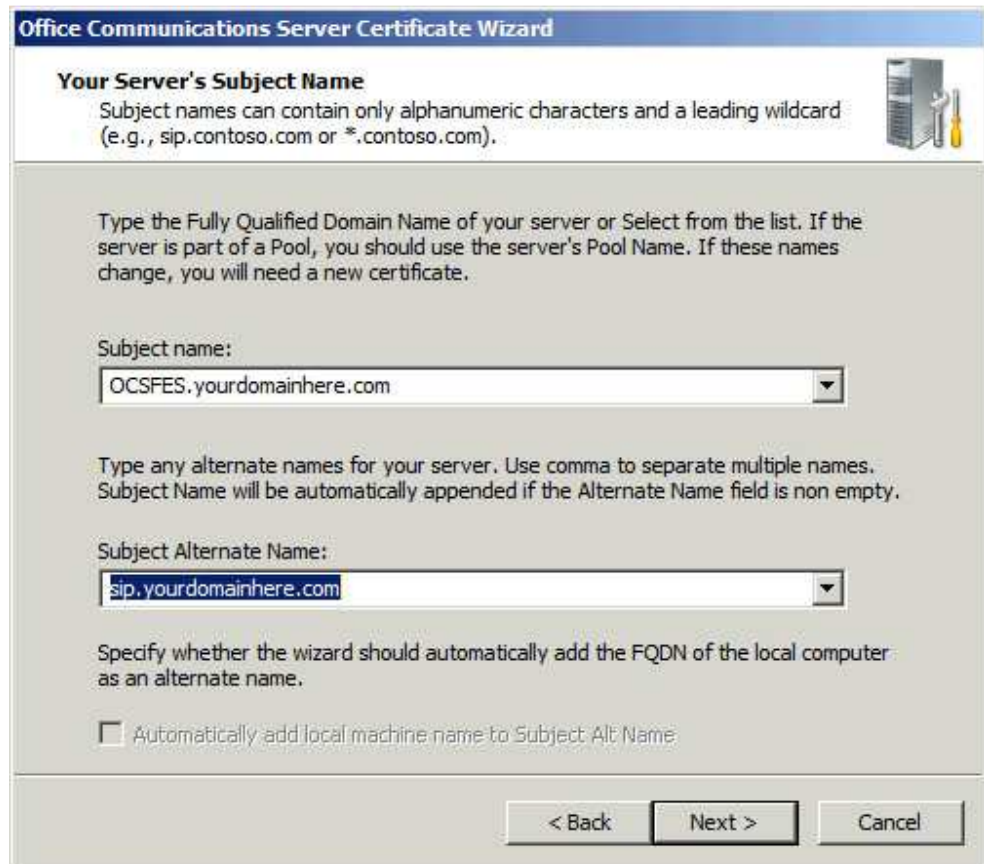
Sample dialed number:

Translated number:

- e. Click OK twice to exit OCS voice properties.

Deploy an OCS Mediation Server and configure to Altigen specs.

- 1) On a server with dual network cards that is joined to your domain, run the OCS install DVD to install the Mediation Server Role and OCS Admin tools.
 - a. When adding the certificate, please add a Subject Alternative Name (SAN) for your SIP domain if it will be different from the computer name of the mediation server. (EX. Mediation server computer name: OCS_MED.yourdomainhere.com, SIP domain: sip.yourdomainhere.com... See figure below)



The image shows a Windows-style dialog box titled "Office Communications Server Certificate Wizard". It has a blue header bar with the title. Below the title bar, there's a section titled "Your Server's Subject Name" with a small icon of a server and a key. The text explains that subject names can contain alphanumeric characters and a leading wildcard (e.g., sip.contoso.com or *.contoso.com). Below this, there's a text box for "Subject name:" containing "OCSFES.yourdomainhere.com". Another section explains that alternate names can be entered, separated by commas, and will be automatically appended. Below this is a text box for "Subject Alternate Name:" containing "sip.yourdomainhere.com". At the bottom, there's a checkbox labeled "Automatically add local machine name to Subject Alt Name" which is currently unchecked. Navigation buttons "< Back", "Next >", and "Cancel" are at the bottom right.

Office Communications Server Certificate Wizard

Your Server's Subject Name
Subject names can contain only alphanumeric characters and a leading wildcard (e.g., sip.contoso.com or *.contoso.com).

Type the Fully Qualified Domain Name of your server or Select from the list. If the server is part of a Pool, you should use the server's Pool Name. If these names change, you will need a new certificate.

Subject name:
OCSFES.yourdomainhere.com

Type any alternate names for your server. Use comma to separate multiple names. Subject Name will be automatically appended if the Alternate Name field is non empty.

Subject Alternate Name:
sip.yourdomainhere.com

Specify whether the wizard should automatically add the FQDN of the local computer as an alternate name.

☐ Automatically add local machine name to Subject Alt Name

< Back Next > Cancel

- 2) Configure the network cards to each have a unique static IP.
- 3) Configure mediation server properties.
 - a. In Admin Tools, expand Forest, expand Mediation Servers, select your mediation server, right-click on it and choose Properties.
 - b. On the General tab, drop down "Communications Server Listening IP Address" and select the address that your OCS front end will be sending traffic to.
 - c. Drop down "Gateway Listening IP Address" and select the address that your Gateway/MAX Communication server will be sending traffic to. Leave the Port as 5060.
 - d. On the Next Hop Connections tab, if not auto-populated, select the FQDN of your OCS front end server and enter 5061 as the Port.
 - e. Under PSTN Gateway Next Hop, add the address of your MAX Communication Server, port 5060, and choose TCP as the transport.
 - f. On the Certificates tab, make sure the correct certificate is assigned.
 - g. Click OK to exit mediation server properties.
- 4) Manually start the mediation server role service.
 - a. In Admin Tools, expand Mediation Servers, right-click on your mediation server and select Start.

Configure remaining OCS front end server properties (Routes)

- 1) Configure OCS routing table.
 - a. In the OCS admin tools, right-click on Forest, select Properties and choose Voice Properties.
 - b. Determine the dialing patterns that you would like to send to the MAX Communication server, and input a Route for each.
 - i. On the Routes tab, click Add, title your Route and give it a description.
 - ii. Under Target Phone Numbers, add the Target Regular Expression for the desired dialing pattern.
 - iii. Under Gateways, click Add, select your mediation server and click OK.
 - iv. Under Phone Usages, click Configure, select an available Phone Usage Policy, click the > symbol and then OK.

Edit Route

Name:

Description:

A route requires a target phone number regular expression, one or more gateways, and one or more phone usages.

Target phone numbers:

Target regular expression

Helper...

Gateways

Address

OCS-MED.yourdomainhere.com:5061

Add... Remove

Phone usages

Default Usage

Configure...

OK Cancel Help

- v. Click OK twice to exit OCS voice properties.

- 2) Verify the mediation server's name is resolving to the correct address.
 - a. From the OCS front end server, the mediation server's address must resolve to the address specified as the Communications Server Listening IP Address in your mediation server.
 - b. You may have to add the mediation server's DNS name to the Windows HOSTS file as a static entry (c:\windows\system32\drivers\etc\hosts). *Note: On Windows Server 2008, to save changes made to the Hosts file, you must first run Notepad "As Administrator" (right-click on Notepad and select Run as Administrator).*

Configure MAX Communication Server

- 1) Verify the mediation server's name is resolving to the correct address.
 - a. From MAX Communication server, the mediation server's address must resolve to the address specified as the Gateway Listening IP Address in your mediation server.
 - b. You may have to add the mediation server's DNS name to the Windows HOSTS file as a static entry.
- 2) Add and assign a Codec Profile for OCS.
 - a. In Enterprise Manager > Codec, click Add, title your Codec Profile "OCS", select G.711 Mu Law as the codec, RFC2833 as the DTMF delivery, TCP as SIP Transport, and Disabled for SIP Early Media.
 - b. In Enterprise Manager > Servers, on the IP Codec tab, click Add, enter both the From and To addresses as the OCS mediation server Gateway Listening IP Address, select the OCS Codec Profile and click OK. Double check for conflicting address ranges here. If your OCS server address falls within an already specified range, you will have to delete the existing range and add a total of three address ranges (before your OCS server address, your OCS server address, and after your OCS server address).
 - c. In Enterprise Manager > Servers, on the IP Dialing Table tab, click Add, configure with the following settings and then click OK:
 - i. Server ID: any unused number
 - ii. Server Name: OCS_Mediation
 - iii. Server IP Address: the server address of the mediation server Gateway Listening IP Address
 - iv. Remote Ext Length: the digit length of your OCS extensions
 - v. Dialing Scheme: Enblock
 - vi. Protocol: SIP/TCP
 - vii. Codec: OCS
 - viii. Hop Off Allowed: Yes
- 3) An IP Trunk Access Code is required to make calls to OCS extensions.

Enable users for Enterprise Voice

- 1) Configure the telephony settings on the OCS front end server.
 - a. In admin tools, expand Forest, expand Standard Edition Servers, expand your front end server, click Users.
 - b. Right-click on the user, select Properties, and click the Configure button for Telephony Settings.
 - c. Select the radio button next to Enable Enterprise Voice and be sure to leave the Enable PBX Integration box unchecked. In the Line URI field, enter tel: plus the user's DID or unique numerical identifier(pseudo-URI) in E.164 format. (EX. *Line URI: tel:+15102529712*)
 - d. Select the Location Profile from the drop down list.
 - e. Click OK twice to exit user properties.

Verify the integration

- 1) Login to Office Communicator 2007 with an Enterprise Voice enabled OCS extension, and place a test call to another Office Communicator extension.
 - a. This must be done on a computer with current domain membership, speakers and a microphone.
 - b. If this step fails, please consult Microsoft's Office Communications Server 2007 Troubleshooting documentation for assistance. (For example: <http://technet.microsoft.com/en-us/library/dd572865%28office.13%29.aspx>)
- 2) Place a call from Office Communicator to a valid MAX Communication Server extension. Verify that the call rings through, and when picked up has a clear, bidirectional talkpath.
 - a. If this step fails, double check the following:
 - i. Mediation server's network settings and connectivity
 - ii. Routes (especially Regular Expressions)
 - iii. Codec settings in MAXCS
- 3) Place a call from a MAX Communication Server extension to an OCS extension.
 - a. The dialed extension number must be preceded by the IP Trunk Access code and the OCS server ID as set in the IP Dialing Table in Enterprise Manager. (EX. IP Trunk Access Code: 8, OCS server ID: 04, OCS extension: 602. The dialed string must be 804602.)
 - b. A virtual extension may be created on MAX Communication server with the same extension number as an OCS extension, with forwarding set up to the necessary dialed number string to get the call to OCS.
 - c. If this step fails, double check the following:
 - i. IP Dialing table
 - ii. Location Profile Normalization and Translation Rule

Concepts

There are a few things to consider when configuring an AltiGen & OCS integration, besides the initial setup of getting MAXCS and OCS to communicate with each other.

First of all, will the extension number lengths match? OCS and AltiGen are able to have differing extension number digit lengths, as long as the OCS normalization and translation rules are set up to handle each different length. If MAXCS is sending three digits as the OCS extension, OCS must transform those digits into the correct E.164 phone number. If MAXCS is sending four digits, OCS must then transform the four digits to E.164.

OCS calling an AltiGen Extension

When calling from OCS to MAXCS, a rule must have been created in order for OCS to know where to send the call. Because of varying combinations of digit lengths and inconsistent extension numbering plans, fully thought out normalization rules, translations and routes are very important.

Digit Length Match, Consistent Numbering Plan

OCS must be able to differentiate OCS and AltiGen extensions. If the digit lengths match, this cannot be the determining factor. A good way for OCS to differentiate between OCS and AltiGen extensions would be to have the first digit of MAXCS extensions be different from the OCS extensions. This can also be a good organizational tactic. In this case, the OCS route will use a regular expression to match strings of a specific length (extension length) and that start with a specific number. The route will only have to be created to send MAXCS extensions to MAXCS. No routes have to be configured in order for OCS to call OCS.

Keep in mind that the OCS normalization rule that transforms a dialed extension into an E.164 number for the Reverse Number Lookup to call OCS users will also normalize and translate a dialed AltiGen extension into E.164 and the call will fail, not having a defined target within OCS. If the extension digit lengths match, you must have clearly defined normalization rules and translations that can differentiate between the two extension types and route accordingly.

Digit Length Mismatch

Non-matching extension digit lengths may provide an easy differentiation between OCS and AltiGen extensions but may not be the best solution as it does not provide a transparent dialing pattern. If it is determined necessary to have non-matching extension digit lengths, a normalization and translation rule must be set up to transform the OCS extensions of a specific length to E.164 format, and a route set up to pass MAXCS extension digit length to the mediation server.

Altigen as the PSTN Gateway

Microsoft Office Communications Server does not have connectivity to the Public Switched Telephone Network. Altigen can provide this connectivity by acting as the gateway, connecting OCS to the PSTN. Altigen as a PSTN Gateway is good solution for businesses already using or planning to use OCS for voice calls, and extends the capability to include voice calls external to the organization. Altigen is a good fit for a business using OCS for presence and IM capability alongside their current PBX.

Configuration Notes

Voicemail

Microsoft Office Communications Server does not have voicemail capability built in. For a Microsoft deployment, voicemail functionality is provided by Microsoft Exchange 2007, and not by the built in voicemail on MAXCS. Therefore, Altigen's advanced voicemail features such as One Number Access (Find Me Follow Me), Return Call, VM Notification and Zoomerang are not available. Microsoft Exchange 2007 would also be responsible for any Message Waiting notification.

Routing

Currently, there must be a virtual extension on MAXCS for every extension on OCS. Each virtual extension would forward to the IP Trunk access code plus the OCS extension number. OCS would then translate the extension number into E.164 format, perform the Reverse Number Lookup and route the call to the correct user.

When a call rings into MAXCS from the PSTN, the digits the caller entered in order to make the call are passed to MAXCS in the form of DNIS (Dialed Number Identification Service). MAXCS queries the In-Call Routing table (where DNIS routing is configured) and looks for a match to the number that was dialed. Each user's DID (direct number) can be configured as a DNIS entry in MAXCS In-Call Routing table (it also can be configured as a DID on the virtual extension configuration as described below), with the correct virtual extension for that user. In addition to each user's DID, any other phone number that needs anything other than generic routing to the operator must be configured here as well.

When a PSTN call rings into MAXCS and no match is found in DNIS on the In-Call Routing table, MAXCS will then look to the extension configuration. Each OCS user's corresponding Altigen extension can have their direct number configured as a DID, in the DID field in the extension configuration.

When a PSTN call rings into MAXCS and no match is found in DNIS, and no match is found on the extension DIDs, the routing will default to the Trunk In-Call Routing. Since OCS extensions cannot be members of Altigen groups, the Trunk In-Call Routing options are limited. The call can be routed to one extension that may be acting as operator (see limitations), may forward to Exchange 2007 Auto Attendant (configuration not covered by Altigen) or the call can be routed to MAXCS Auto Attendant.

Business Hours & Holiday Profiles

If time-based routing is desired, MAXCS can provide Business Hour and Holiday Profile routing. Business Hour Profiles and Holiday Profiles can be specified on the DNIS In-Call Routing table. This is a good solution for organizations with more than one department or more than one location. Example One, Organization A has a sales department that is open 7am to 9pm, Monday through Friday, and a service department that is open 24/7. Different Business Hour Profiles can be created for each department, and DNIS calls routed appropriately. Example two, Organization A has a location in the United States and a location in Germany. Since different holidays are observed in each location, different Holiday Profiles can be created for each country and assigned to the appropriate DNIS phone numbers.

Limitations

If the Operator is an OCS extension, MAXCS operator console is not available for use and functionality is severely decreased. This configuration is not recommended for high Operator call volume.

Call restriction can no longer be performed from MAXCS on an individual extension basis, as the extensions actually reside on OCS.

When routing calls to MAXCS for outbound trunk hop-off, please do not configure normalization to append the E.164 plus to the beginning of the dial string.

Altigen as the Call Center for OCS

Microsoft Office Communications Server does not have advanced call routing or ACD capabilities. Altigen can provide a full suite of feature rich Call Center capabilities, in addition to being the gateway to the PSTN.

Configuration Notes

Groups

Only Altigen extensions can be members of workgroups or huntgroups. MAXCS extensions must use an approved IP phone or MAXCS soft-phone client software. Office Communicator may not be used for workgroup Agents, unless the user's OCS DID is configured as a mobile extension. Groups and group call routing are configured as normal.

Note: OCS users configured as mobile extensions will take up twice as many PRI/T1 resources.

Voicemail

Altigen extensions can be configured to use MAXCS voicemail system alone, MAXCS voicemail with bridged Exchange 2007 Integration, or native Exchange Integration (no Altigen voicemail). The voicemail may also be forwarded to an email distribution group. There is no Message Waiting Indication light for groups.

Supervisory Capability

Designated Altigen extensions have the ability to log in to MAXCS client software, MaxSupervisor, to Listen, Barge-In and Coach their Agents. MaxSupervisor also gives that extension access to seeing real time group and queue statistics, and if granted, queue control with call redirect ability. Agents (Altigen extensions) can be recorded and this would be handled by MAXCS.

Reporting

Call Detail Reports for any Altigen extension will be provided by MAXCS. A Call Detail Records search utility is provided with MAXCS. An optional Altigen reporting package, Altireport, provides a web-based Call Center reporting package with customizable automated emails of favorite reports, and many pre-configured industry favorite reports. Office Communications Archiving server will be responsible for the Call Detail Records for all OCS extensions.

Limitations

- Currently, there is no way to import OCS extensions into MAXCS.
- OCS extensions may not use MAXCommunicator and Altigen extensions may not use Office Communicator for voice calls. An Altigen extension may use MAXCommunicator for voice calls and Office Communicator for presence and IM.
- There is no cross-system call park.
- When an OCS user calls an Altigen extension, the E.164 number of the OCS user is displayed as Caller ID but the Altigen extension cannot call the user back via the call log.

- Each system is responsible for its own hold music.
- Transferring calls between OCS and AltiGen uses SIP Tie resources for the duration of the call. When a call is transferred back and forth multiple times, the used resources multiply.