



Avaya Agile Communication Environment™ Microsoft Lync Integration and Microsoft Office Communicator Add- in Fundamentals

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Chapter 1: New in this Release

This is the first release of *Avaya Agile Communication Environment™ Microsoft Lync Integration and Microsoft Office Communicator Add-in Fundamentals* (NN10850-014). Information on Avaya ACE™ Communicator Add-in has been moved to this document. The following are new features in this release.

Microsoft Lync integration

Avaya Agile Communication Environment™ (ACE) Release 3.0 introduces Avaya ACE™ Microsoft Lync Integration. The Lync Integration expands on the previous capabilities of the ACE Microsoft Communicator Add-in. Lync Integration is used in network environments where Microsoft Lync Server 2010 and Microsoft Lync 2010 are deployed.

In this document, the term Lync Integration will be used to refer to both Lync Integration and Communicator Add-in unless specific Communicator Add-in features are being highlighted.

Embedded Avaya UC Engine

Previous releases required the One-X Communicator be coresident for Computer Mode functionality. In this release, the required components are embedded in the Lync Integration software package.

Configurator Lync Integration interface

The Configurator assists with configuration parameters when building an install package. The Configurator now provides a Lync Integration interface.

Additional call control capabilities

Release 3.0 adds the following call control capabilities:

- Consult Call
- Consult Transfer
- Consult Conferencing
- Call Waiting
- Phone mode utilizing Shared Control. Shared Control is available on Avaya Aura® Communication Manager deployments only.

New in this Release

Chapter 2: Introduction

Avaya Agile Communication Environment™ (ACE) Microsoft Lync Integration Fundamentals (NN10850-014) provides the information needed to administer

- Avaya ACE™ Microsoft Lync Integration
- Avaya ACE™ Microsoft Communicator Add-in

The Avaya ACE Lync Integration is intended for a network environment where Microsoft Lync Server 2010 is deployed. Avaya ACE Lync Integration is a client side add-in to Microsoft Lync 2010. The Avaya ACE Communicator Add-in is intended for a network environment where Microsoft OCS is deployed. Avaya ACE Communicator Add-in is a client side add-in to Microsoft Communicator.

Terminology

In this document, the term Avaya ACE Lync Integration will be used to refer to both Avaya ACE Lync Integration and Avaya ACE Communicator Add-in unless specific Avaya ACE Communicator Add-in features are being highlighted.

Avaya product names:

The following product names are used for Avaya ACE Lync Integration.

- Avaya ACE Lync Integration
- ACE Lync Integration
- Lync Integration

The following product names are used for Avaya ACE Communicator Add-in.

- Avaya ACE Communicator Add-in
- ACE Communicator Add-in
- Communicator Add-in

Microsoft product names:

The following product names are used for the Microsoft Lync solution.

- Microsoft Lync Server 2010
- Lync Server 2010
- Microsoft Lync 2010 (client)
- Lync 2010 (client)

The following product names are used for the Microsoft Office Communicator solution.

- Microsoft Office Communication Server 2007 R2
- Office Communication Server 2007 R2

- Microsoft Office Communicator 2007 R2 (client)
- Office Communicator 2007 R2 (client)
- Communicator (client)

Avaya ACE™ documentation overview

Before you use Avaya ACE, be familiar with the following documentation resources.

Avaya ACE documentation

These documents provide information on Avaya ACE fundamentals and planning, ordering ACE software, as well as ACE installation and administration. The documents also contain information on Avaya and third-party system solution integration, Web service application programming interfaces (APIs), security, fault and performance management, and troubleshooting. You can also find information on core applications or APIs delivered with the base software like Message Drop and Blast API.

Avaya ACE application documentation

The application documentation includes information on the planning, installing, administration, and use of the Application Integration Engine (AIE) platform and the applications AIE hosts. The documentation also includes Microsoft and IBM desktop integration solutions, and other prepackaged Avaya ACE applications.

Avaya ACE Release Notes

The Avaya ACE release notes describe operational considerations for a specific release of Avaya ACE. You can download this document from <https://support.avaya.com>. You must carefully review the release notes for the Avaya ACE release you support prior to a software install or upgrade. In addition, this document is a helpful reference for the ongoing support and use of Avaya ACE.

Obtaining documents

- Avaya ACE documentation is available on the Avaya support Web site on <https://support.avaya.com>.
- Avaya ACE documentation is available on:
 - the **Avaya ACE Server** disk
 - the Avaya ACE GUI **Help** menu
 - the Avaya ACE server under the Linux folder `/opt/avaya/ace/doc/NTP` .
- Avaya ACE application documentation is available on:
 - the **Avaya ACE Applications** disk
 - the AIE GUI **Help** menu (for applications hosted through the AIE)

Avaya ACE professional services and support

Avaya ACE™ combines industry-leading consulting and design services with the right mix of custom development and communications integration capabilities. Avaya ACE provides communications solutions that meet business needs of an organization.

Avaya ACE can be used in :

- Consulting and solution design: Helps customers understand and design communications solutions holistically, ensuring all elements of the solution are addressed and aligned.
- Solution development and customization: Ensures the unique requirements of an enterprise are met.
- Solution integration and implementation: Ensures the solution is deployed and integrated within the network and communications infrastructure and applications effectively to achieve organizational and business goals.
- Project management and ongoing solution maintenance: Helps enterprises manage and maintain their network and communications infrastructure.
- Business optimization: Ensures the deployed solution delivers maximum performance.

Avaya Global Services

Avaya Global Services delivers world-class support in three areas:

- **Avaya Professional Services:**

Avaya Professional Services consultants are technically proficient, possess strong business acumen and have developed vertical industry specialization to help you address the challenges of the current converged voice, video, and data communications environments. At the same time, Avaya Professional Services actively help you look for ways to optimize your communications environment to better enable your people, increase your business agility, and lower your operation costs.

- **Avaya Support Services:**

Avaya Support Services are backed by global resources, including more than 5,800 industry-certified service desk and backbone engineers and 34 regional network operations centers delivering 24x7 monitoring, diagnostics and problem resolution, as well as support in 14 languages.

- **Avaya Operations Services:**

Avaya Operations Services are available for customers who want to outsource the proactive management and monitoring of their communications infrastructure. These services can be delivered by Avaya directly or private-labeled and co-delivered by Avaya authorized partners.

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Chapter 3: Avaya ACE™ Microsoft Lync Integration

Network administrators can integrate the Avaya Agile Communication Environment™ (ACE) into their Microsoft Lync or Microsoft Office Communications Server (OCS) 2007 R2 network infrastructure to enhance existing communication services. Avaya ACE supports unified communication (UC) desktop integration with Microsoft Lync 2010 clients and Microsoft Office Communicator 2007 R2 clients. Leveraging Avaya ACE web services and user profile management, administrators of Microsoft networks can provide unified communication services to clients utilizing their Avaya Aura® Communication Manager or Avaya Communication Server 1000 service provider. Note that supported features may differ by service provider and where differences occur, they are indicated in this document.

Avaya ACE Lync and OCS integration is client side. The Avaya ACE Lync Integration is an add-in application that extends Microsoft Lync or Microsoft Office Communicator client functionality using Microsoft supported APIs. The Avaya ACE Lync Integration extends Microsoft Lync Client providing two telephony modes, Phone and Computer mode. Phone mode allows the user to control the desktop phone, with media going over existing PBX telephony equipment. Computer mode allows the user to use the computer as a phone, using the media capabilities of the computer. For a description of the services available in Phone and Computer mode, see [Telephony services with Lync Integration](#) on page 18

The Avaya ACE Lync Integration interacts with the Lync 2010 client directly using Microsoft Supported APIs. All telephony capabilities are integrated directly between Avaya ACE Lync Integration, the Avaya AIE, and Microsoft Lync 2010 client. The Avaya ACE solutions telephony capabilities with Lync 2010 requires only an OCS 2007 R2 Standard CAL (license), eliminating the need for a Microsoft voice infrastructure and the Microsoft OCS Enterprise CAL. Remote Call Control and Enterprise Voice must be disabled on the Lync or OCS server.

Language support

Avaya ACE Lync Integration supports the following languages:

- English
- French, International
- German
- Italian
- Japanese
- Korean
- Portuguese, Brazilian
- Russian

- Spanish, International
- Chinese, Simplified

Features

The solution supports the Lync 2010 Microsoft Office Communicator user interface to provide voice services utilizing Avaya Aura Communication Manager or Avaya Communications Server 1000 voice infrastructure.

* Note:

For a detailed description of each voice service and a list of the services supported by each service provider, see [Telephony services with Lync Integration](#) on page 18.

The solution supports the following functionality:

- Support for Computer (soft client) and Phone (CTI control of Desk phone) modes.
- Make Calls from Contact list, or search dialog box utilizing contacts published numbers.
 - Select Computer mode.
 - Select Phone mode.
- In conjunction with the Office Add-in and Web Browser Add-in applications, Make Calls from Microsoft Office applications and Internet Explorer (see Avaya Agile Communication Environment Configurator for Desktop Communication Enablement Fundamentals (NN10850-031)
- Translation of E164 numbers to customer dial plan including insertion or deletion of appropriate digits.
- Publish Telephony Presences on behalf of the user when their client is signed in and on a call.
- Display a conversation window with the following mid-call functionality:
 - Release/End call.
 - Place call on Hold and Retrieve call.
 - Insert DTMF digit in to an established call.
 - Speaker volume control and speaker mute function (Computer mode).
 - Microphone mute function (Computer mode).
- Handling multiple calls
 - Support for multiple Consult calls
 - While on a Consult call, instigate a Call Transfer.
 - While on a Consult call, merge another call to form a Conference call.
 - Add additional Consult calls to this Conference call.
 - Call Waiting popup display.
- Display an incoming call window with the following functionality:
 - Indicate the Incoming Caller line ID or Caller name.
 - Allows the user to Answer the call or Deflect (Phone mode with Restful Session Control) to one of their specified devices.

- While On a call, indicate that an other call is waiting. Answering this call places the first call on Hold.
- Graphically indicate which device (Computer or Phone mode) the call will be answered on.
- Set Call Forward options.

Microsoft Lync 2010 may be deployed within an Enterprise, on premise, or within a Hosted Office 365 deployment. Microsoft Office Communication System 2007 R2 may be deployed within an Enterprise or as a hosted service, Business Productivity Online Suite (BPOS). Avaya ACE Microsoft Lync Integration will inter-operate with Lync 2010 or Communicator 2007 R2 clients deployed on the users PC. The following diagram represents Avaya ACE deployed within an Enterprise. The following section describes Avaya ACE deployed in a hosted service configuration ([Communicator Add-in support for Microsoft BPOS](#) on page 15).

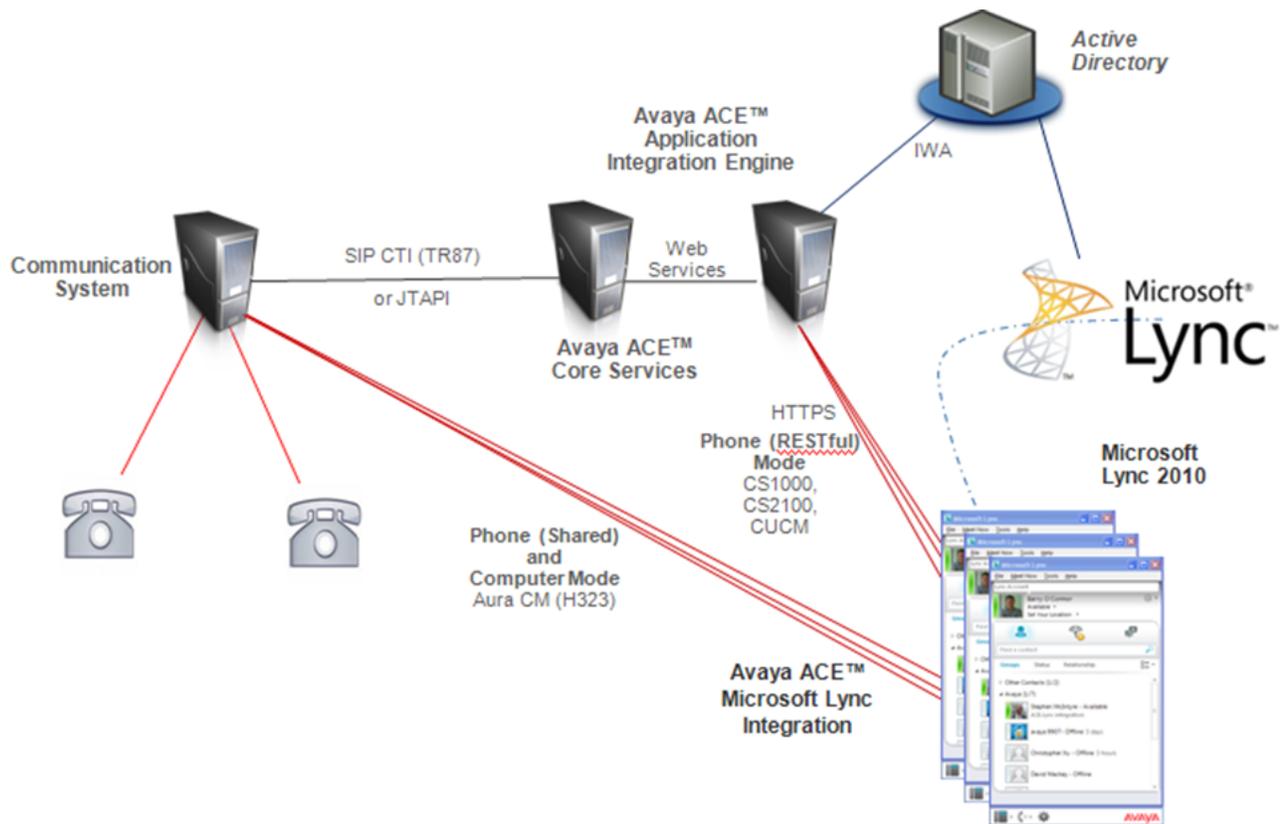


Figure 1: Avaya ACE deployed in an Enterprise with the Communicator Add-in

Communicator Add-in support for Microsoft BPOS

This section describes how Avaya ACE™ integrates with OCS when OCS is deployed within a Microsoft Business Productivity Online Suite (BPOS) environment.

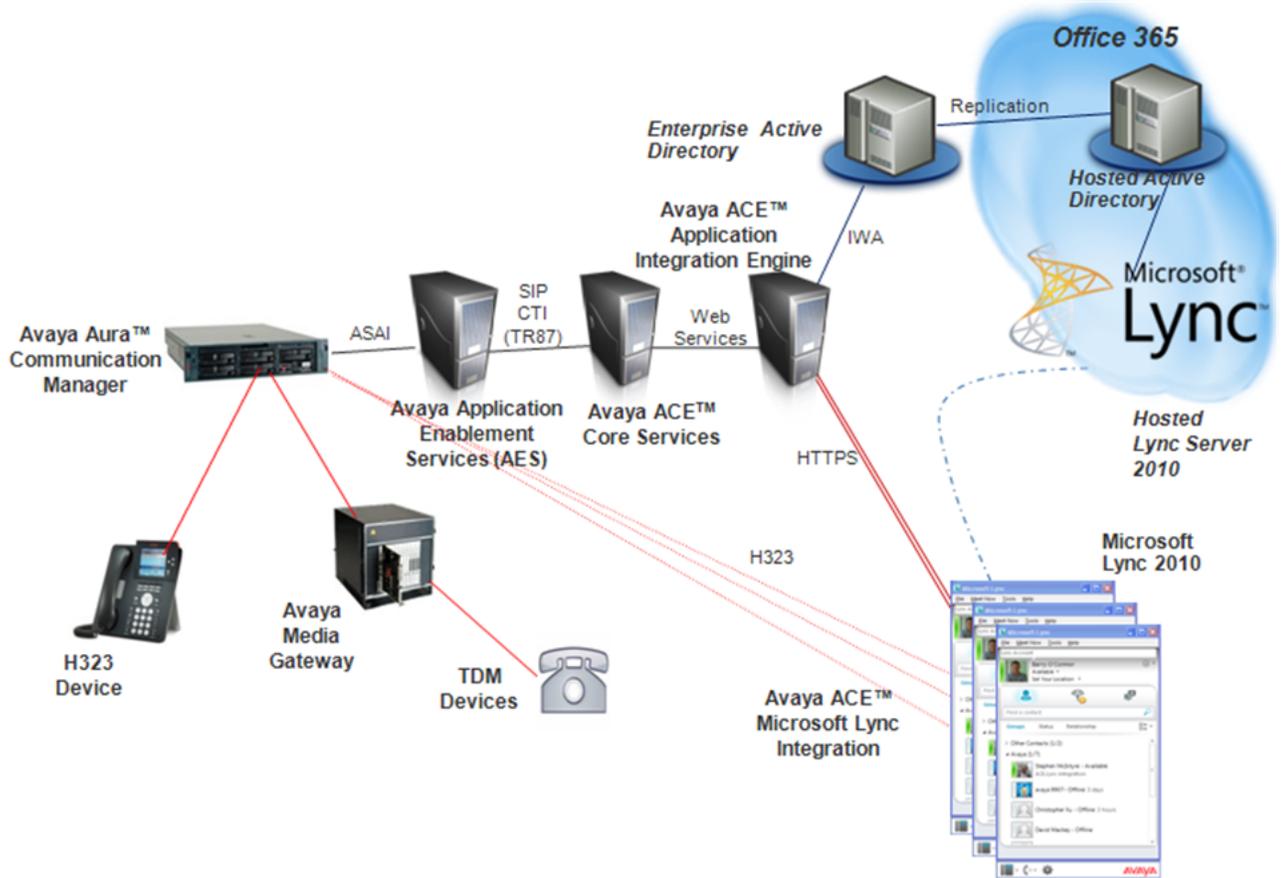


Figure 2: Avaya ACE Communicator Add-in deployed in a Microsoft Business Productivity Online Suite (BPOS) environment

Authentication within a BPOS deployment

Authentication is unchanged within a BPOS deployment. BPOS deployments do not require that Active Directory user data be replicated with a premise Active Directory. The Avaya ACE OCS integration solution does require a premise based Active Directory. When the Communicator Add-in is in phone mode, user authentication occurs within each restful web request to AIE, based on the user credentials of the work station hosting MOC. The AIE must be installed in Active Directory mode and both the AIE and the client PC where the Communicator Add-in is installed must be connected to the same domain. When the Communicator Add-in is in Computer mode, authentication occurs between the Avaya UC engine and the Avaya Communication Manager.

Lync Integration key components

Lync Integration features the following key components.

Microsoft Lync 2010 client

Microsoft's Lync 2010 is the unified communication desktop client providing IM and presence capabilities to the overall solution. Microsoft's Lync Server delivers IM and presence aggregation services to the end user.

Avaya ACE Microsoft Lync Integration

This is a client side add-in to Microsoft Lync 2010. It utilizes the Lync Client User interface to drive Avaya Voice capabilities to the end user. The Lync Integration operates in two modes. In Computer mode, it utilizes the Avaya Unified Communication (UC) desktop engine to deliver soft client functionality. In Phone mode it provides CTI control over the end user's desk phone. An AIE server must be available for the ACE Lync Integration to operate in either Phone or Computer mode.

Microsoft Lync Server

Microsoft Lync Server provides the end user with the IM and Presence aggregation functionality. The Avaya ACE Microsoft Lync Integration builds on this Lync functionality and its Lync client user interface to deliver an Avaya voice experience.

Microsoft Office Communicator

Microsoft's Office Communicator is the unified communication desktop client providing IM and presence capabilities to the overall solution. Microsoft's Office Communications Server delivers IM and presence aggregation services to the end user.

Avaya ACE Microsoft Communicator Add-in

This is a client side add-in to Microsoft Office Communicator 2007 R2. It utilizes the Office Communicator User interface to drive Avaya Voice capabilities to the end user. The Communicator Add-in operates in two modes. In Computer mode, it utilizes the Avaya Unified Communication (UC) desktop engine to deliver soft client functionality. In Phone mode it provides CTI control over the end user's desk phone. An AIE server must be available for the Communicator Add-in to operate in either Phone or Computer mode.

Microsoft Office Communicator Server 2007 R2

Microsoft Office Communicator Server (OCS) 2007 R2 provides the end user with the IM and Presence aggregation functionality. The Avaya ACE Microsoft Communicator Add-in builds on this OCS functionality and its Communicator client user interface to deliver an Avaya voice experience.

Active Directory

AIE accesses Active Directory to determine which OCS user it will service. If the OCS user has an Avaya ACE profile, then AIE will deliver voice and telephony presence services to the user's Office Communicator client and allow this user to control the end devices registered in their profile.

Avaya ACE

Provides the integration point to the customer's multivendor communication system environment through vendor specific protocol adaptors. The Avaya ACE service interacts with these communication systems on a signaling basis only. It relies on the underlying communication infrastructure to control the media. This allows Avaya ACE to monitor and control end user devices. It maintains a profile of the end user's services and devices. One of

the Avaya ACE services, ACE Address Manager, converts E164 Numbers used by OCS to the number formats which can be used by the Communication System.

Avaya ACE Application Integration Engine (AIE)

This server hosts the Restful Session Controls Services utilized by the Avaya ACE Microsoft Communicator Add-in to deliver call control functionality over the end user's Avaya communication system device. These Restful Session Controls Services are delivered over a secure HTTP session. AIE also provides the authentication services used by the Communicator Add-in to ensure the user is a valid OCS, Avaya ACE and Communication Manager user.

Service provider

The following service providers are supported:

- Avaya Aura® Communication Manager (Computer and Phone mode)
- Communications Server 1000 (Phone mode)

Desk Phone (hardware)

Avaya phone series 46xx, 24xx, 64xx, and 96xx (except 9610)

All 16xx phones configured as 46xx phones on the Communication Manager server are also supported. All phones not listed here are not supported in the Desk Phone mode. For more information about aliasing one telephone model as another, see the "Using an Alias" section in *Administering Avaya Aura® Communication Manager* (Doc ID 03-300509).

Telephony services with Lync Integration

Avaya ACE Lync Integration is client side. Avaya ACE Lync Integration is an add-in application that extends Microsoft Office Lync 2010 functionality using Lync supported APIs. Lync Integration extends Lync 2010 by providing two telephony modes: Phone mode and Computer mode.

Integrating Lync Integration with Microsoft Lync 2010 enables telephony services in Lync 2010. Avaya ACE does not alter the existing functional operation of Lync 2010. However, Lync Integration does customize and configure Lync 2010 as part of its installation.

*** Note:**

If you are using Lync 2010 over a Microsoft Remote Desktop session, it is recommended that you use Remote Desktop client version 7.0 or higher. Remote Desktop client software is available from [Microsoft](http://Microsoft.com).

Lync Integration controls a single line, based on the user's primary line. If the user's desk phone supports multiple lines, non-primary lines will not be represented by Lync Integration.

The following table highlights the functionality supported for ACE Lync Integration.

Table 1: Telephony feature descriptions

Capability	Description
Make Call	User can make a call on their phone by clicking on a contact in their contact list or entering a number in the Lync 2010 dialog box.
Release Call	User can Release a phone call by clicking on the End Call icon in Lync Integration Conversation Bar.
Answer Call	User can accept an incoming call that is presented to them via a pop-up window.
Deflect Call (redirect)	User can redirect an incoming call that is presented to them via a pop-up window.
Caller ID	User receives Calling Party Name in popup window.
Forward Line	User can activate Call Forward on their PBX line for incoming calls by selecting the Call Forward icon from the Lync Integration Lync 2010 Bar.
Call Hold and Retrieve	User can place call on hold using the hold button within the Lync Integration Conversation Bar. The call may be retrieved by selecting anywhere within the Conversation Bar when the call is in a held state.
Generate Digits (DTMF)	User can initiate sending of DTMF digits through the PBX system by selecting the dial pad icon on the Add-in Conversation Bar.
Consult Call	When on an active call, the user can: <ul style="list-style-type: none"> • answer a call • instigate a second call by clicking on a contact in their contact list or entering a number in the Lync 2010 dialog box When an additional call is answered or initiated, the previously active call is placed on hold. Multiple consult calls can be created.
Consult Transfer	When one or more consult calls are established the user is able to select, from a list of held calls, the call they wish to transfer their active call too.
Consult Conference	When one or more consult call are established the user is able to select, from a list of held calls, the call they wish merge into a Conference call.
Call Waiting	When on an active call, a toast pop up will be presented indicating that an alternative call is waiting. If the user decides to answer this call, then current active call will be place on hold. The new call will now become the active call.
Receiver Mute	User can select to mute or Un-mute the PC speaker(s) or headset receiver.

Capability	Description
Receiver Volume Control	User can select to adjust the volume of the PC speaker(s) or headset receiver.
Microphone Mute	User can select to mute or un-mute the PC speaker(s) or headset microphone.
Codecs supported	G711, G722 and G729

Phone Mode allows Lync Integration to control the User's desk phone and is implemented using two different methods dependent on the Service Provider:

- Phone mode using Shared Control:** Shared Control allows Lync Integration to control the desk phone. The Lync Integration uses Avaya UC Desktop Engine capabilities to remotely control media anchored on the phone. Phone mode using Shared Control is supported on Avaya Aura® Communication Manager.
- Phone mode using Restful Session Control:** Phone mode using Restful Session Control integrates over Restful HTTP to ACE Application Integration Engine (AIE) to remotely control media anchored on the phone. Phone Mode using Restful Session Control is supported on Avaya CS 1000.

Computer mode allows the Lync or Communicator client to use the computer as a phone. ACE Link Integration uses Avaya UC Desktop Engine capabilities to use media capabilities of the computer. Computer mode is supported on the Avaya Aura® Communication Manager service provider.

Table 2: Feature support by communication system and mode

Capability	Avaya Aura		CS 1000 Phone
	Computer	Phone	
Make Call	Y	Y	Y
Release Call	Y	Y	Y
Answer Call	Y	Y	Y
Deflect Call (deflect)	N	N	Y
Caller ID	Y	Y	Y
Forward Line	Y	Y	Y
Call Hold and Retrieve	Y	Y	Y
Generate Digits (DTMF)	Y	Y	Y
Consult Call	Y	Y	N
Consult Transfer	Y	Y	N
Consult Conference	Y	Y	N
Call Waiting	Y	Y	N

Capability	Avaya Aura		CS 1000 Phone
	Computer	Phone	
Call History	N	N	N
Receiver Mute	Y	not applicable	not applicable
Receiver Volume Control	Y	not applicable	not applicable
Microphone Mute	Y	not applicable	not applicable
Codec's supported	Y	not applicable	not applicable

Lync Integration telephony service limitations

* Note:

While Microsoft states that the Microsoft Communicator can connect and properly function with Microsoft Lync Server, this configuration was not tested.

Lync Integration telephone service has the following limitations.

Audio controls

- When a conversation is initiated, if the audio device setting is already at the lowest setting, Lync Integration will not present the conversation as muted.
- Audio Device settings may appear unsynchronized with the PC settings.
- It is not possible to change from the local sound card to a headset when a call is in progress. If the headset is removed, the call will migrate to the built-in sound card on the workstation, if a built-in sound card exists.
- Audio Settings cannot also be adjusted from the Settings panel when a call is in progress.
- Lync Integration does not support call control using the headset directly. Call control must be invoked on the phone set, or using the Lync Integration application.

Call Forwarding (Phone mode with Restful Session Control)

- Changes in Call Forwarding settings on a line may take five minutes to be reflected within Lync Integration.
- When configuring call forwarding to voice mail, you must configure a corresponding reverse translation rule that is compatible with the network dial plan. The voice mail number must use the E.164 format. If the translation rule is not configured, the Forward to Voice Mail icon does not display in Lync Integration.
- In Computer mode, the Call Forwarding service cannot determine the “forwarded to” number. In Computer mode, Call forwarding appears as on or off.

Call Forwarding and Redirect

An incoming call originated by the user, that is eventually routed back to the originator will not be presented to the user. For example, a user sets Call Forwarding from device B to device A.

The user then uses device A to call device B. Device A receives a ringback, but the user cannot accept the call. The call may route to No Answer treatment.

Call Hold and Call Retrieve (Phone mode with Restful Session Control)

This limitation applies only to Phone (Restful Session Control) mode.

- Setting Call Hold or Call Retrieve on a user device is not reflected in the Lync Integration Call Control Bar.
- After a network connectivity outage between AIE and Avaya ACE, the held state of the call is unknown and should be managed on the device.

Consult Transfer and Consult Conference

- Transferring into a conference is not supported.
- Transferring a conference is not supported.
- Presentation of only one conference is supported.
- Conference participants in the conference that are not Lync Integration users will be removed from the conference leader's window if the conference leader sends an IM.
- The conversation window of a conference participant will not show the other conference participants.
- Consult Conference behavior is not guaranteed if the conference is initiated or manipulated via the phone or hard client.

Avaya Bridge Call Appearance Integration with Lync Integration

The Lync Integration application is not supported on lines with the Bridged Call Appearance feature on Avaya Communication Manager.

DTMF in Computer Mode

When entering DTMF digits into a conversation, the DTMF tone played back on the speaker may be picked up by the microphone. In this case the digit sequence may be corrupted. There are two workarounds:

- Use a headset when inserting DTMF digits into a conversation
- mute the microphone while DTMF digits are being inserted.

EC500 Integration

- **Phone mode:** When a line has EC500 enabled, and the call is answered on the EC500 forwarded device, Lync Integration is aware of the call and Telephony Presence is published into the Lync Server 2010. A Lync Integration conversation window appears, including mid-call operation options. In this case, the operations will not control the call.
- **Computer mode:** When a line has EC500 enabled, and a call is answered on the EC500 forwarded device, Lync Integration is aware of the remote call and Telephony Presence is published into the Lync Server 2010 for the duration of the call. Lync Integration Conversation bar is not presented to the user.

Multiple Avaya Unified Communication clients

Multiple Avaya UC Clients, with the exception of Avaya IP softphone, may be deployed on a user workstation, but only a single UC client can be used for telephony services at any time.

Having multiple Avaya soft phone clients (Avaya one-X Communicator, Avaya Flare) logged in simultaneously on the same work station is not supported.

Multiple Lync Integration sessions

Microsoft Lync supports multiple client sessions for each user. However, Avaya ACE Lync Integration does not. For each user, only a single Lync Integration session can be running.

Lync Integration cannot be deployed on a shared computer. To avoid contention for telephony resources, only a single session of Lync Integration can run on a workstation at any time.

Multiple published work phone numbers

Avaya ACE Lync Integration cannot support multiple published work phone numbers. The published work phone number must match the number defined in Active Directory.

This limitation does not apply to Avaya ACE Office Communicator Add-in.

Lync server restarts

Communicator Add-in will not function during an OCS outage. Within Phone mode, mid-call control may return when OCS becomes available. Users retain the ability to use their Desk phone to make calls until full functionality is restored.

If a user is on a Computer mode call when the Lync Server becomes unavailable, the call will be maintained, but mid-call control may be lost. The ability to end the call is maintained by a pop-up window. If the Lync client is able to reconnect to the Lync server prior to the call being completed, Lync Integration will begin providing service once the existing call is completed.

Avaya component restarts

Avaya Communicator Add-in telephony services are disrupted after an AIE or Avaya ACE application restart. Services may be reduced for 5 to 10 minutes.

Telephony presence with Lync Integration

The Lync Integration telephony presence implementation enables the “Busy – In A Call” status for a Lync 2010 user. Other Lync 2010 users see the appropriate presence status depending on their relative “Level of Access”. Lync Integration publishes the “Busy – In A Call” status when the user initiates a call, or when the user answers an incoming call. If the user has a call on hold, then “Busy – In a Call” is still published. If the user is part of multiple calls, “Busy – In A Call” is published until Lync Integration detects that the user is not part of any call.

The Custom Presence definition file is hosted on the Avaya ACE Application Integration Engine. The Custom Presence file must be available when Lync 2010 is launched. When custom presence is enabled on Lync 2010, the presence option “Busy – In A Call” is available in the list of presence options.

Do Not Disturb

While the Lync 2010 user presence status is “Do Not Disturb”, incoming calls are not presented to the user. If the user’s phone line is supported by Avaya Aura Communication Manager using

Shared Control or Computer mode, the incoming call will be treated with the Ignore command automatically. In Phone mode, the telephony device will continue to ring, and can be answered.

Initiating a call to another Lync 2010 user while in “Do Not Disturb” state, results in the called party having to acknowledge that the calling party is in “Do Not Disturb” state prior to the conversation window being created.

Lync Integration presence service limitations

Lync Integration presence service has the following limitations.

Do Not Disturb

When in Phone mode, even if the presence status is “Do Not Disturb”, the phone will ring.

On the computer, a window does not open for the incoming call but if you answer the phone, a conversation window opens.

Redundancy limitations

Lync Integration is only supported with AIE in a non-redundant configuration. AIE restarts will result in a temporary loss of functionality.

Lync Integration deployment notes

The following limitations apply to deployment of Lync Integration.

- The Avaya ACE Lync Integration builds on Lync’s IM and Presence capabilities. This requires the Lync 2010 Standard CAL . Upon deployment of Lync Integration, the Microsoft Lync 2010 UC (Voice and Video) capabilities are disabled.
- Lync Integration cannot be installed in conjunction with any other Lync Extension.
- Lync Integration supports a single extension per end user.
- Lync Integration does not support SIP endpoints

- Lync Integration may not integrate with other 3rd party add-ins to the Microsoft Lync software. If Lync Integration fails to load after the installation of a 3rd party add-in, you must reinstall Lync integration.
- If Lync Integration and one-X Communicator are installed on the same machine, the one-X Communicator must be installed with the following functions set to **Disabled**:
 - ENABLECLICKTODIALIE
 - ENABLECLICKTODIALFF
 - ENABLEOUTLOOKADDIN

See the section “Silent Installation” in *Overview and Planning for Avaya one-X[®] Communicator*.

Chapter 4: Dialing rules fundamentals

By default, Lync Integration uses the configured dial plan information specified in the Configurator or defined within the Lync Integration **Settings** panel. These dial plan settings normalize phone numbers and match presented phone numbers with Lync contacts. Dialing between users must be either extension dialing or E.164 dialing. In this document, this is referred to as a simple dial plan.

Simple dial plans are not always specific enough to handle all types of phone numbers. For these scenarios, an advanced dial plan must be configured. With an advanced dial plan, it is possible to manipulate incoming and outgoing phone numbers by creating a `dialingRules.xml` file.

- [Supported phone number formats](#) on page 27
- [Simple dial plan](#) on page 28
- [Advanced dial plan](#) on page 30

Supported phone number formats

Lync Integration normalizes phone numbers published in the Lync client into a format that can be used to find Lync contacts. Dialing rules must be configured in order for users to make and receive calls successfully.

Phone numbers published in the Lync client can be entered in one of the following formats:

- E.164 DID
- Extension
- E.164 non-DID

The following table provides an example and a description for each of the number formats listed above.

Table 3: Supported phone number formats

Format	Example	Description
E.164 DID	+17776671234	A number in the E.164 format with no extension at the end.
Extension	1234	An extension number. These types of numbers are not preceded by a +. Phone numbers entered in this format are not fully qualified and require dialing rules.

Format	Example	Description
E.164 non-DID	+17776670000 x1234	A number in the E.164 format with an extension at the end. The first part of the number describes the switchboard or reception from which you can request the extension number.

Simple dial plan

You must configure a dial plan to enable the telephony features of Avaya Lync Integration. You can configure a default dial plan in the Configurator when building the Lync Integration install package. Users can also modify the dial plan in the Lync Integration **Settings** window by selecting the **Dialing Rules** tab.

Simple dial plan examples

North American dial plan example

E.164 Number + 1 613 77[67] xxxx	
Number to dial to access an outside line	9
Your country code	1
Your area/city code	613
PBX Main Prefix	777
Number to dial for long distance calls	1
Number to dial for international calls	011
Extension length for internal extensions calls	4
Length of national phone numbers (including area/city code)	10
Include area/city code when making a local call	check

Results using a simple dial plan: North America

Dialed number is	Dialing number as	Entered number	Dialed number
Extension	E.164	+16133568293	8293
	International	01116133568293	901116133568293

Dialed number is	Dialing number as	Entered number	Dialed number
	National	6133568293	8293
	Local	3568293	8293
	Extension	8293	8293
	Short code	500	500
Local	E.164	+16139078177	96139078177 (Include area code) or 99078177
	International	01116139078177	901116139078177
	National	6139078177	96139078177 (Include area code) or 99078177
	Local	9078177	99078177
National	E.164	+19088485596	919088485596
	International	01119088485596	901119088485596
	National	19088485596	919088485596
	Short code	911	911
International	E.164	+441628515068	9011441628515068
	International	011441628515068	9011441628515068

United Kingdom dial plan example

E.164 Number + 44 1628 5xxxxx	
Number to dial to access an outside line	9
Your country code	44
Your area/city code	01628
PBX Main Prefix	5
Number to dial for long distance calls	0
Number to dial for international calls	00
Extension length for internal extensions calls	5
Length of national phone numbers (including area/city code)	10, 11
Include area/city code when making a local call	unchecked

Results using a simple dial plan: United Kingdom

Dialed number is	Dialing number as	Entered number	Dialed number
Extension	E.164	+441628515068	15068
	International	00441628515068	900441628515068
	National	01628515068	15068
	Local	515068	15068
	Extension	15068	15068
	Short code	4190	4190
Local	E.164	+441628777700	901628777700 (Include area code) or 9777700
	International	00441628777700	900441628777700
	National	01628777700	901628777700 (Include area code) or 9777700
	Local	777700	9777700
National	E.164	+441483308721	901483308721
	International	00441483308721	900441483308721
	National	01483308721	901483308721
	Special number	08001111	908001111
	Short code	999	999
International	E.164	+16133568293	90016133568293
	International	0016133568293	90016133568293

Advanced dial plan

Simple dialing rules may not be specific enough to handle all situations. Advanced dialing rules may be needed to:

- Interpret any numbers dialed and convert them into a form that can be used by the PBX.
- Match call progress updates with the display of the call in progress.

- Take incoming numbers and normalize them into their E.164 form.
- Match the normalized numbers to contacts from the user's Outlook or Active Directory contact list.

Simple dialing rules alone may not be enough to perform these operations. See the following examples.

Operation	Extensions cannot be defined as a number of digits at the end of full E.164 numbers.
Example	E.164: +441628433000 - +441628434999 > Extension: 3000 - 4999

Operation	There is not a direct relation between extensions and their E.164 representations.
Example	E.164: +441628515000 - +441628515999 > Extension: 55000 - 55999

Operation	Numbers received include the outside line access code.
Example	Received number: (9)0162843000 > E.164: +441628433000

Operation	The PBX serves a number of locations with different country and area/city codes.
Example	Extension: 3000 > E.164: +441628433000 Extension: 4000 > E.164: +35391734000

Operation	A company uses private network dialing between sites.
Example	Local Extension: 3000 > E.164: +441628433000 Remote Extension: 3563000 > E.164: +35391733000

Operation	The PBX presents other special numbers to the phones that are not directly convertible into E.164 form.
-----------	---

When the simple dialing rules are not sufficient, it is possible to manipulate incoming and outgoing phone numbers by creating a `dialingRules.xml` file. This file defines patterns used to match incoming or outgoing numbers which are then manipulated by inserting and removing digits.

Dialing plans may differ per site or region and must be managed appropriately.

When crafting the advanced dialing rules, you must consider all of the possible number forms that are to be sent and received. See [Simple dial plan examples](#) on page 28 for examples of dialable translations, and the advanced dial plan examples below for the normalized translations.

! Important:

Advanced dialing rules must be tested before they are deployed. Lync Integration will not generate error messages if the `dialingRules.xml` file contains incorrect dialing rules.

Advanced dial plan examples

North American dial plan example

E.164 Number + 1 613 77[67] xxxx	
Number to dial to access an outside line	9
Your country code	1
Your area/city code	613
PBX Main Prefix	777
Number to dial for long distance calls	1
Number to dial for international calls	011
Extension length for internal extensions calls	4
Length of national phone numbers (including area/city code)	10
Include area/city code when making a local call	check

Example of outside line digit not removed in number received to displayed number: North America

Received number is	Received number as	Number received	Number displayed
Extension	Extension	8293	+16133568293
Short code	Short code	500	500
Local	National	96139078177	+16139078177
	Local	99078177	+16139078177
National	National	919088485596	+19088485596
Short code	Short code	9911	911
International	International	011441628515068	+441628515068

United Kingdom dial plan example

E.164 Number + 44 1628 5xxxxx	
Number to dial to access an outside line	9
Your country code	44
Your area/city code	01628
PBX Main Prefix	5
Number to dial for long distance calls	0
Number to dial for international calls	00
Extension length for internal extensions calls	5
Length of national phone numbers (including area/city code)	10, 11
Include area/city code when making a local call	uncheck

Example of outside line digit not removed in number received to displayed number: United Kingdom

Received number is	Received number as	Number received	Number displayed
Extension	Extension	55068	+441628515068
Short code	Short code	4190	4190
Local	National	901628777700	+441628777700
	Local	9777700	+441628777700
National	National	901483308721	+441483308721
Special number	Special number	908001111	08001111
Short code	Short code	9999	999
International	International	90016133568293	+16133568293

The dialingRules.xml file

The `dialingRules.xml` file contains the advanced dialing rules. This file is read by the Lync Integration at start up. The following conditions apply to an advanced dial plan using a `dialingRules.xml` file.

- Rules defined in the `dialingRules.xml` file have to match and complete any digit manipulation on their own. If a number is matched and transformed by a

`dialingRules.xml` pattern then no further change will be made by the simple dialing rules.

- The order of the rules in the `dialingRules.xml` file is important as these are checked in order and only the first match takes effect.
- If no `dialingRules.xml` patterns are matched then the simple dialing rules are applied.

Dialing rules contained in the `dialingRules.xml` file are applied only when using Lync Integration. They are not applied when using the desk phone. As a result, telephone numbers may be presented differently in Lync Integration and the desk phone.

You can create a `dialingRules.xml` file using the Avaya one-X[®] Communicator Centralized Administration Tool (CAT) or by using a text editor.

Deploy the `dialingRules.xml` using the Configurator. When you are performing the procedure to build the install package using the Configurator, you can specify the `dialingRules.xml` file to be included.

You can make changes to the `dialingRules.xml` file without reinstalling the Lync Integration software. Modify the `dialingRules.xml` using the CAT and deploy the new file using the `updateRules.wsf` tool. Changes to this file will take effect at the next Lync 2010 sign in.

*** Note:**

If the new dial plan rules are not applied after a Lync 2010 client restart, reboot the workstation to ensure that the Lync Integration process has been restarted.

dialingRules.xml file example

Pattern	Type	Prefix	Delete Length	Min Length	Max Length
\+441628515[0-4]	Dialable	5	9	13	13
4190	Normalize	+441483309700	4	4	4
^55[0-4]	Normalize	+44162851	1	5	5
^5[89]	Normalize	+44148330	1	5	5
^9[1-9]	Normalize	+441628	1	7	7
^90[1-9]	Normalize	+44	2	11	12
^900[1-9]	Normalize	+	3	7	32

Below is a sample `dialingRules.xml` file based on the above table.

*** Note:**

The `DialingRulesPatternList` string that begins on the second line is a single string on one line. Do not introduce carriage return characters into the string. If you cut and paste

from this document, the string will contain carriage returns. Ensure that you remove any carriage returns that are introduced.

The `DialingRulesPatternList` string is composed of four segments separated by spaces. The line below indicates the location of the spaces.

```
<DialingRulesPatternList<space>xmlns:xsi="http://www.w3.org/2001/
XMLSchema-instance"<space>xmlns:xsd="http://www.w3.org/2001/
XMLSchema"<space>xmlns="http://xml.avaya.com/endpointAPI">

<?xml version="1.0" encoding="utf-8"?>
<DialingRulesPatternList xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns="http://xml.avaya.com/
endpointAPI">
  <!-- Turn extensions dialed as E.164 numbers into extensions -->
  <DialingRulesPattern>
    <type>0</type>
    <pattern>\+441628515[0-4]</pattern>
    <subString>5</subString>
    <minLength>13</minLength>
    <maxLength>13</maxLength>
    <deleteLength>9</deleteLength>
  </DialingRulesPattern>
  <!-- Displayed number when calling voicemail, display as voicemail E.164 number -->
  <DialingRulesPattern>
    <type>1</type>
    <pattern>4190</pattern>
    <subString>+441483309700</subString>
    <minLength>4</minLength>
    <maxLength>4</maxLength>
    <deleteLength>4</deleteLength>
  </DialingRulesPattern>
  <!-- Displayed number is local extension, display as E.164 number -->
  <DialingRulesPattern>
    <type>1</type>
    <pattern>^55[0-4]</pattern>
    <subString>+44162851</subString>
    <minLength>5</minLength>
    <maxLength>5</maxLength>
    <deleteLength>1</deleteLength>
  </DialingRulesPattern>
  <!-- Displayed number is extension from another site, display as E.164 number -->
  <DialingRulesPattern>
    <type>1</type>
    <pattern>^5[89]</pattern>
    <subString>+44148330</subString>
    <minLength>5</minLength>
    <maxLength>5</maxLength>
    <deleteLength>1</deleteLength>
  </DialingRulesPattern>
  <!-- Displayed number is an external number in the local area, display as E.164
number -->
  <DialingRulesPattern>
    <type>1</type>
    <pattern>^9[1-9]</pattern>
    <subString>+441628</subString>
    <minLength>7</minLength>
    <maxLength>7</maxLength>
    <deleteLength>1</deleteLength>
  </DialingRulesPattern>
  <!-- Displayed number is an external national number, display as E.164 number -->
  <DialingRulesPattern>
    <type>1</type>
```

```

<pattern>^90[1-9]</pattern>
<subString>+44</subString>
<minLength>11</minLength>
<maxLength>12</maxLength>
<deleteLength>2</deleteLength>
</DialingRulesPattern>
<!-- Displayed number is an external international number, display as E.164 number
-->
<DialingRulesPattern>
  <type>1</type>
  <pattern>^900[1-9]</pattern>
  <subString>+</subString>
  <minLength>7</minLength>
  <maxLength>32</maxLength>
  <deleteLength>3</deleteLength>
</DialingRulesPattern>
</DialingRulesPatternList>

```

Additional dialing rule scenarios

Incoming calls from 6133568 prefix cannot be normalized to match the E.164 numbers.

Incoming rule: Insert the +1 to properly normalize the incoming dialed number.

Example:

```

<DialingRulesPattern>
  <type>1</type>
  <pattern>^6133568</pattern>
  <subString>+1</subString>
  <minLength>10</minLength>
  <maxLength>10</maxLength>
  <deleteLength>0</deleteLength>
</DialingRulesPattern>

```

Outgoing calls to the 1613967 require the leading 1 to be passed to Communication Manager because 613967 is a toll call, but other calls to 1613 are not toll calls.

E.164 number: +1613967XXXX

Outgoing rule: Detect pattern and pass number.

Example:

```

<DialingRulesPattern>
  <type>0</type>
  <pattern>1613967</pattern>
  <subString></subString>
  <minLength>10</minLength>
  <maxLength>12</maxLength>
  <deleteLength>0</deleteLength>
</DialingRulesPattern>

```

External calls, if presented by the PBX with the outside line prefix, require the outside line prefix to be removed.

Example:

```

<!-- (91) area code number presentation without 9 -->
<!-- (needs to be changed if you are at another site) -->
  <DialingRulesPattern>
    <type>1</type>

```

External calls, if presented by the PBX with the outside line prefix, require the outside line prefix to be removed.

```
<pattern>^9[1-9]</pattern>
<subString>+35391</subString>
<minLength>7</minLength>
<maxLength>7</maxLength>
<deleteLength>1</deleteLength>
</DialingRulesPattern>
```

External calls, if presented by the PBX with the outside line Prefix, require the outside line prefix to be removed.

Example:

```
<DialingRulesPattern>
  <type>1</type>
  <pattern>^900[1-9]</pattern>
  <subString>+</subString>
  <minLength>6</minLength>
  <maxLength>32</maxLength>
  <deleteLength>3</deleteLength>
</DialingRulesPattern>
```

Incoming call from extension 4190 to be presented as +35391733380

Incoming rule: Detect pattern and replace with +35391733380.

Example:

```
<!-- Short code expansion -->
<DialingRulesPattern>
  <type>1</type>
  <pattern>4190</pattern>
  <subString>+35391733380</subString>
  <minLength>4</minLength>
  <maxLength>4</maxLength>
  <deleteLength>4</deleteLength>
</DialingRulesPattern>
```

These rules apply when the internal extension is not a subset of the published E.164 number.

Outgoing rule: Change published E.164 prefixes of 16137778xxx to extension 9xxx.

Example:

```
<DialingRulesPattern>
  <type>0</type>
  <pattern>16137778</pattern>
  <subString>9</subString>
  <minLength>10</minLength>
  <maxLength>12</maxLength>
  <deleteLength>9</deleteLength>
</DialingRulesPattern>
```

Outgoing rule: Variation on change published E.164 prefixes of 16137778xxx to extension 9xxx.

Example:

```
<DialingRulesPattern>
  <type>0</type>
```

These rules apply when the internal extension is not a subset of the published E.164 number.

```
<pattern>16137778</pattern>  
<subString>9</subString>  
<minLength>10</minLength>  
<maxLength>12</maxLength>  
<deleteLength>8</deleteLength>  
</DialingRulesPattern>
```

Outgoing rule: Incoming notification, with a 4 digit extension starting with 99xx, will be converted to 161377789xx.

Example:

```
<DialingRulesPattern>  
  <type>1</type>  
  <pattern>99</pattern>  
  <subString>+16137778</subString>  
  <minLength>4</minLength>  
  <maxLength>4</maxLength>  
  <deleteLength>1</deleteLength>  
</DialingRulesPattern>
```

Chapter 5: Work flow for deploying Lync Integration

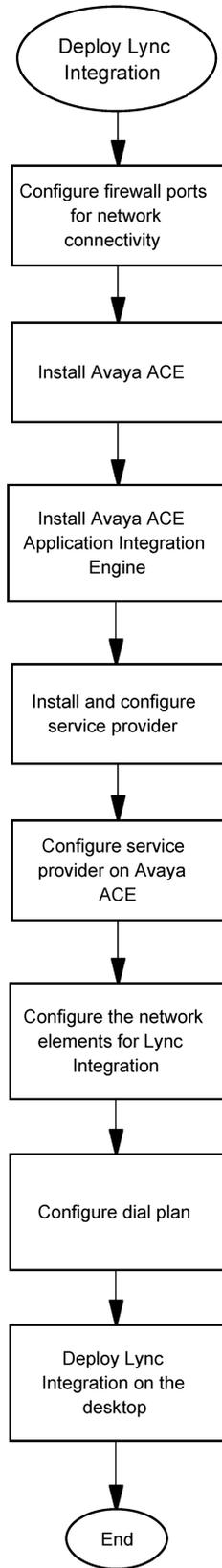
This section illustrates the high level work flow required to deploy Avaya ACE Lync Integration and lists the requirements for the network components.

In this document, the term Lync Integration will be used to refer to both Lync Integration and Communicator Add-in unless specific Communicator Add-in features are being highlighted. Unless specified, the Communicator Add-in installation steps are identical to that of Lync Integration.

Deploying Lync Integration work flow

The work flow shows the tasks you perform to deploy Lync Integration.

Work flow for deploying Lync Integration



Navigation

- **Configure firewall ports for network connectivity:** see [Port configuration](#) on page 43
- **Install Avaya ACE:** see *Avaya Agile Communication Environment™ Planning and Installation* (NN10850–004)
- **Install Avaya ACE Application Integration Engine:** see *Avaya Agile Communication Environment™ Application Integration Engine Fundamentals* (NN10850–021)
- **Install and configure service provider:** see the requirements listed in [Service provider configuration](#) on page 45
- **Configure service provider on Avaya ACE:** see *Avaya Agile Communication Environment™ Administration* (NN10850–005)
- [Configure the network elements for Lync Integration](#) on page 47
- [Configure a dial plan](#) on page 55
- [Deploy Lync Integration on the desktop](#) on page 63

Chapter 6: Port configuration

Firewall rule configuration is required for the solution deployment to work. This may require advance planning in order to comply with customer site IT governance and policy enforcement.

Port configuration is required for the following network elements:

- **Avaya ACE:** See
 - The requirements and references listed under [Service provider configuration](#) on page 45
 - The port usage information in *Avaya Agile Communication Environment™ Planning and Installation* (NN10850–004).
- **Application Integration Engine (AIE):** See “AIE Configuration” in *Avaya Agile Communication Environment™ Application Integration Engine Fundamentals* (NN10850–021).
- **Client PC:** The Windows firewall is automatically traversed by Lync Integration. However, for Computer Mode, a firewall rule may be required to traverse proprietary firewalls.

Chapter 7: Service provider configuration

Your service provider must be installed and functional. Note the service provider requirements listed below.

Avaya Aura requirements

- The Avaya Aura service provider must be configured to use the TR/87 protocol. See the information on TR/87 solutions in *Avaya Agile Communication Environment™ Avaya Aura™ Integration* (NN10850–050).
- Avaya Aura™ Application Enablement (AE) Services must be installed and configured to communicate with the Avaya Communication Manager service provider and the Avaya Agile Communication Environment™ (ACE). For information on configuring AE Services, see the following documents:
 - *Avaya Aura Application Enablement Services Implementation Guide for Microsoft Office Live Communications Server 2005 or Microsoft Office Communications Server 2007* (Doc ID 02-601893)
 - *Avaya Aura™ Application Enablement Services Administration and Maintenance Guide* (Doc ID 02–300357)
- Avaya ACE Lync Integration requires the following Communication Manager configuration settings. These settings allow Avaya IP soft phones to register with Communication Manager every minute, allowing reasonable “switch modes” behavior between Lync Integration Computer mode and Phone mode.

Configuration category	Variable	Setting
Communication Manager System-Parameters features	Unnamed registrations and PSA for IP Telephones?	N
Communication Manager system-parameters ip-options	Periodic Registration Timer (min)	1

Avaya Communication Server 1000 requirements

The Avaya CS 1000 service provider must be configured to use the TR/87 protocol. See the information on TR/87 solutions in *Avaya Agile Communication Environment™ Communication Server 1000 Integration* (NN10850–023).

Chapter 8: Configure the network elements for Lync Integration

Prerequisites for Avaya ACE

* Note:

These prerequisites do not apply for Avaya Aura deployments.

- The Avaya ACE server must be installed and functional. See *Avaya Agile Communication Environment™ Planning and Installation* (NN10850-004).
- You must have administrator privileges on the Avaya ACE server.
- The service provider must be configured. For information about service provider configuration, see *Avaya Agile Communication Environment™ Administration* (NN10850-005).
- You must be familiar with Avaya ACE user management. For more information, see *Avaya Agile Communication Environment™ Administration* (NN10850-005).
- For each instance of the Avaya ACE AIE, a corresponding Avaya ACE user profile must be created and associated with the AIE system user. The AIE system user profile must belong to an Avaya ACE user group of type **System Administrator** or **Group Administrator** and have at minimum, write privileges for the following services:
 - CallForwardingService
 - CallNotificationService
 - ThirdPartyCallService

For more information on the AIE system user, see *Avaya Agile Communication Environment™ Application Integration Engine Fundamentals* (NN10850-021).

- You must create the Avaya ACE user group **RESTful_Session_Control**. The **RESTful_Session_Control** group must be a child of the group that the AIE system user is a member of.

Prerequisites for Avaya ACE Application Integration Engine

- The Avaya ACE Application Integration Engine (AIE) must be installed and configured to communicate with Avaya ACE. See *Avaya Agile Communication Environment™ Application Integration Engine Fundamentals* (NN10850-021).
- The AIE must be deployed as a standalone AIE and installed with Integrated Windows Authentication (IWA) enabled.
- The AIE must be in the same domain as the PC where Lync Integration will be installed.

Configure the network elements for Lync Integration

- Inbound communication must be enabled on the AIE applications API access port.
- The **Enforce HTTPS** setting must be disabled. In the AIE configuration window, the check box for **Enforce HTTPS** must be cleared.

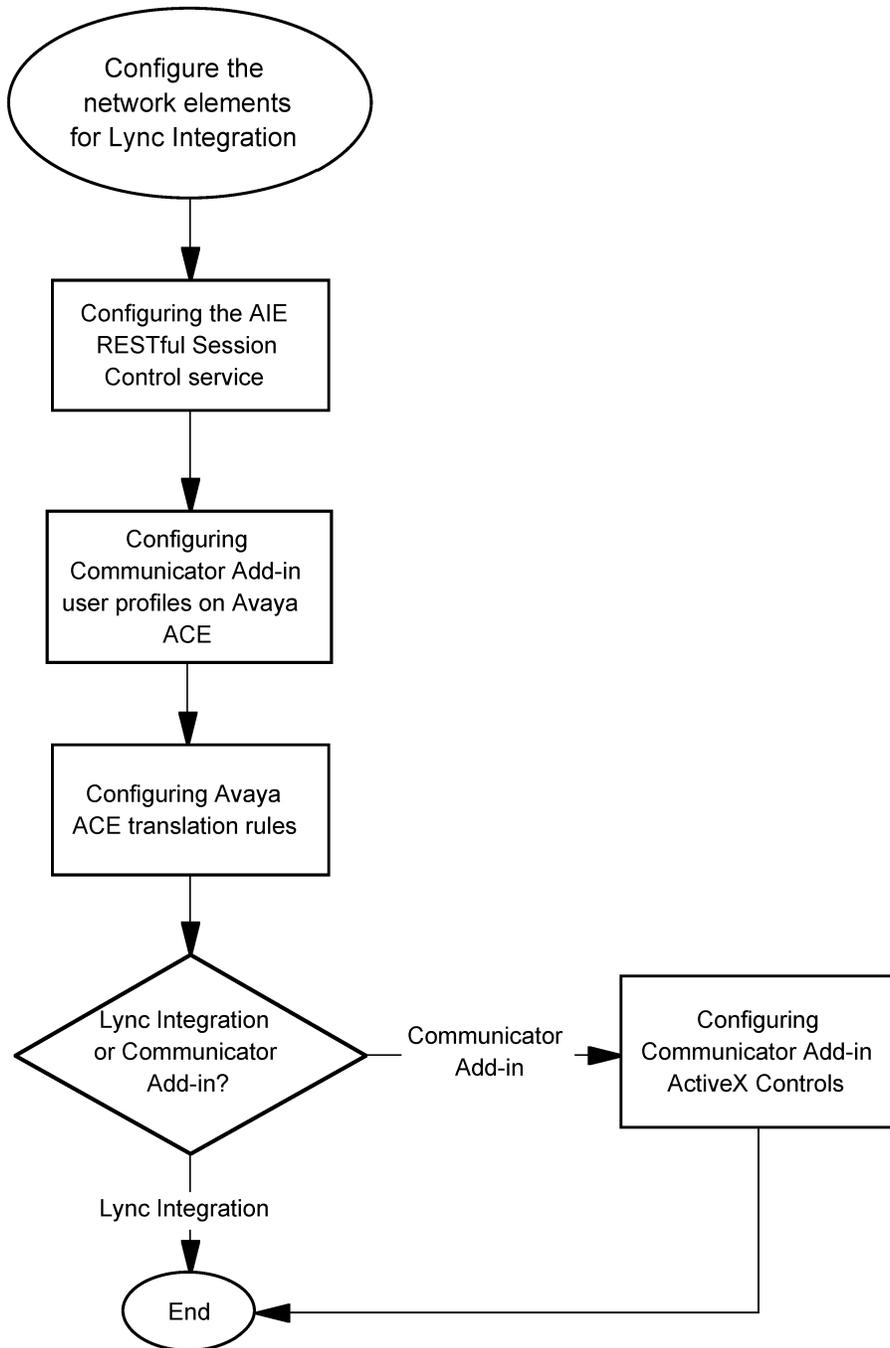
If you want to disable access to the AIE over HTTP, you must set up firewall rules to block access to the port.

Caution:

Do not block the connection to Avaya ACE. Ensure that communication between AIE and Avaya ACE is allowed on the port.

Configure the network elements for Lync Integration procedures

This task flow shows the procedures you perform to configure the network elements for Lync Integration.



Navigation

- [Configuring the AIE RESTful Session Control service](#) on page 50
- [Configuring Lync Integration user profiles on Avaya ACE](#) on page 51
- [Configuring Avaya ACE translation rules](#) on page 52
- [Microsoft Communicator Add-in ActiveX Controls](#) on page 52

Configuring the AIE RESTful Session Control service

You must configure the RESTful Session Control service on the Avaya ACE™ Application Integration Engine (AIE).

*** Note:**

This procedure does not apply for Avaya Aura deployments.

Before you begin

- You must be able to log in to the AIE GUI (Integrated Windows Authentication enabled).
- During the procedure you must provide the following configuration values.

Variable	Description
ACE user group	Members of the Avaya ACE Group RESTful_Session_Control are permitted to use the Restful Session Control service. Only a single Avaya ACE Group is supported and the group name must be RESTful_Session_Control .
Client access address	The IP Address of the AIE that clients will use to access Restful Session Control services. This is only required in the case when the AIE server is configured with multiple IP Addresses. If only a single IP Address is available on the AIE server, this field should be left blank.
Secure client communications	Check this box if AIE is configured with https certificates. This configuration item causes AIE to present all subsequent URIs as secure HTTPS URIs.
Core access address	The IP Address of the AIE that Avaya ACE will use to send notifications to Restful Session Control. This is only required in the case when the AIE server is configured with multiple IP Addresses. If only a single IP Address is available on the AIE server, this field should be left blank.
Secure core communications	This check box must remain unchecked.

*** Note:**

The HTTP port is publicly open. If you want to disable access to the AIE over HTTP, you must set up firewall rules to block access to the port. HTTP Communication between Avaya ACE and AIE must remain permitted.

- The HTTP port used by the Restful Session Control Mailbox service, port 3080, must be accessible to Lync Integration clients, and must not be blocked by a firewall. A firewall rule may be required to allow Lync Integration clients to access AIE on port 3080.
- You must be able to restart the AIE. For the procedure to restart the AIE, see *Avaya Agile Communication Environment™ Application Integration Engine Fundamentals* (NN10850–021).

Procedure

1. Log in to the AIE GUI.
2. On the menu bar, click **Applications**, then **Resource**, and then **Resource Configuration**.
3. Complete the configuration details.
4. Click **Save**.
5. Restart the AIE.

Configuring Lync Integration user profiles on Avaya ACE™

Avaya ACE maintains a user profile database to manage user information and to authenticate any entity requesting a web service. For information on creating and managing Avaya ACE user profiles, see *Avaya Agile Communication Environment™ Administration* (NN10850–005).

All Lync Integration users must have an Avaya ACE user profile.

* Note:

All Lync Integration users must be a member of the Avaya ACE “User” group **RESTful_Session_Control**. When you configure the Restful Session Control service on the AIE, you specify **RESTful_Session_Control** as the **ACE user group**.

Table 4: Lync Integration user profile requirements on Avaya ACE

You must add a telephone type contact with the contact identifier matching the e.164 representation of the work number provisioned against the Lync 2010 user. The Contact Name can be any value.				
Contact Type	Contact Name	Contact Identifier	Priority	Default CLI
Telephone	work phone	tel:<e.164_work_number>	0.5	No

Configuring Avaya ACE translation rules

The Lync 2010 environment encourages the use of E.164 telephone numbers to be published by Active Directory and Lync Server 2010. In Phone Mode the service provider manages extensions only, and is aware of local numbers. ACE must be configured to translate between these numbering formats between the Lync Server 2010 and Communication Manager domains. For more information on address translation, see *Avaya Agile Communication Environment™ Administration* (NN10850-005).

Microsoft Communicator Add-in ActiveX Controls

The Avaya ACE™ Microsoft Communicator Add-in utilizes the ActiveX framework to extend the capabilities of the Communicator client by enabling Avaya ACE features. To utilize the ActiveX framework, Internet Explorer 6 or higher must be present on any computer where Communicator Add-in is deployed.

*** Note:**

This procedure does not apply to Lync Integration deployments.

Internet Explorer security settings for ActiveX

Internet Explorer security settings must explicitly allow ActiveX controls and plug-ins in order for the Communicator Add-In to function properly. At a minimum, the following allowances must be made for any user or computer running the Communicator Add-In:

- The Avaya ACE™ Application Integration Engine (AIE) server must be a member of the Internet Explorer Trusted Sites Zone. For more information about Internet Explorer security zones, please refer to <http://support.microsoft.com/kb/174360>.
- The Internet Explorer security settings for the Trusted Sites Zone must be configured to allow the following:
 - Run ActiveX Controls and plug-ins is enabled.
 - Automatic Prompting for ActiveX Controls is enabled.
 - Initialize and Script ActiveX Controls not marked as safe is enabled.

*** Note:**

Alternatively, you may choose to configure this setting as “prompt”, however this configuration will prevent Communicator Add-in from automatically starting as soon as the user logs into the Communicator client. Instead, the user will be presented with an ActiveX prompt which they must accept in order to enable the Communicator Add-in features. Therefore, this setting be enabled for the Trusted Sites Zone only.

Avaya recognizes that it may not be practical to individually configure the necessary Internet Explorer security settings for users or computers in large deployments, therefore in such cases

we suggest configuring a Group Security Policy for all Communicator Add-in users. Such a policy can be applied to all users in the domain, or if the system administrator wishes, a separate organizational unit (or units) may be created in Active Directory for Communicator Add-in users and the policy applied only where required. For more information on Active Directory Organizational Units, please refer to [http://technet.microsoft.com/en-us/library/cc758565\(W.S.10\).aspx](http://technet.microsoft.com/en-us/library/cc758565(W.S.10).aspx) .

Configuring a group security policy for Communicator Add-in users within Active Directory

For details and step-by-step procedures, the following resources may be helpful when configuring a group security policy to allow the necessary ActiveX controls to run.

- Internet Explorer Policy Settings: <http://technet.microsoft.com/en-us/library/bb457144.aspx>.

The policy settings are available in the User Configuration nodes of Group Policy Object Editor, in Administrative Templates\Windows Components\Internet Explorer\Internet Control Panel\Security Page.

Group Security Policy Requirements:

- The Site To Zone Assignment List must be enabled and the IP address or fully qualified domain name of the Avaya ACE™ Application Integration Engine (AIE) must be added to the Trusted Sites Zone (value=2).
- The Trusted Sites Zones Template must be enabled and subsequently configured to any value other than “high” security.
- Within the Trusted Sites Zone, the “Initialize and Script ActiveX Controls not marked as safe” setting must be enabled and subsequently configured to “enable”. **Note: Alternatively, you may choose to configure this setting as “prompt”, however this configuration will prevent the Communicator Add-In from automatically starting as soon as the user logs into the Communicator client. Instead, the user will be presented with an ActiveX prompt which they must accept in order to enable the Communicator Add-in features. Therefore, this setting is enabled for the Trusted Sites Zone only.

Configure the network elements for Lync Integration

Chapter 9: Configure a dial plan

This section applies to Lync Integration deployments using Computer mode or Computer and Phone mode. In these scenarios, you must configure a dial plan to enable the telephony features of Avaya ACE Lync Integration. You can configure a simple or advanced dial plan. You create a simple dial plan by configuring the **Dialing Settings** in the Configurator. To create an advanced dial plan, you must configure the **Dialing Settings** in the Configurator and use the Configurator to deploy an `dialingRules.xml` file.

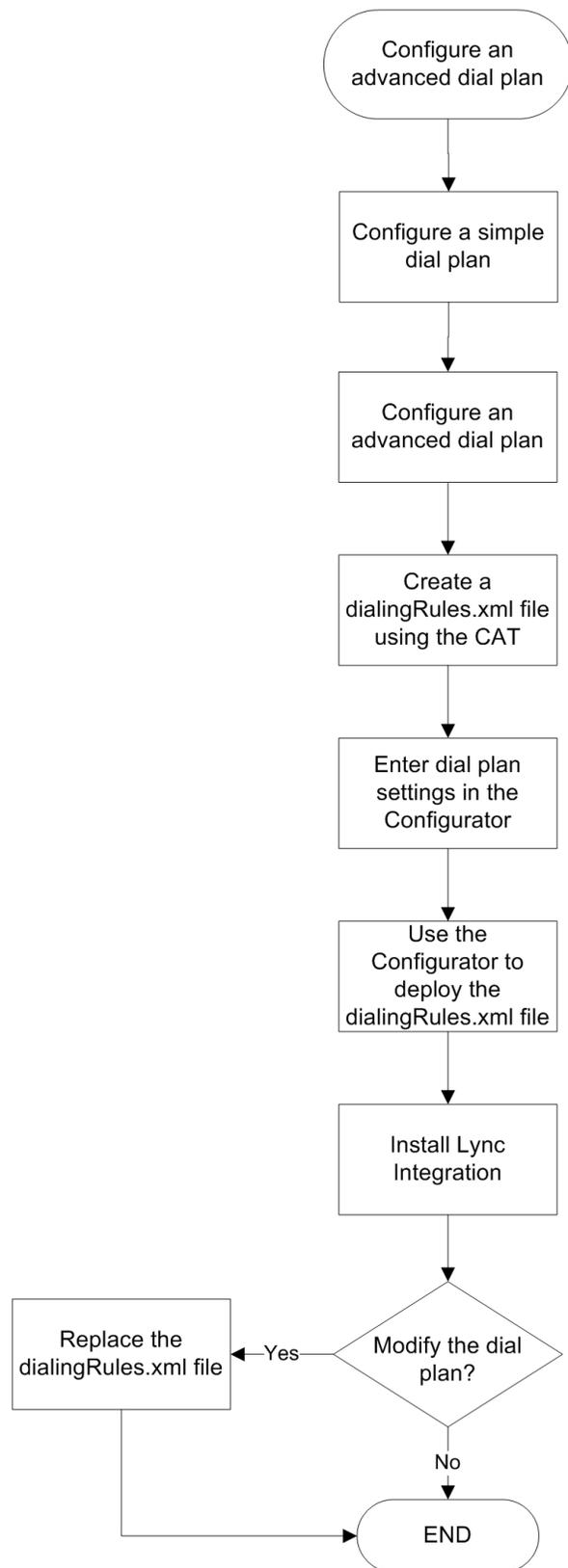
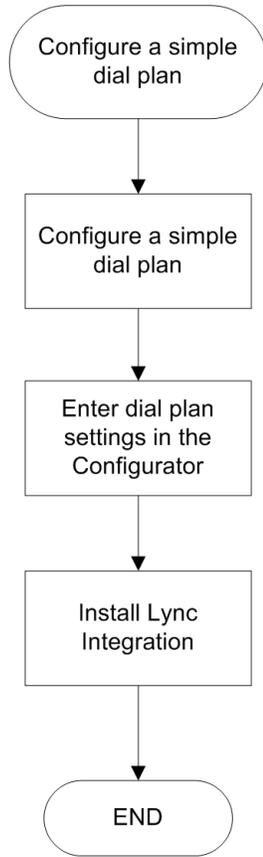
Prerequisites

You must understand the structure of a dial plan. For a description of dial plans, see [Dialing rules fundamentals](#) on page 27.

Configure a dial plan procedures

This task flow shows the procedures you perform to configure a dial plan.

Configure a dial plan



Navigation

- [Configuring a simple dial plan](#) on page 57
- [Configuring an advanced dial plan](#) on page 59
- [Creating a dialingRules.xml file using the Centralized Administration Tool](#) on page 59
- For the procedure that covers entering dial plan settings in the Configurator and using the Configurator to deploy the `dialingRules.xml` file, see [Building the install package](#) on page 66
- All the procedures to install Lync Integration are contained in [Deploy Lync Integration on the desktop](#) on page 63
- [Replacing the dialingRules.xml file on the workstation where Lync Integration is installed](#) on page 71

Configuring a simple dial plan

You can configure a simple dial plan in the Configurator when building the Lync Integration install package. Users can modify the dial plan in the Lync Integration **Settings** window by selecting the **Dialing Rules** tab.

Use the dial plan checklist to create a simple dial plan. The settings are described in [Dial plan variables](#) on page 58.

For examples of a simple dial plan, see [Simple dial plan examples](#) on page 28

Dial plan checklist

Phone Settings	
IP address of the telephone server or servers	
Dialing Rules Settings	
Enable Call Forward	
Digit(s) you must dial to access an outside line	
Country code	
Area/city code	
PBX Main Prefix	
Digit(s) you must dial to make long-distance calls	

Configure a dial plan

Digit(s) you must dial to make international calls	
Extension length for internal extensions	
Length of national phone numbers (Includes area and city codes)	
Do you have to dial the area/city code when making a local call?	
Extension Settings	
Phone Extension	
Phone Password	

Dial plan variables

Variable	Description
Enable Call Forward	When Call Forward is enabled, the Call Forward icon is displayed.
Number to dial to access an outside line	The digit or digits you must dial to access an outside line.
Your country code	The dialing code for your country.
Your area/city code	The area code or the city code where your phone server is located. You can enter multiple codes separated by commas. For example, 406, 208. In this example, Lync Integration treats all calls made the 406 or 208 regions as local calls.
PBX Main Prefix	The main prefix of your PBX. This is the digit(s) that comes after the area/city code and before the internal extension. If you cannot obtain the extension number by removing digits up to and including the PBX main prefix from an E.164 representation of the number, then this field should remain blank.
Number to dial for long distance calls	The digit or digits you must dial to make a long distance call.
Number to dial for international calls	The digit or digits you must dial to make an international call.
Extension length for internal extensions calls	The number of digits that comprise an internal extension. For example, if your internal extensions consist of five digits, enter 5. In this example, any number that consists of five digits or less would be treated as an internal extension. If your company

Variable	Description
	supports internal extensions of varying lengths, enter the length numbers separated by comas. For example, if you use three-digit, five-digit, and seven-digit extensions, enter 3, 5, 7. * Note: If you specify multiple extension lengths, Lync Integration performs exact matches. For example, if you specify 3, 5, 7, then a four-digit number will not be recognized as an internal extension.
Length of national phone numbers (including area/city code)	The number of digits you must dial (including area/city code) for a call within your country.
Include area/city code when making a local call	Check the box if you are required to prefix the area or city code while making a local call.

Configuring an advanced dial plan

In deployments where the simple dialing rules are not enough, you must manipulate incoming and outgoing phone numbers by creating a `dialingRules.xml` file. You can create a `dialingRules.xml` file using the Avaya one-X[®] Communicator Centralized Administration Tool (CAT) or by using a text editor. For examples of an advanced dial plan, see [Advanced dial plan examples](#) on page 32.

Deploy the `dialingRules.xml` using the Configurator. When you are performing the procedure to build the install package using the Configurator, you can specify the `dialingRules.xml` file to be included.

You can make changes to the `dialingRules.xml` file without reinstalling the Lync Integration software. Modify the `dialingRules.xml` using the CAT and deploy the new file using the `updateRules.wsf` tool. Changes to this file will take effect at the next Lync 2010 sign in. See [Replacing the dialingRules.xml file on the workstation where Lync Integration is installed](#) on page 71.

Creating a dialingRules.xml file using the Centralized Administration Tool

You can create or modify a `dialingRules.xml` file using a text editor or by using the Avaya one-X[®] Communicator Centralized Administration Tool (CAT). The CAT is distributed with the Avaya one-X Communicator. Download the Avaya one-X Communicator Admin Tool R6.1 SP2 or higher.

This document provides the procedures for working with a `dialingRules.xml` file. See the Avaya one-X Communicator Centralized Administration Tool documentation for further details. When creating dialing rules in CAT, only use the **Dialing Rules** tab. The remaining tabs are not used.

Dialing rules interface

Add

Click this button to open the **Add Rule** dialog box.

Add Rule window

Use this window to specify a pattern match rule.

Field	Description
Pattern	Field to enter a regular expression. The pattern can exist anywhere in the input string, not necessarily from the beginning or the end of the input string.
Type	List box to specify whether to apply the Dialable rule to all the outgoing numbers before storing the number in the call log or to apply the Normalize rule to all the incoming numbers before storing the number in the call log. Specify 0 for Dialable or 1 for Normalize.
Prefix	Field to enter the string to be prefixed to the input string after deleting the specified number of characters.
Delete Length	Field to enter the number of characters, including the + character, to delete from the beginning of the input string.
Minimum Length	Field to enter the minimum length, including the + character, of the input string.
Maximum Length	Field to enter the maximum length, including the + character, of the input string.
OK	Button to add the pattern match rule and close the Add Rule dialog box.
Cancel	Button to cancel adding the pattern match rule and close the Add Rule dialog box.

Remove

Click this button to remove an existing pattern match rule.

Save

Click this button to save the Avaya one-X Communicator dialing rules settings.

Open

Click this button to open the existing `dialingRules.xml` file.

Configuring dialing rules

Use the **Dialing Rules** tab to configure dialing rules.

Procedure

1. Click the **Dialing Rules** tab.
 2. Click **Add** to open the Add Rule dialog box.
 3. Enter the appropriate information.
 4. Click **OK** to add a new pattern match rule.
 5. Click **Save** to save the Dialing Rules settings.
-

Modifying dialing rules

Use the **Dialing Rules** tab to modify the existing dialing rules settings.

Procedure

1. Click the **Dialing Rules** tab.
 2. Click **Open**.
 3. Select the `dialingRules.xml` file.
 4. If you want to add additional pattern match rules, click **Add** to open the Add Rule dialog box, enter the appropriate information, and click **OK**.
 5. If you want to remove a pattern match rule, select a rule and click **Remove**.
 6. Click **Save** to update the dialing rules settings.
-

Configure a dial plan

Chapter 10: Deploy Lync Integration on the desktop

The following service providers support the Web Browser and Office Add-in applications with Lync Integration:

- Avaya Aura® TR/87
- Avaya CS 1000 TR/87

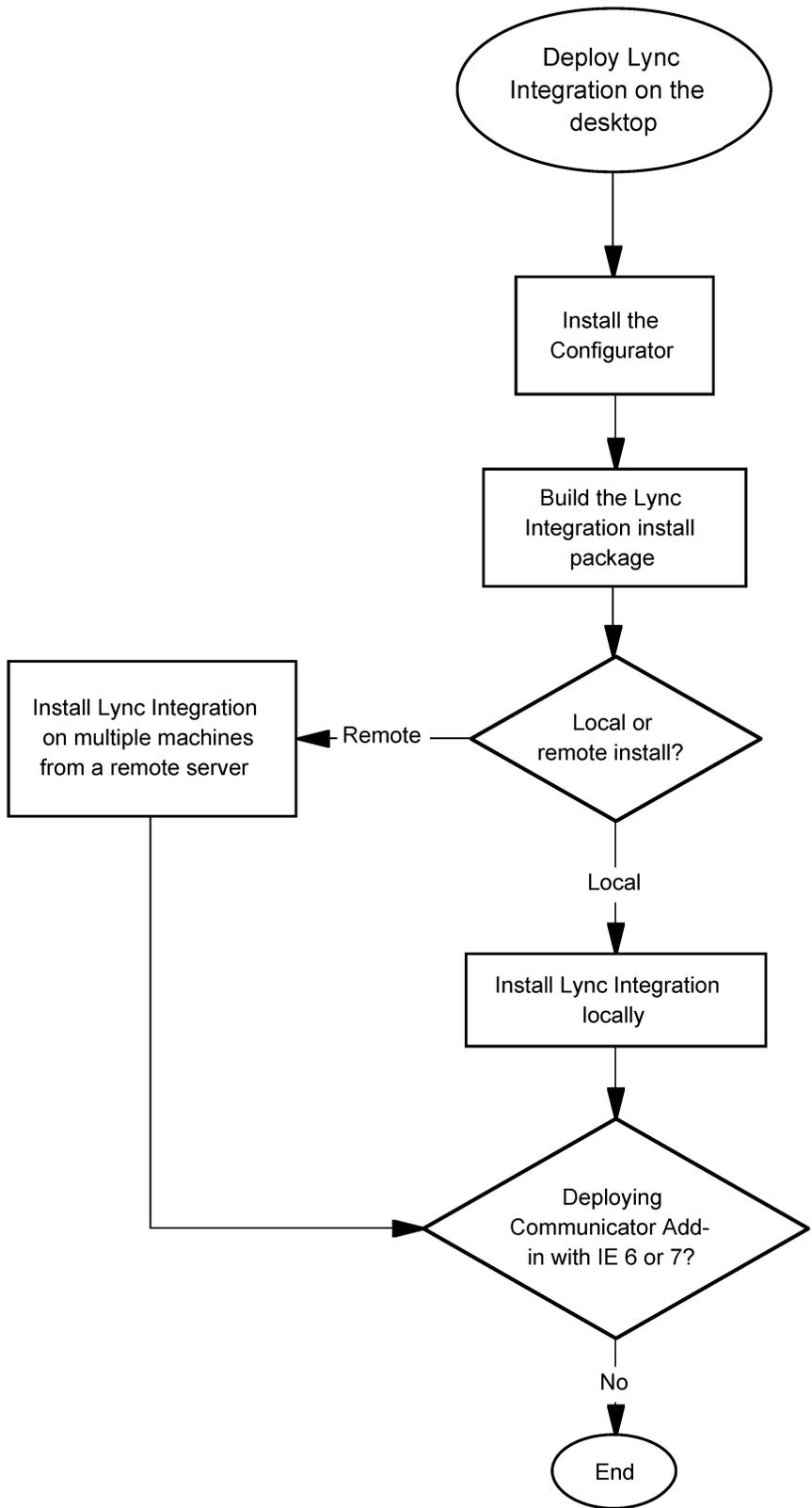
Prerequisites

- The machine where Lync Integration is installed must meet the following hardware requirements:
 - CPU: 1.8 GHz or better
 - Memory: 1 GB on Windows XP; 2 GB on Windows 7
 - Disk space: 100 MB
 - Network Connectivity Download Bandwidth: 80 kbps
 - Network Connectivity Upload Bandwidth: 80 kbps
 - An audio device must be available on the computer to use Lync Integration in Computer mode
- The machine where Lync Integration is installed must meet the following software requirements:

Lync Integration	Communicator Add-in
Microsoft Lync 2010 version 4.0.7577.314 or higher	Microsoft Office Communicator 2007 R2, version 3.5.6907.196 or higher
- One of the following operating systems: <ul style="list-style-type: none">• Microsoft Windows XP Service Pack 3, or higher• Microsoft Windows 7 The latest operating system patches must be installed.	- One of the following operating systems: <ul style="list-style-type: none">• Microsoft Windows XP Service Pack 2, or higher• Microsoft Windows 7 The latest operating system patches must be installed.
Microsoft .Net 4, or higher	Microsoft .Net 3.5 SP1
Microsoft Internet Explorer 6.0 or higher	Microsoft Internet Explorer 6.0 or higher
	Windows Installer 3.1

Deploy Lync Integration on the desktop procedures

This task flow shows the procedures you perform to deploy Lync Integration on the desktop.



Navigation

- [Installing the Configurator](#) on page 65
- [Building the install package](#) on page 66
- [Installing Lync Integration locally](#) on page 68
- [Installing the Lync Integration on multiple machines from a remote server](#) on page 70

Installing the Configurator

Before you begin

- You are running one of the following operating systems:
 - Microsoft Windows XP (patched to a minimum of SP2)
 - Microsoft Windows 7
- You have Microsoft .NET Framework 4.
- The machine where you are installing the Configurator must be able to communicate with the AIE.
- The user ID running the Configurator must be authorized on the AIE.
- You have the DCE.configurator.msi file on your desktop. The Configurator installation package is available on the Avaya ACE Applications disk in the Desktop Communications Enablement (DCE) folder.

About this task

Install the Avaya ACE™ Configurator. The Configurator is an administrative tool used to configure and build the install packages for the Communicator Add-in application with the needed Avaya ACE AIE configuration details and any specific application configuration prior to distribution of the add-ins to end users.

Procedure

1. Double-click the DCE.Configurator.msi file to launch the Windows installer for the Avaya ACE Configurator.
2. When the Avaya ACE Configurator installer opens, click **Next**.
3. When the Avaya ACE Configurator setup wizard opens, click **Next**.
4. In the License Agreement window, click **I Agree** to accept the license agreement.
5. In the Select Installation Folder window, specify a path to the installation folder for the Avaya ACE Configurator and click **Next**.
6. In the Confirm Installation window, click **Next** to start the installation.
7. In the Installation Complete window, click **Close** to exit the setup wizard.

A dialog prompts you to view the documentation associated with the Avaya ACE Configurator.

8. To view the Avaya ACE Configurator documentation, click **Yes**. Otherwise, click **No**.

The Avaya ACE Configurator icon appears on your desktop.

Building the install package

Build the install package for Avaya ACE Lync Integration or Avaya ACE Communicator Add-in.

Before you begin

- You have installed the Avaya ACE™ Configurator.
- You know the host URL for the Avaya ACE AIE server that is hosting the application. The URL must:
 - be prefixed by `http://` or `https://`
 - contain the AIE server fully qualified domain name
 - end with a port numberFor example, `http://hostname.avaya.com:8080`.
- You must be able to define the following configuration variables:

Variable	Description
General Settings tab	
Communication System Type	The options are: <ul style="list-style-type: none">• Avaya Aura• CS 1000• CS 2100• CUCM <p> Note:</p> <ul style="list-style-type: none">• The CS 2100 and CUCM options are not currently supported.
Integration Type	For CS 1000, CS 2100, and CUCM, the only option is Phone Only .

Variable	Description
	For Avaya Aura, the options are: <ul style="list-style-type: none"> • Computer Only • Phone Only • Computer & Phone
Preferred Integration Type	This variable is enabled if the Integration Type is Computer & Phone . You can select which one of the two modes is presented to the user when they start the client.
Server List	A comma separated list of call servers applicable to the extension. Each server can be identified by IP address, FQDN, or host name. <p>! Important:</p> Do not add call servers that are not applicable to the extension. The Lync Integration client may continue to search the call server list and become unresponsive.
Dialing Settings tab	
See Configure a dial plan on page 55 If you are configuring an advanced dialing plan and will be deploying a <code>dialingRules.xml</code> file, you must know the location of the file.	

About this task

ACE Lync Integration can integrate with the Avaya ACE Web Browser Add-in and the Avaya ACE Office Add-in applications to provide a unified user experience across all Avaya ACE desktop applications. For more information, see *Avaya Agile Communication Environment™ Configurator for Desktop Communication Enablement Fundamentals* (NN10850–031).

The Configurator builds the following files:

- `LyncIntegration.zip` — The Lync Integration software.
- `MCAddin.zip` — The Communicator Add-in software.

These files must be transferred to the machine where the Communicator Add-in is installed.

Procedure

1. Double-click the Avaya ACE Configurator icon to open the Avaya ACE Configurator tool.
2. On the **AIE** tab, enter the Host URL of the Avaya AIE server that is hosting the application.
3. In the **Destination Folder**, enter the folder where the installation package will be saved to or click the folder icon to browse for a destination folder.
4. Select the **Lync Integration** tab.

5. Enable the **Build** check box.
 6. Under **Installers**, enable the check box for either
 - ACE Lync Integration Installer
 - ACE Communicator Add-in Installer
- You can select both.
7. Under **Settings**, click **Modify Lync Integration Settings**.
 8. Click the **General Settings** tab and enter the configuration details for your deployment.
 9. Click the **Dialing Settings** tab and enter the details for your deployment.
 10. If you are deploying a `dialingRules.xml` file, click the **Specify Dialing Rules XML File** check box and then click on the folder icon. Navigate to the file location and click **Open**.
 11. Click **OK**.
 12. Click the arrow button at the bottom of the Configurator interface to build the install package.

The Configurator validates the information that you entered. If the information is valid, the Configurator creates the add-in installation files that contain all of the validated AIE configuration and application custom configuration.

If the build is successful, the Avaya ACE Applications folder opens.

Installing Lync Integration locally

Use this procedure to install Avaya ACE™ Lync Integration where the installation software is local to the machine where it is being installed. The Lync Integration is installed on end user machines coresident with Lync 2010.

When using this procedure to install Lync Integration, no installation log file is created. If you experience problems with installation, perform the installation from the command line and view the log file. See [Installing the Lync Integration on multiple machines from a remote server](#).

Before you begin

- You must have administrative privileges on the local desktop.
- You must have the Lync Integration .msi file.

About this task

The install directory is under `\Program Files\Avaya\`.

Procedure

1. If open, exit Microsoft Lync 2010.
 2. If open, exit Internet Explorer.
 3. Open a Windows Explorer tool and navigate to the location of the Lync Integration .zip file.
 4. Unzip the file.
 5. Perform one of the following options.
 - If you are installing Lync Integration:
 - Double click on the Microsoft Lync 2010 SDK installation file `LyncSdkRedist-4.0.7577.124.msi` and follow the instructions to complete the installation.
 - Double click on the ACE Lync Integration installation file `LyncIntegration-<release#>.msi` and follow the instructions to complete the installation.
 - If you are installing Communicator Add-in, double click on the ACE Communicator Add-in installation file `MCAdd-in-<release#>.msi` and follow the instructions to complete the installation.
- You may receive a prompt to restart the system. If this occurs, you must reboot the machine to complete the installation.
6. Perform one of the following options.
 - If you installed Lync Integration:
 - Start Lync 2010.
 - Start Lync Integration. On Lync 2010, select **Tools > Avaya ACE Lync Integration**.
- * Note:**
- You only need to start Lync Integration after the initial installation. For subsequent Lync 2010 startups, Lync Integration also starts.
- If you installed Communicator Add-in, start Office Communicator.
7. On some deployments, the Lync Integration Settings window opens with the **Phone** tab displayed. Enter your **Extension** number and the **Password** for your extension.
-

Installing the Lync Integration on multiple machines from a remote server

To facilitate the integration of the Avaya ACE™ Lync Integration software into bulk software distribution and installation infrastructure, the Lync Integration software can be installed without end-user intervention, using the following command:

```
msiexec /i [LyncIntegration | MCAddin]-<release#>.msi  
REBOOT=ReallySuppress /lv [LyncIntegration | MCAddin].install.log /q
```

Installation notes

- The `/q` parameter kills running Lync 2010 client, Lync Integration, and one-X engine processes. The installation cannot proceed if the Microsoft Lync Client is running.
- You may receive a prompt to restart the system. If this occurs, you must reboot the machine to complete the installation.
- Any interaction with the Microsoft Lync Client or Microsoft Communicator by an end user during the installation can result in a failed installation. The `[LyncIntegration | MCAddin].install.log` will indicate the operation is complete. Please allow enough time for completion of the operation prior to re-starting the Lync 2010 client (up to 1 minute, for slower machines). Failure to do so will result in an unsuccessful installation and the installation process must be repeated.
- You must have administrator privileges to install the application. On Windows 7, you must open the Command Prompt window using the **Run as administrator** option. To run the Command Prompt as administrator:
 - a. From the Windows start menu, type **Command Prompt** in the **Search programs and files** box.

The Command Prompt application is displayed in the list under **Programs**.
 - b. Right click on **Command Prompt** and select **Run as administrator**.

Lync Integration will start the next time Microsoft Lync 2010 is started after logging into Windows. To start Lync Integration without restarting Windows, from the Lync 2010 **Tools** menu, select **Avaya ACE Lync Integration**.

To validate the installation, view the log file `LyncIntegration.install.log` or `MCAddin.install.log`. The file contains text readable output of the installation process and indicates successful install of Lync Integration.

Chapter 11: Replacing the dialingRules.xml file on the workstation where Lync Integration is installed

There are two ways of replacing the `dialingRules.xml` file used.

- Build a new Lync Integration installer including the updated file and then follow the procedures to uninstall and reinstall Lync Integration.
- Use the `updateRules.wsf` script to update the `dialingRules.xml` file on a workstation where Lync Integration is installed. This script is intended to be used in conjunction with a company's preferred workstation software deployment method; for example, run as a Microsoft SMS deployed script.

Before you begin

- You must have an updated `dialingRules.xml` file. See [Modifying dialing rules](#) on page 61
- You must be able to run the `updateRules.wsf` script with Administrative privileges.

* Note:

If the new dial plan rules are not applied after a Lync 2010 client restart, reboot the workstation to ensure that the Lync Integration process has been restarted.

Procedure

1. On the machine where Lync Integration is installed, open a command prompt window.
 2. Navigate to the location of the `updateRules.wsf` tool.
 - On a 32-bit Windows system, go to
`C:\Program Files\Avaya\Avaya one-X Communicator for MSI`
 - On a 64-bit Windows system, go to
`C:\Program Files (x86)\Avaya\Avaya one-X Communicator for MSI`
 3. Run the tool. Enter
`cscript updateRules.wsf /?`
Details on how to replace the `dialingRules.xml` file are displayed.
 4. Once the new file is deployed, log out and log back in to the Lync 2010 client to apply the changes.
-

Replacing the dialingRules.xml file on the workstation where Lync Integration is installed

Chapter 12: Troubleshooting Avaya ACE™ Lync Integration installation

Use the information in this chapter to help troubleshoot issues related to Avaya Agile Communication Environment™ (ACE) Lync Integration configuration.

AIE cannot register for phone events from ACE

User Alert:

Server or connection to the server is down. Reason Unknown. Please contact administrator and sign in again

Logs/Alarms:

2011-02-24 15:30:45.171 1 Debug QueryLine Exception: Object reference not set to an instance of an object

?Object reference not set to an instance of an object.

at RestProvider.RestProvider.QueryLine(String line)

at RestProvider.RestProvider.InitialQueryLine()

Root Cause:

The Application Integration Engine (AIE) is not able to use the Call Notification web service.

Recovery Action:

Check the Avaya ACE logs. Specifically, look at:

- appcoredebug
- service provider logs

AIE is not aware of the phone number ACE Lync Integration is registered for

User Alert:

User was not provisioned properly. Please contact your administrator

Logs/Alarms:

2011-05-16 10:06:14.513 1 Debug InitialQueryLine - QueryLine WebException: The remote server returned an error: (404) Not Found.

?The remote server returned an error: (404) Not Found.

at System.Net.HttpWebRequest.GetResponse()

at RestProvider.RestProvider.SendHTTPWebRequest(String method, String connectionUri, Int32 timeout, String payload)

at RestProvider.RestProvider.QueryLine(String line)

at RestProvider.RestProvider.InitialQueryLine()

Root Cause:

The Lync Integration phone number does not match the phone number in the Avaya ACE user profile.

Recovery Action:

- Check the Avaya ACE user profile contacts against phone number provisioned on Lync Integration (the Lync Integration phone number could be provisioned on the local machine or in Active Directory).
- If you change the contact number in the Avaya ACE user profile, wait 4 minutes for the AIE to synchronize new user profile data from Avaya ACE.
- If the numbers in the Avaya ACE user profile and the Avaya ACE Lync Integration are the same, restart the AIE.

* Note:

It may take 5 mins for the `startcallnotification` to pickup configuration changes after the restart.

AIE not responding to query line request from Avaya ACE Lync Integration

User Alert:

Server or connection to the server is down. Please contact your administrator

Logs/Alarms:

2011-03-01 15:52:11.114 1 Debug QueryLine WebException: Unable to connect to the remote server

?Unable to connect to the remote server

at System.Net.HttpWebRequest.GetResponse()

at RestProvider.RestProvider.QueryLine(String line)

at RestProvider.RestProvider.InitialQueryLine()

2011-03-01 15:52:11.114 1 RestProvider.ShowErrorMsgDialog Server or connection to the server is down.

Please contact your administrator

Root Cause:

No network connectivity between the ACE Lync Integration machine and the Application Integration Engine (AIE).

Recovery Action:

- Use the `ping` command to ensure that the AIE is reachable.
- Check AIE port configuration and the procedures for configuring securing communication with the AIE. See *Avaya Agile Communication Environment Application Integration Engine Fundamentals* (NN10850-021).

AIE returns 401 unauthorized error

User Alert:

Server or connection to the server is down. Please contact your administrator

Logs/Alarms:

2011-05-16 14:07:08.275 1 Debug InitialQueryLine - QueryLine WebException: The remote server returned an error: (401) Unauthorized.

?The remote server returned an error: (401) Unauthorized.

at System.Net.HttpWebRequest.GetResponse()

at RestProvider.RestProvider.SendHTTPWebRequest(String method, String connectionUri, Int32 timeout, String payload)

at RestProvider.RestProvider.QueryLine(String line)

at RestProvider.RestProvider.InitialQueryLine()

Root Cause:

The Application Integration Engine (AIE) is installed with Integrated Windows Authentication enabled and the ACE Lync Integration machine is not in the same domain as the AIE.

Recovery Action:

- Ensure that the AIE and ACE Lync Integration machine are in the same domain.
- When in phone mode, RESTful URLs are written to the ACE Lync Integration log file. Enter the RESTful URL into a browser on the ACE Lync Integration machine. If you receive a prompt for a user name and password, this indicates that the Integrated Windows Authentication is not functioning and the AIE and ACE Lync Integration machine are not in the same domain.

G729 or G722 Codec negotiation fails

User Alert:

No User Alert Displayed

Logs/Alarms:

No log exceptions. QueryConnection Response missing connection state details.

Root Cause:

One or more endpoints or media elements has codecs disabled.

Recovery Action:

- Verify the G729 and G722 codecs are enabled on Communication Manager.
- Verify that the following four lines exist in the Lync Integration `config.xml` file :

```
<parameter>
<name>EnableG729</name>
<value>1</value>
</parameter>
```

The `config.xml` file can be found in the following location.

- Windows XP: `C:\Documents and Settings\<user_name>\Application Data\Avaya\Avaya one-X Communicator for ACE(TM)`

- Windows 7: C:\Users\\AppData\Roaming\Avaya\Avaya one-X Communicator for ACE(TM)

Incorrect Internet Explorer ActiveX Policy Settings

User Alert:

- ERROR: The Avaya ACE Communicator Add-in cannot access ActiveX. Insufficient security permissions. Please contact your administrator.
- Internet Explorer Script Error

Logs/Alarms:

No ACE Communicator Add-in logs.

Root Cause:

ACE Communicator Add-in unsuccessfully tries to use ActiveX API

Recovery Action:

Review ActiveX Internet Explorer browser settings for the client machine and the Active Directory group policy settings. See [Microsoft Communicator Add-in ActiveX Controls](#) on page 52

Lync Call Control window is not presented when making a call with the desk phone

User Alert

When using the deskphone to place outgoing calls, a call alert notification and the Call Control window are not displayed on the user's computer.

Logs/Alarms

The phoneContext in the logs is listed as UnknownUnknown.

Root Cause

This issue is caused by a corruption in the user's Call Notification Subscription.

Recovery Action

Restart ACE and AIE software components and the issue should be rectified in the Lync Add-in within 2 to 30 minutes depending on the number of users on the system.

Lync Integration cannot connect to Servers in Phone Mode (Shared Control) or Computer Mode

User Alert:

Server or connection to the server is down. Please contact your administrator.

The following message displays in the Configure Settings Window on the client:
Communication servers are not available. Please contact your administrator.

Logs/Alarms:

2011-06-23 15:19:26.341 1 Debug PopupManager.ShowErrorMsgDialog: The selected mode cannot be accessed without configuring login settings.

Do you wish to exit the ACE Lync Integration? Select Yes to exit the ACE Lync Integration. To restart the ACE Lync Integration, please sign-out and sign-in to the OCS Communicator.

2011-06-23 15:19:27.825 1 Debug PopupManager.ShowErrorMsgDialog: The selected mode cannot be accessed without configuring login settings.

Do you wish to exit the ACE Lync Integration? Select Yes to exit the ACE Lync Integration. To restart the ACE Lync Integration, please sign-out and sign-in to the OCS Communicator.

Root Cause:

No network connectivity between user's Lync Integration machine and Communication Manager.

Recovery Action:

- Use the ping command to ensure that the Communication Manager or Call Server is reachable. This may require establishing the VPN tunnel to the enterprise network.
- Check that Communication Manager is functioning and without alarms.

Lync Integration Communicator Bar does not appear

User Alert:

No user alert displayed.

Logs/Alarms:

No Lync Integration logs.

Root Cause:

The Lync Integration process is not running because:

- The process was not started after a local install.
- The process has exited.

Recovery Action:

Start Lync Integration. From the Lync 2010 **Tools** menu, select **Avaya ACE Lync Integration**.

ACE™ Lync Integration timed out from Query line request to Application Integration Engine

User Alert:

Server or connection to the server is down. Please contact your administrator.

Logs/Alarms:

2011-02-22 16:10:09.734 1 Debug QueryLine WebException: The operation has timed out

?The operation has timed out

at System.Net.HttpWebRequest.GetResponse()

at RestProvider.RestProvider.QueryLine(String line)

at RestProvider.RestProvider.InitialQueryLine()

Root Cause:

No network connectivity between the ACE Lync Integration machine and the Application Integration Engine (AIE).

Recovery Action:

- Use the `ping` command to ensure that the AIE is reachable.
- Check AIE port configuration and the procedures for configuring securing communication with the AIE. See *Avaya Agile Communication Environment Application Integration Engine Fundamentals* (NN10850–021).

Avaya ACE Lync Integration can initiate phone calls but incoming call and conversation dialogue windows do not automatically close

User Alert:

No User Alert Displayed

Logs/Alarms:

No log exceptions

Root Cause:

Missing or incorrect reverse dial rules for the Avaya ACE service provider.

Recovery Action:

- Check the Avaya ACE logs. Specifically, look at:
 - appcoredebug
 - service provider logs
- Confirm that the DN received by Avaya ACE in the service provider logs is properly mapped to the Number format expected by the AIE (for example, E164).
- Use the Avaya ACE rule validation tool for Call Notification v3.8 to confirm that the number format is transformed correctly.

Avaya ACE Lync Integration icons do not appear on the Microsoft Office Communicator

User Alert:

No User Alert Displayed

Logs/Alarms:

No ACE Lync Integration logs.

Root Cause:

Microsoft Office Communicator has not started the ACE Lync Integration program.

Recovery Action:

- Sign out of Office Communicator and then sign back in.
- Confirm that the Application Integration Engine (AIE) is accessible from the client machine. In a browser, enter the URL `http://<AIE_FQDN>:3080/mcaddin` where `AIE_FQDN` is the fully qualified domain name of the AIE.
- Review the Active Directory group policy settings. See [Microsoft Communicator Add-in ActiveX Controls](#) on page 52

No microphone sound in computer mode

User Alert:

No User Alert Displayed

Logs/Alarms:

No log exceptions

Root Cause:

Using a configured 6.0 version of One-X while installing a 3.0 Lync Integration may set the microphone to zero without any way to adjust the volume.

Recovery Action:

1. Exit Communicator.
2. Run the Audio Tuning Wizard from the Settings menu in the 6.0 version of One-X.
3. Sign in to Communicator.
4. Ensure that the correct microphone is selected in the Lync Integration Settings window.

Telephony presence not published when Lync Integration user is in a call.

User Alert:

Lync Client 2010 **Presence Options** does not include **Busy - In A Call** (orange) extended presence option.

Logs/Alarms:

Lync Integration log contains errors indicating **In A Call** presence could not be published.

Root Cause:

When the Lync 2010 client was launched, the Telephony Presence Configuration file was not available from the AIE.

Recovery Action:

1. Open a web browser and confirm the `CustomPresence.xml` file is accessible.
The AIE custom presence URL is `http://<AIE Server>.<AIE Domain>:3080/mcaddin/CustomPresence.xml`.
2. If yes, sign out and exit the Lync 2010 client and then sign in again.
3. Confirm that the AIE and AIE Mailbox service is operational.
4. If not, confirm that the AIE firewall rules permit access to the `CustomPresence.xml` file.

Unable to connect to remote server - 503 Server Unavailable

User Alert:

Server or connection to the server is down. Please contact your administrator.

Logs/Alarms:

011-03-24 15:43:17.470 11 QueryConnections WebException: The remote server returned an error: (503) Server Unavailable

2011-03-24 15:43:17.470 11 RestProvider.ShowErrorMsgDialog Error: Server or connection to the server is down

Please contact your administrator.

2011-03-24 15:43:19.610 11 RestProvider.ShowErrorMsgDialog.Cleared Error: Server or connection to the server is down

Please contact your administrator

Root Cause:

No network connectivity between Avaya ACE and the Application Integration Engine (AIE).

Recovery Action:

- Ensure there is network connectivity between Avaya ACE and the AIE.
- Ensure that the AIE has been configured with the correct Avaya ACE administrator user name and password.

Windows Script Host configuration incorrect

User Alert:

Internet Explorer Script Error: Automation Server can't create object.

Logs/Alarms:

No Communicator Add-in logs

Root Cause:

ACE Communicator Add-in unsuccessfully tries to access its data file when user selects a contact in the contact list

Recovery Action:

1. Open a Windows Explorer tool and navigate to the `Windows\system32` folder.
2. Check if the files `scrrun.dll` and `wscript.exe` exist.
3. Choose one of the following:
 - a. If the files exist, sign out of Communicator and sign back in again.
 - b. If the files do not exist, perform an internet search for Windows Script. Download the Windows Script software and install it.
4. If the problem persists, check the registry. From the Windows Start menu, enter the Run command `regedit`.
5. In the Registry Editor window, check for the entry `HKEY_CLASSES_ROOT\Scripting.FileSystemObject`.
6. If the entry does not exist, close the Registry Editor and open a command line window.
7. Change directories to the `Windows\system32` folder.
8. Enter the command `regsvr32.exe scrrun.dll`.
9. In the Registry Editor window, ensure that the entry `HKCR\Scripting.FileSystemObject` has been created.
10. Sign out of Communicator and sign back in again.

Chapter 13: Troubleshooting the one-X engine

Use this procedure to turn on debug logging for the one-X engine. The one-X logging levels are listed below. The default level is 3.

- 0 = EMERGENCY

Emergency only - essentially no logging - application crash events

- 1= ALERT

Alert Not used

- 2 = CRITICAL

Critical - Error that will cause instability in the application

- 3 = ERROR

Only error conditions - behavior that is not expected but will not cause application to crash

- 4 = WARNING

Unexpected behavior that is not an error but should be investigated

- 5 = NOTICE

Normal logging information that is essential operation of the program

- 6 = DEBUG

Only for debugging information that can possibly be activated in the field

- 7 = DEBUG

For very high level messages that are to occur potentially many times - for Message Logging

To turn on debug logging, you must edit the `config.xml` file located in the Avaya one-X Communicator installation folder.

On a 32 bit operating system, go to: `C:\Documents and Settings\User Name\Application Data\Avaya\Avaya one-X Communicator for ACE(TM)`

On a 64 bit operating system, go to: `C:\Users\User Name\AppData\Roaming\Avaya\Avaya one-X Communicator for ACE(TM)`

To turn on default debug logging, add the following to the `config.xml` file.

```
<parameter>  
<name>LocalLogLevel</name>  
<value>6</value>
```

Troubleshooting the one-X engine

```
</parameter>
<parameter>
<name>LogCategoryList</name>
<value>ALL,</value>
</parameter>
<parameter>
<name>AudioLogLevel</name>
<value>6</value>
</parameter>
<parameter>
<name>AudioCategoryList</name>
<value> TRACE,API,DEBUG,</value>
</parameter>
```

To turn on maximum debug logging, add the following to the `config.xml` file.

```
<parameter>
<name>LocalLogLevel</name>
<value>7</value>
</parameter><parameter>
<name>LogCategoryList</name>
<value>ALL,</value>
</parameter><parameter>
<name>AudioLogLevel</name>
<value>7</value>
</parameter><parameter>
<name>AudioCategoryList</name>
<value>TRACE,API,DEBUG,</value>
</parameter>
```

Note:

To enable the new log setting, you must sign out and then sign back in to Communicator.

One-X Communicator log files are located in the user's Avaya one-X Communicator application data directory. The path is `C:\Documents and Settings\\Application Data\Avaya\Avaya one-X Communicator for ACE(TM)\Log Files` directory in case of Microsoft Windows® XP and `C:\Users\\AppData\Roaming\Avaya\Avaya one-X Communicator for ACE(TM)\Log Files` directory in case of Microsoft Windows Vista and Microsoft Windows 7.

The `Log Files` folder contains debug log files for several components. The main log file is `EndpointLog.txt`.

Chapter 14: Uninstall Lync Integration

This section contains the procedures for uninstalling the Avaya ACE Lync Integration software deployed on the desktop.

Navigation

- [Uninstalling Lync Integration from the local desktop](#) on page 87
- [Uninstalling Lync Integration from multiple machines](#) on page 88

Uninstalling Lync Integration from the local desktop

Before you begin

- You must have administrator privileges to uninstall the application.
- Close Lync 2010 before performing the uninstall.

Uninstallation notes
<ul style="list-style-type: none">- If you attempt to uninstall Lync Integration from the Control Panel while an instance launched by a different user is still running, you receive the following message: The following application is running and cannot be terminated: Avaya ACE Microsoft Lync Integration. The uninstaller cannot proceed. Continue by choosing one of the following options:<ul style="list-style-type: none">- Restart the system and repeat the uninstall from the Control Panel.- Uninstall using the command line procedure Uninstalling Lync Integration from multiple machines.- If a version of one-X Communicator lower than release 6.1 is installed on the same machine as Lync Integration, then the one-X Communicator software must be re-installed after the Lync Integration uninstallation.- You may receive a prompt to restart the system. If this occurs, you must reboot the machine to complete the uninstallation.

Procedure

1. From the Windows **Start** menu, select **Settings, Control Panel**, then **Add or Remove Programs**.
2. In the Add or Remove Programs window, select **Avaya ACE Lync Integration** and then click **Remove**.

3. You are prompted to confirm the uninstall. Click **Yes**.

Uninstalling Lync Integration from multiple machines

To facilitate the integration of the Avaya ACE Lync Integration software into bulk software distribution and installation infrastructure, the Lync Integration software can be uninstalled without end-user intervention, using the following command.

```
msiexec /x [LyncIntegration | MCAddin]-<release#>.msi  
REBOOT=ReallySuppress /lv [LyncIntegration | MCAddin].uninstall.log /q
```

Uninstallation notes

- The `/q` parameter kills the running Lync 2010 client, Lync Integration, and one-X engine processes. The uninstallation cannot proceed if the Microsoft Lync Client is running.
- Any interaction with the Microsoft Lync client or Microsoft Communicator by an end user during the uninstallation can result in a failed uninstallation. The `[LyncIntegration | MCAddin].install.log` will indicate the operation is complete. Please allow enough time for completion of the operation prior to restarting the Lync 2010 client (up to 1 minute, for slower machines). Failure to do so will result in an unsuccessful uninstallation and the uninstallation process must be repeated.
- You must have administrator privileges to uninstall the application. On Windows 7, you must open the Command Prompt window using the **Run as administrator** option. To run the Command Prompt as administrator:
 - a. From the Windows start menu, type **Command Prompt** in the **Search programs and files** box.
The Command Prompt application is displayed in the list under **Programs**.
 - b. Right click on **Command Prompt** and select **Run as administrator**.
- You may receive a prompt to restart the system. If this occurs, you must reboot the machine to complete the uninstallation.
- If a version of one-X Communicator lower than release 6.1 is installed on the same machine as Lync Integration, then the one-X Communicator software must be re-installed after the Lync Integration uninstallation.

To validate the uninstallation, view the log file `LyncIntegration.uninstall.log` or `MCAddin.uninstall.log`. The file contains text readable output of the uninstallation process and indicates successful uninstall of Lync Integration.

Chapter 15: Upgrade Communicator Add-in

This section contains the procedures for upgrading the Avaya ACE Communicator Add-in software deployed on the desktop.

Note that the Avaya one-X engine is now embedded with the Lync Integration software. Since the one-X Communicator is no longer required by Lync Integration, you have the option to uninstall the one-X Communicator software.

Navigation

- [Upgrading Communicator Add-in](#) on page 89
- [Uninstalling one-X Communicator](#) on page 90

Upgrading Communicator Add-in

Upgrade the Avaya ACE Communicator Add-in components to release 3.0 in the following order:

1. Application Integration Engine (AIE). See *Avaya Agile Communication Environment™ Application Integration Engine Fundamentals* (NN10850–021).
2. Avaya ACE. See *Avaya Agile Communication Environment™ Planning and Installation* (NN10850–004).
3. Lync Integration.

Communicator Add-in 2.3.2 is compatible with AIE 3.0.

Lync Integration 3.0 is backwards compatible with AIE 2.3.2.

Before you begin

- Before upgrading Lync Integration, review the chapters listed under [Work flow for deploying Lync Integration](#) on page 39 to ensure that all prerequisites have been met.
- To upgrade Avaya ACE Lync Integration, you must perform the procedure to uninstall the old version and then install the new version. Before you can install the new version, you must build the .msi file using the Configurator tool.

Note that if the 2.3.2 Configurator is installed, it must be removed prior to installing the new Configurator.

- You must close Communicator before performing the upgrade.

Procedure

1. Uninstall the Communicator Add-in. Perform one of the following procedures:
 - [Uninstalling Lync Integration from the local desktop](#) on page 87
 - [Uninstalling Lync Integration from multiple machines](#) on page 88
 2. Install the Configurator. Perform the procedure [Installing the Configurator](#) on page 65.
 3. Build the .msi file. Perform the procedure [Building the install package](#) on page 66.
 4. Install Lync Integration. Perform one of the following procedures:
 - [Installing Lync Integration locally](#) on page 68
 - [Installing the Lync Integration on multiple machines from a remote server](#)
-

Uninstalling one-X Communicator

Use this procedure to uninstall the Avaya one-X Communicator.

Procedure

1. From the Windows **Start** menu, select **Settings, Control Panel**, then **Add or Remove Programs**.
 2. In the Add or Remove Programs window, select **Avaya one-X Communicator** and then click **Remove**.
 3. You are prompted to confirm the uninstall. Click **Yes**.
-