



Avaya Agile Communication Environment™ Overview

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Chapter 1: New in this release

Avaya Agile Communication Environment Overview (NN10850–001) has been rewritten for Avaya ACE release 3.0.

New in this release

Chapter 2: Introduction

Avaya Agile Communication Environment™ Overview (NN10850-001) provides a high-level description of the Avaya Agile Communication Environment™ (ACE) solution, including its architecture, services and features, hardware, software, and technical documentation and other resources included with Avaya ACE™.

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 at <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)

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Avaya Mentor videos

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- Enter a key word or key words in the Search channel to search for a specific product or topic.
- Click the name of a playlist to scroll through the posted videos.

Navigation

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Chapter 3: Solution overview

This section describes the role Avaya Agile Communication Environment™ (ACE) plays as middleware software. Avaya ACE™ enables developers to build applications that bridge the gap between an organization's business systems and its IP communications infrastructure. Avaya ACE allows business applications developers to incorporate communications functionality into business systems without having to acquire technical knowledge of the underlying communications network infrastructure or how it works.

Communications enabled business systems and Avaya ACE

A common issue faced by many enterprises is human latency in business processes. A high level of collaboration and interaction is needed to make and communicate decisions at the various steps in a business process. Latency introduced at each step increases costs, reduces time to market, and can greatly reduce the overall customer experience.

In a Communications Enabled Business System, automated communications are tightly integrated into business process flows. While a Communications Enabled Business System might leverage Unified Communications (UC) capabilities, such as Click-to-contact and presence, CEBS applications are usually triggered and driven by business events. For example, when the price of a specified commodity breaches a predefined threshold a trading application automatically contacts the personnel who are available (as identified by their presence status) and can take action (as identified by their skill set) to execute the next step in the process. Communications Enabled Business Systems incorporate communications capabilities directly into the sequence of tasks in business processes. By enabling communications to be triggered directly from the business system, communications can be sped up significantly, thus reducing human latency and costs, and improving efficiency and effectiveness.

Communications Enabled Business Systems allow enterprises to streamline workflows, quickly respond to time-sensitive issues and improve customer satisfaction by ensuring the right people, armed with the right information, are able to respond at the right time.

Avaya ACE supports both UC and event-driven CEBS capabilities. It is designed to help IT developers inject communications capabilities into their enterprise business systems, without

having to acquire detailed and highly specialized IP communications development knowledge. To facilitate the development of CEBS, Avaya ACE:

- Provides a simple programming interface that allows developers to access core capabilities that satisfy most of the communications requirements of business systems. Avaya ACE enables client applications to, for example:
 - Make and control calls.
 - Create conferences and manage participants.
 - Play audio messages to users on their communications devices.
 - Access and manage user presence information.
- Provides access to communications capabilities via a choice of high level Web services APIs or low level Foundation Runtime Services.

Web services are a widely used technology, well known to most business system developers and programming language independent. The Avaya ACE Web services are based on open standards.
- Provides Web services that work with a wide variety of underlying communications network infrastructures provided by a variety of vendors.

Avaya ACE network

Avaya ACE is an open software platform for building Communications Enabled Business Systems (CEBS) and Unified Communications (UC) applications. Avaya ACE is “middleware”: software deployed on a server that sits between a business system and the communications network. The primary role that Avaya ACE performs in this position is to make functionality provided by the communications network available to the business systems through high level programming interfaces.

The Avaya ACE network is comprised of the following components:

- Avaya ACE
- Applications
- Communications network (Service Providers)
- User devices

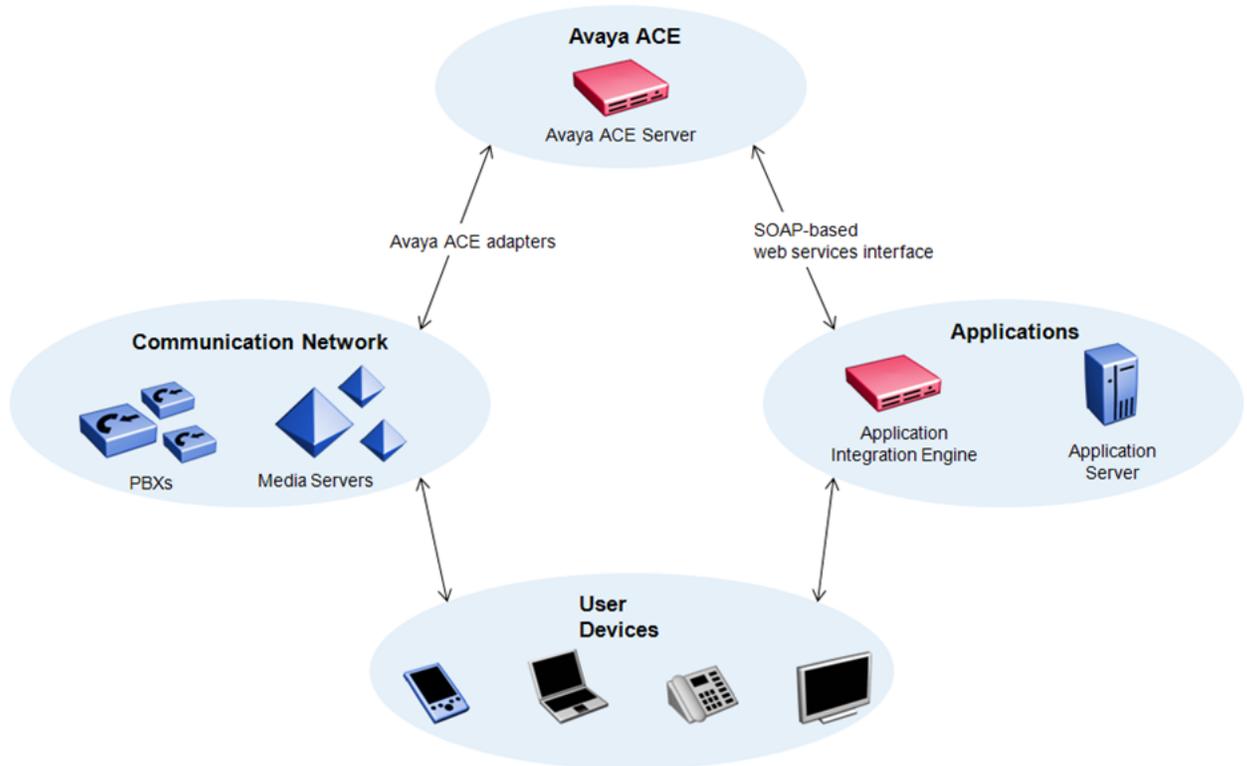


Figure 1: Avaya ACE network

Avaya ACE servers

Avaya ACE is comprised of two server elements: the Avaya ACE server and the Application Integration Engine (AIE).

The Avaya ACE server hosts SOAP-based Web services that enable client applications to access core communications capabilities, and routes service requests to the underlying network elements that provide those capabilities. [Avaya ACE architecture](#) on page 45 provides a detailed description of Avaya ACE.

The AIE is an optional Avaya ACE component that hosts a number of the Avaya ACE prepackaged applications and provides a central point for administration of those applications.

AIE supports a web-based graphical user interface (GUI) that allows administrators to perform tasks related to AIE server and application configuration and management. AIE provides a single point of access for all hosted applications. Administrators have access to configuration, logs, and database backup and restore for all hosted applications from the same user interface.

Applications

Avaya ACE customers can purchase licenses for prepackaged applications or license services and develop custom applications.

Avaya ACE offers its web service APIs bundled in developer-friendly toolkits for custom application development. Avaya ACE supports standards-based interfaces such as Parlay X that provide developers high-level access to communication capabilities such as audio and video call control, media service control, call notification, and presence. Services such as click-to-call, presence, location, notification, and call forwarding are modular and platform-neutral so they can be combined, assembled, and sequenced in different ways, without regard to the underlying communications platform. Developers can integrate these services into applications and business process quickly and simply using any platform or programming language. For more information see [Developer toolkits](#) on page 25

Avaya ACE also provides a set of pre-programmed applications that offer out-of-the-box integration into common business applications such as Microsoft Outlook, Internet Explorer, IBM Lotus Notes, and IBM Lotus Sametime. [Packaged applications and UC desktop integration](#) on page 19 contains a description of the Avaya ACE prepackaged applications.

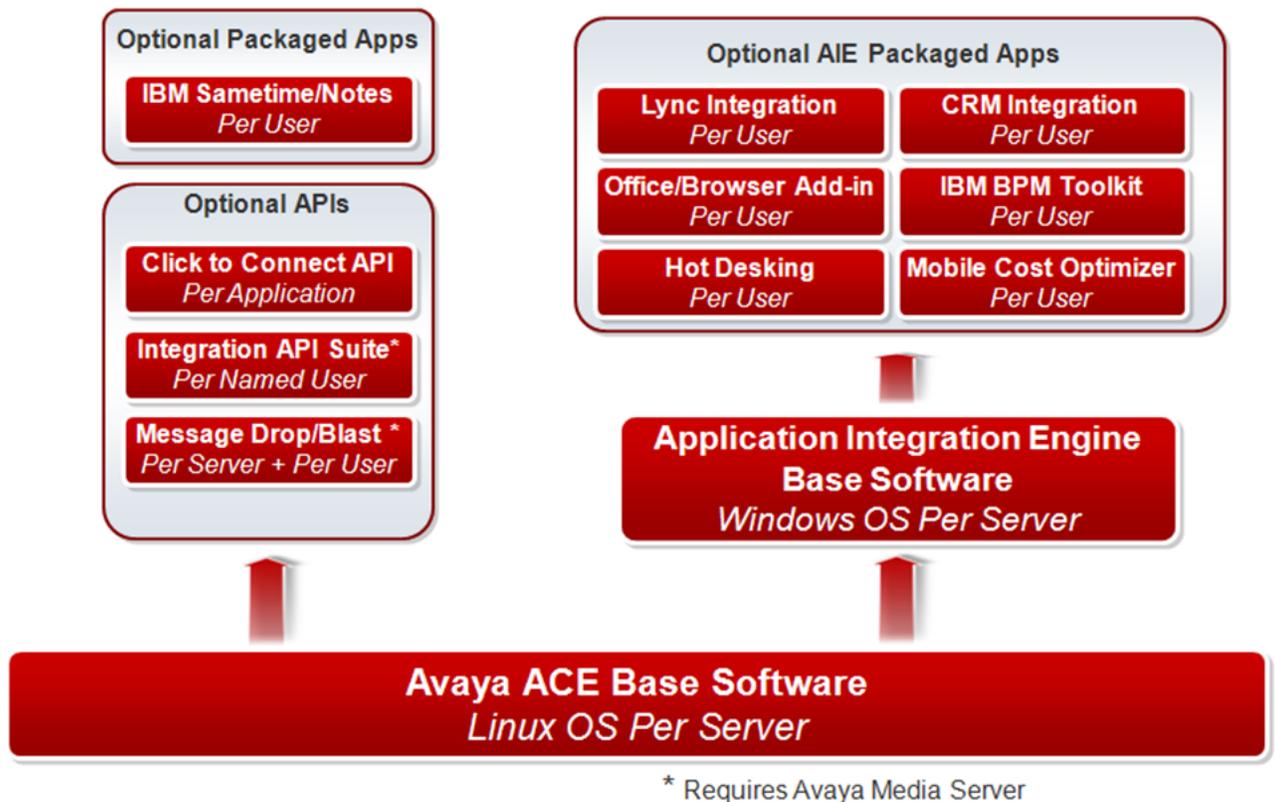


Figure 2: Avaya ACE packaged applications

Service providers

Avaya ACE sits in the middle between an organization's business systems and its communications network infrastructure. The communications and network services infrastructure includes network elements such as a voice Private Branch Exchange (PBX) or Internet Protocol/SIP-enabled servers that deliver communication services. Through an Avaya ACE software technology called a service provider, also referred to as an adapter, the Avaya ACE network interface support multiple-vendor infrastructures, including Avaya Aura™, Cisco, Tandberg, and more. This eliminates the requirement to deploy new, proprietary hardware or software, providing customers a cost savings and return on investment.

Avaya ACE supports a range of Avaya platforms including Avaya Aura®, Avaya Communication Server 1000, Avaya Communication Server 2100. Avaya ACE also supports popular communications network elements from other vendors, including Cisco, Tandberg, IBM, and Microsoft.

To achieve this network infrastructure and vendor neutrality, Avaya ACE implements service provider adapters for each communications network it supports. Developers don't need to use these adapter interfaces directly or be concerned with how they work, but they are a vital component of Avaya ACE because they are what allow the same set of Web services to access communications functionality provided by different networks.

Network infrastructure and vendor neutrality provides a number of key benefits:

- The same business application can be deployed in different environments with different underlying communications network infrastructures.
- Organizations can change their network infrastructure without having to rewrite their communications enabled business systems. For example, when an organization upgrades from Cisco Unified Communications Manager to Avaya Aura, applications that use Avaya ACE Web services capabilities supported on both platforms will continue to work with only a few updates to configuration settings.
- In an environment comprising multiple platforms from multiple vendors, Avaya ACE can be configured to use different network elements to provide different communications capabilities. Avaya ACE lets you configure rules and set the preferred service provider order to determine which network elements provide which services.

Chapter 4: Packaged applications and UC desktop integration

Avaya Agile Communication Environment™ (ACE) offers a number of prepackaged applications. A subset of these applications are hosted on the Application Integration Engine.

Applications

Avaya Agile Communication Environment™ (ACE) provides the following packaged applications.

Hot Desking

The Hot Desking application provides a portal for users to manage their various phone and video devices. This can range from controlling the call forward status of their desk phones to registering a hot desk. The Avaya ACE Hot Desking application offers a combination of the following features to end users:

- **Profile Management:** Make a device primary or alter call forwarding.
- **Hot Desking:** Assign a new temporary phone automatically, using the Hot Desking registration wizard.
- **Context Aware Routing (My Settings):** Alter your desk phone call-forward settings automatically, depending on the IBM Sametime® presence state.
- **Corporate Phone Directory Integration:** Integrate into the LDAP or AD directory to “click to call” other users, and also view presence of other users, if available.

The Hot Desking application functions in an existing customer network that includes a SIP-enabled communication system. The Application Integration Engine (AIE) server hosts the Hot Desking application. This server provides the web portal for users to manage their communication devices. Avaya ACE acts as a bridge between the AIE server hosting the Hot Desking application and the customer infrastructure.

For more information, see *Avaya Agile Communication Environment™ Hot Desking Application Fundamentals* (NN10850-039).

Mobile Cost Optimizer

The Mobile Cost Optimizer application routes smartphone-initiated calls by way of the enterprise network and converts mobile outbound calls into mobile inbound calls if the application calculates cost savings can be made.

The Mobile Cost Optimizer application is hosted by the Application Integration Engine (AIE). The Mobile Cost Optimizer application can be installed on the BlackBerry device by way of the BlackBerry desktop manager, a BES application push, or a user-initiated over-the-air (OTA) install through the BlackBerry web browser

For more information, see *Avaya Agile Communication Environment™ Mobility Application for BlackBerry* (NN10850-028).

Toolkit for IBM Business Process Manager Standard

The Avaya Agile Communication Environment™ (ACE) Toolkit for the IBM Business Process Manager (BPM) Standard, communication-enables IBM business process management solutions.

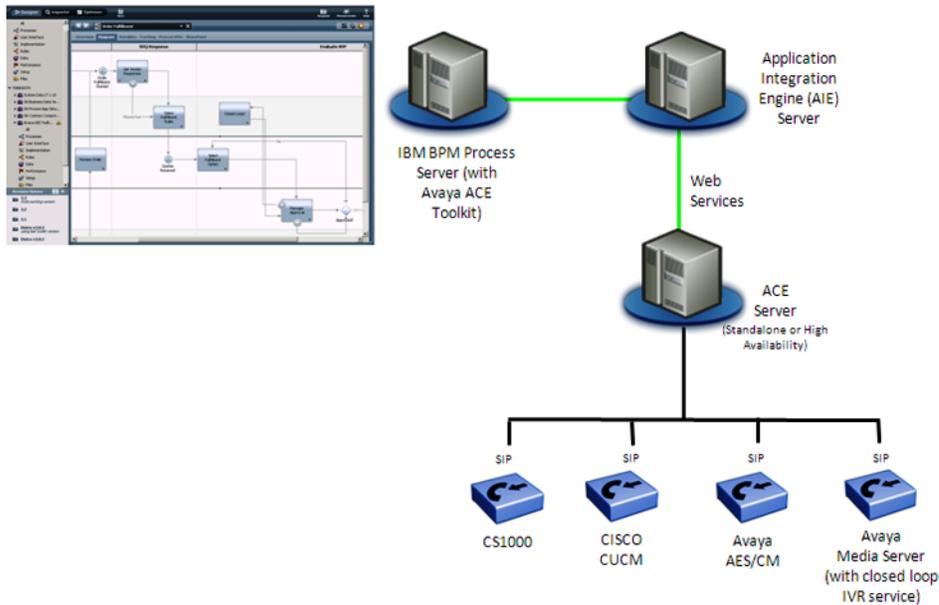


Figure 3: Avaya ACE Toolkit integration overview

The Avaya ACE Toolkit provides the following capabilities:

- **Click-to-call:** Users can initiate phone calls directly to participants from within an IBM BPM Standard business process.
- **Closed Loop Notification:** Users or automated business processes can initiate a call to an Interactive Voice Response (IVR) service from within a business process. When a

user/business process interacts with the IVR service (DTMF presses), the responses are fed back into the business process.

For more information see *Avaya Agile Communication Environment™ Toolkit for IBM Business Process Manager Standard* (NN10850–051).

Customer Relationship Management Integration

With the Avaya ACE Customer Relationship Management (CRM) Integration packaged application for Salesforce.com and Microsoft Dynamics, Avaya integrates real-time communications capabilities with CRM software to improve productivity and enhance customer service. The CRM Integration application is hosted by the Application Integration Engine.

UC desktop integration

There are desktop integration solutions specific to Microsoft and IBM environments. You can also create a UC desktop using the Web Browser Add-in and Office Add-in applications.

Microsoft desktop integration

Microsoft integration

Avaya ACE for Microsoft Office Communications Server (OCS) is a unique set of solutions that leverage existing communications infrastructure to deliver unified communications (UC) capabilities. Because the solution works with the existing communication infrastructure, there is no need to invest in upgrades or buy new equipment.

Avaya ACE provides two independent OCS Integration solutions: Avaya ACE Microsoft Communicator Add-in and Remote Call Control capabilities utilizing the Microsoft UCMA API.

Both solutions provide end users with the ability to have their telephony presence published to OCS and allow OCS to control their communication devices. Features and functionality will differ with the solutions and the communication infrastructure utilized.

Microsoft Lync Integration

Integrates with Microsoft Lync to combine reliable, feature rich, real-time Avaya Aura communications services with Microsoft Lync for instant messaging, email, and calendaring.

Note that Lync Integration is hosted by the Application Integration Engine. For more information, see *Avaya Agile Communication Environment™ Microsoft Lync Integration and Microsoft Office Communicator Add-in Fundamentals* (NN10850-014).

Remote Call Control capabilities utilizing the Microsoft UCMA API

Includes Avaya ACE Service Agent (ASA) that acts as a protocol converter between Avaya ACE and the Microsoft OCS server to enable enhanced communications such as Remote Call Control (RCC) and Extended Presence.

For more information, see *Avaya Agile Communication Environment™ Microsoft Lync Integration and Microsoft Office Communicator Add-in Fundamentals* (NN10850-014).

Web Browser Add-in and Office Add-in

Web Browser Add-in

The Web Browser Add-in is installed on a user's PC and embeds additional functionality, such as click-to-call, import contacts, and email, into external and internal web pages.

For more information, see *Avaya Agile Communication Environment™ Configurator for Desktop Communication Enablement Fundamentals* (NN10850-031).

Office Add-in

The Office Add-in is installed on the PC and gives Outlook 2007 and 2010 users the ability to select mail, contact, calendar, task, or journal items and initiate a call, to the originator of the item, with a simple click.

The Web Browser Add-in and the Office Add-in are deployed using the Avaya ACE Configurator. For more information, see *Avaya Agile Communication Environment™ Configurator for Desktop Communication Enablement Fundamentals* (NN10850-031).

IBM Lotus Sametime desktop integration

IBM Lotus Sametime is a popular communications software solution that combines presence awareness, instant messaging, and web conferencing into a single integrated business application. Through integration with Avaya ACE, Sametime users have access to enhanced telephony and video services from their Connect client interface.

Key IBM Sametime integration features are:

- Single contact identity associated with multiple communications devices, such as chat, desk phone, mobile, and video.
- Click-to-call and video call from Sametime Connect client.
- Connect client.
- Integrated telephony dialpad to make internal or external calls from Sametime Connect client.
- Click-to-call within IBM Lotus Notes email or contacts (with embedded Sametime Connect client).

For more information see, *Avaya Agile Communication Environment™ Administration - IBM Lotus Sametime Integration* (NN10850-011).

Chapter 5: Developer toolkits

Avaya Agile Communication Environment™ (ACE) provides a developer-friendly toolkit that enables application developers to create CEBP applications using Avaya ACE™™ web service application programming interfaces (APIs) or Avaya ACE Foundation Toolkit APIs.

Avaya ACE web service APIs includes Avaya ACE custom services and a subset of Parlay X web services that can be exported into the developer programmer's favorite software programming environment for application creation using the development platform of choice.

The Foundation Toolkit includes a set of runtime services, API and Java libraries that enable application developers to build named applications and sequenced applications (applications based on real-time call flow) through comprehensive access to Avaya Aura® SIP, presence and other core network services.

The Avaya Agile Communication Environment (ACE) Message Drop and Message Blast (MsgDropBlast) service provides orchestration of audio recording and call control web services provided by Avaya ACE to enable automation of voice recording and broadcasting of audio messages to specified recipients.

Web service API

Using Avaya ACE web services, application developers can build custom applications with their programming environment of choice without a requirement to understand the underlying technologies.

The task of converting this code into protocols the telephony systems can understand is done by Avaya ACE service provider interfaces that include pre-written Computer Telephony Integration (CTI) code for deep integration and control. This enables the developer to create, test, and invoke operations (such as makeCall) without a requirement to understand the underlying technologies, such as Session Initiation Protocol (SIP).

For a brief description of the Web service API, see [Web services and WSDLs](#) on page 27

For more information, see *Avaya Agile Communication Environment™ Web Services* (NN10850-007).

Foundation Toolkit

The Avaya ACE Foundation Toolkit provides a Java API for developers that abstracts them from the complexities of the SIP protocols used to integrate with the Aura Session Manager,

while still allowing the creation of powerful value-added custom applications and services. The Foundation Toolkit includes Media Server support, allowing applications to play announcements, record media streams and process DTMF tones.

Sequenced applications are invoked while a call is being established through the Session Manager and allow the application to control the routing and outcome of the call. Sequenced applications can apply contextual rules or integrate with other network elements to decide what action to take with the call.

The Foundation Toolkit API also supports developers creating custom features or services that can be invoked directly by end-users, such as Virtual Personal Assistants. Services can incorporate a virtual endpoint to make and receive calls.

Message Drop and Message Blast API

MsgDropBlast is a service residing on the Avaya ACE server that provides the high level web servicebased interfaces for the various telecommunication capabilities. In a typical deployment, the MsgDropBlast service interfaces with a Customer Relationship Management (CRM) system to provide click-to-dial and automated audio recording and broadcast capabilities.

The MsgDropBlast service consists of the following functional areas:

- Click-to-Dial
- Message Drop
- Message Blast
- Message Record
- Message Review
- MsgDropBlast LDAP lookup service

Chapter 6: Web services and WSDLs

Web service fundamentals

A web service is a software component that provides a functionality or capability through a standardized set of application programming interfaces (API).

Web service APIs (for example, Third Party Call Control) expose their services as individual components to promote a more rapid delivery and re-use of those services. Their interfaces are described in a machine-processable format, or Web Service Description Language (WSDL). This enables developers to develop their own applications, without having to contend with the underlying communication network infrastructure that facilitates the delivery of those services.

Some key attributes associated with a web service are:

- Platform/language-independent: Has well defined platform-independent and language-independent interfaces used to accept requests and to deliver service responses.
- Loosely coupled: Operates in a loosely coupled unit that operates independently of other services.
- Business functionality: Represents a high level business functionality; for example, `getAccountBalance`.

Web service standards

Web services are governed by web standards (rules) for information exchange. Some examples are listed below.

- Extensible Markup Language (XML): General-purpose specification for creating custom markup languages.
- Hypertext Transfer Protocol (HTTP): Client/server protocol for linking text files to one another to share information on the Internet and the World Wide Web (WWW).
- Hypertext Transfer Protocol Secure (HTTPS): Combines HTTP with additional technologies such as Transport Layer Security (TLS) and Secure Socket Layer (SSL) to provide secure communications.
- Web Service Description Language (WSDL): XML format for describing Web services; provides common language for entities to interact .
- SOAP (originally defined as Simple Object Access Protocol): Protocol specification for exchanging structured information in the implementation of Web Services in computer networks that relies on eXtensible Markup Language (XML) as its message format and

usually relies on other Application Layer protocols (most notably Remote Procedure Call (RPC) and HTTP) for message negotiation and transmission.

Standards organizations

Web services technologies are standardized by organizations. Some key organizations are:

- Distributed Management Task Force, Inc. (DMTF): The DMTF focuses on common management infrastructure components for enterprise and Internet environments. For more information, go to www.dmtf.org.
- European Telecommunications Standards Institute (ETSI): The ETSI publishes global information and communications standards for fixed, mobile, radio, converged, broadcast and internet technologies. For more information, go to www.etsi.org.
- Organization for the Advancement of Structured Information Standards (OASIS): OASIS focuses on the development and standardization of open standards for Web services, security, and e-business. For more information, go to www.oasis-open.org.
- The Parlay Group: Focuses on the development open application programming interfaces (APIs) to simplify the creation of web services. For more information, go to www.parlayx.com.
- Third Generation Partnership Project (3GPP): Consists of standards organizations who have partnered to develop specifications for evolved third generation and beyond mobile system. For more information, go to www.3gpp.org.
- World Wide Web Consortium (W3C): Focuses on technologies that support interoperability across the web. For more information go to www.w3.org.

WSDL fundamentals

Each web service API has a corresponding Web Service Description Language (WSDL). The WSDL contains the message definitions and syntax necessary for dissimilar entities to communicate. As defined by the World Wide Web Consortium (W3C):

- WSDLs are an XML format for describing network services as a set of endpoints operating on messages containing either document-oriented or procedure-oriented information.
- The operations and messages are described abstractly and then bound to a concrete network protocol and message format to define an endpoint.
- Related concrete endpoints are combined into abstract endpoints (services).

The WSDL does not include any of the semantics of the web service; for example, what the service actually does. While users can read a WSDL, the WSDL format is really designed for simple parsing by a computer program. Application developers typically use a tool within their development environments to analyze the WSDL.

WSDL attributes

Some important WSDL attributes are:

- **Target namespace:** Is similar to an XML schema target namespace. Requires absolute URI; for example, a web site that is within the service provider's control.
- **Operations:** Describes a web service's functionality as a set of abstract operations. Each operation specifies the types of messages that the service performs as part of that operation.
- **Message:** Includes the information needed to perform the operation; typically, corresponds to an operation. •
- **Service definition:** Specifies the supported interface attribute. (A service is only allowed one interface.)
- **Port Type:** Specifies what services the web service can provide; for example, a web service might provide various services on documents containing English-language text, translating the text into another language, counting the words in the text, checking the spelling of the text, etc. Each of these services would be defined as a separate port on the web service.
- **Operation Type:** Specifies how the service operates.
 - **Request-response:** This is the most common operation type. The web service accepts a request and returns a response; for example, accepts text in English and returns a list of spelling mistakes.
 - **One-way:** Accept a request and return nothing; for example, a logging service.
 - **Notification:** Supports unsolicited messages from a web service. The web service spontaneously generates and delivers a message to a client but does not expect a response; for example, alerts a consumer if some event occurred.
 - **Solicit-response:** Service spontaneously sends a message to its consumer, as with the notification operation type, but also expects a response.
- **Messages:** Are transmitted during the invocation of a web service. Depending on the operation type of the port, one or more messages are transmitted during the invocation of a web service; for example, if this is a request-response type, the consumer sends a message to the port and the web service responds with a message.

Inside a WSDL

Following is an excerpt from a Third Party Call (v2) WSDL interface file, which is available for download from the Avaya ACE GUI. It is important to note that while users can read a WSDL, the WSDL format is really designed for simple parsing by a computer program. Key WSDL attributes are highlighted by bold text.

```

<wsdl:definitions
  name="parlayx_third_party_call_interface"
  targetNamespace="http://www.csapi.org/wsd/parlayx/third_party_call/v2_3/interface"
  xmlns="http://schemas.xmlsoap.org/wsd/"
  xmlns:wsd="http://schemas.xmlsoap.org/wsd/"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:parlayx_third_party_call="http://www.csapi.org/wsd/parlayx/third_party_call/v2_3/interface"
  xmlns:parlayx_common_faults="http://www.csapi.org/wsd/parlayx/common/v2_0/faults"
  ...

  <wsdl:portType name="ThirdPartyCall">
    <wsdl:operation name="makeCall">
      <wsdl:input message="parlayx_third_party_call:ThirdPartyCall_makeCallRequest"/>
      <wsdl:output message="parlayx_third_party_call:ThirdPartyCall_makeCallResponse"/>
      <wsdl:fault name="ServiceException"
message="parlayx_common_faults:ServiceException"/>
      <wsdl:fault name="PolicyException"
message="parlayx_common_faults:PolicyException"/>
    </wsdl:operation>

    <wsdl:operation name="getCallInformation">
      <wsdl:input
message="parlayx_third_party_call:ThirdPartyCall_getCallInformationRequest"/>
      <wsdl:output
message="parlayx_third_party_call:ThirdPartyCall_getCallInformationResponse"/>
      <wsdl:fault name="ServiceException"
message="parlayx_common_faults:ServiceException"/>
      <wsdl:fault name="PolicyException"
message="parlayx_common_faults:PolicyException"/>
    </wsdl:operation>
  
```

Avaya ACE WSDL download

Supported Avaya ACE web service WSDLs are available for download from the Help menu of the Avaya ACE GUI.

Supported Avaya ACE WSDLs

Following is a description of each supported Avaya ACE WSDL. For more information, see *Avaya Agile Communication Environment™ Web Services* (NN10850–007).

Third Party Call Control

Third Party Call Control (v2) provides click-to-call functionality between two endpoints; for example, click-to-dial, prioritized call routing, and on calling line identifier support. Third Party Call Control (v3) enhances Third Party Call Control (v2) functionality to initiate and manage a

call between multiple endpoints, as well as provide media services such as conference and audio through a media terminal.

A business use for the Third Party Call Control API is integration with a retail web page to provide customers with a click-to-dial capability to speak to a customer service representative.

Third Party Call Extensions

Third Party Call Extensions (v3) enhances Third Party Call Control capabilities to allow an application to perform call control functions; for example: answer, place a call on hold and make a consultation call to another device, and send a response message. Third Party Call Extensions (v3) enhances Third Party Call Extensions (v2) capabilities to include generateDTMF and singleStepTransfer operations.

- The generateDTMF operation directs Avaya ACE to generate Dual Tone Multi-Frequency digits (digitone) into a specified call.
- The singleStepTransfer operation allows Avaya ACE to transfer an existing call to another device in a single step without placing the call on hold before transferring the call).

Call Notification

Call Notification (v3) allows management of call notification functionality, such as called party address and number for Third Party Call Control (v2/v3) sessions. Call Notification (v3.8) allows an application to receive an event each time a user's phone is involved in a call. Each event contains the number of the party attempting to place the call.

A business use for Call Notification API is an application that enables users to receive an email alert with the caller identification of whoever calls, notify users of calls that came in while they were online or not online, or have a notification email sent to an Internet email address or to your text messaging-enabled cell phone.

Call Forwarding

Call Forwarding allows a device to redirect an incoming call to another device when specific conditions are met. A business use of the Call Forwarding API is an application, such as Hot Desking, that allows users to manage call forwarding remotely from a web page; for example, specify a number to which calls are redirected.

Call History

Call History allows an application to instruct the Avaya ACE host to create and store records for incoming calls for retrieval by address or user name (user ID). A business use of the Call History API is an application that instructs the Avaya ACE server to create, store and delete records for calls for retrieval by the address or Avaya ACE user name (userID).

Terminal Location

Terminal Location allows an application to obtain information about the physical location of a user device; for example, retrieve location information about a mobile terminal, which can then be queried by another application to trigger other events. Location is expressed in terms of latitude, longitude, altitude and accuracy. Location Supplier is a customized solution that allows a device to publish information about its location, based on a specific condition. Avaya ACE stores this information and can provide it to client applications querying information for the device.

Audio Call

Audio Call (v3) allows an application to add or drop audio content in an existing call, and monitor message delivery. A business use for the Audio Call API (combined with a call control service such as Third Party Call Control) is an application that sends an automated meeting reminder to an end user or broadcasts a message to a group of clients at a specified time.

Presence

Presence collects presence information for users registered with one or more network elements. A business use of the Presence API is an application that collects presence information and communication capabilities about a user who is registered with one or more network elements (for example, a call server or an instant messaging server).

System Monitoring

System Monitoring allows a service client to monitor the health of applications. This service is used to obtain information about system or application uptime; for example, how long Avaya ACE or applications have been running. If a status request is unsuccessful, a fault codes is triggered, which can be used for troubleshooting.

User Profile

User Profile supports user management operations, including operations related to the management of global security policies and individual user group policies. The User Profile web service supports operations to:

- Create user profiles on Avaya ACE.
- Create and maintain global security policies that define default password settings, user account settings, and access control rules at the system level.
- Create and maintain individual user account or user group policies.

Subscriber Management

Subscriber Management allows client applications to query subscriber information, either locally or globally for federated deployments; for example:

- Name of the subscriber configured on Avaya ACE.
- IP address of the subscriber's home Avaya ACE domain.
- Contact information specified in the subscriber's profile.
- Type of contact media used for communication.
- Organization, unit, or department associated with the subscriber.

Message Drop and Message Blast

Message Drop and Message Blast automates voice recording and audio message broadcasting. It provides orchestration of audio recording and call control web services to enable automation of voice recording and broadcasting of audio messages to specified recipients. The Message Drop and Message Blast API resides on the Avaya ACE core server and provides the high-level web service-based interfaces for the various telecommunication capabilities. In a typical deployment, it interfaces with a Customer Relationship Management (CRM) system to provide click-to-dial and automated audio recording and broadcast capabilities.

For more information, see *Avaya Agile Communication Environment™ Message Drop and Message Blast Administration* (Nn10850–025).

Chapter 7: Service providers

The Avaya Agile Communication Environment™ (ACE) provides a simplified service-based architecture that facilitates a client's access into more complex networks and systems. Avaya ACE™ provides a bridge between the web-based application layer and the network communication layer. It abstracts the communication functions provided in the network layer from the web-based service requests in the application layer.

The network communication layer is responsible for providing the communication services to support web service requests. Avaya ACE provides service provider interfaces (also known as adapters) to enable communications with the network communication layer.

Avaya ACE provides a service provider interface to communicate with the following network elements:

- Avaya Aura®
- Avaya Communication Server 1000 (Avaya CS 1000)
- Avaya Communication Server 2100 (Avaya CS 2100)
- Avaya NES Contact Center (Contact Center), through the Meridian Link Services (MLS) interface
- Communication Server 2000 (CS 2000)
- Cisco Unified Communications Manager (CUCM)
- Tandberg Video Communication Server (VCS)
- IBM Lotus Sametime
- Microsoft Office Communication Server

For information on how to configure the IBM Lotus Sametime service provider interface, see *Avaya Agile Communication Environment™ Administration — IBM Lotus Sametime Integration* (NN10850-011).

For information on how to configure the Microsoft Office Communication Server service provider interface, see *Avaya Agile Communication Environment™ Administration — Microsoft Office Communications Server Integration* (NN10850-012).

For all other service providers, see *Avaya Agile Communication Environment™ Administration* (NN10850-005).

Avaya Aura®

Avaya Aura® is Avaya's core communications platform supporting unified communications and contact center solutions for midsize to large enterprises. Its SIP-based architecture and strategy simplifies complex enterprise communications networks, reduces infrastructure costs

and quickly delivers voice, video, messaging, presence, web applications and more to employees anywhere, anytime and from any device.

Avaya ACE provides an Avaya Aura service provider interface to enable communications with Avaya Aura network elements using TR/87 and SIP.

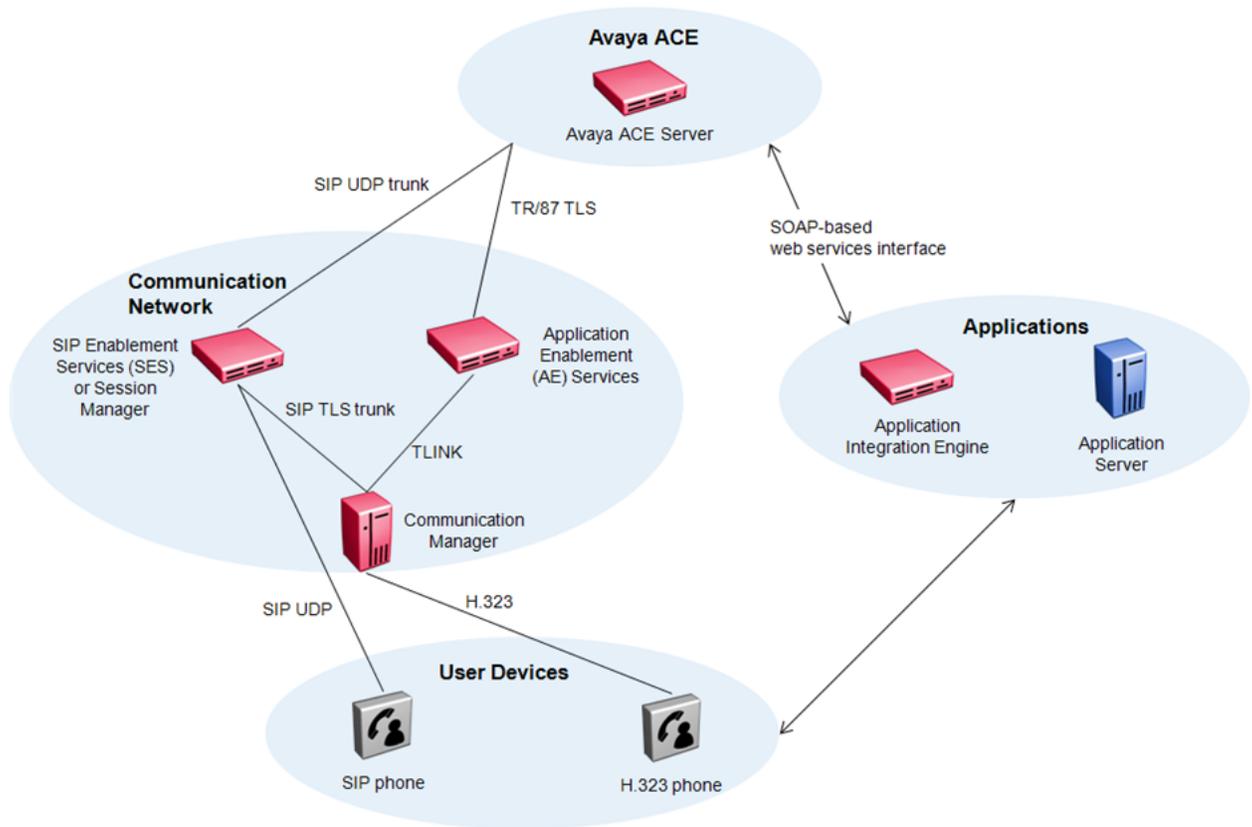


Figure 4: Avaya Aura Service provider

Avaya ACE™ and Avaya Aura® interworking

Avaya ACE™ supports Avaya Aura® 5.2.1 and 6.1 communications platforms.

For information on supported services and applications through Avaya ACE, see [Reference tables](#) on page 83.

Avaya Aura 5.2.1 baseline load lineup

ACE release 3.0 requires the following Avaya Aura release 5.2.1 baseline load lineup for interworking with ACE. Each component service pack and patch level must be at the listed value or higher.

- Media Gateway 30.18.1
- Communication Manager 5.2.1 SP8 (02.1.016.4-18855)
- Avaya Session Manager 5.2 SP3 (asm-5.2.3.0.523013)
- System Manager 5.2 SP2 on System Platform 1.1.1 (patch 1.1.1.97.2)
- Application Enablement Services 5.2.3 SP1 on System Platform 1.1.1 (patch 1.1.1.97.2)

The following functionality introduced in ACE release 3.0 is only supported with the Avaya Aura 6.1 baseline load lineup.

- ACE support for an Application Enablement (AE) Services in a high availability deployment. If ACE is connected to an Avaya Aura 5.2.1 baseline load lineup, then AE Services is only supported in a standalone deployment.
- An Avaya Aura SIP service provider that connects to multiple Avaya Session Managers. If ACE is connected to an Avaya Aura 5.2.1 baseline load lineup, then only a single Session Manager can be configured against an Avaya Aura SIP service provider.
- Support for Avaya 96xx clients and one-X[®] Communicator clients.

Avaya Aura 6.1 baseline load lineup

ACE release 3.0 requires the following Avaya Aura release 6.1 baseline load lineup for interworking with ACE. Each component service pack and patch level must be at the listed value or higher.

- Media Gateway (G430) 31.18.1
- Communication Manager 6.0.1 with SP2 (00.1.510.1-18860)
- Avaya Session Manager 6.1 SP1 (6.1.1.0.611023)
- System Manager 6.1 SP 1.1 (6.1.0.0.7345)
- Application Enablement Services 6.1 SP2 (6.1.0.20)

If the Foundation Toolkit is deployed with Avaya Aura[®] Communication Manager, the Communication Manager must be at release 6.0.1 or higher.

Avaya Communication Server 1000

The Avaya Communication Server (CS) 1000 is a server-based, full-featured IP PBX. The CS 1000 system supports traditional public switched telephony network (PSTN) as well as Session Initiation Protocol (SIP) and H.323 communications. Avaya ACE provides a CS 1000 provider interface to enable communications with CS 1000 network elements using TR/87 and SIP.

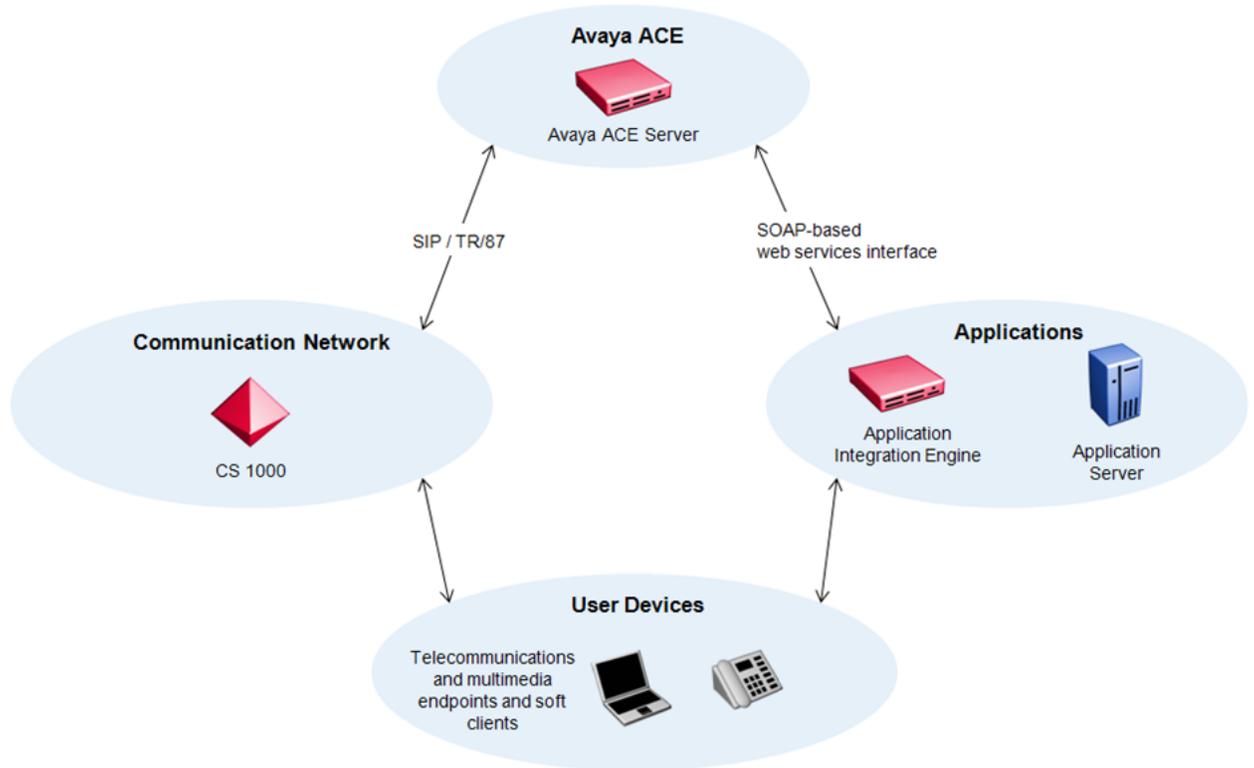


Figure 5: Communication Server 1000 service provider

Avaya ACE and CS 1000 interworking

Avaya ACE and CS 1000 require SIP connectivity, although the CS 1000 system supports H.323 and SIP virtual trunking. The CS 1000 SIP-enabled system connects by way of a SIP virtual trunk. Avaya ACE communicates with CS 1000 using standard SIP or SIP Computer Telephony Integration (CTI) TR/87 protocol. ACE provides a service provider interface to inter-operate with the CS 1000 using either SIP or TR/87 signaling and with or without a media server.

For information on supported services and applications through Avaya ACE, see [Reference tables](#) on page 83.

The Avaya Media Server is required to support Audio Call and Third Party Call Control (v3) Web services.

For CS 1000 systems that support media services, configure a CS 1000 TR/87 service provider with media services on ACE, to enable click-to-dial functionality for calls established through the Third Party Call Control (v3) web service. In this case, TR/87 is required to control the phone set that initiates the call, such that the CS 1000 can place the phone off-hook without the call originator having to answer. A SIP trunk is configured on the CS 1000 to route the call back to the ACE server, so that the Avaya ACE application can choose an appropriate SIP endpoint to answer the call (for example, the Avaya Media Server). This enables ACE to add

media services to a CS 1000 call either at call setup or as a new participant to an existing call.

For all calls initiated by Avaya ACE to CS 1000 softphones; whether triggered by Sametime or any other application with call capabilities; the following conditions occur:

- Calling party scenario – If a CS 1000 softphone is logged out or not fully logged in to its CS 1000 server when a user attempts to place a call, the call does not go through. However, the ACE server sends a BUSY indication to the application, based on information that the ACE server has from the CS 1000 at that time.
- Called party scenario – If a CS 1000 softphone is logged out or not fully logged in to its CS 1000 server while the user is being called from another softphone, the call appears to go through and rings as if both phones were logged in.

Supported CS 1000 software releases

ACE release 3.0 requires the following CS 1000 release baseline software loads for interworking with ACE.

For deployments using network routing service (NRS):

- CS 1000 Rel 7.0 with patches

Deployments using Session Manager:

- CS 1000 Rel 7.5 with patches

*** Note:**

For information on required CS 1000 software patches, see *Avaya Agile Communication Environment Release Notes* (NN10850–019).

*** Note:**

ACE release 3.0 does not interwork with the following CS 1000 releases:

- 4.5
- 5.0
- 5.5
- 6.0

Avaya Communication Server 2100

The Avaya CS 2100 is a large-scale converged solution that combines carrier and enterprise attributes. Avaya ACE provides a CS 2100 provider interface to enable communications with CS 2100 network elements using TR/87 and Session Server Trunk (SST).

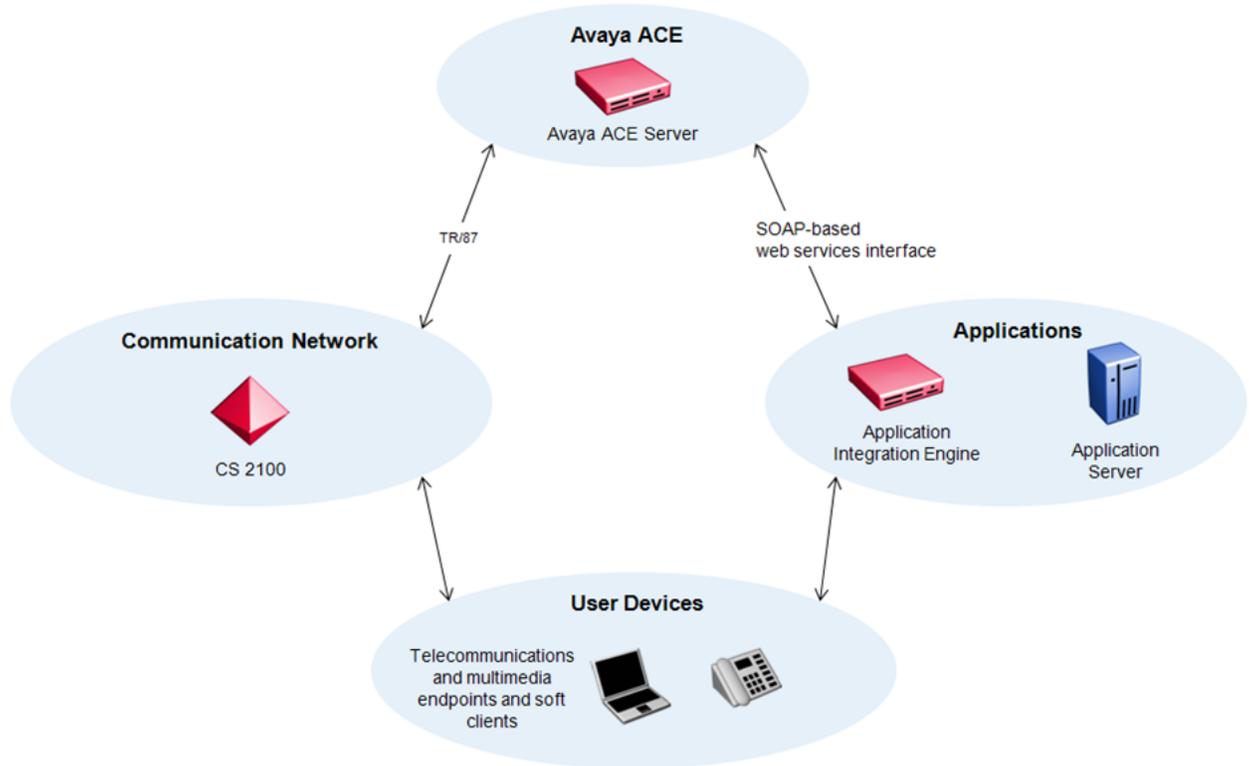


Figure 6: Communications Server 2100 service provider

Avaya ACE and CS 2100 interworking

For information on supported services and applications through Avaya ACE, see [Reference tables](#) on page 83.

Avaya ACE supports interworking with the CS 2100 system for the IBM Sametime solution. For more information, see *Avaya Agile Communication Environment™ Administration—IBM Lotus Sametime Integration* (NN10850-011).

NES Contact Center

The Avaya NES Contact Center includes a suite of applications to meet varied business requirements, call processing, agent handling, management and reporting, and networking third-party application interfaces. Avaya ACE provides a Contact Center/ Meridian Link Services (MLS) interface to enable communications with Contact Center network elements.

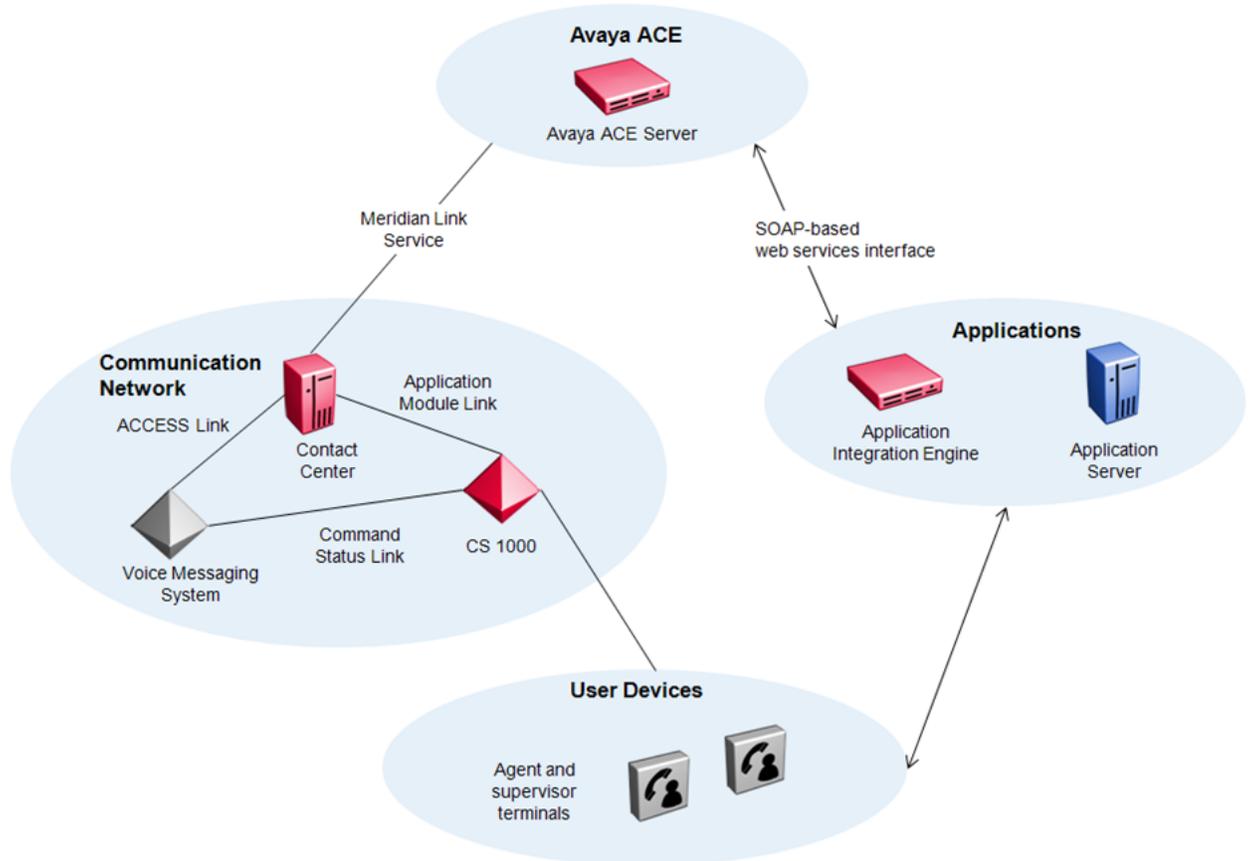


Figure 7: NES Contact Center service provider

Avaya ACE and Contact Center interworking

Avaya ACE communicates with the Avaya NES Contact Center using the MLS interface.

The Contact Center network element must meet the following configuration requirements to interact with Avaya ACE:

- Must be running Avaya NES Contact Center Release 6.0 or higher
- The CS 1000 system must be running a software version that is supported to interact with Avaya ACE.

For information on supported services and applications through Avaya ACE, see [Reference tables](#) on page 83.

Communication Server 2000

The CS 2000 is a Carrier Voice over IP (VoIP) superclass softswitch. Avaya ACE provides a CS 2000 service provider to enable communications with CS 2000 network elements using SIP_IN, and SIP_SSL (Session Server Lines).

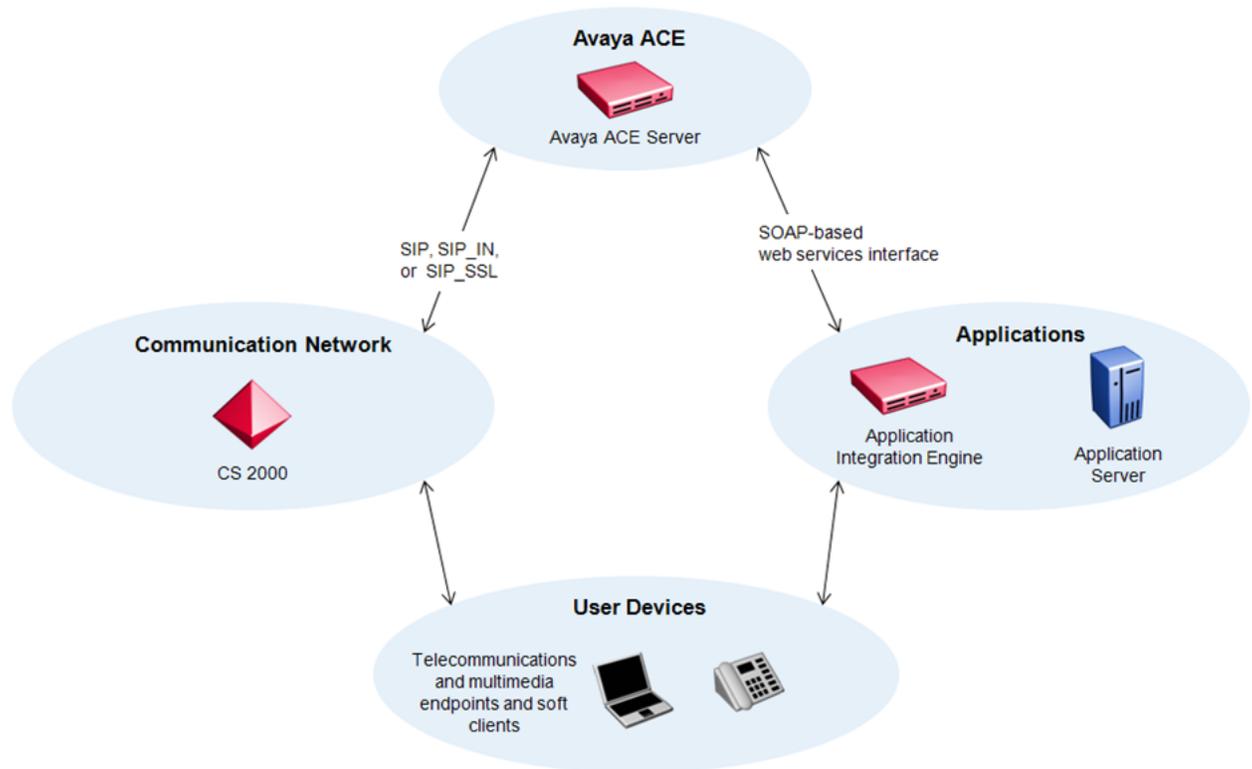


Figure 8: Communication Server 2000 service provider

Avaya ACE and CS 2000 interworking

For information on supported services and applications through Avaya ACE, see [Reference tables](#) on page 83.

Avaya ACE supports interworking with the CS 2000 system as part of the Microsoft Office Communications Server (OCS) solution. For information, see *Avaya Agile Communication Environment™ Administration — Microsoft Office Communication Server Integration* (NN10850-012).

Cisco Unified Communication Manager

Cisco Unified Communications Manager (Cisco Unified CM) is the software call processing component of a Cisco Unified Communications solution. Cisco Unified CM software is installed on a supported Cisco server or a customer-supplied server that meets the Cisco Unified CM operating specifications. Avaya provides Cisco Unified CM service provider to enable communications with Cisco Unified CM network elements using Session Initiation Protocol (SIP), Java Telephony Application Programming Interface (JTAPI), and Administrative XML Layer (AXL).

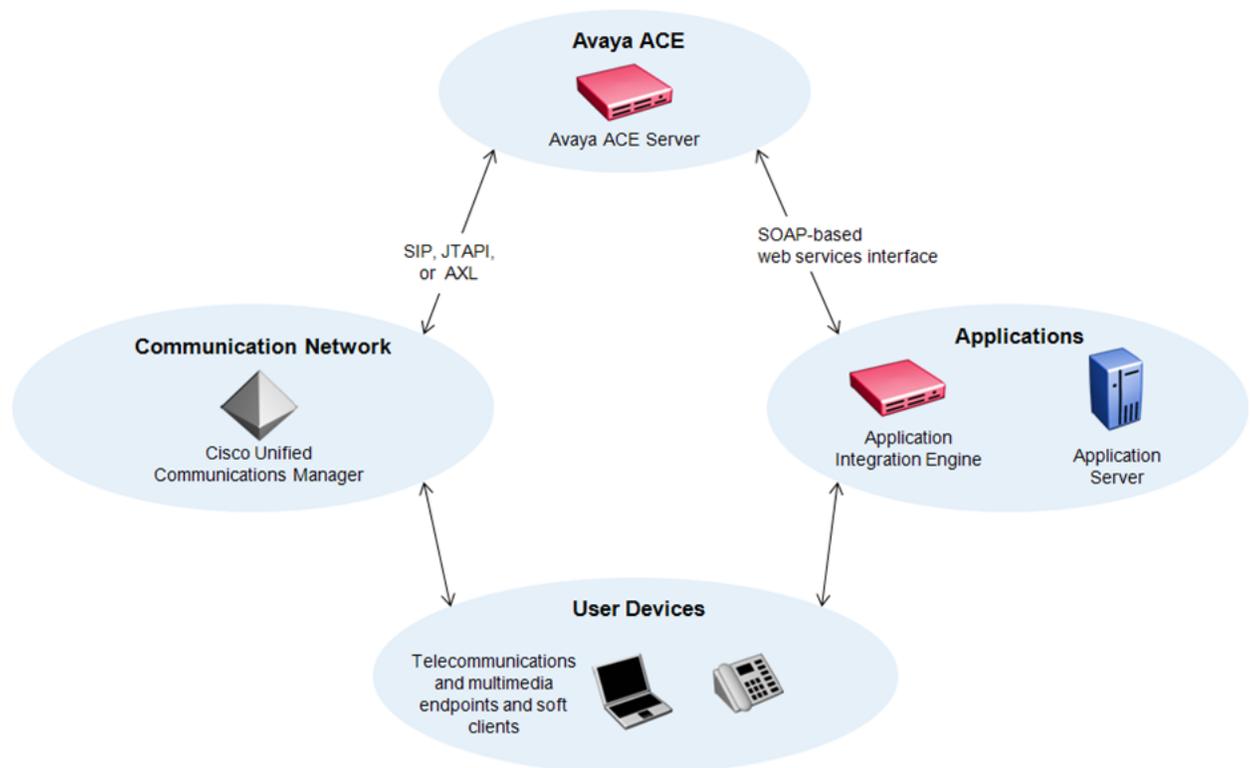


Figure 9: Cisco Unified Communication Manager service provider

Avaya ACE and Cisco Unified CM interworking

The Avaya ACE™ communicates with the Cisco Unified Communications Manager using SIP, JTAPI and AXL.

For information on supported services and applications through Avaya ACE, see [Reference tables](#) on page 83.

Tandberg Video Communication Server

The Tandberg Video Communication Server (VCS) is a client-server solution that is deployed in the customer network to facilitate video networking and communications between H.323 and Session Initiation Protocol (SIP) video devices. Avaya ACE provides a Tandberg VCS service provider to enable communications with Tandberg VCS network elements using SIP.

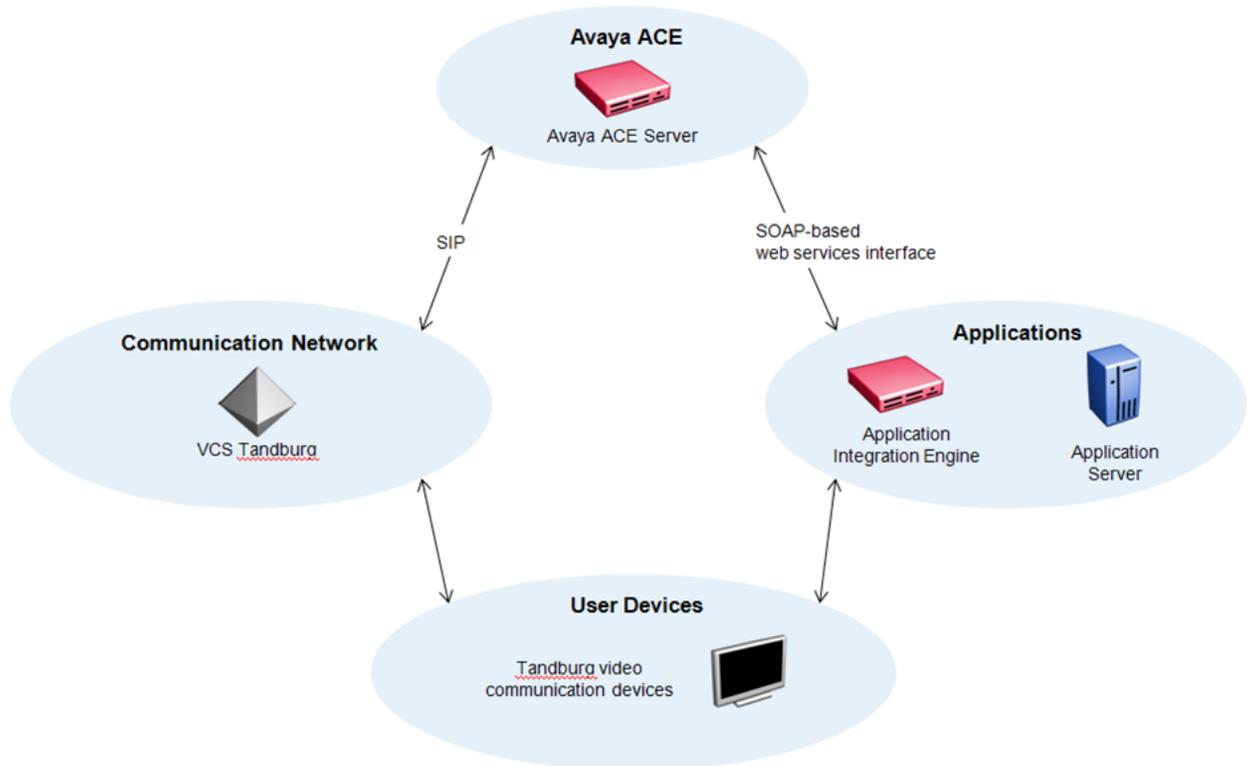


Figure 10: Tandberg service provider

Avaya ACE and Tandberg interworking

Avaya ACE communicates with Tandberg through SIP.

For information on supported services and applications through Avaya ACE, see [Reference tables](#) on page 83.

Chapter 8: Avaya ACE architecture

Avaya is a leader in the telecom industry with a history of delivering world class products to customers. Avaya is leveraging this leadership and its telecom infrastructure expertise in a service oriented architecture (SOA). The Avaya Agile Communication Environment™ (ACE) permits integration of telecommunications functions into existing applications and business processes to create new capabilities.

This section provides an overview of Avaya ACE architecture.

Avaya ACE™ network interfaces

[Figure 11: Avaya ACE architecture](#) on page 46 shows the system architecture in which Avaya ACE operates. Avaya ACE provides a simplified service based architecture to facilitate client access into more complex networks and systems. Avaya ACE provides a bridge between the web based application layer and the network communication layer. Avaya ACE provides the telephony services requested through SOA applications while abstracting the details of the underlying network server architecture.

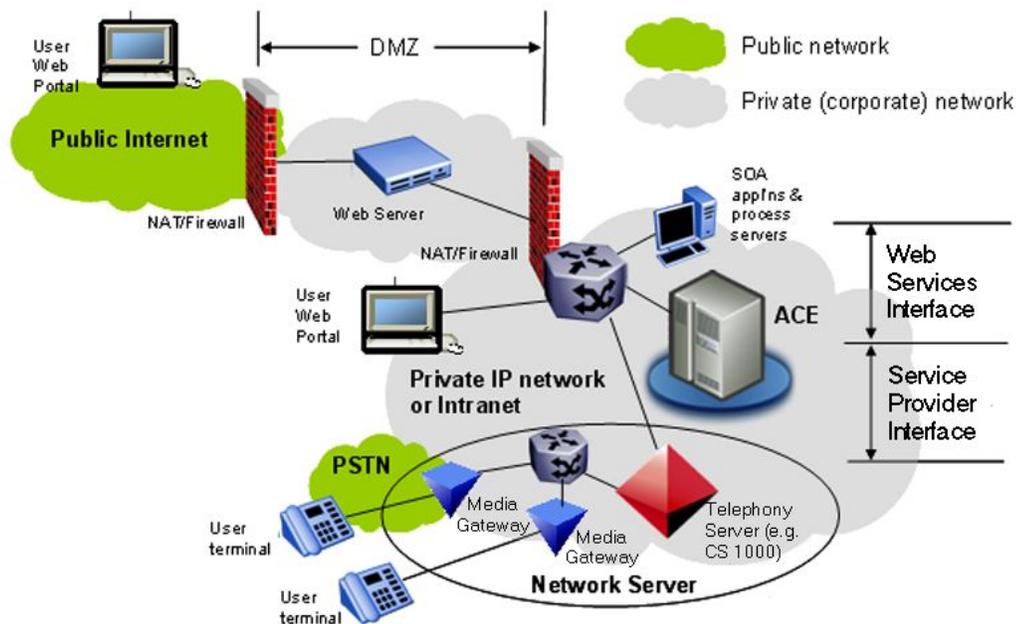


Figure 11: Avaya ACE architecture

The Application layer comprises the set of SOA based Web Services available to clients hosted in either a private or a public network. The clients invoke Avaya ACE enabled features through web based applications and processes. If the web server determines that a service request is Avaya ACE enabled, the web server forwards the request to Avaya ACE. Avaya ACE requests that come in from the application network are all mapped to a specific Web Services Description Language (WSDL), an XML based language for defining Web Services. Requests from the application layer are referred to as coming from the Web Services interface.

Clients communicate through the Web Services interface using SOAP messages. SOAP is a protocol for exchanging XML-based messages over computer networks, normally using HTTP/HTTPS. SOAP forms the foundation layer of the Web Services protocol stack providing a basic messaging framework upon which abstract layers can be built. The Web Services interface connects the SOAP clients to Avaya ACE and carries traffic containing SOA service requests. It also includes the SOAP interface with the Sametime server to provide service access and “telephony” Presence status to the Sametime server.

Requests are not constrained to coming from the clients. Requests can also be initiated by the network servers. For example, when the Presence service is available from Avaya ACE and a monitored client changes their state, a network server notifies Avaya ACE of the change. Requests that come from the network servers are referred to as coming from the Service Provider interface.

The Service Provider interface connects with the Network Servers such as an Avaya IP PBXs (for example, Avaya Aura or the Avaya CS 1000) or third party servers (for example, the Cisco UCM or Tandberg), providing the enhanced IP telephony services. The Sametime service is

also included on this interface using an IBM proprietary VP (Virtual Places) protocol to provide online presence updates to Avaya ACE from the Sametime server.

Avaya ACE™ management network interfaces

Java Management Extensions (JMX) is a Java technology that supplies tools for managing and monitoring applications, system objects, devices, and service oriented networks. JMX runs on the Avaya ACE host. The Avaya ACE GUI connects over HTTPS and provides a secure management interface. Avaya ACE also supports JConsole access through RMI to enable management using third party software tools such as IBM Tivoli.

The WebSphere administrative console also connects over HTTPS to perform WebSphere administrative tasks.

Avaya ACE deployment features

Federated ACE deployment

The federated Agile Communication Environment™ (ACE) deployment provides distributed client applications with seamless global web service access across geographical locations.

With a federated ACE deployment, users of IBM Lotus Sametime Connect can communicate across the globe in multi-location deployments regardless of underlying communications infrastructure available in each ACE *region*. To use Avaya ACE™ services, Sametime users must be logged into the Sametime server in the same region where their ACE user profile is located. The Sametime server cannot retrieve a user profile from an ACE in a remote region.

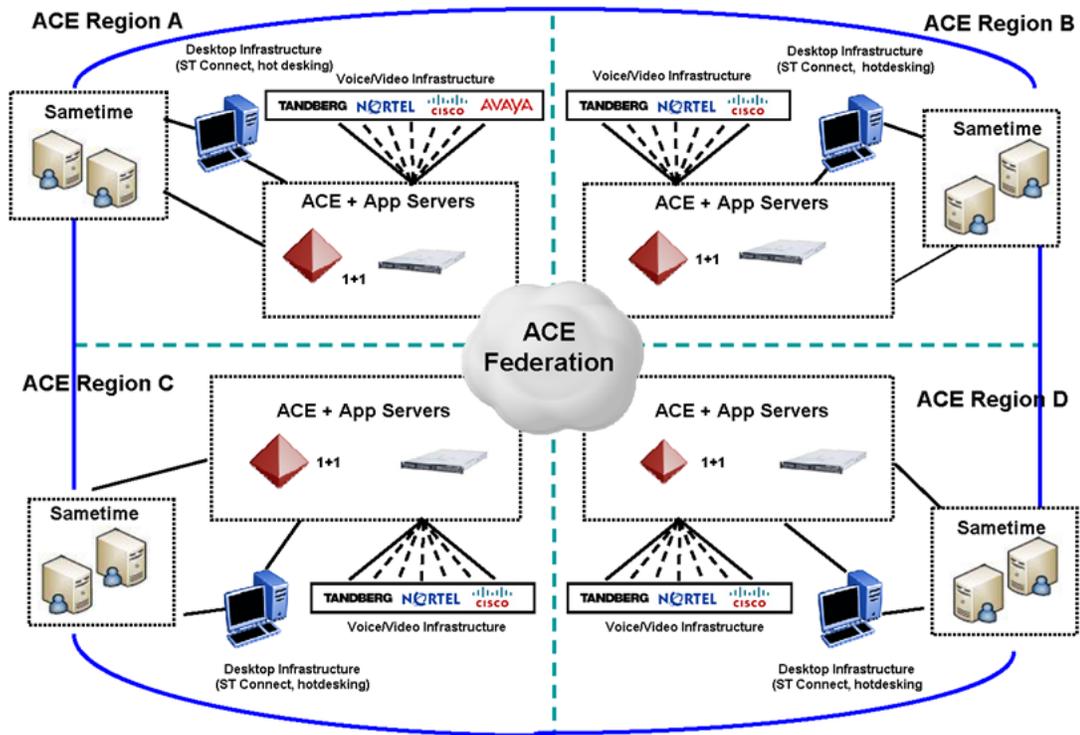


Figure 12: ACE federation - example deployment

High availability network

Availability refers to the ability of the user community to access the system. High availability (HA) refers to the implementation of system features that ensure operational continuity during a given measurement period.

For High Availability, the Avaya Agile Communication Environment™ architecture supports the deployment of an active host and a host server in the idle state. The idle state refers to an ACE host with both the WebSphere Application Server and the Avaya ACE™ application running. In the event of a failure condition on the active host, a failover to the idle host occurs.

The switchover to the idle host is significantly faster than to a redundant standby host. Thorough engineering testing indicates at least a 60% improvement in the speed of switchover to an idle host versus to a standby host. A faster switchover ensures minimal loss of web service traffic (for example, loss of new web service subscriptions) between client applications and Avaya ACE, during the failover period.

The HA configuration consists of two physical hosts in a non-revertive configuration, that uses the Red Hat Cluster Suite software to detect failures and trigger failovers.

! Important:

Although the Avaya ACE application is running on the idle host, it is unavailable to handle web service requests from client applications.

The recommended HA network configuration uses two VLANs. This allows for the segregation of HA management traffic on a separate VLAN. Deploying an Avaya ACE HA system on a single subnet, without segregating HA traffic, is only supported for demos or trials with less than 250 ACE users. When deploying Avaya ACE on a single subnet, the subnet must be dedicated to Avaya ACE and the power fence devices.

Avaya ACE HA capability is provided by Red Hat Cluster Suite. In this chapter, the Red Hat Cluster Suite application is described first, followed by a description of network requirements.

Security

Avaya ACE provides layered security features, protecting Avaya ACE solutions at all levels.

Server-side security

Avaya ACE uses the Secure Socket Layer (SSL) protocol to provide serverside authentication and ensure secure communications.

Client authentication and authorization

Access to Avaya ACE is controlled using HTTP basic authentication. All requests from client applications must contain a valid user name and password that corresponds to a user profile configured on Avaya ACE. The client application's user profile must have the appropriate access control rules set to invoke a particular Web service.

Web service communication

is supported on secure (HTTPS) and non-secure (HTTP) ports. Client applications can choose to secure all Web services communications.

Chapter 9: Building an Avaya ACE™ solution

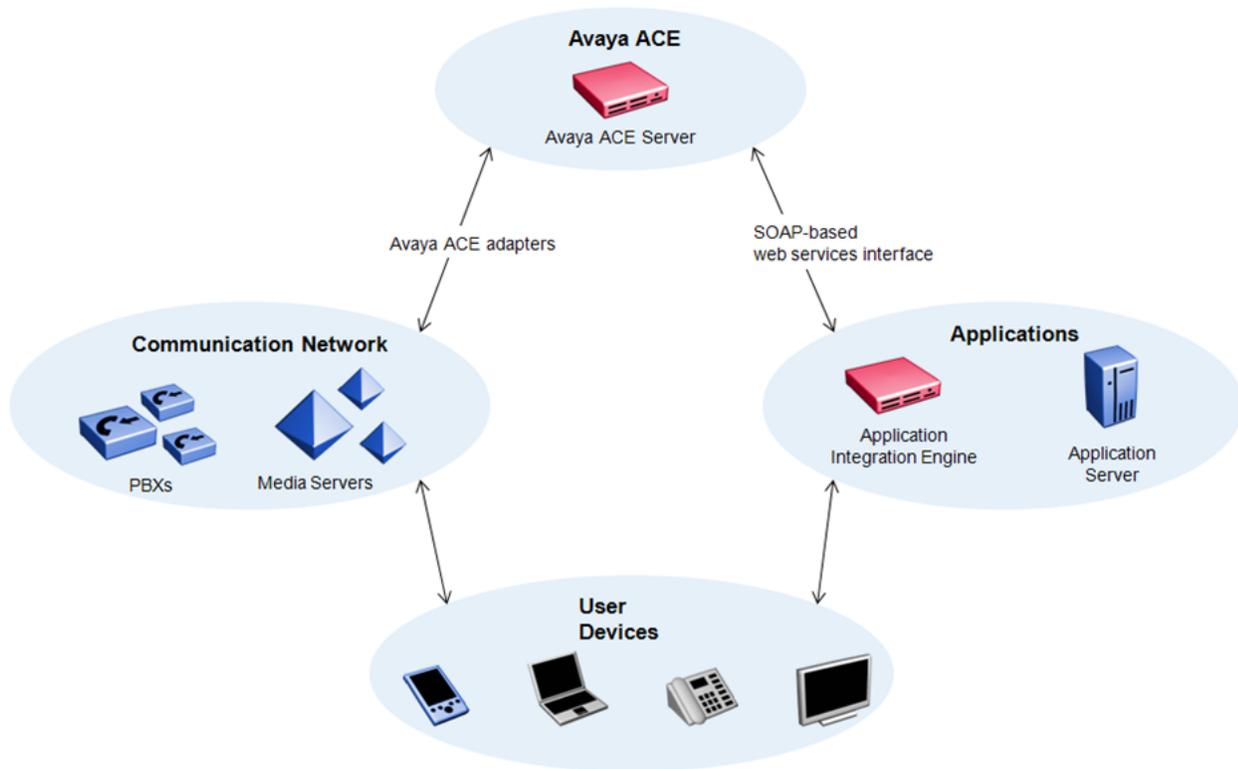


Figure 13: Avaya ACE network

As illustrated in the network diagrams presented in this document, Avaya Agile Communication Environment™ (ACE) deployments are comprised of four components. When building an Avaya ACE solution, consider the constituent components in the following order.

Applications

Unified communication (UC) is more than a technology initiative. UC is an application foundation that enhances productivity by enabling integrated control of communication channels, network resources, and business applications. Work with the Avaya sales and support personnel to determine the application solution that will solve your business challenges.

Avaya ACE server

All Avaya ACE solutions use an Avaya ACE server to mediate between the communications network and the applications. Depending on the application being deployed, the Avaya ACE Application Integration Engine may be required.

Communications network

Avaya ACE uses service provider adapters to achieve network infrastructure and vendor neutrality. Therefore, multiple connection technologies to the Avaya ACE server are available. Avaya ACE can be deployed with your existing telecommunication infrastructure.

User devices

There are two types of end user devices:

- devices that communicate with applications
- devices that communicate with PBX systems

Some physical devices communicate with both type of servers and can appear as a single interface to the end user.

Navigation

- The next chapter, [Solution deployment](#) on page 53, provides information on ACE application requirements and specifications.
- [Avaya ACE deployment](#) on page 79 provides hardware and software requirements for deploying ACE and AIE.

Chapter 10: Solution deployment

This section describes deployment of the following Agile Communication Environment™ (ACE) solutions:

- [Avaya ACE Lync Integration](#) on page 53
- [Avaya ACE IBM Lotus Sametime Integration](#) on page 58
- [Avaya ACE Desktop Communication Enablement](#) on page 61
- [Avaya ACE Mobile Cost Optimizer](#) on page 72

Avaya ACE™ Lync Integration

Avaya ACE Lync Integration delivers an enhanced integration to Microsoft Lync Server 2010 that allows customers to maximize their unified communications experience by utilizing their reliable, feature rich, real-time Avaya and Cisco communications services coupled with Microsoft Lync 2010 for instant messaging, email, and calendaring.

The following diagram represents the key components of the ACE Microsoft Communication Add-in solution.

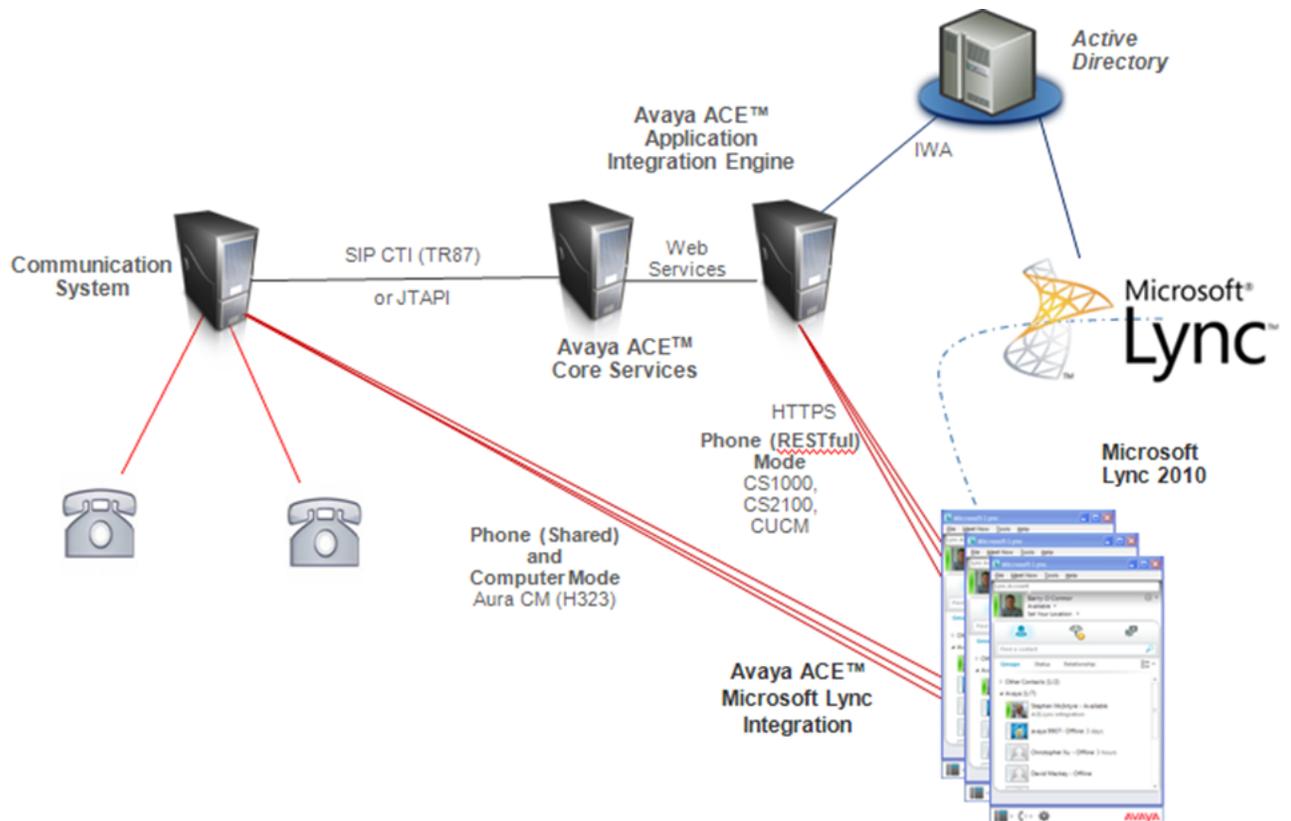


Figure 14: Avaya ACE deployed in an Enterprise with Lync Integration

Lync Integration deployment

The product line-up required for the Lync Integration solution is listed below.

Avaya ACE

- ACE 3.0.0 or later on Linux (Red Hat 5.4 with WAS 7.0)
- AIE 3.0.0 or later running on Win Server 2008 R2

See [Avaya ACE deployment](#) on page 79.

Service providers

The following service providers are supported.

- Avaya Aura
 - See [Avaya Aura](#) on page 35
- Communications Server 1000
 - See [Avaya Communication Server 1000](#) on page 37

Microsoft line-up

- Microsoft Lync 2010 server or Microsoft Office Communicator Server 2007 R2
- The machine where Lync Integration is installed must meet the following hardware requirements:
 - CPU: 1.8 GHz or better
 - Memory: 1 GB
 - 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:
 - One of the following operating systems:
 - Microsoft Windows XP Service Pack 2, or higher
 - Microsoft Windows 7
 - The latest operating system patches
 - Microsoft .Net 4, or higher
 - Microsoft Internet Explorer 6.0 or higher

Lync Integration	Communicator Add-in
Microsoft Lync 2010	Microsoft Office Communicator 2007 R2, version 3.5.6907.196 or higher

Capacity

- The maximum verified sustainable rate of Avaya ACE-initiated calls is 6 calls per second per Lync Server with 5000 Avaya ACE Lync Integration users using AIE Restful Session Control Service. AIE Restful Session Control uses Third Party Call (v2), Third Party Call Extensions (v2) and Call Forwarding.
- The AIE Restful Session Control can connect to a single Avaya ACE instance.
- Avaya ACE can support a single AIE Restful Session Control instance.
- Deployments on Avaya Aura can support up to 10,000 users per ACE server.

Lync Integration network diagrams

Avaya Aura®

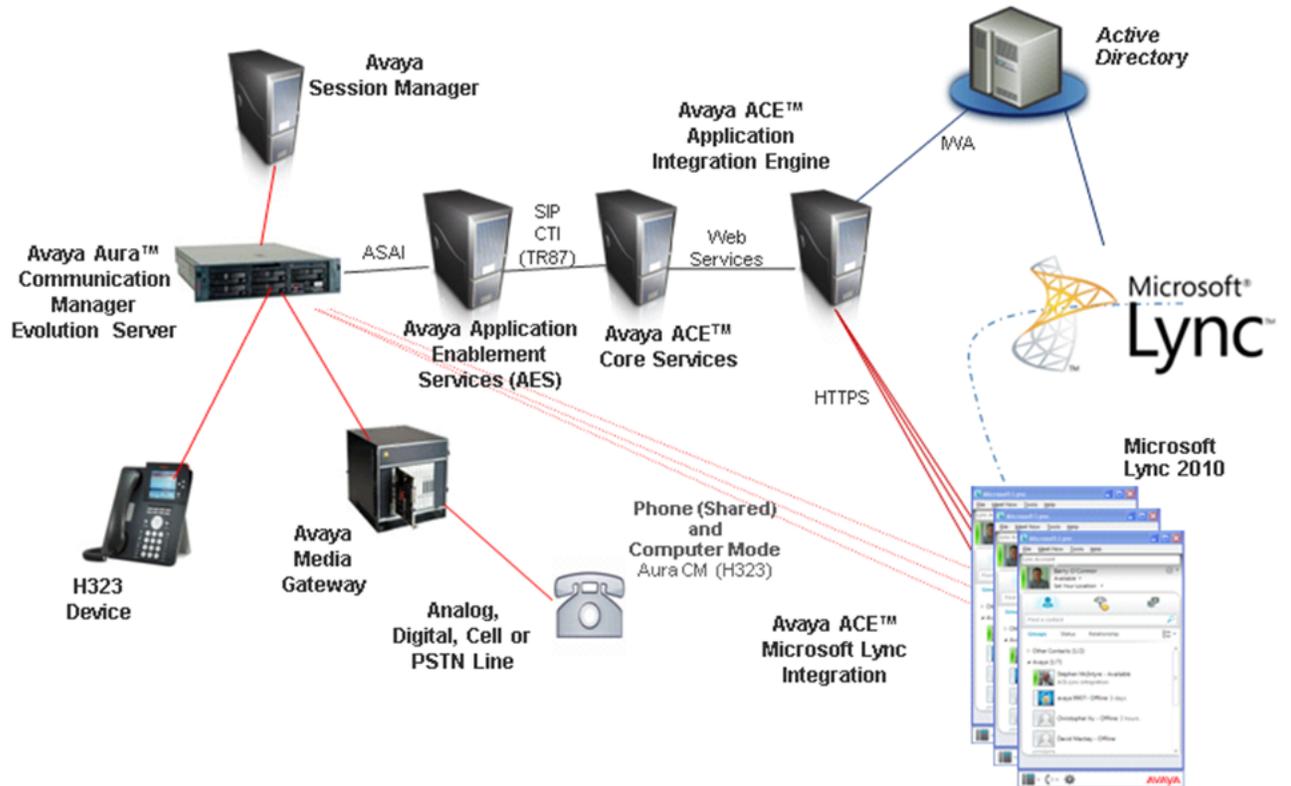


Figure 15: Avaya ACE Lync Integration deployed with Avaya Aura

Communication Server 1000

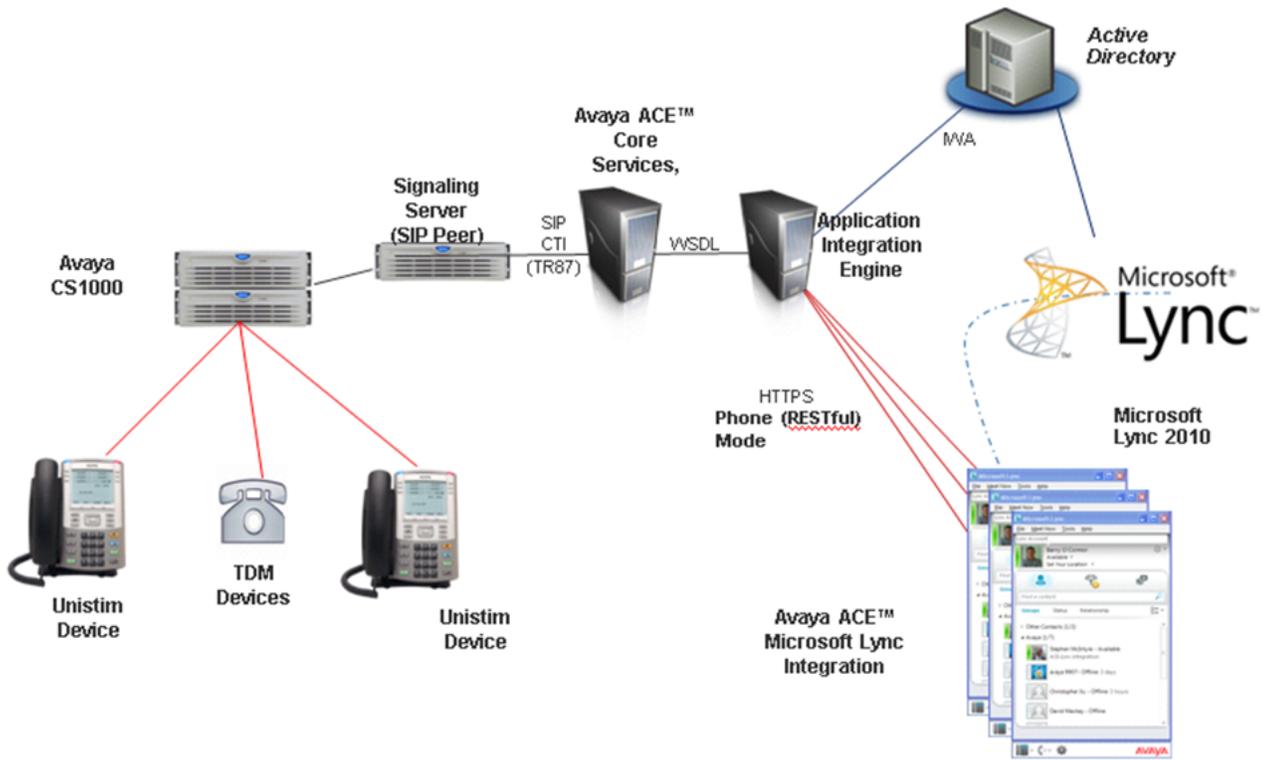


Figure 16: Avaya ACE Lync Integration deployed with Communication Server 1000

Cisco Unified Communications Manager

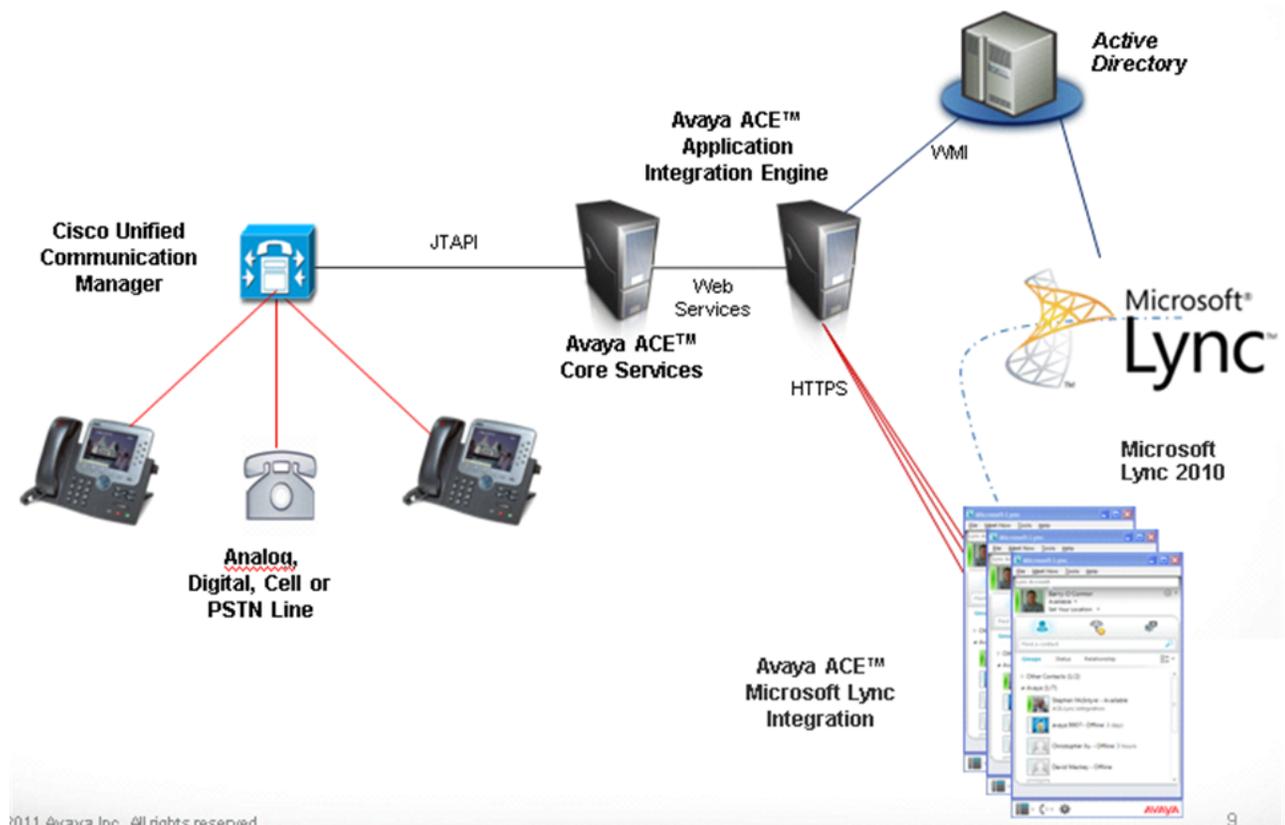


Figure 17: Avaya ACE Lync Integration deployed with Cisco Unified Communications Manager

Avaya ACE™ IBM Lotus Sametime Integration

Avaya Agile Communication Environment™ (ACE) Sametime Integration adds voice and video services to IBM desktop software. Avaya ACE integrates multi-vendor telephony and video systems with IBM® Lotus® Sametime® and Notes® to provide click-to-call functionality from Sametime Connect clients. Avaya ACE also displays telephony and video presence information about Sametime users on multiple devices within the Sametime Connect client interface.

Avaya ACE Sametime Integration enables IBM Lotus Sametime with the following telephony services.

- Quick phone call
- Quick video call
- Dialpad
- Telephony and Video presence

Avaya ACE Sametime Integration enables IBM Lotus Sametime with the Hot Desking (My Phone and Video) application.

The following diagram represents the key components of the ACE Sametime Integration deployed with Avaya Aura.

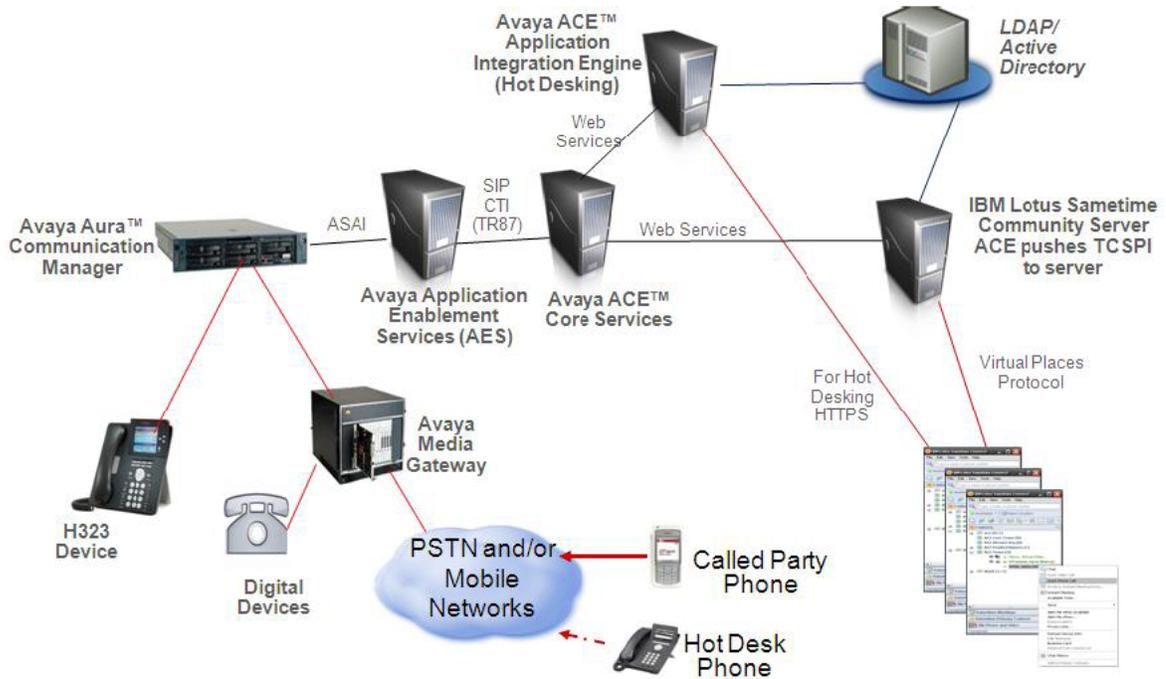


Figure 18: Avaya ACE Sametime Integration with Avaya Aura

Sametime integration deployment

The product line-up required for the Sametime integration solution is listed below.

Avaya ACE

ACE 3.0.0 or later on Linux (Red Hat 5.4 with WAS 7.0)

See [Avaya ACE deployment](#) on page 79

Service providers

The following service providers are supported.

- Avaya Aura
 - See [Avaya Aura](#) on page 35
- Communications Server 1000
 - See [Avaya Communication Server 1000](#) on page 37
- Communications Server 2100

See [Avaya Communication Server 2100](#) on page 39

- Cisco Unified Communication Manager

See [Cisco Unified Communication Manager](#) on page 43

- Tandberg Video Communication Server

See [Tandberg Video Communication Server](#) on page 44

Supported IBM Lotus Sametime load line-up

Avaya ACE™ supports integration of telephony services and applications with the following end-user client software and server software.

Table 1: Versions supported by Avaya ACE

End-user client software			Server software	
Type	Lotus Notes client version	Sametime client version	Domino version	Sametime version
Notes-embedded	8.5.1	8.5.1	8.5.1	8.5.1
	8.5.1	8.5.1	8.5.2	8.5.1
	8.5.2	8.5.1	8.5.2	8.5.1
	8.5.2	8.5.2	8.5.2	8.5.2
Sametime stand-alone	N/A	8.5.1	8.5.1	8.5.1
	N/A	8.5.1	8.5.2	8.5.1
	N/A	8.5.2	8.5.2	8.5.2

The following table provides additional details about Avaya ACE support for IBM Sametime.

Table 2: Avaya ACE™ support for IBM Sametime

Server/client	IBM Lotus Sametime version 8.5.1 and 8.5.2
Sametime server	8.5.1 and 8.5.2 on: <ul style="list-style-type: none"> • Windows Server 2003, 32-bit, Service Pack 2 • Windows Server 2008, 64-bit, Service Pack 2
Domino server	8.5.1 FP4 and 8.5.2
Sametime Connect Client	<ul style="list-style-type: none"> • Lotus Sametime Connect stand-alone client version 8.5.2 • Lotus Notes embedded Sametime Connect client version 8.5.2

Server/client	IBM Lotus Sametime version 8.5.1 and 8.5.2
	<ul style="list-style-type: none"> • Lotus Sametime Connect stand-alone client version 8.5.1 with required Fix Pack. • Lotus Notes embedded Sametime Connect client version 8.5.1 with required Fix pack. <p>For the Fix Pack (FP) version information, see <i>Avaya Agile Communication Environment™ Release Notes</i> (NN10850–019).</p>
Sametime System Console  Note: The Sametime System Console is an optional component for Avaya ACE Sametime integration.	<ul style="list-style-type: none"> • DB2 8.5.1 FP1 and 8.5.2 • System Console 8.5.1 FP1 and 8.5.2

Capacity

- A maximum of 5000 IBM Lotus Sametime Avaya ACE users may be simultaneously logged in to a IBM Lotus Sametime server.
- The maximum verified sustainable rate of Avaya ACE-initiated calls is 6 calls per second per IBM Lotus Sametime server using ThirdPartyCall (v2), Presence and CallNotification (v2.3) with an average call duration of 3 minutes.

Avaya ACE™ Desktop Communication Enablement

The following sections provide an overview of the Avaya ACE Desktop Communication Enablement (DCE) applications.

Navigation

- [Avaya ACE Web Browser Add-in](#) on page 61
- [Avaya ACE Office Add-in](#) on page 63
- [Avaya ACE Hot Desking](#) on page 66
- [Notification Service](#) on page 67
- [DCE application deployment](#) on page 68

Avaya ACE™ Web Browser Add-in

The Avaya ACE Web Browser Add-in provides users with the ability to select phone numbers, extensions, or email addresses from any web page and initiate a call with a simple click from

within the web page. Calls initiated by the Web Browser Add-in can be made through the customer's PBX infrastructure using Avaya ACE to initiate the call.

When you select a web page within your Internet Explorer browser, the ACE Web Browser Add-in recognizes number patterns on this web page and highlights them for the user. The Web Browser Add-in then applies enterprise, national and international dialing rules to ensure that these highlighted numbers can be dialed from this web site.

The ACE Web Browser Add-in is supported on Internet Explorer versions 6, 7 and 8. This solution is deployable as a direct add-in to the user's Internet Explorer desktop.

You can deploy the Web Browser Add-in with Avaya ACE Lync Integration. When using the Web Browser Add-in deployed with Lync Integration, a user can originate a call through the Web Browser Add-in and a Lync 2010 conversation window displays when this call is answered. This expands the user's capabilities in that they can now control the call using the call control functionality of Lync Integration.

The following diagram represents the key components of the ACE Web Browser Add-in solution.

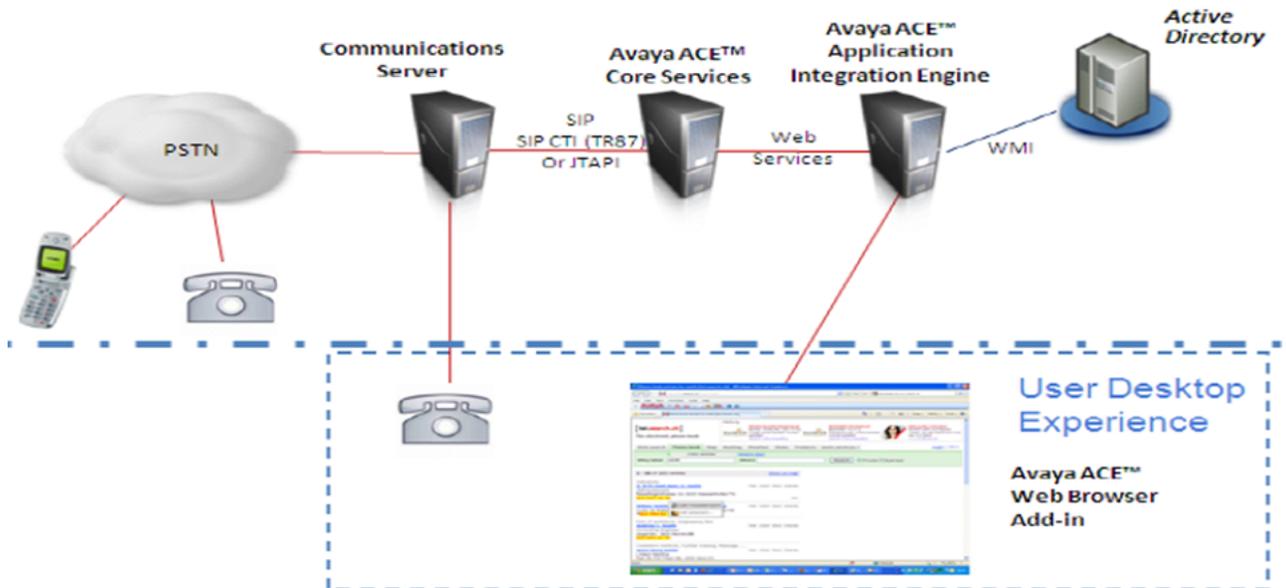


Figure 19: Avaya ACE deployed in an Enterprise with Lync Integration

Web Browser Add-in network diagram

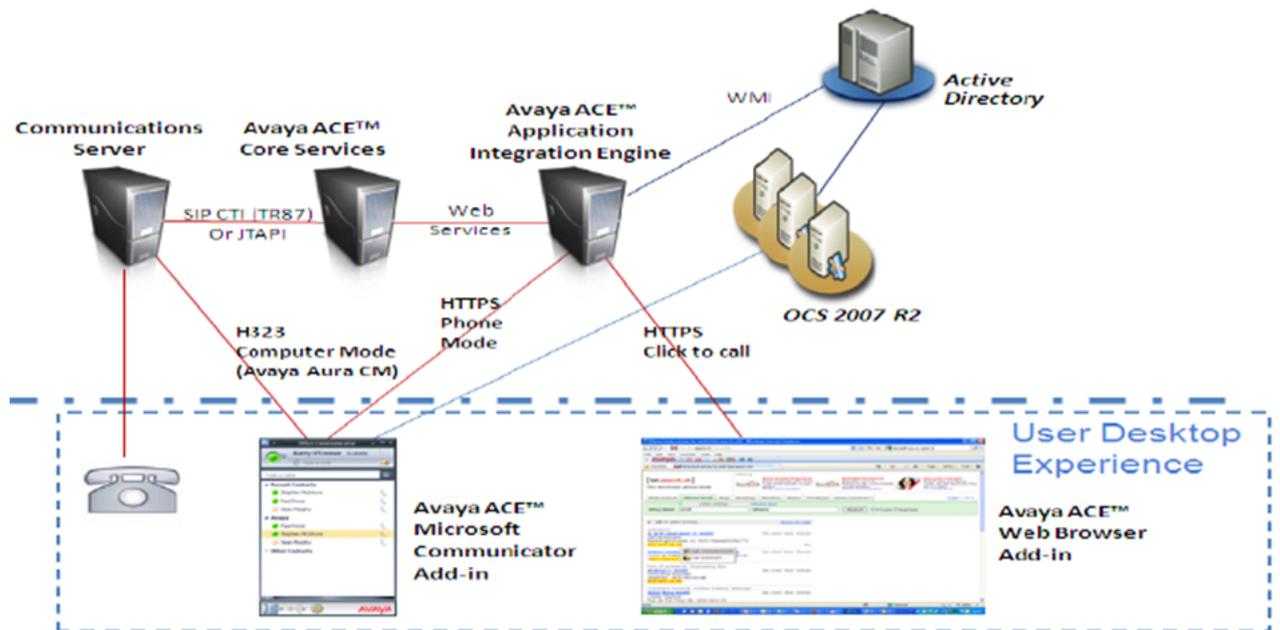


Figure 20: Web Browser Add-in deployment with Lync Integration

Avaya ACE™ Office Add-in

The Avaya ACE UC Desktop Office Add-in provides users with the ability to communication enable their Microsoft Office 2007 and 2010 Suite. In Outlook users can select mail, contact, calendar, task, or journal items and initiate a call with a simple click within the Outlook window. Office Add-in The Office Add-in will also recognize telephone numbers from within Word documents, Excel Spread sheets, Power Point presentations, and within the body of an Outlook email. Users can simply clicks on the party/number they wish to contact, their own desk phone with first ring and when they pick up, the number of the desired contact will ring.

This solution is deployable either as a direct add-in to the users Outlook desktop or within a Citrix environment. Within a Citrix environment the administrator is only required to perform a single install of the Office Add-in on a Citrix server. Once this is done, all Citrix users will have access to the Add-in without any further install steps.

You can deploy the Office Add-in with Avaya ACE Lync Integration. When using the Office Add-in deployed with Lync Integration, a user can originate a call through the Office Add-in and a Lync 2010 conversation window displays when this call is answered. This expands the user's capabilities in that they can now control the call using the call control functionality of Lync Integration.

The following diagram represents the key components of the ACE Office Add-in solution.

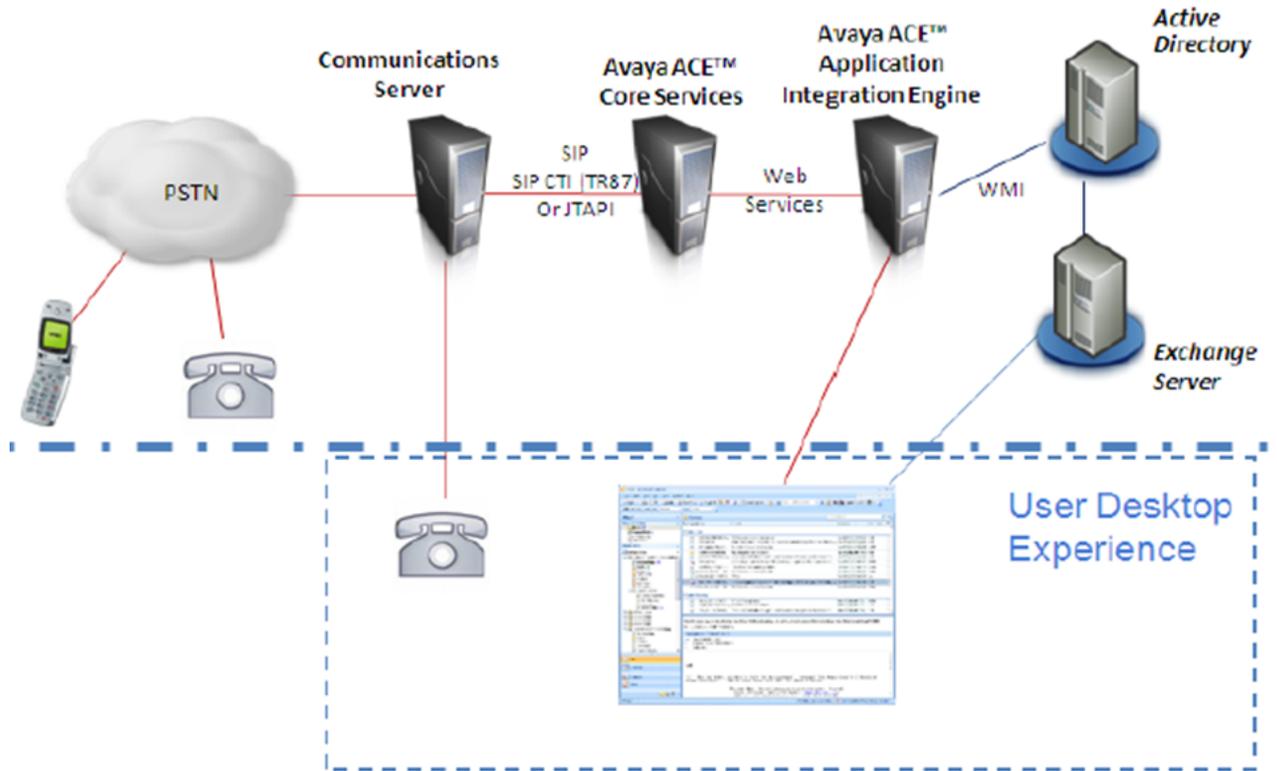


Figure 21: Avaya ACE Office Add-in deployment

Office Add-in network diagrams

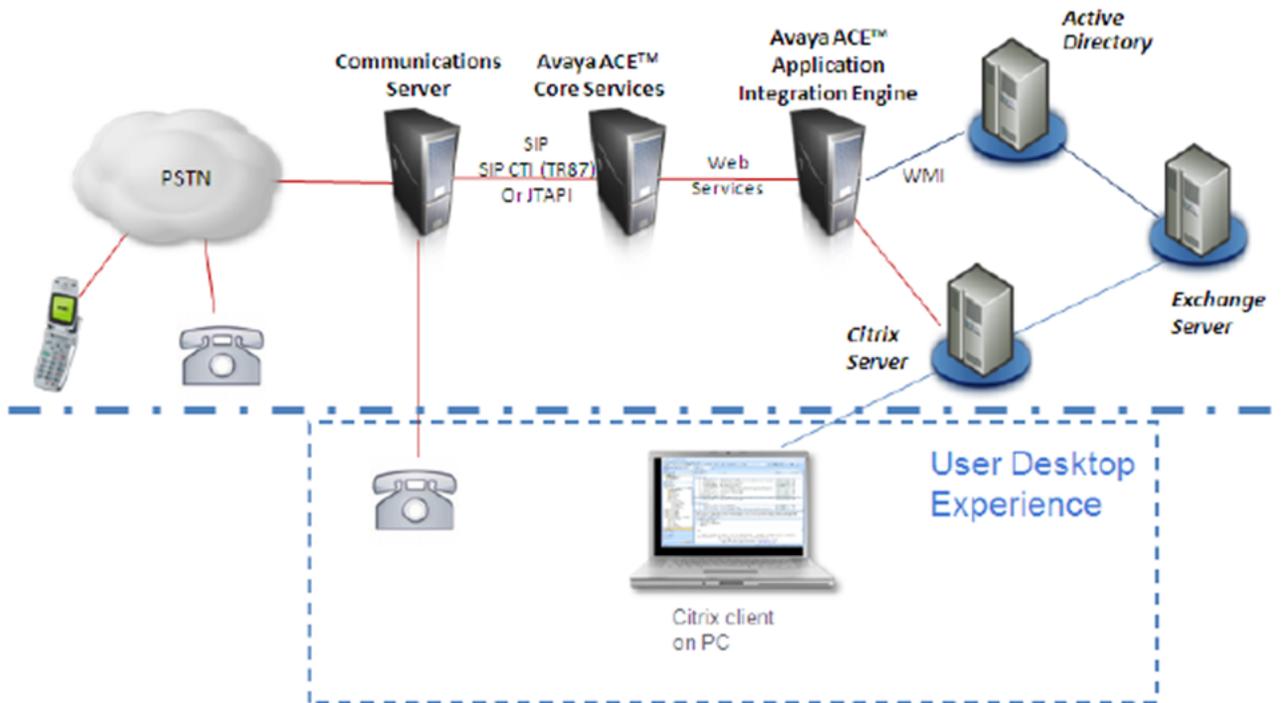


Figure 22: Office Add-in deployed in a Citrix environment

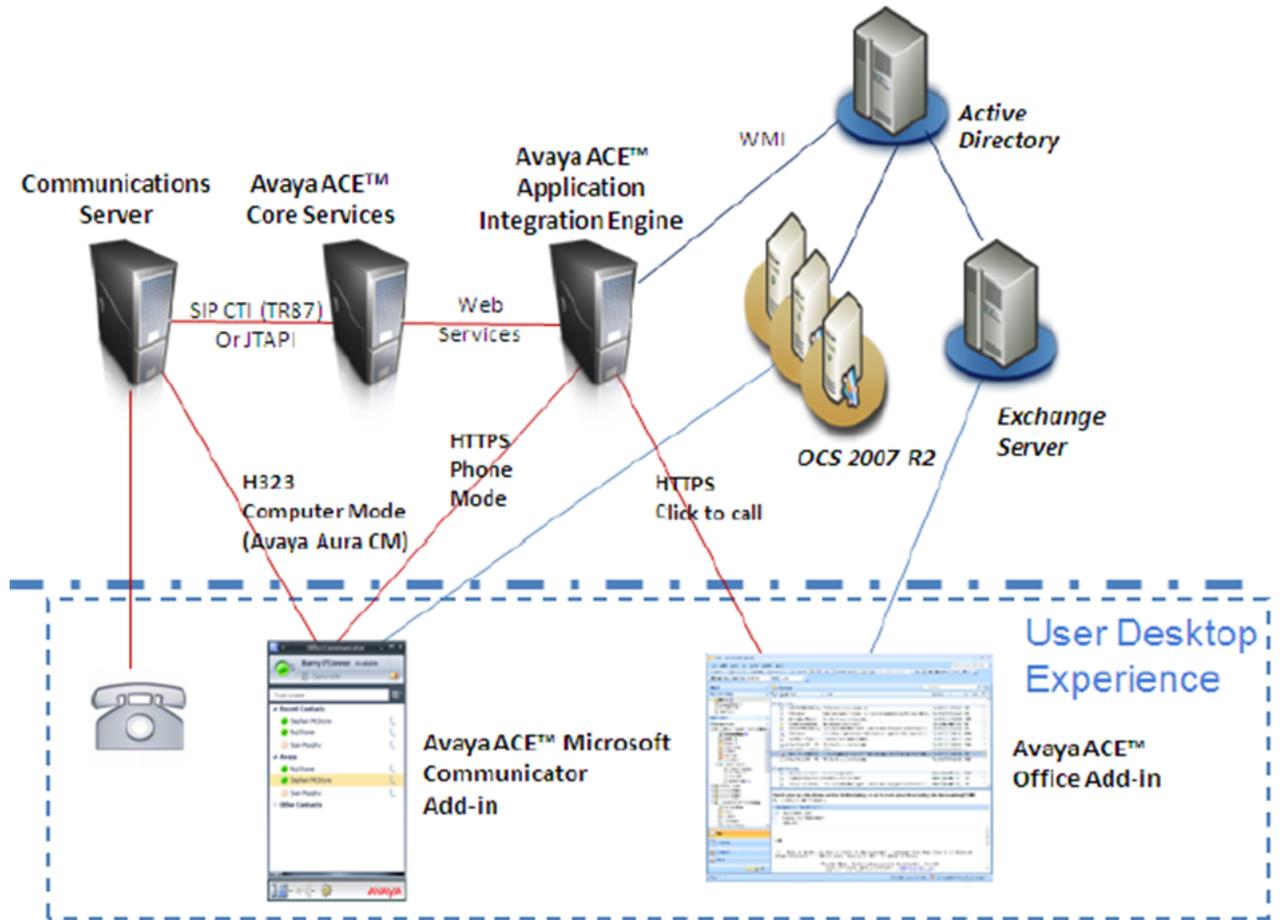


Figure 23: Office Add-in deployment with Lync Integration

Avaya ACE™ Hot Desking

Avaya ACE Hot Desking provides a web interface for users to manage their various phone and video devices. It integrates with a company's existing single or mixed-vendor voice and video environment to help create virtual workspaces for employees wherever they are. The Hot Desking Web interface may be used to set the call forwarding status of an employee's desk phone or to register another device as their temporary hot desk phone.

The Hot Desking application delivers the following benefits.

- Hot Desking can help enterprises develop and expand flexible working options to drive significant cost savings. As more employees work remotely on a part or full-time basis, individual cubicles may be consolidated into shared workspaces.
- Employees who frequently travel or work from home can use Hot Desking to set up virtual workspaces and remain productive wherever they are.
- Hot Desking can provide your customers with single number access to account representatives so that fewer calls are missed or not completed.

Hot Desking network diagram

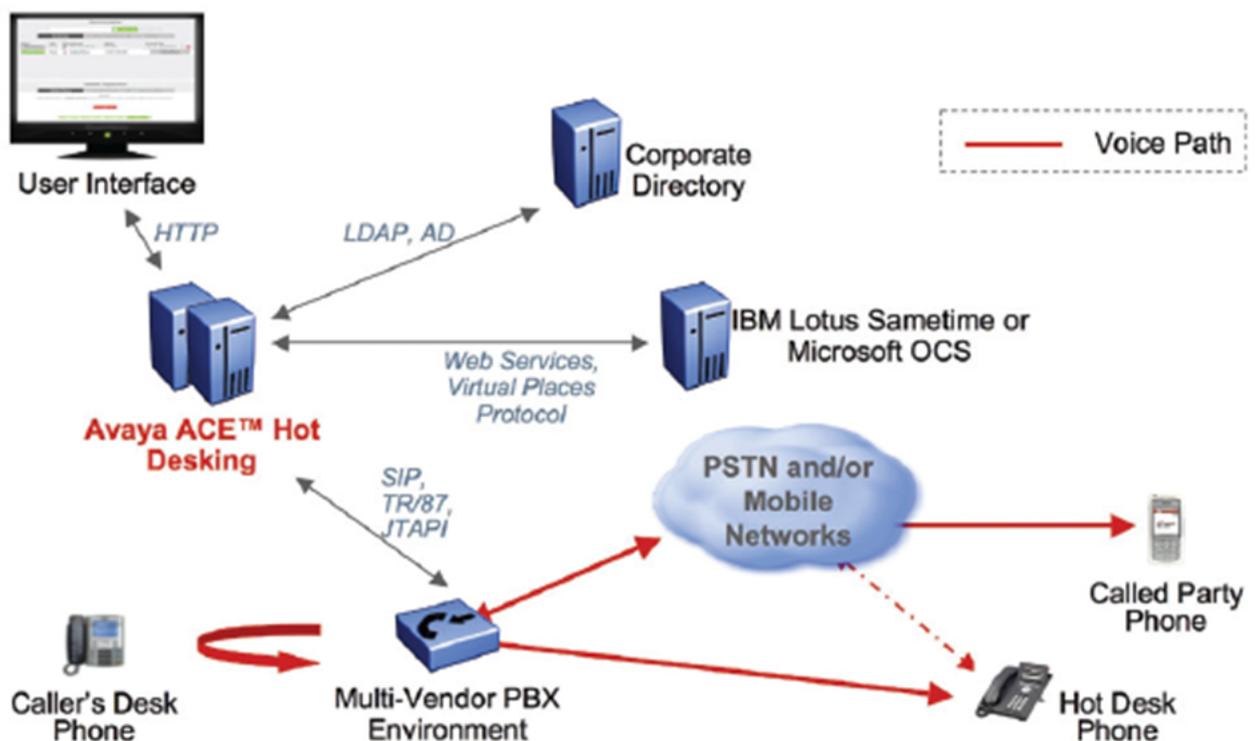


Figure 24: Avaya ACE Hot Desking deployment

Notification Service

The Avaya ACE Desktop Communication Enablement (DCE) Notification Service presents incoming and outgoing call notifications on a user's desktop.

The DCE Notification service can integrate with the Microsoft Dynamics or Salesforce customer relationship management (CRM) environments to add real-time communications to CRM work flows such as click-to-dial from contact lists and customer records (when running

with the Web Browser Add-in) and call notification with the incoming or outgoing call contact information as defined in the CRM tool.

The Notification Service without CRM integration is also available. In this case, users get the call notifications on their desktops but do not have the CRM database lookup.

DCE application deployment

The product line-up required for deploying DCE applications is listed below.

Avaya ACE

- ACE 3.0.0 or later on Linux (Red Hat 5.4 with WAS 7.0)
- AIE 3.0.0 or later running on Win Server 2008 R2

Service providers

The following service providers are supported for the Web Browser and Office Add-in applications.

- Avaya Aura
See [Avaya Aura](#) on page 35
- Communications Server 1000
See [Avaya Communication Server 1000](#) on page 37
- Cisco Unified Communication Manager
See [Cisco Unified Communication Manager](#) on page 43
- Tandberg Video Communication Server
See [Tandberg Video Communication Server](#) on page 44

The following service providers are supported for the Notification Service.

- Avaya Aura
See [Avaya Aura](#) on page 35
- Communications Server 1000
See [Avaya Communication Server 1000](#) on page 37

The following sections list specific requirements for each application. For more information, see *Avaya Agile Communication Environment™ Configurator for Desktop Communication Enablement Fundamentals* (NN10850–031)

Configurator requirements

The Configurator is an administrative tool used to configure and build the install packages for the Avaya ACE™ DCE applications with the needed Avaya AIE configuration details and any specific application configuration prior to distribution to end users.

Table 3: Configurator requirements for administrators

Software prerequisites	Supported OS	Privileges
Administrators must have the following software installed on their systems before installing the Configurator: <ul style="list-style-type: none"> • Microsoft.NET Framework 3.5 	Administrators must be running one of the following operating systems (OS): <ul style="list-style-type: none"> • Microsoft Windows XP SP3 • Microsoft Windows Vista SP1 • Microsoft Windows 7 (including 64-bit versions) Make sure the OS is fully updated with all Microsoft patches.	Administrator

Web Browser Add-in requirements

Users should close all existing Internet Explorer (IE) browser sessions before they install the Web Browser Add-in.

! Important:

Following the installation of the Web Browser Add-in, when users launch IE 9 for the first time, they must enable the Web Browser Add-in at the prompt, and then restart IE 9.

! Important:

Microsoft Internet Explorer separates Web Browser Add-in data for sites in different security zones. As a result, if a user makes changes to, for example, the highlighting style, or enables and disables the add-in, these changes do not propagate to windows or tabs that are showing pages in different security zones. For example, if a user views a site in a protected-mode security zone, and views another site in an unprotected-mode security zone in another tab or window, changes to one do not propagate to the other. This applies to Internet Explorer 7, 8, and 9 running on Windows Vista or Windows 7.

Table 4: Web Browser Add-in requirements for end users

Software prerequisites	Supported OS	Supported browsers	Privileges
<p>Users must have the following software installed on their systems before running the Browser Add-in installer.</p> <ul style="list-style-type: none"> • Microsoft.NET Framework 3.5 • Avaya ACE™ Microsoft Lync Integration and Microsoft.NET Framework 4.0 if integrating with Microsoft Lync Integration 	<p>Users must be running one of the following operating systems (OS):</p> <ul style="list-style-type: none"> • Microsoft Windows XP SP3 • Microsoft Windows Vista SP1 • Microsoft Windows 7 (including 64-bit versions) <p>Make sure the OS is fully updated with all Microsoft patches.</p>	<p>Users must be using one of the following browsers:</p> <ul style="list-style-type: none"> • Internet Explorer 6 • Internet Explorer 7 • Internet Explorer 8 • Internet Explorer 9 (32-bit only) 	<p>Administrator</p>

Office Add-in requirements

Users should close all existing Outlook sessions before they install the Office Add-in.

Table 5: Office Add-in requirements for end users

Software prerequisites	Supported OS	Privileges
<p>Users must have the following software installed on their systems before running the Office Add-in installer:</p> <ul style="list-style-type: none"> • Microsoft.NET Framework 1.1 • Microsoft.NET Framework 3.5 (or higher) • Avaya ACE™ Microsoft Lync Integration and Microsoft.NET Framework 4.0 if integrating with Microsoft Lync Integration • Adobe Flash Player 9 if integrating with Hot Desking • Microsoft Office 2007 or Microsoft Office 2010 	<p>Users must be running one of the following operating systems (OS):</p> <ul style="list-style-type: none"> • Microsoft Windows XP SP3 • Microsoft Windows Vista SP1 • Microsoft Windows 7 (including 64-bit versions) <p>Make sure the OS is fully updated with all Microsoft patches.</p>	<p>Administrator</p>

Software prerequisites	Supported OS	Privileges
<p>The installer installs the following software if missing:</p> <ul style="list-style-type: none"> • Microsoft Installer 3.1 • Microsoft Office Primary Interop Assemblies VSTO 3.0 Runtime 		

Notification Service requirements

The Notification Service uses the Directory Service on AIE and the following Directory Service tags: Id, fullname, internalPhone, and mobilePhone.

The Notification Service also uses the RESTful Session Control service on AIE.

Configure these services before using the Configurator to build the Notification Service install package.

Table 6: Notification Service requirements for end users

Software prerequisites	Supported OS	Privileges
<p>Users must have the following software installed on their systems before running the DCE Notification Service installer:</p> <ul style="list-style-type: none"> • Microsoft.NET Framework 4.0 	<p>Users must be running one of the following operating systems (OS):</p> <ul style="list-style-type: none"> • Microsoft Windows XP SP3 • Microsoft Windows Vista SP1 • Microsoft Windows 7 (including 64-bit versions) <p>Make sure the OS is fully updated with all Microsoft patches.</p>	Administrator

Deployment notes

Lync Integration

The Office Add-in and the Web Browser Add-in can be integrated with the Lync Integration application.

Integration with IBM and Microsoft desktop applications

The Hot Desking user interface is also accessible from IBM Lotus Sametime Connect clients and from the ribbon menu bar of Microsoft Outlook and Internet Explorer, provided the corresponding Avaya ACE IBM Integration packaged application and Avaya ACE Office and Browser Add-ins have been implemented.

Hot Desking capacity

The maximum verified sustainable rate of a single Hot Desking deployment is one Hot Desking wizard invocation per second where one Hot Desk wizard invocation involves:

- 1 ThirdPartyCall (v2) call notification invocations per second to Avaya ACE.
- 2 Call notification invocations per second to Avaya ACE
- 4 User Profile invocations per second to Avaya ACE
- 4 Call Forwarding invocations per second to Avaya ACE.
- 2 Call Notification invocation per second to Avaya ACE.

Avaya ACE™ Mobile Cost Optimizer

Avaya ACE Mobile Cost Optimizer can reduce corporate mobile phone costs significantly by integrating smartphones such as BlackBerry with a company's communications environment. The application instructs a company's single or multi-vendor private branch exchange (PBX) environment to use the enterprise voice network instead of the mobile network for smartphone outbound calls. Mobile Cost Optimizer is also embedded within the smartphone menu to facilitate rapid and easy adoption by users.

With the Mobile Cost Optimizer application, you can:

- get mobile long distance/international calling at local rates
- reduce roaming charges
- redirect mobile calls to any desk phone

Mobile Cost Optimizer deployment

The product line-up required for the Mobile Cost Optimizer solution is listed below.

Avaya ACE

- ACE 3.0.0 or later on Linux (Red Hat 5.4 with WAS 7.0)
- AIE 3.0.0 or later running on Win Server 2008 R2

See [Avaya ACE deployment](#) on page 79.

Service providers

The following service providers are supported.

- Avaya Aura
 - See [Avaya Aura](#) on page 35
- Communications Server 1000

See [Avaya Communication Server 1000](#) on page 37

- Cisco Unified Communication Manager

See [Cisco Unified Communication Manager](#) on page 43

Supported phones

Mobile Cost Optimizer is currently supported on BlackBerry and is certified on the following devices running OS version 4.2.1 and upwards: 83xx, 88xx and 90xx.

Integration with other ACE applications

The ACE solutions for both mobile and desktop unified communications as well as communication-enabled business processes may be combined with Mobile Cost Optimizer.

Capacity

- The maximum verified sustainable rate for a single Mobile Cost Optimizer deployment is 15 ThirdPartyCall MCO requests per second to Avaya ACE.
- The maximum verified sustainable rate for a mixed Mobile Cost Optimizer and Hot Desk deployment is one Hot Desking wizard invocation per second and one Mobile Cost Optimizer request per second where one Hot Desk wizard invocation involves:
 - 1 ThirdPartyCall (v2) call notification invocations per second to Avaya ACE
 - 2 Call notification invocations per second to Avaya ACE
 - 4 User Profile invocations per second to Avaya ACE
 - 4 Call Forwarding invocations per second to Avaya ACE
 - 2 Call Notification invocation per second to Avaya ACE

Mobile Cost Optimizer network diagram

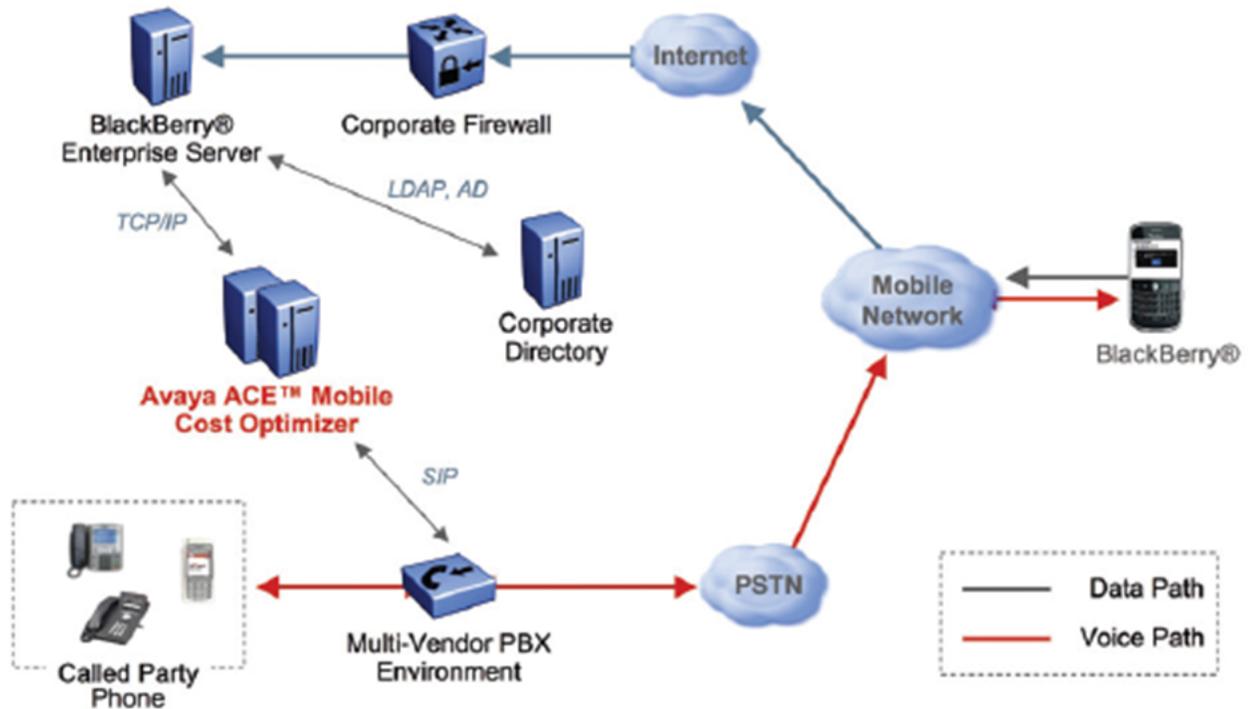


Figure 25: Avaya ACE Mobile Cost Optimizer deployment

Avaya ACE™ Customer Relationship Management Integration

With the Avaya ACE Customer Relationship Management (CRM) Integration packaged application for Salesforce.com and Microsoft Dynamics, Avaya integrates real-time communications capabilities with CRM software to improve productivity and enhance customer service. Users can click to call directly from contact lists and CRM customer records. For incoming or outgoing calls, a desktop pop-up notification displays contextual information about the customer and gives the user the option to:

- hold or release the call
- transfer the call to an available colleague via a presence-enabled contact list
- enter notes during the call

- generate an activity record in the CRM database that includes automatically populated call detail
- view call history and missed calls in the PC system tray

The key features of IBM BPM are listed below.

Packaged integration: Packaged integration to Salesforce.com and Microsoft Dynamics CRM applications provides ready-to-use, out-of-the-box functionality.

Click to Dial: Click to Dial from contact lists and customer records that contain phone numbers.

Automatic Call Logging: Automatic Call Logging of inbound and outbound calls stores call history within the client record, including call duration and missed calls.

Call Annotation: Call Annotation allows a user to enter personal notes during a call and stores the notes in the record along with call detail such as time and date.

Call Duration: Call Duration automatically captures conversation time for inbound and outbound calls, rounds it to the nearest minute, and stores it in the customer record.

Desktop Notification Service: Presents a PC tray pop-up containing CRM record information and telephony options.

Presence-enabled Contacts List: Lets users create a list of frequently used contacts for quick dialing or call transfer. Telephony presence can be added where available.

Missed calls icon: An icon in the PC tray indicates missed calls.

Customer Relationship Management Integration deployment

The product line-up required for the CRM Integration solution is listed below.

Avaya ACE

- ACE 3.0.0 or later on Linux (Red Hat 5.4 with WAS 7.0)
- AIE 3.0.0 or later running on Win Server 2008 R2

See [Avaya ACE deployment](#) on page 79.

Service providers

The following service providers are supported.

- Avaya Aura
See [Avaya Aura](#) on page 35
- Communications Server 1000
See [Avaya Communication Server 1000](#) on page 37

Integration with other ACE applications

The CRM Integration application can be deployed with Avaya ACE Microsoft Lync Integration.

Deployment notes

If using the Avaya Aura service provider, Communication Manager 6.1 and Application Enablement Services 6.1 SP2 are required for SIP endpoints.

Capacity

Avaya ACE CRM Integration supports up to 5,000 users per Avaya ACE system.

Customer Relationship Management Integration network diagram

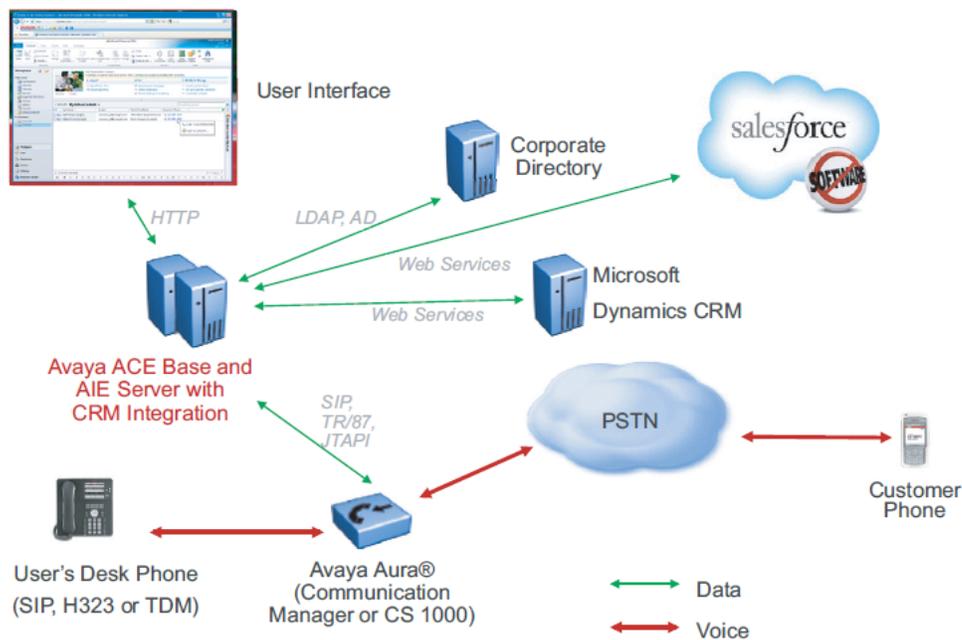


Figure 26: Avaya ACE Customer Relationship Management Integration deployment

Avaya ACE™ IBM Business Process Manager Integration

Avaya and IBM have joined forces to embed Avaya and multi-vendor real-time communications into mission-critical business processes. Avaya ACE IBM Business Process Manager (BPM) Integration allows IBM BPM application developers to build communications-enabled business processes (CEBP) quickly and easily using familiar design tools. Streamlined business processes can now include closed loop communication to notify decision makers automatically on their preferred devices and to collect responses in order to move the workflow along to the next step. By eliminating process delay, businesses are significantly more responsive to

events. The result is proactive outreach and faster response time, leading to greater efficiency and increased customer satisfaction.

The key features of IBM BPM are listed below.

Drag-n-drop real-time communications into process flows: The Avaya ACE toolkit is integrated to the IBM Business Process Manager suite of graphical developer tools.

Click to dial: Click to dial can be integrated with business processes. Avaya ACE packaged adapters invoke the underlying network communications systems to place calls to and from a user's preferred device.

Closed loop media services: Incorporate text-to-speech notification with contextual information fields such as quantities, names and dates from IBM BPM and collect responses using DTMF to input into the business process. An Avaya Media Server is required.

Use real-time communications to automatically respond to a business event.: Configure alerts and triggers from business processes and applications to launch communications and collaboration, enabling agile responsiveness and decision making.

Contact users on their preferred devices.: Ensure key individuals can access and respond wherever they are, on whatever device they use, with text-to-speech capabilities.

Business Process Manager Integration deployment

The product line-up required for the Business Process Manager Integration solution is listed below.

Avaya ACE

- ACE 3.0.0 or later on Linux (Red Hat 5.4 with WAS 7.0)
- AIE 3.0.0 or later running on Win Server 2008 R2

See [Avaya ACE deployment](#) on page 79.

Closed loop media services requires the Avaya Media Server 7.0.

Service providers (for Click to Call)

The following service providers are supported.

- Avaya Aura
 - See [Avaya Aura](#) on page 35
- Communications Server 1000
 - See [Avaya Communication Server 1000](#) on page 37
- Communication Server 2100
 - See [Avaya Communication Server 2100](#) on page 39
- Cisco Unified Communication Manager

See [Cisco Unified Communication Manager](#) on page 43

Chapter 11: Avaya ACE deployment

This chapter provides an overview of the hardware and software requirements for Avaya Agile Communication Environment™ (ACE) and Avaya ACE Application Integration Engine.

Avaya ACE server hardware and software requirements

Hardware requirements for Avaya ACE

The supported platforms for Avaya ACE deployed on Linux are listed below. For 1+1 resiliency, two servers are required.

For an ACE standalone deployment, commercial off-the-shelf (COTS) hardware meeting the specifications listed below is supported. For 1+1 resiliency, only the specific server models are supported.

Hardware component	IBM x series	HP Proliant
Base	Model x3550 M3	Model DL360 G7
Processing	2 x quad core processors (Intel E5620 or better)	2 x quad core processors (Intel E5620 or better)
Memory	Recommended 24 GB on-board memory	Recommended 24 GB on-board memory
Internal storage	3 x 300 GB disks in RAID5 configuration	3 x 300 GB disks in RAID5 configuration
Other	<ul style="list-style-type: none">• 1 DVD drive• When deploying x3550 M3 servers with 1+1 resiliency, ensure that there are at least two 2 GB Ethernet ports and one dedicated fast Ethernet port for power fencing using the Integrated Management Module (IMM).	<ul style="list-style-type: none">• 1 DVD drive• When deploying the HP Proliant DL360 G7 servers with 1+1 resiliency, ensure that there are at least two 2 GB Ethernet ports and one dedicated fast Ethernet port for power fencing using the Integrated Lights-Out 3 (iLO 3) management processor.

Linux operating system

The supported Linux operating system (OS) for Avaya ACE™ is Red Hat Enterprise Linux server OS release 5.4 for a 64-bit x86 architecture. For information on Red Hat, go to <http://www.redhat.com/>.

AIE hardware and software requirements

When you install the Application Integration Engine (AIE), the applications hosted by the AIE are available for administration from the AIE GUI.

Hardware requirements

The supported platform for Avaya ACE AIE is IBM x3550 as follows. For 1+1 resiliency, two servers are required.

Hardware component	IBM x series	HP Proliant
Base	Model x3550 M3	Model DL360 G7
Processing	2 x quad core processors (Intel E5620 or better)	2 x quad core processors (Intel E5620 or better)
Memory	Recommended 24 GB on-board memory	Recommended 24 GB on-board memory
Internal storage	3 x 300 GB disks in RAID5 configuration	3 x 300 GB disks in RAID5 configuration
Other	1 DVD drive	1 DVD drive

If the AIE uses two network interface cards (NICs) when deployed in a demilitarized zone (DMZ), bond the NICs. The recommended IBM Server blade is a Broadcom Advanced Server Program (BASP) virtual adapter from Broadcom Advanced Control Suite (BACS). This provides a single external IP address across two network adapters.

Software requirements

The supported Windows operating system (OS) platforms for AIE are as follows:

- Windows 2003 R2 with service pack 2 or higher, 32-bit version only
- Windows 2008 R2, 64-bit version

The Windows server must be installed using US English locale and language settings.

AIE installs specific versions of Apache Tomcat, MySQL software, and Java Runtime Environment (JRE). Make sure the AIE server does not have existing versions of these software components installed.

AIE with IWA enabled for Windows Server 2003 OS platform

To run AIE with Integrated Windows Authentication (IWA) enabled, configure the Windows server with the following:

- the same Windows domain as the end users for a single sign-on experience
- the role of Application Server to provide the following features:
 - Internet Information Services (IIS) Version 6.0
 - Application Server Console, ASP.NET, COM+ and DTC are optional

AIE with IWA enabled for Windows Server 2008 OS platform

To run AIE with IWA enabled, configure the Windows server with the following:

- the same Windows domain as the end users for a single sign-on experience
- the role of Web Server to provide the following features:

+ Tip:

From the Start menu, choose **Administrative Tools**, and then **Server Manager**. In the left navigation pane, expand **Roles**, right-click **Web Server (IIS)**, and select **Add Role Services**.

- Common HTTP Features (sub-features HTTP Redirection is optional)
- Application Development Features (for hosting AIE only, ISAPI Extensions and ISAPI Filters are essential, others are optional)
- Health and Monitoring (as appropriate, HTTP Logging and Request Monitor are recommended)
- Security (BASIC Authentication, Windows Authentication, and IP Address and Domain Restrictions roles are essential). Other security-related roles are optional depending on existing or future needs of the IIS Server (for example, URL Authorization can be useful in a portal page). Some roles are selected by default, such as Request Filtering, and can cause problems if removed.
- Performance (Static Content Compression is recommended)

! **Important:**

When you install the Web Server role, make sure you do not install the feature named WebDAV (Web Distributed Authoring and Versioning).

- IIS 6 Management Compatibility

Chapter 12: Reference tables

This section contains the following sets of tables:

- [Tables of Avaya ACE supported services by service provider type](#) on page 83
- [Tables of Avaya ACE supported applications by service provider type](#) on page 86

Tables of Avaya ACE™ supported services by service provider type

This section contains the following tables:

- [Table 7: Web service acronyms](#) on page 83
- [Table 8: Supported web services by service provider type \(part 1 of 2\)](#) on page 84
- [Table 9: Supported web services by service provider type \(part 2 of 2\)](#) on page 85

Table 7: Web service acronyms

Acronym	Definition
TPC (v2)	Third Party Call (v2)
TPC (v3)	Third Party Call (v3) with Avaya Media Server
TPC Ext 2.4	Third Party Call Extensions (v2.4)
Pres	Presence
CN v3.2	Call Notification (v3.2)
CN v3.8	Call Notification (v3.8)
Call Fwd	Call Forward
Call Hist	Call History
Term Loc	Terminal Location
MsgDB	Message Drop and Message Blast

Table 8: Supported web services by service provider type (part 1 of 2)

Service Provider	Web Services					
	TPC (v2)	TPC (v3)	TPC Ext 2.4	Pres	CN v3.2	CN v3.8
Avaya Aura (SIP)	√	√*****				
Avaya Aura (TR/87)	√		√	√	√	√
Avaya Aura (TR/87 with Media Server)		√*				√**
Avaya ACE (Location Server)						
CS 1000 (SIP)	√	√				
CS 1000 (TR/87)	√		√	√	√	√
CS 1000 (TR/87 with Media Server)		√*				√**
Avaya NES Contact Center	√			√	√***	√
CS 2000 (SIP)	√				√	√
CS 2000 (SIP_IN)				√		√
CS 2000 (SIP-SSL)					√	√
CS 2100 (TR/87)	√			√	√	√
Tandberg VCS	√			√	√	√
CUCM (SIP)	√	√		√		
CUCM (JTAPI)	√		√*****		√	√
CUCM (AXL)						
IBM Sametime				√****		
Turret						
<p>* Avaya Aura (TR/87 with Media Server) support for TPC(v3) applies only to the Message Drop and Message Blast service. ** Call ID based. *** Limited operations. The startCallNotification(DN_Id), notifyCalledNumber, and stopCallNotification operations are supported. **** Chat presence only. ***** Limited operations. The singleStepTransfer operation is not supported. ***** Requires a media server.</p>						

Table 9: Supported web services by service provider type (part 2 of 2)

Service Provider	Web Services						
	Audio Call	Call Fwd	Call Hist	Term Loc	MsgDB		Turret
					Click to Call	Click to Dial	
Avaya Aura (SIP)	√				√		
Avaya Aura (TR/87)		√					
Avaya Aura (TR/87 with Media Server)						√	
Avaya ACE (Location Server)				√			
CS 1000 (SIP)	√				√		
CS 1000 (TR/87)		√					
CS 1000 (TR/87 with Media Server)						√	
Avaya NES Contact Center		√	√				
CS 2000 (SIP)							
CS 2000 (SIP_IN)			√				
CS 2000 (SIP-SSL)							
CS 2100 (TR/87)		√					
Tandberg							
CUCM (SIP)							
CUCM (JTAPI)		√					
CUCM (AXL)		√					
IBM Sametime							
Turret						√	√

Tables of Avaya ACE™ supported applications by service provider type

This section contains the following tables:

- [Table 10: Supported applications by service provider type \(part 1 of 2\)](#) on page 86
- [Table 11: Supported applications by service provider type \(part 2 of 2\)](#) on page 87

Table 10: Supported applications by service provider type (part 1 of 2)

Service Provider	Application			
	Lync Integration	Sametime Integration	Mobile Cost Optimizer	Customer Relationship Management
Avaya Aura (SIP)		√*	√	
Avaya Aura (TR/87)	√	√	√	√
Avaya Aura (TR/87 with Media Server)				
Avaya ACE (Location Server)				
CS 1000 (SIP)		√*	√	
CS 1000 (TR/87)	√	√	√	√
CS 1000 (TR/87 with Media Server)				
Avaya NES Contact Center				
CS 2000 (SIP)				
CS 2000 (SIP_IN)				
CS 2000 (SIP-SSL)				
CS 2100 (TR/87)		√		
Avaya Messaging				
Tandberg VCS		√		
CUCM (SIP)		√	√	
CUCM (JTAPI)			√	
CUCM (AXL)				
IBM Sametime		√		

Service Provider	Application			
	Lync Integration	Sametime Integration	Mobile Cost Optimizer	Customer Relationship Management
Turret				
Service availability may be restricted. For details, see <i>Avaya Agile Communication Environment™ — IBM Lotus Sametime Integration</i> (NN10850–011)				

Table 11: Supported applications by service provider type (part 2 of 2)

Service Provider	Application		
	Web Browser Add-in	Office Add-in	IBM Business Process Manager (Click to dial)
Avaya Aura (SIP)	√		√
Avaya Aura (TR/87)	√	√	
Avaya Aura (TR/87 with Media Server)			
Avaya ACE (Location Server)			
CS 1000 (SIP)	√		√
CS 1000 (TR/87)	√	√	
CS 1000 (TR/87 with Media Server)			
Avaya NES Contact Center			
CS 2000 (SIP)			
CS 2000 (SIP_IN)			
CS 2000 (SIP–SSL)			
CS 2100 (TR/87)	√	√	
Avaya Messaging			
Tandberg VCS			
CUCM (SIP)	√	√	
CUCM (JTAPI)	√	√	
CUCM (AXL)			
IBM Sametime			
Turret			

