

## Avaya Agile Communication Environment™

### Delivering Communications-Enabled Business Applications and Processes Easily and Rapidly

Most business processes suffer inefficiencies due to poor real-time collaboration. For instance, consider the delay between the onset of a critical business event and time spent notifying and bringing together appropriate personnel to respond. This lag time persists because business applications and real-time communications networks tend to be completely separate from one another. Enterprises have invested heavily to integrate third party applications with business processes and are also collapsing their data and voice communications systems to a single multi-vendor layer in order to reduce costs. But limited integration has been done between the application and communication layers because connectivity tends to be complex, custom for each interface type, and therefore expensive. The net result is inefficiency for any process step that involves real-time collaboration between people, since communication is not triggered automatically by business applications and users require a separate set of tools outside of the process workflow to communicate. This human delay factor translates into higher costs and lost revenue when bringing the right people together for such activities as approving projects, responding to customers, or reacting quickly to business critical events.



Avaya ACE™ solves this business challenge by integrating the multi-vendor, multi-modal communications layer with the applications layer. It sits as middleware between these layers, with pre-written CTI adapters that connect real-time communications systems from Avaya, Cisco, Microsoft and other vendors with business applications. Avaya ACE provides packaged applications that are plug-and-play and can deliver high return on investment. A powerful Web services toolkit is also available for IT developers to build communications-enable applications using a flexible and modular service-oriented

architecture (SOA) approach. Avaya ACE is also the application-enablement platform for Avaya Aura™ and offers a foundation services toolkit for fine-tuned control of call flows throughout the network.

#### Integration

Avaya ACE can integrate Avaya Aura™ or other vendor communications systems with SAP, Salesforce.com and many more business applications. Companies can preserve investments and drive higher ROI from existing communications infrastructure,

such as with the Avaya ACE™ Microsoft Communicator Add-In, which integrates Avaya Aura functionality with Microsoft Office Communications Server (OCS) 2007 with only the Communicator Standard Client Access License. Pre-written adapters for multi-vendor systems allow the same application to be integrated simultaneously to users across multiple network communications systems.

## Innovation

Companies can leverage Avaya ACE to bring services to market faster and open up new revenue streams through development of new applications. A broad array of Web services allow the IT community to create communication-enabled applications up to five times faster than methods used by telecommunications specialists, from weeks or months now to a matter of days. IT developers can also use the Avaya ACE Foundation Toolkit in conjunction with Avaya Aura™ to build new sequenced applications that invoke client applications in a pre-defined order during call setup. For example, a law firm could develop a sequenced application that triggers an automatic call recording and then sends it to a speech-to-text transmission service. DevConnect, Avaya Professional Services, system integrators, independent software vendors and IT departments within companies are building innovative solutions across verticals that differentiate companies from their competitors.

## Automation

Avaya ACE helps automate communication to drive human latency out of business processes. For example, traders can save up to one hour per day in providing updates to clients with automated message drop & blast functionality; nurses can spend 50% less time on hospital crash cart compliance with automated communications; a utilities company can cut downtime costs by 50% with critical-event driven notification and conferencing; a hospital's communication-enabled healthcare information portal can demonstrate a 75% improvement in workflow efficiency.

Avaya ACE adheres to a customer-driven agile development process with new functionality delivered every few months based on lead customer demand. The solution is easy to acquire with a selection of licensed packaged applications and APIs that span desktop and mobile communications-enabled applications as well as business process integration. Choice of Linux and Microsoft Windows operating system options along with commercial hardware servers is available. Avaya

Professional Services is available to work with your IT department, preferred Systems Integrator (SI) or channel partner to deliver the right solution for your organization.

## Avaya ACE™: Delivering Speed, Accuracy, and Agility

### Business Challenges

Avaya ACE seeks to address some problems faced by most enterprises today:

- **Communications environments tend to include multiple vendors with different application programming interface (API) protocols**, which creates complexity for IT developers to build and manage organization-wide communications-enabled business applications.
- **Business process management software typically lacks the ability to bring communications into workflows**, which leads to delays in people-centric processes.
- **Communication between the right people requires context to be valuable** (for example, location, availability, phone device, knowledge and skills) of the appropriate person to contact.

By using Avaya ACE to communications-enable business applications, organizations can be faster, more accurate, and more agile.

## Business Benefits of Avaya ACE™

### Improves business agility

- Dynamically reacts to changes in the business environment
- Equips businesses for long-term competitive advantage



- Enables employees to work anywhere and remain tightly connected to the business

#### Accelerates business processes

- Removes latency and speeds up key business processes/mission critical activities
- Improves customer and supplier relationships
- Brings goods and services to the market faster
- Reduces errors and mistakes

#### Creates a richer user experience

- Creates a consistent user experience across multi-vendor network communications infrastructure
- Allows users to connect and communicate easily with the right people from within the context of a business application or process
- Adds integrated communication capabilities to your existing Microsoft Office Communications Server and/or IBM® Lotus® Sametime® environment

#### Drives fast return on investment (ROI)

- Leverages existing network communications infrastructure and business applications
- Creates new opportunities to cut costs and increase revenue
- Makes available packaged applications for immediate ROI opportunity

## Avaya ACE™: The Benefits of Communications-Enabled Business Applications

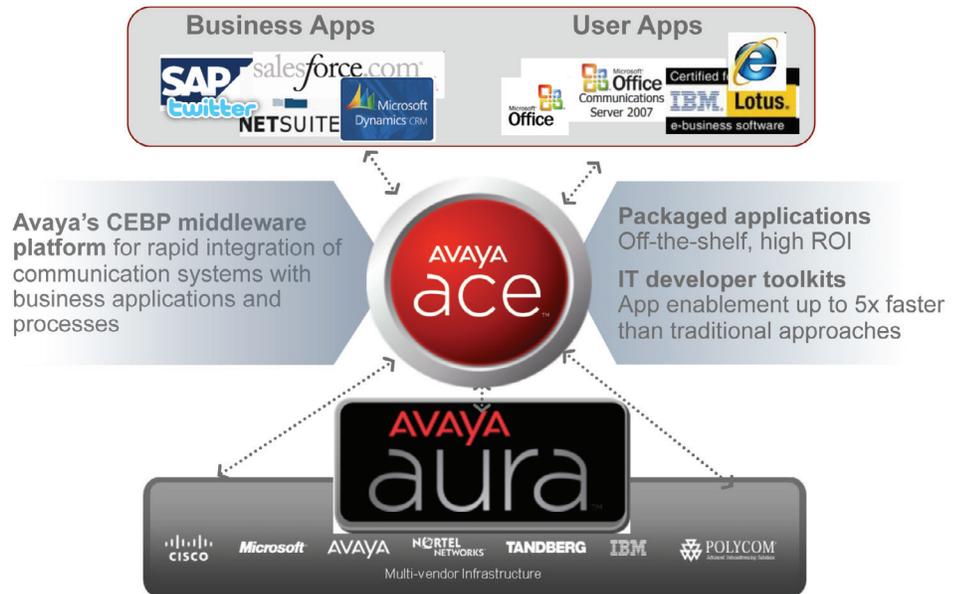
Enterprise Goal	How Avaya ACE Delivers
<b>Cost Savings</b>	<p>Use Avaya ACE to integrate business applications with multi-vendor communications infrastructure simply and quickly. Reduce time and costs of writing code for multiple communications systems by up to 80%.</p> <p>Reduce mobile call charges and office space requirements with Avaya ACE Hot Desking and Mobile Cost Optimizer packaged applications.</p> <p>Reduce communications costs through pervasive use of presence and click-to-call embedded in desktop business application software. Users are connected over the enterprise “least cost route” and more likely to use embedded “click-to-call” than call each other directly on mobile phones.</p>
<b>Business Continuity</b>	<p>Automatically or manually trigger a notification and conference call setup with the right team of people based on roles, skills, and location using Avaya ACE Event Response Manager. Use Avaya ACE Message Blast to provide notifications to large groups of people affected. Enable temporary workspace using Avaya ACE Hot Desking and fast, efficient communications using custom Web portal applications.</p>
<b>Increased Productivity</b>	<p>Contextual communications - Improve the speed and accuracy of communications and collaboration by embedding “click-to-call” within familiar desktop applications.</p> <p>Communicate by name, not number. Avaya ACE determines the best method &amp; device on which to reach a user, applications no longer need to consider static phone numbers &amp; addresses. Communication has become personalized and user-centric verses device-centric.</p>
<b>Increased Customer Satisfaction</b>	<p>Use Avaya ACE to build expert anywhere solutions to provide faster answers to customer’s questions.</p>
<b>Interoperability</b>	<p>Avoid vendor lock-in through open standard Web services and multi-vendor communication system adapters using SIP, TR-87 and JTAPI. Take advantage of rich integration with Microsoft, IBM and other business applications, as well as deep integration with multi-vendor communications infrastructure including Avaya, Cisco, IBM, Microsoft, Genband and Tandberg systems.</p>

## A Comprehensive Framework for Communications Enablement

Avaya ACE™ is the application enablement platform for Avaya Aura™ and consists of multiple offerings (toolkits and applications) to best suit customer needs. Avaya ACE provides packaged applications with “out-of-the-box” integration into popular business applications as well as a number of toolkits to help IT developers build custom communication-enabled applications and processes. Avaya ACE adapters provide the integration into Avaya Aura™ and a range of multi-vendor communication systems.

### Communication Abstraction

Avaya ACE architecturally sits above an organization’s existing network communications infrastructure and uses software adapters to interface and control multi-vendor PBX communication systems, video systems, unified communications systems and application servers. Avaya ACE extracts communications capabilities and exposes them as Web services, which can be easily integrated by IT developers into business applications to create communications-enabled business processes (CEBP). Key communications capabilities exposed by Avaya ACE include presence, location, audio/video call control, conferencing, message drop and message blast, text to speech synthesis using AudioCall playTextMessage and terminal location. Software adapters include open Session Initiation Protocol (SIP), TR-87, and JTAPI as well as proprietary code for



vendor specific communications control. A lower level toolkit, the Avaya ACE Foundation Toolkit, consists of JAVA API's to create custom call treatment applications leveraging the power of Avaya Aura the application enablement platform for Avaya Aura™ Session Manager and SIP.

### Communication Integration

Avaya ACE offers integration with desktop IM clients such as Microsoft Office Communicator and IBM® Lotus® Sametime®. Avaya ACE can also be integrated with leading vendors' service-oriented architecture (SOA) frameworks, business applications such as Customer Relationship Management (CRM), and processes that use business process management (BPM) software. A growing suite of packaged applications is available

on Avaya ACE to provide plug-and-play features and benefits to customers.

### Communication Orchestration

Avaya ACE orchestrates and mediates services between the communications and IT worlds in real time via Web services interfaces. Avaya ACE facilitates richer, event-driven communications that can be triggered automatically by business process workflows, contextual information and system events and alarms.

### Avaya ACE™ Adapters for Multi-Vendor Interoperability

Avaya ACE Adapters support integration with the following network communications elements:

- Avaya Aura™ Session Manager
- Avaya Aura™ Communication Manager
- Avaya Communication Server (CS) 1000 and 2100
- IBM Lotus Sametime Server
- Microsoft Office Communications Server 2007 (OCS 2007)
- Cisco Unified Communications Manager (CCM)
- Tandberg Video Communication Server (VCS)
- Genband Communication Server (CS) 2000
- Genband Application Server (AS) 5200

### DevConnect developer program support

Avaya Agile Communication Environment is part of the Avaya DevConnect Developer Program, which provides access to software development kits, training, tools, documentation, and other developer support for participating independent software vendors, service integrators and corporate customers. See [www.devconnectprogram.com](http://www.devconnectprogram.com) for more information.

## Leveraging Avaya Aura™

Avaya Aura™ brings together Avaya real-time communications performance and reliability with a revolutionary, enterprise-wide SIP architecture, plus the instant detection of each user's presence across devices and applications. Communications applications and services are implemented once and made available across the business. Simpler deployment and streamlined provisioning, along with streamlined hardware requirements and enterprise-wide dial plans, all drive down costs and complexity.

Avaya ACE is the application enablement platform for Avaya Aura and leverages and extends communication services into business applications and processes rapidly and easily using packaged applications and application programming interfaces (APIs). The Avaya ACE Developer Toolkit's higher and lower level API's enable a large pool of IT application developers to integrate Avaya Aura and multi-vendor communication services with business applications, including desktop and business process software. Avaya ACE enables end users to initiate Avaya Aura communication services straight from their desktop software and also automatically invoke Avaya Aura communication services as a result of automated, business process

workflows. Avaya ACE provides higher level Web services and lower level control CTI control of Avaya Aura Session Manager. Avaya ACE will also enable integration between Avaya next generation Context Center and business applications rapidly and simply using Web services programming and leveraging the large community of business application developers.

## Avaya ACE™ Packaged Applications

Avaya ACE provides a suite of packaged applications spanning desktop, mobile, and business process integration working with multi-vendor communication systems to provide a consistent user experience across multi-vendor environments. These applications work together synergistically to provide users with incremental value.

### Avaya ACE™ Web Browser Add-in

With the Avaya ACE Web Browser Add-in, employees can use their desktop phones to click-to-call phone numbers within Web pages. The Web Browser Add-in applies the correct national and international dialing rules to help ensure that the highlighted numbers in Web pages can be dialed correctly. The solution is deployable as a direct add-in to Microsoft Internet Explorer



software. Users spend less time and make fewer errors looking up and dialing phone numbers. Coupled with the Avaya ACE Hot Desking application, virtually any phone may be used with this application.

### **Avaya ACE™ Microsoft Office Add-in**

Avaya ACE Microsoft Office Add-in lets employees use their desk phones to click-to-call numbers from their Microsoft Office Suite. In Microsoft Outlook users can select mail, contact, calendar, task, or journal items and initiate a click-to-call. The Microsoft Office Add-in will also recognize telephone numbers from within Microsoft 2007 and 2010 Word documents, Excel spreadsheets, PowerPoint presentations, and within the body of an Outlook email. Users can simply click on the number they wish to contact and the Avaya ACE adapter interfaces with and controls the user's PBX to set-up the call. This solution is deployable either as a direct Add-in to the user's Outlook desktop or centrally deployed within a Citrix environment. Coupled with the Avaya ACE Hot Desking application, virtually any phone may be used with this application.

### **Avaya ACE™ Microsoft Communicator Add-in and/or IBM Lotus Sametime Integration**

Avaya ACE integration with Microsoft Communicator and IBM Lotus Sametime combines enables these presence and Instant Messaging clients to be combined with Avaya Aura and other network communication system features. The



Avaya ACE Microsoft Communicator Add-in packaged application adds functionality to Microsoft Office Communicator clients using only the OCS Standard client access license (CAL). Features include: aggregated telephony and IM presence, click to call control of PBX desk phones, enterprise dial-plan support, toast pop-ups enabling incoming calls to be answered or re-directed, and a conversation window pop-up to access Avaya Aura mid-call features. Functionality added to IBM Sametime clients include aggregated telephony presence, click to call and click to conference, integrated dial-pad and enterprise dial plan support. The solution offers investment protection

of existing PBX systems by extending their functionality into the customer's choice of desktop IM clients. The solution improves user productivity and customer service by enabling users to quickly connect, communicate and collaborate with people directly from their desktop IM clients using familiar PBX desk phones. Integration is achieved at a lower cost because the use of Avaya ACE as the single integration point avoids the requirement to integrate each PBX and avoids PBX upgrades otherwise required to continue working with the latest Microsoft and IBM systems.

### **Avaya ACE™ Mobile Cost Optimizer**

Avaya ACE Mobile Cost Optimizer helps increase user productivity and lower mobile communication costs for BlackBerry® smartphone users. Mobile Cost Optimizer uses secure signaling between the smartphone and Avaya ACE system and uses a unique cost optimization algorithm to analyze dialed numbers and automatically calculate which calls can be routed more cheaply via the enterprise network rather than the mobile phone network. Avaya ACE then instructs the user's multi-vendor PBX to place both legs of the call using enterprise "least cost routing" rules. The BlackBerry® user receives an inbound call to their BlackBerry® or can optionally choose to receive the call on an alternate device using the Avaya ACE mobile hot desking feature. To aid rapid and easy adoption, Mobile Cost Optimizer application is embedded within the native smartphone menu. Users can click-to-join or chair conference calls from the BlackBerry® calendar independent of the conference bridge technology provider. Users can click-to-dial from email and call people using enterprise dial plans. The application supports international roaming users by automatically converting BlackBerry® dialled local and international numbers into the appropriate format for routing via Mobile Cost Optimizer.

### **Avaya ACE™ Hot Desking**

Avaya ACE determines the best method and device to reach a user by means of a user profile, which contains a list of numbers including the user's primary number. Applications no longer need to consider static phone numbers & addresses. Communication has become personalized and user-centric verses device-centric.

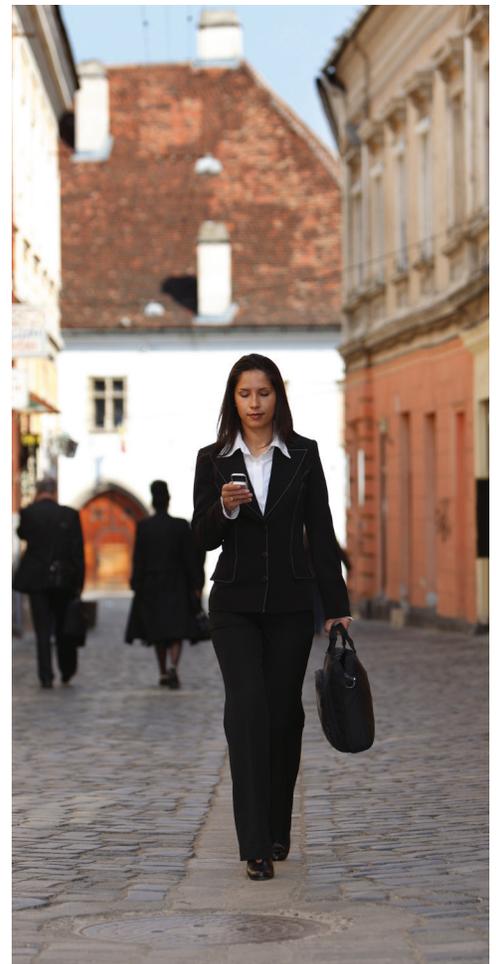
Avaya ACE Hot Desking provides a unique Web portal and hot desk phone registration wizard for users to set-up, manage and control their communication devices. The Hot Desking application provides a means to manage these devices and temporarily add new ones. For example, when working abroad in a hotel, a user could register his hotel room phone as his chosen primary method of communication. Hot Desking helps ensure that anyone trying to reach that person will be directed to this device. All calls initiated by Avaya ACE packaged and custom applications will use this device. Additionally, users or system administrators have the option to allow calls to present the calling line identifier (CLI) of the user's one number (e.g. the user's PBX desk phone number) to callers.

Intelligent Context-aware routing rules can be configured by a user to automatically re-direct calls to their primary device based on their IBM Lotus Sametime presence state. For example, the user may stipulate that all inbound calls be automatically routed to a mobile phone when his or her IBM Sametime presence status changes to "Away" or to voicemail when "In A Meeting".

Hot Desking can help enterprises develop and expand flexible working options to drive significant cost savings in areas such as real-estate.

### **Avaya ACE™ Event Response Manager**

Avaya ACE Event Response Manager (ERM) is designed to reduce business downtime and accelerate responsiveness to critical events. When an event occurs, Event Response Manager alerts and assembles the right people in seconds. The application



sends a notification to a targeted response team and starts an audio-conference simultaneously. Responders who receive the notification are transitioned seamlessly into a conference call. Once the meeting is in progress, notifications about related events may also be communicated directly into the conference. This integration of communications with business process workflows minimizes the delay between an event occurrence and the right people being notified and taking action. The result is increased uptime and faster responsiveness through more informed, just-in-time decision making. Coupled with the Avaya ACE Hot Desking application, users can easily set-up and control the device (the primary number) they wish the Event Response Manager application to reach them on.

## Avaya ACE™ Custom Applications

Avaya ACE toolkits enable standard business application developers to build communications enabled applications without the need for telephony expertise.

The Avaya ACE Foundation Toolkit provides IT developers the ability to create custom call treatment applications leveraging the power of SIP and Avaya Aura Session Manager. Capabilities include the ability to reject, redirect, add a media server, or answer a call on the behalf of users.

End point applications may also be created by the Foundation Toolkit so that users may participate in Interactive Voice Response (IVR) type sessions. Applications can be

developed quickly and rolled out to all users across an Avaya Aura Session Manager based network.

The Avaya ACE Developer Toolkit exposes communications functions of a set of over fifty Web services that can be exported into programmer's preferred software environment for application creation — whatever the development platform of choice. Examples include Microsoft Visual Studio, Eclipse JAVA tools, Ruby or PERL. Developers can also write new applications using simple Web series code.

## Avaya ACE™ IT Developer Toolkit Benefits

### Speed

Programming code to communication-enable applications can be reduced by up to 80% through the use of Avaya ACE Web services. Pre-packaged communication adapters allow the same programming code to be re-used across multiple platforms, thereby enabling rapid and cost-effective delivery of new applications.



## Simplicity

IT application developers can build communication-enabled applications without becoming telephony experts or contending with individual application programming interfaces (API's) for each piece of their communications infrastructure, which often includes multiple vendors and systems.

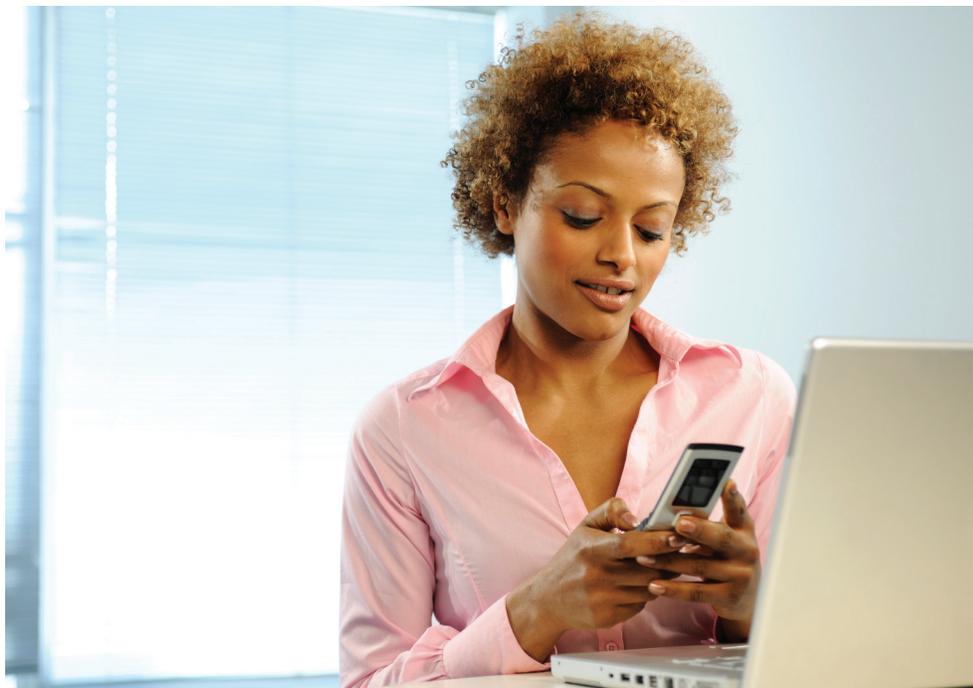
## Flexibility

Web services can easily be exported into the IT developer's preferred software programming environment such as Microsoft Visual Studio or Eclipse open source software development environment.

## Custom Application Examples

### Communications Enabled Corporate Portal

Corporate Portal enables users to easily connect, communicate and collaborate with people from a single corporate website. This communications-enabled corporate directory solution provides powerful, easy-to-use click-to-communicate functionality that can be embedded into any existing Web portal or employee directory. It provides aggregated presence information (device status, person availability) from across the network, including telephony, video and desktop UC clients (Microsoft Office Communications Server and IBM Lotus Sametime). All communications options are displayed in a single interface, with contacts simply a mouse click away. Users are free to select the appropriate channel for communication: instant message (IM), voice, even video. It also avoids searching among multiple directories, as video, voice and IM presence



can all be integrated. As long as contacts are on the internal company network, their presence and status can be displayed.

### Communications Enabled Customer Relationship Management

Avaya ACE Web service API's can be used to build custom, communications-enabled CRM solutions. Using a combination of API's for click-to-dial, Message Drop and Message Blast, users can highlight customer names from CRM software and click-to-dial using their existing desk phone to communicate.

Click-to-dial functionality allows users to initiate calls to clients from directly within the CRM system, regardless of their device type, whether a soft client, desk phone.

Message Drop functionality allows users to insert personalized messages into an established call. The personal message can be played directly to the called party, or inserted when the call goes to the called party's voice mail system. Once a call has been set up, the user can leave the call (while the message is playing) and proceed to make other calls.

Message Blast functionality allows users to deliver a personalized message to a selected group of individuals at a specified time. As the message is delivered to each party, Message Drop and Blast makes information available so that the called party's call log can be updated. This information includes the time and date that the message was left, whether it was successfully left, and an identifier associated with the message played.

Message Record functionality allows users to record announcements from a device and store the announcements on the network for retrieval in a Message Drop or Message Blast action.

The user can also modify or expand these events to include further details, such as the topics discussed with the called party and any actions or next steps arising from the discussion.

## A Business Continuity Planning Solution

Avaya ACE™ applications provide all the ingredients required to build an effective communications solution for business continuity planning. Immediate awareness of the incident can be provided using Avaya

ACE Event Response Manager's automated, event driven notification and conference setup capabilities. Dynamic team formation based on people's roles, skills, and location can be initiated to allow for rapid adaptation to changing conditions. Using the Avaya ACE Message Blast API, an organization can effectively communicate with large groups of impacted employees. Using the Avaya ACE Hot Desking application, employees can quickly set up workplace alternatives that keep business moving and costs manageable. Communications-enabled corporate portals and applications are also valuable during crisis situations. In summary, a combination of Avaya ACE applications and API's can help make organizations' business continuity processes more agile, responsive, and effective.

## Avaya ACE™ Customer Service Solutions

Avaya ACE can be used to build innovative customer service solutions beyond the traditional confines of a CTI enabled contact center. For example, Avaya ACE will provide pre-packaged adapters for integrating with CRM software such as Salesforce.com to enable all customer service facing employees, not just contact center agents, to benefit from screen-pops of customer data. A customer service representative can then be notified of a caller's profile (e.g. a high net worth customer) before answering the call in order to prioritize service requests more effectively and provide more personalized customer care. Avaya ACE can be used to automatically notify customers when a specific event occurs and connect them to a contact center agent immediately. For example, if a customer's credit card is about to expire, Avaya ACE can detect this event and set up an outbound call to the customer. Avaya ACE may be used to build "Expert Anywhere" solutions so that agents have access to subject matter experts across the enterprise, thereby resolving customer questions more quickly and effectively



## Avaya ACE™ Vertical Industry Value Table

Industry	Business Value
<b>Finance</b>	A bank is using a communications-enabled Customer Relationship Management (CRM) solution to save the time it takes to provide market updates to clients. Using the Avaya ACE developer toolkit and the click-to-call, Message Drop and Message Blast APIs, customer relationship staff can easily record personalized messages, click to call from client lists in CRM, and play messages into phone calls or send them out to a group of customers.
<b>Healthcare</b>	A hospital has built a custom code cart compliance application that communication enables the various actions previously driven by manual, pen and paper process. 50% reduced time spent on manual code cart management is expected.
<b>Hospitality</b>	A hotel has used the Avaya ACE developer toolkit to improve its guest experience while also offering the capability to drive up average guest spend and advertising revenue. Guests use the IPTV remote control to easily browse the hotel's information and entertainment services and initiate a "Click-to-Call" from their in-room PBX phone. Using Avaya ACE, the prototype application was up and running after just 2 days, shaving weeks off traditional development times.
<b>Manufacturing</b>	Event Response Manager can be linked to manufacturing processes to notify the right people and transition them onto a conference call whenever a significant event or alarm is triggered. An automatic message could be delivered to a truck driver when he is within proximity of the delivery destination (e.g.10 miles away) with specific drop-off instructions. This capability minimizes manufacturing process downtime and logistical delays.
<b>Utility</b>	A Utility company can use location tracking devices and proximity triggered audio messages to notify customers of the impending arrival of an employee, say within an estimated 30 minute window, to give the customer enough time to return home. This functionality reduces the time and costs of repeat visits and improves customer satisfaction with the added flexibility.

## Global Services

Avaya Professional Services offers a single point of accountability to design, build, implement and manage multi-vendor, converged communications solutions worldwide. Avaya can help you align Avaya ACE capabilities with your business imperatives. Our professional services

experts can translate executive business strategies into a business case and a communications blueprint for success. Avaya support services help ensure communications networks and applications operate at peak performance with proactive monitoring, software update management,

problem resolution, and continuous optimization to maximize the value of your investment. Avaya managed services can also complement, supplement, or completely outsource communications operations.

## Learn More

For more information on how Avaya Agile Communication Environment™ can help your organization gain competitive advantage by integrating business processes with existing communications systems, contact your Avaya Account Manager or Avaya Authorized Partner or visit [www.avaya.com](http://www.avaya.com).

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### About Avaya

Avaya is a global provider of business collaboration and communications solutions, providing unified communications, contact centers, data solutions and related services to companies of all sizes around the world. For more information please visit [www.avaya.com](http://www.avaya.com).



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[avaya.com](http://www.avaya.com)