Oracle Collaboration Suite Mobile Collaboration

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ORACLE

Oracle Collaboration Suite
Mobile Collaboration

Oracle Mobile Collaboration

EXECUTIVE OVERVIEW

Oracle Collaboration Suite Mobile Collaboration is designed to meet the needs of today's diverse enterprise workforce, with solutions to support all networks and device types – from mobile phones to PDAs, Blackberrys and Smartphones. Oracle Mobile Collaboration offers the flexibility to let you decide how you want receive and respond to your priority mail, meetings and contacts, giving you the power to drive business wherever you are. Administrators get simple provisioning and over-the-air device management with the ability to activate user accounts, push mobile clients out to devices, and update devices with the latest upgrades, so users get up and running fast, and stay running. As a solution based on open-standards, your investment is protected for future generations of devices, you benefit from lower costs, and you get the same end-to-end security, scalability, reliability, and integration with existing business processes you've come to expect from Oracle.

- Mobile Push Mail solution pushes your emails to you in real-time securely on the device on your choice.
- Mobile Data Sync keeps all your appointments and address book in synchronized up-to-date all over the air. You will never need to cradle your phone to get your calendar.
- Oracle Mobile Collaboration completely takes away the pain of installing applications and managing devices. All mobile applications are installed and provisioned over the air. But Oracle just does not stop there; we also upgrade the applications over the air immediately as soon as new version is available.
- All Oracle mobile solutions are based on open standards, which ensure you will always be using the latest technology and applications for mobile access.
- Instead of introducing proprietary standards, Oracle relies on HTTPS/SSL/TLS security stack, which is already endorsed and deployed by your IT organization.
- And last, Oracle does not want you to learn a new tool to manage and administer mobile applications so you manage all mobility from Oracle Enterprise Manager – admin console you use for "all" Oracle products.

THE MOBILE CHALLENGE

The wireless industry is poised for yet another big change, and this time it is driven by once hyped but now real enterprise mobile users. The enterprise market is very complex and diversified, especially if examined from a mobile point of view- with users' needs varying from company to company, department to department, and even user to user. What remains a commonality is the demand for real-time mobile access to most critical Collaboration, Messaging and Email applications.

The total number of mobile network subscribers has just recently exceeded one billion. However, at the moment only a fraction of them can be classified as enterprise employees who use the subscription for business purposes. According to Forrester, only 2.2% of companies that have enterprise applications make them mobile. Mobile network operators are looking for ways to attract more enterprise users, and more specifically increase the traffic generated by mobile enterprise users.

The reason for low penetration is that enterprise mobile market is very complex and distributed and demands a manageable, scalable, zero-footprint, and easy-to-use mobile email solution at a lower TCO. For enterprises, mobile solution should not operate in isolation, but rather should leverage other essential capabilities like device management and remote administration. Enterprises today face following challenges for mobile solutions:

A flexible solution

Mobility is a personal choice. There is no single access channel which satisfies today's global heterogeneous enterprises. Most mobile solutions are point solutions and provide access to specific set of collaboration applications, on specific set of devices, for specific networks, via specific channels only.

Users should be able to access collaboration information via browser, via speech, via text messaging, or real-time from native applications on the device of their choice.

Real-time as well as offline access

Enterprise users should get real-time access to critical business applications like email and calendar when connected, but an always-on-only-model is not appropriate for business users because of the unpredictability of wireless coverage. Users should also be able to access and take action on them offline.

Most mobile solutions allow only email to be sent and received wirelessly, but enterprises also demand to sync/push PIM data and other corporate applications.

Multiple proprietary solutions

The current mobile vendors offer proprietary solutions with support for specific backend servers and for a limited set of mobile devices. As Mobile Operators and Service Providers look to offer a broader set of valuable mobile services to their

enterprise customers, they are looking to expand their mobile offerings to multi-vendor, standards-based solutions with support and optimization for a plethora of mobile channels, devices, and backend servers working seamlessly across various networks.

Inconsistent user experience

Moreover, the user experience of mobile access to applications today varies based on the type of mobile devices, the mobile network operators and the back-end server capabilities.

Device-agnostic

There are a number of mobile devices to choose from today, and more devices continue to flood into the market. Today, most mobile solutions require enterprises to standardize on one or a few types of devices only. In most cases, users end up carrying multiple devices for multiple purposes – one for phone calls, one to access emails, and a PDA to manage their appointments and contacts. This not only increases the TCO for enterprises but also frustrates end users as they need to learn a new interface. Need is for a truly device-agnostic solution letting companies use whatever devices their employees may already own, hence saving additional hardware costs and IT management costs associated with new devices.

Network-agnostic

Today's mobile solutions work over limited wireless networks, depending on the mobile solution provider. This varies between DataTAC, Mobitex, GSM, GPRS, CDMA and iDEN. These do not all carry the same amount of bandwidth, nor are available all around the world. A good mobile solution should at least support popular networks like GSM, GPRS, CDMA, 802.11b WLAN; but most importantly should fully work within the same network.

Over-the-air device management and administration

Experience with desktop applications in enterprise world has shown that corporate IT administrators look for few essential things when making purchase decisions. Applications and products that help cut costs, improve security and efficiency and integrate existing software applications are the most preferred by corporations.

Different mobile solutions have different methods for syncing with the corporate server. Some require a cradle to rest the device in before sync can take place, some require IT department or the user to schedule synchronization, and others only allow syncing to be performed manually.

IT administrators are concerned to get into this whole new turf of managing mobile applications which require them to learn new set of tools like desktop software. In addition, they have to deal with the overhead of installing, upgrading, and healing the applications running on devices, and educating end users about the installation/upgrade process.

Security

Mobile solutions should be set up behind the corporate firewall, and use security, compression and reliability technologies to ensure secure, efficient and orderly delivery of critical enterprise data. Information should be accessed at the source account, taking away the need for creating redundant intermittent storage that creates inherent security risks. Highest levels of Triple-DES and AES data encryption should be used to securely transmit critical information.

Open-standards

Open standards enabling mobile services interoperability are critical to maturity and stability of the mobile market growth. Without open standards, enterprises will not undertake mobilizing their organizations in a meaningful way.

Most mobile solutions in marketplace are not based on any open standards, thereby locking in enterprises to limited devices, features, and networks. Today, for every new device type, most enterprises have to deploy a new server, and install a new client on devices.

Enterprise-class, reliable, scalable solution

Mobile solutions targeted for thousands of large enterprise users or millions of carrier's subscribers should be highly reliable and scalable.

ORACLE MOBILE COLLABORATION

Oracle Collaboration Suite is an integrated suite of applications that work together seamlessly to solve your organization's toughest collaboration problems. Oracle Collaboration Suite integrates messaging, calendaring, file sharing, real-time communication, calendar and time management, and voicemail and fax services on an enterprise-class infrastructure.

Oracle Collaboration Suite helps companies save money by consolidating email, calendar, and file servers, while gaining the reliability, security, and scalability of the Oracle10g infrastructure (Oracle10g Database and Oracle10g Application Server).

While consolidating all collaboration information into one secure, reliable, infrastructure based on Oracle10g technology, Oracle Mobile Collaboration unlocks every possible channel to access all collaboration information, making the dream of universal access really come true. Employees no longer have to juggle thru multiple devices to access different collaboration application. With Oracle Collaboration Suite, they can now access all collaboration information from the device of their choice.

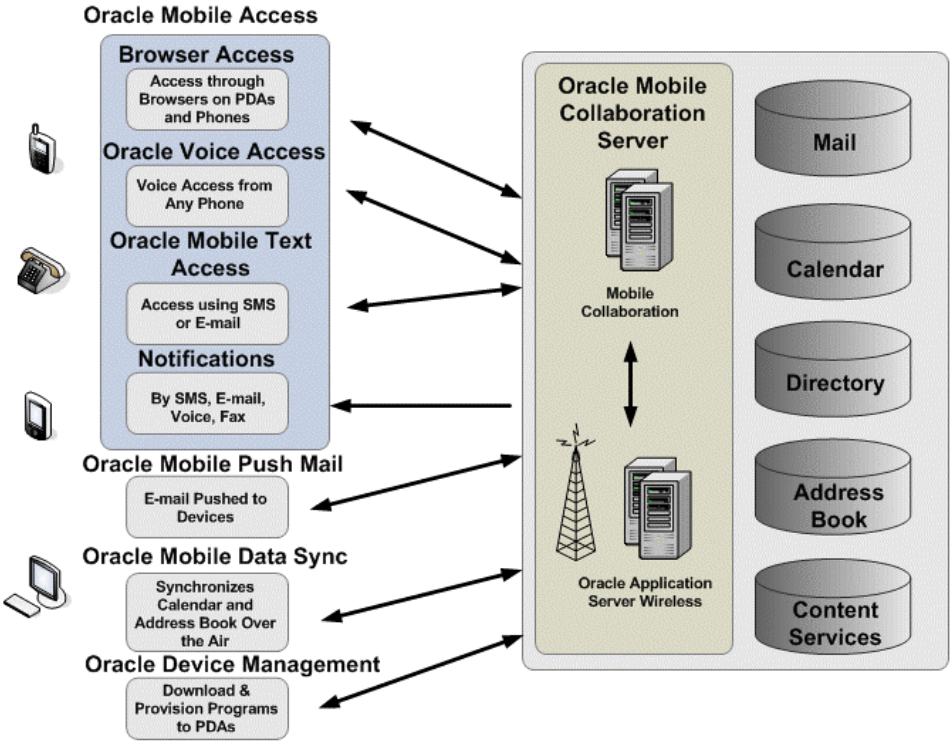

Figure 1. Mobile Collaboration

Oracle Mobile Collaboration is a complete solution and provides following different ways to allow anytime anywhere access to Oracle email, voicemail,

calendar, address book, tasks, files, corporate directory, and instant messages from any device with wireless or voice access:

- **Mobile Push Mail**

  Open standards based always-on real-time secure access to email.

- **Mobile Data Sync**

  Open standards based wireless sync of calendar and contacts.

- **Mobile Access**
  - ***Mobile Browser Access –*** Access from browser of your phone
  - ***Mobile Voice Access –*** Access via speech from any phone.
  - ***Mobile Text Access –*** Access via text messaging.

- **Mobile Device Management**

  Complete, over the air device lifecycle management

- **Mobile Notifications**

  Multi-channel notifications for email and calendar

- **Presence & Availability Management**

  You control how you want to be contacted.

Mobile Push Mail

Currently there are a number of proprietary mobile email solutions deployed in the marketplace, with support for specific backends, and for a limited set of mobile devices. As Mobile Service Providers look to offer broader set of valuable mobile services for their enterprise customers, they are looking to expand their mobile email offerings to multi-vendor standards-based solutions with support and optimization for a range of mobile channels and devices working seamlessly across various networks.

Oracle is leading the efforts for the standardization of mobile email based on open Push-IMAP (P-IMAP) standards through active participation in global standards organizations such as IETF and Open Mobile Alliance (OMA).

As the global leader in providing enterprise software infrastructure and applications, Oracle is uniquely positioned to lead such an industry effort with the collaboration of key Mobile Service and Device Providers, while addressing the specific enterprise mobility needs. An open standards-based mobile email solution will allow all the players in the value chain to interoperate with each other to provide an open solution while lowering the total cost of ownership for both the Mobile Service Providers and Enterprises.

Another unique benefit of Oracle's solution is complete over-the-air management and provisioning. Oracle Mobile Push Mail solution does not require any desktop

software to install the clients, it rather installs, automatically upgrades (whenever the new version is available), and provisions the client all over-the-air.

Finally, Oracle solution is completely secure and relies on already deployed and endorsed security stack – HTTPS and SSL. We encrypt the data on the wire and on the device. Plus, if your device gets in wrong hands, administrator can remotely kill the device to disable access to any further emails and completely wipe out all stored emails.

Key Highlights of Mobile Push Mail:

- **Real-time, Always-on Push**: P-IMAP based Mobile Push Mail provides end-to-end secure, behind-the-firewall server solution to real-time push email to all mobile devices. Oracle solution pushes email to mobile device in real time without requiring any user intervention.
- **Cradle-free, Continuous, Two-way Sync**: Oracle's continuous, two-way real-time Mobile Push Mail ensures that any changes on the mobile device (i.e. delete an email, respond to an email, read to unread) are wirelessly synchronized with the server in real-time. Likewise, changes from the server are wirelessly reflected on the mobile device in real-time. No additional cradle, desktop software or manual reconciliation is required.
- **Over-the-air Install and Provisioning**: Mobile Push Mail over-the-Air (OTA) installation of the client. Whenever the latest version of the client is available, user is automatically notified on his device with a link to upgrade the client. In addition, all user and application settings are also provisioned completely over-the-air to enable most simplified setup experience.
- **Folder, Attachment and Filter Support**: Mobile Push Mail includes full support to push any IMAP folder, and push/ truncate/ open/ view attachments. It allows user to create/modify filters to specify which email they want to be pushed from mobile device or desktop.
- **Open standards based device & network agnostic Solution**: The mobile push mail solution is completely based on open standards and is truly device-, transport protocol-, and network-agnostic. The P-IMAP solution leverages the existing IMAP and TLS/HTTPS technology stack, and is completely open to be adopted by any mobile device or email server. Additionally, it is also possible for Developers and Independent Software Vendors to develop compliant client components that rely on other transport or notification schemes, and network optimization. P-IMAP is a NOC-less (Network Operation Center) solution and an enterprise or email provider can provide mobile push mail for any mobile device for any email server, with a network-agnostic push experience.

Mobile Data Sync

Based on OMA-DS specifications, Oracle Mobile Data Sync provides the server piece of a standard-based synchronization infrastructure. Using any OMA-DS-compliant device, users can synchronize their Collaboration Suite calendar and contact information with the Personal Information Manager (PIM) on the device. Devices such as PDAs or RIM BlackBerrys that do not support OMA-DS out of the box can still benefit from the power of Oracle Mobile Data Sync using 3rd party OMA-DS applications such as the Synthesis SyncML Client. And with Oracle Device Management, the client can be downloaded, installed and configured over-the-air (OTA), allowing the user to be transparently setup to use the service.

As Oracle Mobile Data Sync is not tied to a particular internet connection model, users can use any of their device's supported internet connection methods such as GPRS, desktop/cradle, infrared or Bluetooth®. For instance, a user may use a GPRS connection while on the road but use a desktop/cradle connection while in the office to save on wireless data consumption and get a faster sync. Whether through a physical connection to the network or using wireless Internet technologies, users get the same sync experience delivered through the same UI on the device, reaching a new level of flexibility.

RIM BlackBerry Solution

Previous versions of Collaboration Suite already supported BlackBerry devices by using the Consilient2 Management Server (CMS) as a broker between BlackBerry Enterprise Server (BES) and the Collaboration Suite Email and Calendar servers. This solution is being extended to support the new Consilient4 product.

In 10g Release 1, Oracle Collaboration Suite provides direct access to Calendar and Contacts from RIM BlackBerry devices removing the need for a BES infrastructure. Using an Oracle partner Consilient's client, users can now directly synchronize their Calendar and Contacts with BlackBerry without requiring BES.

Mobile Access

Mobile Browser Access

Mobile Browser Access provides highly optimized wireless access to collaboration information from any mobile device with browser capabilities. Employees have a choice of using any native client browser (e.g. XHTML, HTML, WML, HDML, CHTML, tinyHTML) on any phone, PDA or laptop with a wireless internet connection (e.g. CDMA/1xRTT, GSM/GPRS, CDPD, Mobitex, 802.11b). All mobile applications have been optimized to take full advantage of the device form-factor, browser capabilities, data entry options, and available network bandwidth.

Mobile Voice Access

Basic communication capabilities in this context include all the means mobile workers are expected to communicate with their offices, partners and customers. While different messaging technologies and applications raise their importance, voice communication remains the most important communication method within humans.

Voice provides one of the most ubiquitous application access channels. Accessible from billions of devices today, voice provides a hands-free, easy to use way to access applications requiring only a phone call. Accessing applications with speech entails an end user calling an application on a traditional phone line and interacting with an audio interface. The end user has two possible input methods: either through speech or the number pad.

Prior to speaker-independent speech recognition, users had to train the software to recognize their utterances. Today, speaker-independent speech recognition and VoiceXML are sufficiently mature for large-scale deployment enabling enterprise-grade voice applications to be developed and deployed for telephone access.

Employees can now retrieve and reply to Email, manage appointments, or call someone from address book via voice from any phone. To get voice access to Collaboration Suite, employees call a Voice Gateway from the phone and interact with a spoken interface. The Collaboration Suite voice-enabled applications respond to both voice and touchtone commands, and run on any Oracle-accepted VoiceXML gateway with speaker-independent speech recognition.

Voice communication can have advanced services that especially enterprise users find value in. An example of this kind of services is setting up an automated conference call using corporate directory information. The conference call may be routed differently depending on the recipient's presence status or agenda item in calendar.

Mobile Text Access

Mobile Text Access allows users to access Collaboration Suite via text messaging/SMS or email. Employees can send simple commands via text messaging or email to pull in their appointments for the day, to lookup employee information in corporate directory or personal address book, or browse a files catalog to select a file to fax or send by email.

For example, user can send command "cal" via text messaging to pull in all appointments for the day, or "search joe harris" to lookup Joe Harris in corporate directory.

Mobile Access Features

Mobile Email

- Access corporate Email from browser access, voice access, or text access
- Reply, forward, or move the mail to another folder
- Use your corporate email address for compose
- Compose email by selecting recipients from corporate directory or personal address book
- Play the summary of new Email and Voicemail from voice interface

Mobile Inbox

- Create Mobile Inbox views and specify which Inbox view you want to access from the mobile browser or voice:
    - #mysenders: View all email from my list of senders
    - #urgent: View all email with Priority set to high, or where subject field contains 'urgent' keyword
    - #today: View all email from last 24 hours
    - #voicemail: View all voicemail
    - #fax: View all fax messages

Mobile Calendar

- View your appointments and tasks from mobile browser, voice, or text access
- View appointments in a Day, Weekly, or Monthly view
- Create new appointments or modify appointments
- Accept or reject an invitation
- Listen to the summary of pending appointments from Voice access

Mobile Files

- Navigate thru Oracle Files and Workspaces from mobile browser, voice, or text access, and select a file to fax, or attach with email
- Enables document printing by fax using third-party Fax server like RightFax
- Fully integrated with Mobile Email application enabling option to store email attachment directly into Oracle Files
- Fully integrated with Presence and Availability information enabling commands like "Fax a file to me", which faxes a file to pre-defined nearest fax machine to user's current location

Mobile Personal Address Book

- Enables users to manage their own address books and contacts from mobile browser, voice, or text access
- Enables call function from wireless phones, and integrates with the Email to allow users to compose messages' recipient list from their address books as well as add contacts into their address books based on their email messages.

Mobile Device Management

Mobile Device Management capabilities allow administrators to control and configure the behavior of the corporate fleet of mobile devices. Through an admin console, administrators can maintain a list of supported devices as well as maintain their associated profiles. Administrators can use these profiles to control how the device will behave by configuring default settings and enabling/disabling features.

From the Collaboration Suite portal, users enable their mobile access by providing their mobile device information and selecting from the list of corporate supported carriers and devices. Provided the device profile indicates support for Mobile Push Mail and/or Mobile Data Sync, the user can select the Mobile Push Mail and/or Mobile Data Sync Client option and the configuration settings will be automatically pushed to the mobile device requiring no further user intervention. If the device requires a Mobile Push Mail or Mobile Data Sync client to be installed, the client is automatically transferred OTA onto the device. All user has to do is set their password once and then synchronize.

Mobile Notifications

Oracle Collaboration Suite keeps your employees notified — when they receive specific e-mail or voice-mail, when important events are added or updated in their calendar, when they are invited to a web conference, or as a reminder for important meetings and web conferences. Unique benefit to employees is the freedom to specify which channel they want to receive these notifications: by SMS, MMS, email, voice alert, 2-way pager, or Fax.

Presence & Availability Management

Today, a caller usually has to guess which method of communication is likely to be the most appropriate for the intended recipient at a particular moment. This leads to uncompleted calls and multiple messages being left. The recipient must also struggle to monitor multiple means of communication to ensure reception of important communications, while attempting to avoid persistent interruptions.

Oracle Collaboration Suite availability management capabilities puts user in control by allowing him to create a profile that defines where they are during the day and how they want to get notified at this location: by SMS, on their desk phone, on mobile phone, on home phone, by email, or fax. Employee's availability

information is published thru the corporate directory, so that anyone with right privileges can determine the best method for contacting the employee at a particular moment in time, in a given location, based on the user's availability, device capability, and personal preferences.

HOW DOES MOBILE COLLABORATION WORK?

Architecture

Mobile Collaboration server comprises of the following components: (Figure 2)

1. Mobile Access Server – This server provides all Mobile Access functionality.
2. Push Mail Server – This server provides the push mail functionality.
3. Device Management Server – This server provides the over-the-air installation, update, and install of push mail and Mobile Data Sync client applications on the user device.
4. Notification Delivery Server – This component communicates with the devices and sends UDP or SMS notification messages to the devices.
5. Notification Event Collector – 3 different kinds of events are collected:
    a. UM events de-queued from the Email server.
    b. Calendar events are listened to from the Calendar server.
    c. UDP events are listened to from various push mail devices.

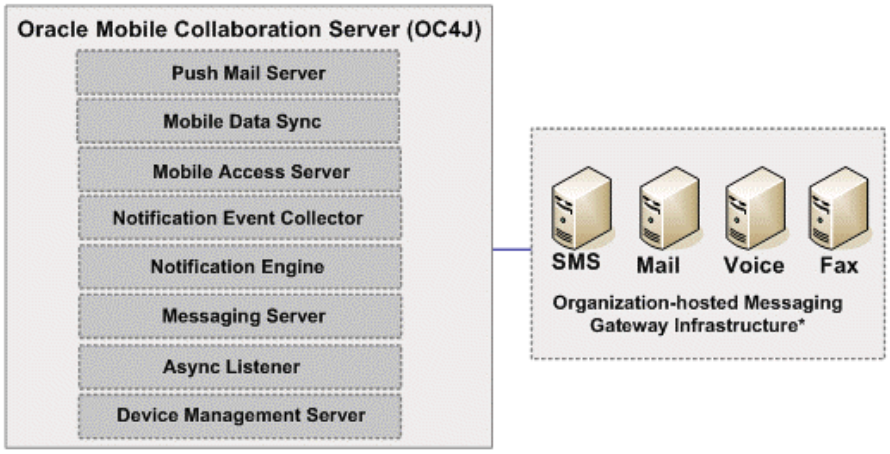

Figure 2 : Components of Mobile Collaboration Server

How Does Mobile Push Mail work?

Here is the data flow for a typical deployment of Mobile Push Mail:

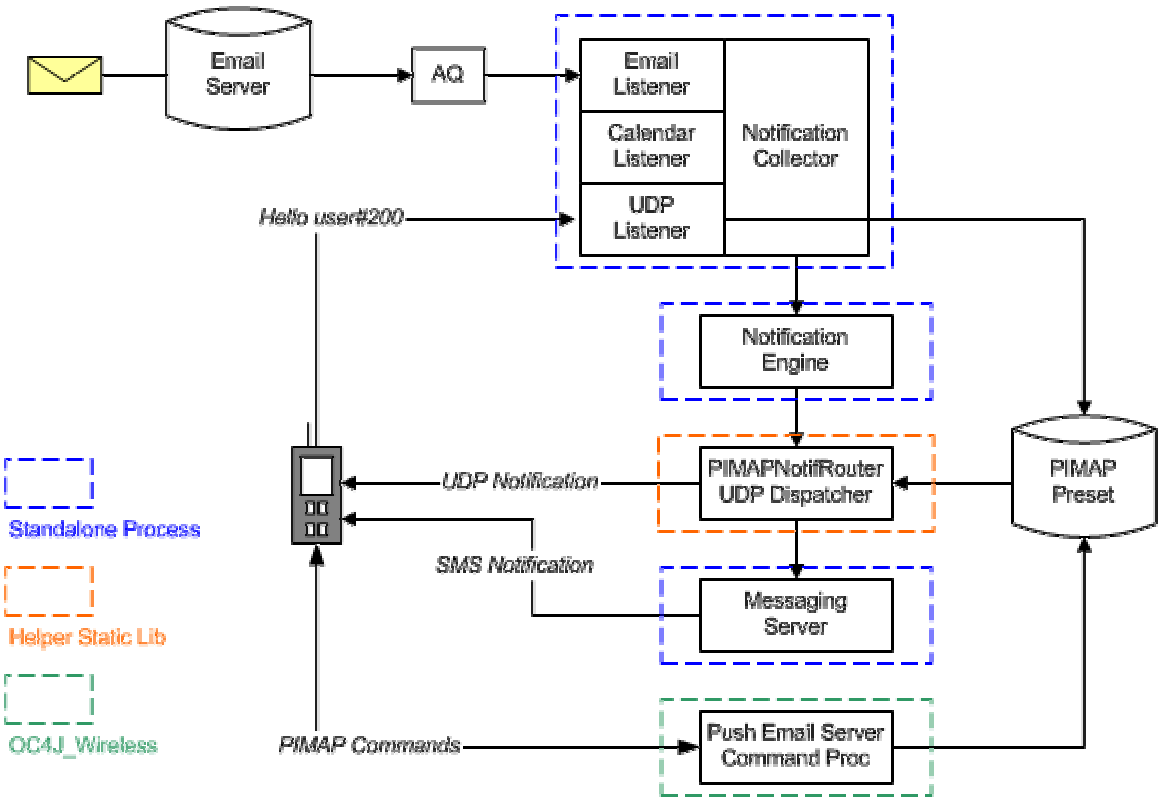

Figure 3 : Mobile Push Mail

- Unified Messaging (Email, Voicemail, Fax) notification rules can be easily created using the Mobile Preferences page
- These notification rules are maintained by the Email server
- All notification events are en-queued in a queue in the mail database
- These events are continuously de-queued by the notification engine running on the mobile collaboration server middle-tier
- The notification engine is responsible for processing the notification event by looking up the end user's preferences like device notification address etc.
- The notification engine then hands over the event to the messaging server
- The messaging server is responsible for delivering the notification to the end user's device(s)
- The messaging server can do the delivery by pushing the notifications through a messaging gateway (either hosted either by the customer or a third party)

Certain features of the push mail server may not function properly if the push mail traffic is routed through Oracle web cache. So we strongly recommend that push mail traffic be strictly routed directly through Oracle HTTP server, straight to the OC4J_Wireless JVM.

How does Mobile Data Sync work?

Using an OMA-DS client, a user connects to the Oracle Mobile Data Sync server through Oracle HTTP server. Then, wrapping standard representations for data objects, such as iCal and vCard, in OMA-DS markup, the OMA-DS client sends all calendar/contact data that was modified since the last sync to the Oracle Mobile Data Sync server. The server then queries the Calendar server for all changes made during the same time period, which is delivered in standard format by the Oracle data provider

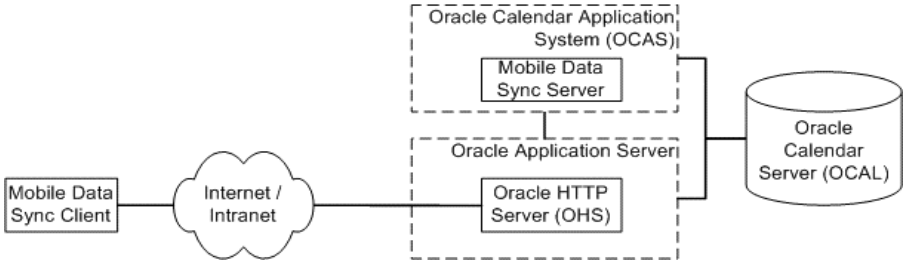

Figure 4 : Mobile Data Sync

The synchronization engine converts both sets of data from the various formats to a unified object model. It then compares the information from the two sources and determines the appropriate sync actions to take, reformatting the data into the original data format and sending it to the appropriate data repository using the OMA-DS protocol.

Any existing conflicts, such as a meeting moved on both the server and the mobile device, are resolved at this stage. Oracle Mobile Data Sync uses intelligent conflict and ownership resolution; determining who owns the event, and who is permitted to modify it.

How does Mobile Browser Access work?

Mobile Browser Access is enabled by Oracle iAS Wireless multi-channel server. Here is the flow for browser access to Collaboration Suite from a WAP device, PDA, or any other mobile device with browsing capabilities:

- User hits the Collaboration Suite wireless portal from browser on his mobile device
- If it's is a WAP device, request will go thru the user's service provider WAP gateway (or his company's WAP gateway)
- Oracle iAS Wireless Multi-Channel Server detects the end user's device type and renders the registered application appropriately

- To take advantage of individual device features, Multi-Channel Server applies Device/Network Adaptation transforms and optimizes the application content for particular device and network

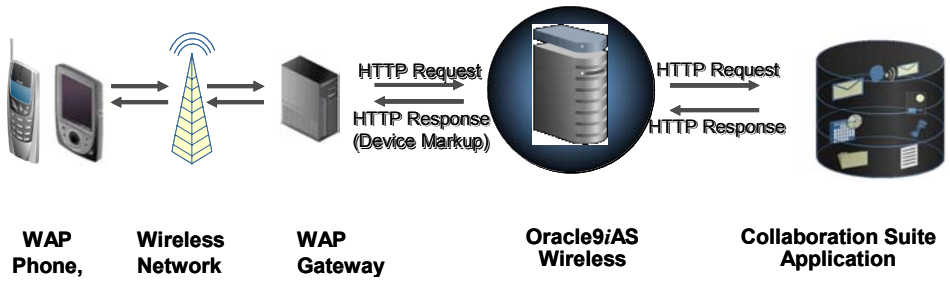

Figure 5. Mobile Browser Access

How does Mobile Voice Access work?

Voice Access to Oracle Collaboration Suite is enabled by Oracle iAS Wireless 100% Voice-XML compliant multi-channel server.

Here is the flow of events involved in voice access to Oracle Collaboration Suite Calendar:

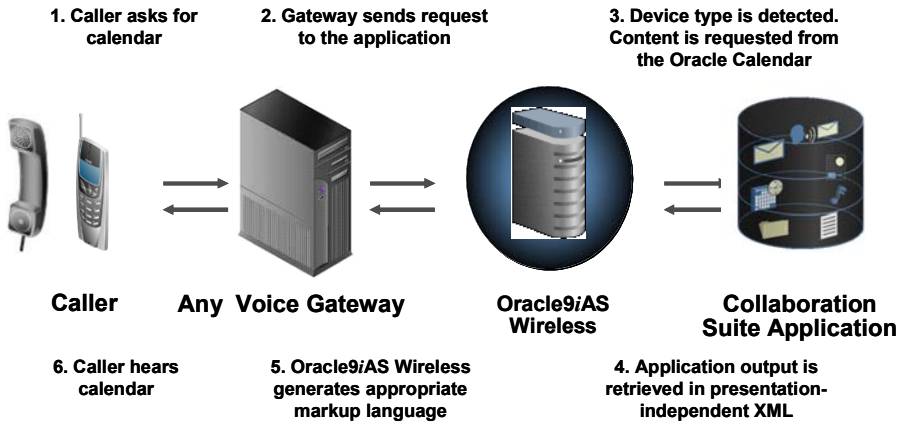

Figure 6. Mobile Voice Access

1. In above example, a caller dials the phone number of the voice gateway. The voice gateway answers the phone and the caller asks for his appointments for the day.
2. The voice gateway uses speech recognition to determine what the caller uttered and then makes an http request to Oracle iAS Wireless for a VoiceXML page that will contain the user's today appointments details in audio.
3. Oracle iAS Wireless relays the request for today's appointments to Oracle Collaboration Suite Calendar.

4. Oracle iAS Wireless receives a response in XML from the Oracle Collaboration Suite Calendar Server.
5. Oracle iAS Wireless transforms the XML page into the markup language appropriate for the user's device, in this case VoiceXML.
6. The voice gateway interprets the VoiceXML and plays the details of caller's appointments for the day over the phone line.

How does Mobile Text access work?

Whereas wireless browser applications provide real-time access to data in a synchronous fashion via the always-on connection to the Internet, whereas Mobile Text Access provide access to all Collaboration Suite back-end data via messaging protocols and do not require a constant connection.

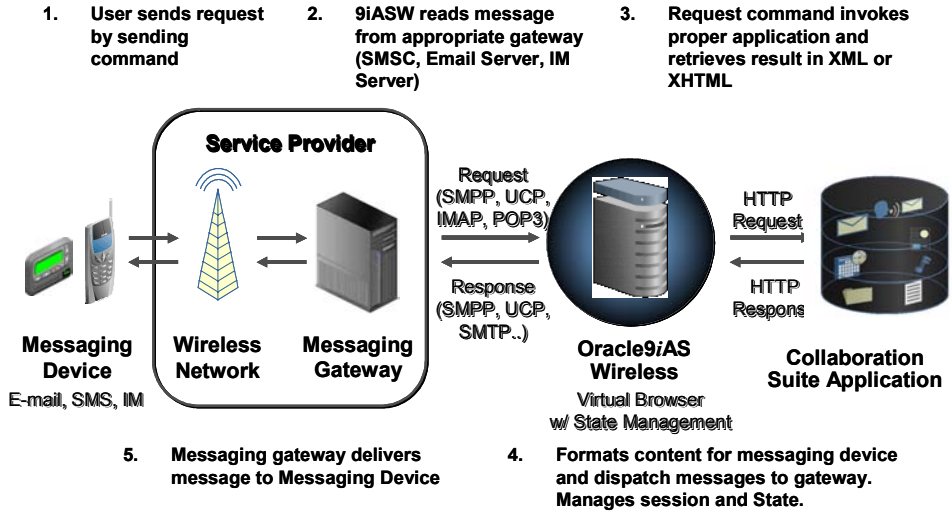

Figure 6. Mobile Text Access

Using any messaging device, such as a mobile phone with text messaging (SMS) capabilities, e-mail client, or a two-way pager, the user asks for information by sending a short message command to the server. This is equivalent to clicking on a link in a browser application. Information that would normally appear on the refreshed browser is sent back to the user as an incoming text message, page or e-mail message.

The Oracle iAS Wireless Multi-Channel Server manages the asynchronous application session to enable such applications to be used interactively. Power users can leverage the command chaining feature to send several commands that get called sequentially, thus reducing the number of messages sent back and forth.

The Oracle iAS Wireless Multi-Channel Server adapts the messages based on device type and breaks the message into several smaller messages if the device has a maximum allowed size.

How does Mobile Notifications work?

Out-of-the-box, Oracle Collaboration Suite provides mobile notifications for Email, Calendar, and Web Conferences. These alerts and notifications are delivered by highly scalable alert engine of Oracle iAS Wireless.

Alerts and Notifications can be delivered in a variety of ways, for instance via text messages to a mobile phone, as an email, or on to a 2-way pager. If you have a voice gateway, you may also deliver your messages using a voice interface, where the messages are read for you. Another option is to send messages as a fax.

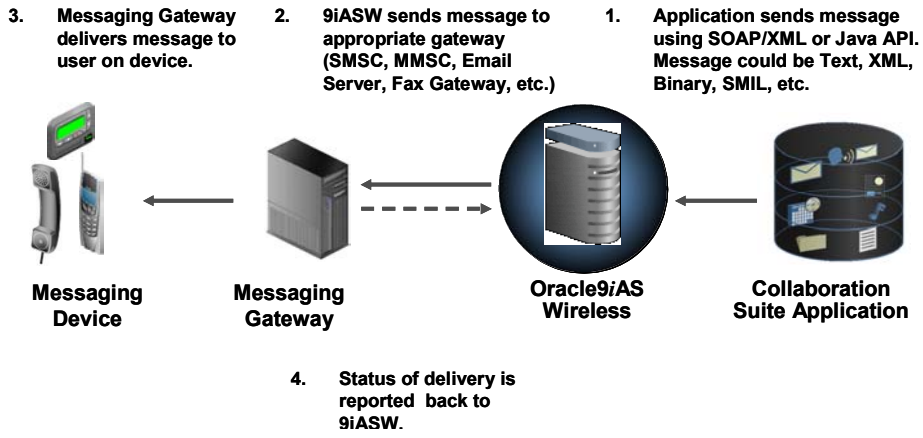

Figure 7. Mobile Notifications

There are three components of Oracle iAS Wireless involved in the delivery of alerts:

1. Data Feeder retrieves alert content from a content source, which in this case is Oracle Collaboration Suite Email and Calendar server.

2. Alert Engine manages the alert subscriptions and trigger conditions

3. Multi-Channel Server formats the message and delivers the alert to the specified device over the appropriate channel.

These three components are integrated to offer a scalable message delivery architecture that can handle large volumes of messages to many different types of devices. It also provides several ways to manage and track your messages, including the status of the sent message.

Oracle iAS Wireless ships with a number of drivers used to deliver messages. Currently these include drivers for popular SMS Centers (SMSC), e-mail servers, Fax servers and Voice Gateways. The architecture is extensible and adding support for other types of messaging devices and mechanisms can be done by writing a driver against the Oracle iAS Wireless Transport API. A complete list of pre-built drivers is available from the Oracle Mobile Tech Center, http://otn.oracle.com/mobile.

REQUIRED INFRASTRUCTURE FOR MOBILE COLLABORATION

(Note: A detailed white paper on deployment of Mobile Collaboration is also available on OTN.)

Internal Requirements

For successful hosting of a complete Mobile Collaboration Server solution, the following components of Oracle Collaboration Suite 10g need to be configured:

1. Notification Engine and Notification Event Collector – The notification event collector and notification delivery server work hand in hand to process UM and Calendar notification events and then hand over the events to messaging server for ultimate delivery to devices
2. Messaging server – The messaging server is capable of communicating with various gateways like Voice gateway, SMS Telco Providers, Email gateway or Fax gateway for delivering messages. The messaging server can also communicate with a hosted messaging gateway, using the Push driver.
3. The Push Mail functionality of Mobile Collaboration server needs to be configured in such a way that requests from the device get routed over the internet, directly to the Oracle HTTP Server (OHS), bypassing the webcache. This is explained further in the Mobile Collaboration Server Administration Guide.

Infrastructure for Mobile Push Mail and Data Sync

Mobile Push Mail or Mobile Data Sync solution does not have any dependency on any additional third party component. However, device management capability to install the required client needs to send out a text message/SMS to the user's device and needs to deploy following external components:

1. Connectivity to a Messaging Gateway Infrastructure for pushing text messages, required for over-the-air install, over the Internet. A hosted messaging gateway is actually a collection of transport gateways, each catering to a particular delivery method/channel. Oracle AS platform provides the platform to glue these various transport gateways together under a single umbrella.
2. A Service Level Agreement with either a SMS Telco provider or an SMS aggregator provider is required.

Infrastructure for Mobile Browser Access

You do not need any third-party component to provide browser access to Collaboration Suite from most mobile devices. A WAP gateway is needed to provide browser access from WAP phones, but in most cases it is provided by the mobile service provider, and the access cost in already included in wireless data services plans.

Infrastructure for Mobile Voice Access

In the past, deploying keypad tone-based and voice-enabled telephone applications was a challenging task that required proprietary hardware and software. Today, Oracle's secure and distributed architecture uses all open standard, off-the-shelf components and is straight-forward to deploy in an organization's data center. For organizations wishing to minimize capital expenditures, maintenance, and administration, Oracle's voice-enabled applications can be hosted at any hosting facility worldwide, or at the world class Oracle Data Center.

The deployment of voice access to Oracle Collaboration Suite requires a VoiceXML gateway. A VoiceXML gateway includes at least four components:

- VoiceXML interpreter
- Telephony interface
- ASR server
- TTS server.

These components work together to support DTMF tone input, audio recording, audio playback, and outbound dialing.

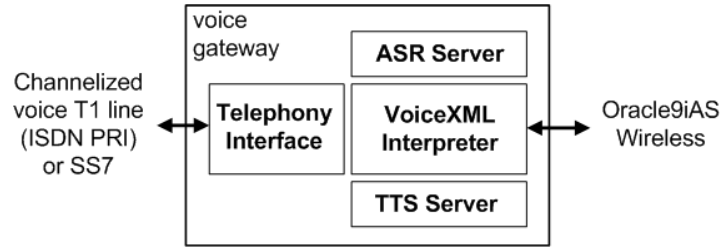

Figure 8. Voice Gateway Components

Many Voice Gateway providers have successfully completed the acceptance testing process of Oracle iAS Wireless for English as well as for several international languages. A complete up-to-date list of accepted Voice Gateway partners and a detailed white paper on deployment of Voice Access is also available on OTN.

Infrastructure for Mobile Text Access

The following external components need to be deployed for using Mobile Text Access via text messaging/SMS:

1. Connectivity to a Messaging Gateway Infrastructure for pushing SMS/Email over the Internet – A hosted messaging gateway is actually a collection of transport gateways, each catering to a particular delivery method/channel. Oracle AS platform provides the platform to glue these various transport gateways together under a single umbrella. The delivery channels can be Email, SMS, Voice and Fax.

2. A Service Level Agreement with either a SMS Telco provider or an SMS aggregator provider is required.

Infrastructure for Mobile Notifications

Oracle Mobile Collaboration supports multi-channel notifications which mean that the notification for your urgent messages and calendar updates can be sent via test message/SMS, as a voice alert, or as an email or fax.

For voice alerts, external requirements are the same as Voice Access.

For notifications via text messages/SMS, the following external components need to be deployed:

1. Connectivity to a Messaging Gateway Infrastructure for pushing SMS/Email over the Internet. A hosted messaging gateway is actually a collection of transport gateways, each catering to a particular delivery method/channel. Oracle AS platform provides the platform to glue these various transport gateways together under a single umbrella.
2. A Service Level Agreement with either a SMS Telco provider or an SMS aggregator provider is required.

SECURITY

Secure access to enterprise applications, or any source of sensitive data, is a primary concern when deploying a mobile solution. With an evolving labyrinth of mobile infrastructure - devices, protocols, networks, and hardware - the problem of security cannot be solved in one homogeneous way. A combination of confidentiality, integrity, authentication, and non-repudiation ensures the secure delivery of mission-critical content to mobile devices. To guarantee confidence in mobile transactions such as stock trades, patient/doctor communication, legal documents and contracts, it is essential that security is ubiquitous and transparent.

Depending on the applications, Oracle Mobile Collaboration supports many techniques to satisfy end-to-end security requirements. Oracle Mobile Collaboration is built on open standards that support integration with standard security technology. Oracle utilizes leading edge encryption technology to deliver solid end-to-end security across the Internet and all wireless networks. Additionally, all sensitive user data and profile is encrypted and stored in the secure Oracle Database.

In sum, a mobile platform provided by Oracle lets companies rest assured that their sensitive information will never be compromised – regardless of how the mobile solution is deployed.

Security remains a significant barrier to the adoption of mobile push mail in many enterprises. Enterprise IT departments and corporate guidelines will simply prevent use of any mobile application or deployment that stores, even temporarily, business information on external devices; they will also prevent its use if they cannot control

or guarantee the end-to-end encryption of data exchanges in wired or wireless networks. Mobile networks are especially critical because of the inherent capability to eavesdrop on such data exchanges.

CONCLUSION

When you're on-the-go, you never want to be out of touch. Mobility provides access to critical business information anytime, anywhere and enables mobile workers to perform more efficiently and effectively. Corporate executives who derive directly quantifiable benefit from being constantly in contact are increasingly adopting mobile push mail and data sync solution and in turn are promoting the use of mobility within their organizations, since they have experienced for themselves how beneficial real-time access to email and calendar can be in terms of responsiveness and productivity.

Oracle's vision for mobility is to offer an open standards based, low cost, easy to deploy, complete solution which will be beneficial to not only a handful of executives but every single employee of your corporation.

No barriers to access mean access for everyone. Oracle Collaboration Suite 10g includes new functionality and updates to an already wide and intuitive portfolio of mix-and-match mobile access methods, to further match your working style and device type. Collaboration Suite 10g includes new convenient Mobile Push Mail access, enhanced and more intelligent Mobile Data Sync, and very easy-to-use over-the-air device management to get user started immediately.

Mobile Collaboration optimizes your investment in Oracle Collaboration Suite by extending its collaborative power to mobile users anywhere, anytime. By providing employees, ubiquitous access to corporate productivity tools enterprises can increase productivity and reduce costs as well as open up new revenue opportunities.

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