

GET YOUR COMMUNITY TO COLLABORATE ON THE SAME PORTAL PAGE

Jim Powell, Oracle Corporation

INTRODUCTION

As organizations of all sizes clamor to improve sharing and accessing information, boost productivity, control costs and bring together geographically dispersed teams, they collectively turn to the corporate portal. Why? They want to combine collaboration and enterprise applications into a customized and integrated on-demand portal that users can access anytime, anywhere. They want one common enterprise portal that provides users with a working environment that brings together the applications and information they need to do their jobs more effectively.

An enterprise portal that supports collaboration in conjunction with providing access to enterprise applications and information solves many customer problems and issues. OracleAS Portal provides the framework to organize information, readily access that information, manage documents, and enable efficient collaboration - all delivered in a familiar, single interface, browser-based environment without having to leave the enterprise portal.

CUSTOMER ISSUES

Enterprises of all sizes and in all industries are faced with the ever-present problem of how to extend communication and information to employees, partners, suppliers, and customers, while still maintaining control, source integrity, and budget considerations. Examples of these difficulties include:

- Poor integration among important information sources within the enterprise, such as email, enterprise applications, document stores, Web sites and so forth, makes it difficult for users to navigate to, search for, and ultimately find the information they seek.
- Extending collaboration to multiple user communities requires separate environments to be built and maintained.
- Limitations in the underlying architecture and security mechanisms make it difficult or impossible to use a common content repository.
- Very limited or overly complex solutions for collaboration and document sharing make it difficult for workers to share information.
- Management of site taxonomy, security, and metadata becomes more time consuming as the size and complexity of the site grows.

To address several of these issues, enterprises are turning to corporate portal technology and building solutions that leverage the application framework that many portal products provide. But in many cases, a portal framework alone is not enough. Built-in capabilities for managing portal content are needed to simplify and integrate the publishing experience, and at the same time, minimize integration, development, and administration costs.

THE PORTAL SOLUTION

Portals are all about bringing together the applications and information that users need to do their jobs more effectively. Since managing business documents and other content is an important part of most jobs, it only makes sense that collaboration features should be part of the portal framework.

The integration of your collaboration applications and your into OracleAS Portal enable users to create, maintain, publish, and search information without having to leave the portal for an external application. The dynamic exchange of information is promoted through document sharing, collaboration, and process automation features, while the quality of user interaction is improved through one common interface to access everything.

You can maintain and access content directly in the context of enterprise applications that are integrated into the portal. Portal features like single sign-on, personalization, search, mobile device support, subscriptions, notifications, and globalization make collaboration easier to access. And many of the management and performance features offered by the portal framework are also required in a collaboration system - features like user provisioning and access control, caching, and usage monitoring.

Of course, OracleAS Portal's open framework makes it easy to integrate collaborative pieces that are already managed in external systems. OracleAS Portal provides pre-built collaboration portlets, integration with Oracle Collaboration Suite, Portal Integration Solutions, tools for building declarative portlets, and APIs to integrate your own collaboration applications.

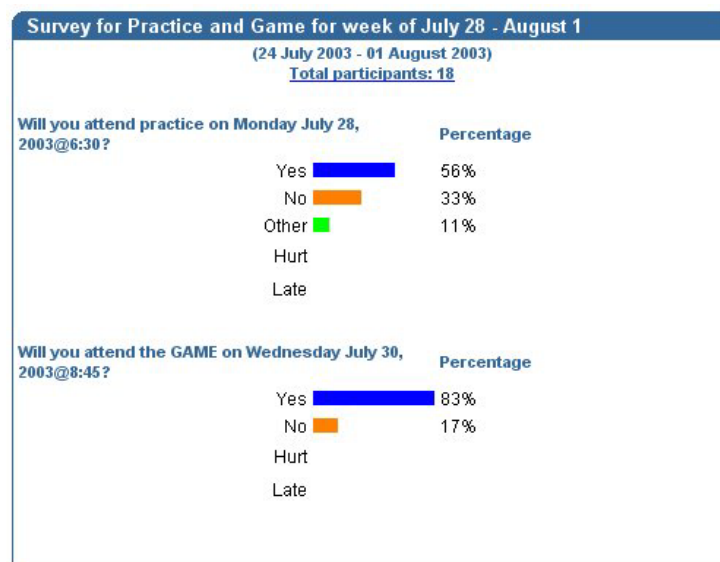
PRE-BUILT COLLABORATION PORTLETS

Oracle provides pre-built collaboration portlets that enable portal administrators and page designers to send and receive information from the portal user population. This section highlights a few of the portlets available from OracleAS Portal.

SURVEY / POLL / TEST PORTLET

The Survey portlets contain tools for building and administering surveys, polls, and tests. The following portlets are included:

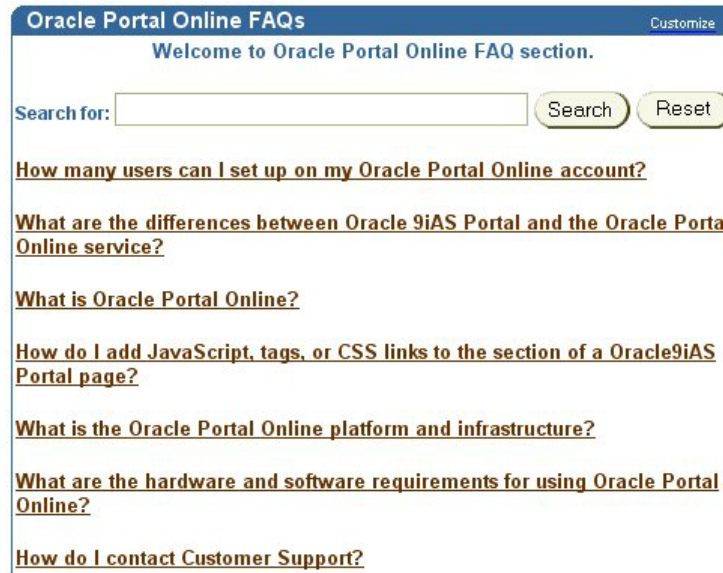
- Survey Builder, for creating, editing, and copying questions; scoring text (essay) responses; and purging responses from a survey, poll, or test
- Survey Form, for delivering the survey, poll, or test to your users
- Survey Chart, for viewing cumulative results in a bar-chart format
- Survey Report, for viewing cumulative results in a report format



Survey chart summary

FAQ PORTLET

The FAQ Portlet provides a way of creating an interactive FAQ list for portal users. The portlet displays a context searchable list of frequently asked questions that automatically prioritizes the list of results based on a cumulative rating scale. Each time an FAQ item is selected by a user and solves that user's problem, it receives a higher weighting than the other items.



The screenshot shows a web portlet titled "Oracle Portal Online FAQs" with a "Customize" link in the top right corner. Below the title is a welcome message: "Welcome to Oracle Portal Online FAQ section." A search bar is located below the welcome message, with the text "Search for:" to its left. The search bar contains a text input field, a "Search" button, and a "Reset" button. Below the search bar is a list of seven frequently asked questions, each displayed as a blue underlined link:

- [How many users can I set up on my Oracle Portal Online account?](#)
- [What are the differences between Oracle 9iAS Portal and the Oracle Portal Online service?](#)
- [What is Oracle Portal Online?](#)
- [How do I add JavaScript, tags, or CSS links to the section of a Oracle9iAS Portal page?](#)
- [What is the Oracle Portal Online platform and infrastructure?](#)
- [What are the hardware and software requirements for using Oracle Portal Online?](#)
- [How do I contact Customer Support?](#)

FAQ for Portal.oracle.com

NEWS PORTLET

The company News portlet enables users with or without HTML skills to easily share the latest community news on the portal. Keep your enterprise portal up to date on deadlines, events, press releases and other news, and even provide a link to the full article when necessary. Add the News portlet to your enterprise portal's home page, to make sure it's the first thing users see when logging into your enterprise portal.

INTEGRATE WITH ORACLE COLLABORATION SUITE

Oracle Collaboration Suite represents the next generation in messaging and collaboration infrastructures, with a three-tier architecture based on proven **Oracle 9i** Database as its foundation, Oracle Collaboration Suite centralizes and consolidates all collaborative content in a common datastore, providing the industry's most secure, failure-tolerant, available and scalable infrastructure. Your organization can finally deploy a single product that integrates email, voicemail and fax, calendar, files, search, and real-time collaboration services using Oracle Application Server infrastructure components, such as the OracleAS Portal infrastructure, Oracle Workflow, and Oracle Internet Directory. A single platform for all enterprise collaboration means avoiding costly integration, improved manageability, and drastically reduced costs related to administration, hardware, software, maintenance and operations. And end-users profit from features like single sign-on and simplified authentication. Only Oracle integrates all applications at the middleware level so that customers don't have to spend time and money on integration, configuration and testing.

New devices and tools for communicating and collaborating will continue to move into the workplace, while the need to communicate with colleagues, customers, and partners across the globe

will continue to grow. However, the infrastructure supporting these complex communications need not be complicated. With a consolidated collaboration infrastructure, an organization can provide the levels of service, reliability, and scalability that their users demand.

Oracle Collaboration Suite

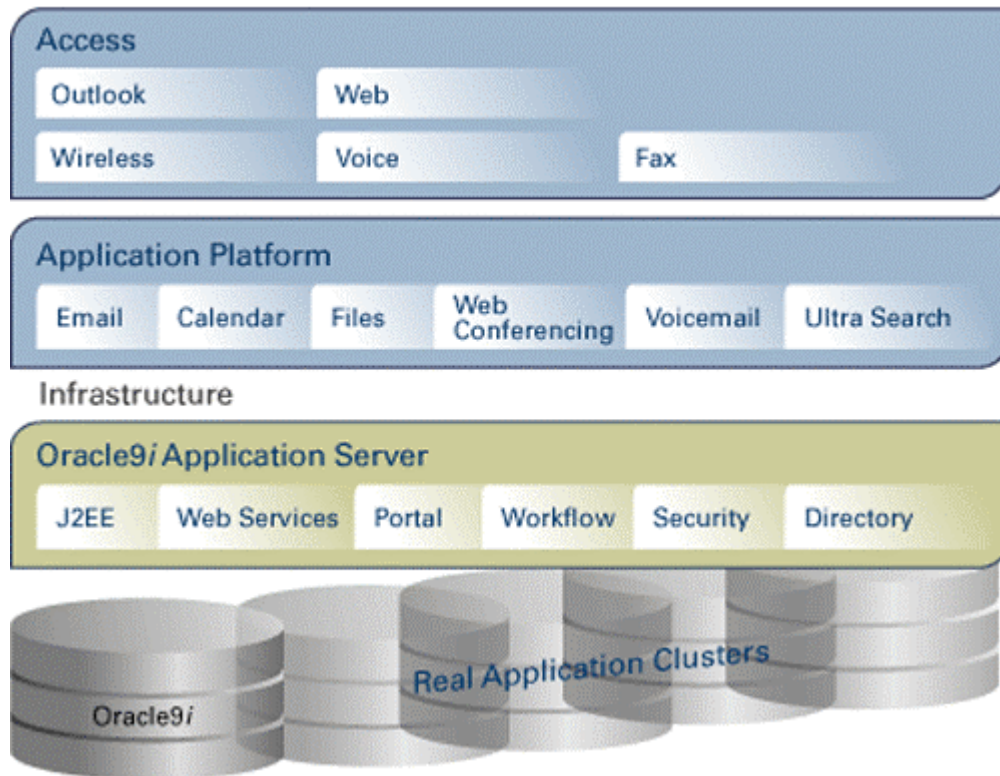


Figure 1- Oracle Collaboration Suite's next generation architecture.

ORACLE EMAIL

Oracle Email takes advantage of Oracle's core competencies in providing easy access to, securely storing, and proficiently managing all types of information by using the Oracle 9i Database as a message store. With Oracle Email, users can access and manage their messages from a choice of standards-based clients, including full support for Microsoft Outlook, an integrated Web client, mobile and traditional phones, PDAs, and faxes. Full integration with Oracle Files means users avoid sending heavy documents as attachments over the network, but can instead include links to files and folders within email messages. Full integration with wireless means email can be accessed anywhere.

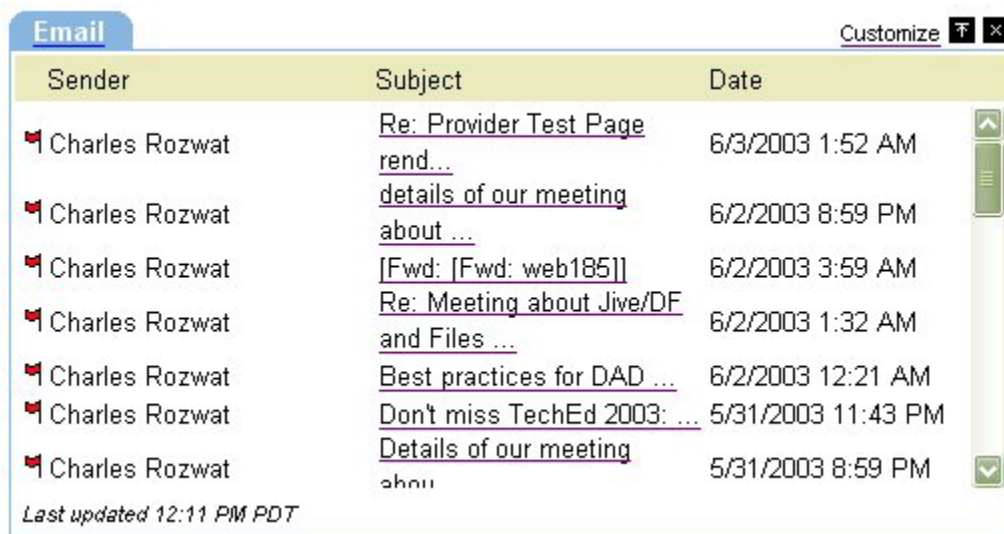
ADVANCED SECURITY AND VIRUS CONTROLS

Oracle Email leverages the unbreakable security of the Oracle Database, ensuring your message store is impenetrable. Its consolidated architecture means you can easily identify and delete infected messages from a single message store. Oracle Email also provides superior virus eradication capabilities, including powerful antivirus and virus scrubbing utilities. Oracle Email uses server-side rules to identify certain virus characteristics such as subject, sender, or attachment, and prevents infected email from entering your system. Release Two delivers an enhanced Virus Scrubber for scanning and cleaning up virus-infected email messages already in the message store -- a quick search of the entire message store allows you to quarantine suspect messages immediately to be inspected

and repaired or isolated for further investigation. Messages can be sent to either the recipient or sender notifying them that their email was infected.

ARCHIVING & RETENTION/ INDEXING AND SEARCH

Employing the powerful Oracle Text tool and the strengths of **Oracle 9i**, Oracle Email allows for advanced indexing and retrieval. Message bodies, including unzipped attachments, can be indexed and later searched for text strings, themes, gists, and formatting (for example, highlighted or marked up text).



The screenshot shows the Oracle Collaboration Suite Email Portlet. It features a table with three columns: Sender, Subject, and Date. The table lists several email messages from Charles Rozwat, with subjects such as 'Re: Provider Test Page', 'details of our meeting', and 'Best practices for DAD ...'. The dates range from 5/31/2003 to 6/3/2003. The interface includes a 'Customize' button and a 'Last updated' timestamp at the bottom left.

Sender	Subject	Date
Charles Rozwat	Re: Provider Test Page rend...	6/3/2003 1:52 AM
Charles Rozwat	details of our meeting about ...	6/2/2003 8:59 PM
Charles Rozwat	[Fwd: [Fwd: web185]]	6/2/2003 3:59 AM
Charles Rozwat	Re: Meeting about Jive/DF and Files ...	6/2/2003 1:32 AM
Charles Rozwat	Best practices for DAD ...	6/2/2003 12:21 AM
Charles Rozwat	Don't miss TechEd 2003: ...	5/31/2003 11:43 PM
Charles Rozwat	Details of our meeting abou	5/31/2003 8:59 PM

Last updated 12:11 PM PDT

Figure 2- Oracle Collaboration Suite Email Portlet.

ORACLE CALENDAR

Oracle Calendar provides the ability to manage personal time and organizational resources within the context of 'intelligent' real-time information delivery for improved efficiency and the optimization of business processes throughout the enterprise. Integration within Oracle Collaboration Suite means streamlined scheduling of meetings with relevant files and full wireless and voice support.

In Release 2, Oracle Calendar features integration with real-time online collaboration services, providing the ability for users to schedule and join Oracle Web Conferencing directly through their calendars. Also new in Release 2, Oracle Calendar answers the enterprise need for resource scheduling depth with features such as Hierarchical Search and Approval Workflow. Calendar users will now be able to search for and book resources based upon attributes or hierarchy, so booking items such as conference rooms based a on set parameters and preferences is now very simple.

ORACLE FILES

Built on top of the Oracle Content Management SDK (formerly Oracle Internet File System), Oracle Files provides an enterprise-wide content storage and management system. Oracle Files answers the need for data consolidation by storing all content in the same file system on one single instance of an **Oracle 9i** Database, accessible anywhere, greatly reducing the costs and administration complexity associated with maintaining distributed file servers across the globe. Oracle Files allows for access to the data store through all major productivity tools, using a variety of widely used protocols such as HTTP/WebDAV, FTP, SMB, NFS (for Linux) and AFP (for Mac).

WORKSPACE AND WORKFLOW SUPPORT

The powerful organization and collaborative features of Oracle Files make it easier for users to set up their own workspaces, locate content, work jointly on projects, and share information. Oracle Files employs Workspaces to structure content based on business use and to authorize who has access to specific content. Role-based authorization is provided through built-in profiles, and categories allow for extended organization of content. Oracle Files also helps to automate business processes through workflow integration for approval and routing. Users can create a workflow attached to a document or folder within Files, monitor the status of the workflow they created, and see what workflows have been applied to specific content. In Release 2, support has been extended to accommodate custom workflows so organizations can better match their business processes, as well as support for triggering actions within Files – like moving, deleting, copying and versioning --when a workflow is completed. Additionally, with lightweight enterprise content management features, your organization gains a system with features vital to enterprise collaboration.

CONTENT INTEGRITY

Oracle Files is designed to eliminate the redundancy of content, while at the same time ensuring that documents can be efficiently secured, backed up, and restored. Content management features are built into the file system, such as versioning and file locking. Content integrity is further strengthened with the Oracle FileSync utility that synchronizes the content on a client machine with a remote folder on the central Oracle Files repository. Through integration with Oracle Internet Directory (OID), Oracle Files maintains consistency of user profiles and naming conventions with the other components in Collaboration Suite. Through SSO integration, Oracle Files offers a secure environment for users to control access to their content by enabling them to keep it in private, public, or shared folders. In Release 2, user provisioning has been automated so that new users will be provisioned automatically in Oracle Files when they are added to OID. If a user who logs onto Files is not yet provisioned, the user will be provisioned at run-time.



Figure 2- Oracle Collaboration Suite Files Portlet.

ORACLE ULTRA SEARCH

Oracle Ultra Search allows you to find what you want – both inside Collaboration Suite applications, such as Oracle Email and Files, and outside the Suite on your corporate network – through the use of two components: Oracle Ultra Search and ‘Search Federator’. Since Oracle Ultra Search and ‘Search

Federator' components employ the same basic Oracle technology, administration and end-user experience extend across all search capability.

FIND THE RIGHT INFORMATION; ANYTIME, ANYWHERE

Oracle Ultra Search is a Web-based, out-of-the-box search engine solution that searches across multiple repositories, including relational databases, HTML documents served up by Web servers, OracleAS Portal, files on disk, IMAP mail servers, and more. Ultra Search uses a 'crawler' to index documents; the documents stay in their own repositories, and the crawled information is used to build an index that stays within a designated Oracle database. 'Search Federator' accepts search terms from end users through the Collaboration Suite Search page and displays an integrated list of search result hits from mail, files, and Web servers crawled by Ultra Search. As Oracle Email and Files build their own index and update it automatically each time a new email arrives or a new file is uploaded, no crawling is required for Collaboration Suite applications; search results are always fresh and current. Release 2 provides support for various new attribute types, including date ranges and list-of-values (LOV), improved Query APIs, and new support for JSP tags, as well as integration with OracleAS Portal and native crawling of Portal instance.

ORACLE VOICEMAIL & FAX

Oracle Collaboration Suite stands apart from other collaboration vendors by delivering a fully-integrated robust Voicemail & Fax system. Oracle Voicemail & Fax enhances traditional voicemail system and fax capabilities with improved scalability, reliability, and accessibility of unified messaging. Voicemail & Fax is designed to co-exist with legacy PBX systems, enabling organizations to gradually lower costs as they leverage the Collaboration Suite data infrastructure and move towards the next generation of unified communications.

STANDARDS-BASED FOR EASY INTEGRATION

Voicemail & Fax leverages the Oracle Email infrastructure, with voicemail messages and faxes residing in and accessed from a centralized, secure message store in **Oracle9i** Database. Oracle Voicemail & Fax applications are built on standard interfaces and support Enterprise Computer Telephony Forum (ECTF) standards (collectively known as "CT Server"), which allow Oracle Voicemail to easily integrate with a variety of enterprise and carrier class switches.

CENTRALIZED ACCESS INCREASES USER PRODUCTIVITY

Oracle Voicemail provides access through multiple channels, including the phone, Microsoft Outlook, standards based clients (IMAP4 or POP3), and Web based UIs such as the Collaboration Suite portal. As messages are stored in industry standard formats (.wav for voicemail and .tif for fax), they require no special player, and it makes it easy for users to store and manage their data. For example, users have the flexibility of accessing messages from any computer system and the ability to forward these messages to anyone with access to email. Additionally, users have a single inbox for all email, voicemail and fax messages, which increases productivity and provides great ease of use. Notification capabilities using Wireless and Voice access further increase the value of Oracle Voicemail, with support for server-side rules that allow users to define how and when to receive email notifications. Notifications can be delivered via SMTP enabled pagers and mobile phones, as well as via gateways for direct one-way and two-way communication with a number of devices, including many popular SMS systems and pager networks.

UNIQUE FUNCTIONALITIES PROVIDE ADDED USABILITY

The Voicemail application in Release 2 includes the ability to address messages to users without the need to know their phone numbers. This directory look-up allows callers to search for and address messages to users at a single site or to access the complete list of global voicemail users. Release 2 also provides completely rerecorded menus streamlined for quick access to voicemail messages and for managing their account, and voicemail support for additional languages including Chinese, Japanese, and Portuguese.

ORACLE WIRELESS

Oracle Collaboration Suite gives your mobile employees full access to all corporate information anywhere, from any device. Its complete set of capabilities lets users access email, calendar, tasks, files, and corporate directories via their voice, PDAs, Web-enabled mobile phones, and pagers. Oracle Collaboration Suite will alert your employees of important events and emails. It lets you define where you are right now (in other words, your *context*), so that alerts get routed to your desktop, mobile phone, or other device.

ORACLE WEB CONFERENCING

New in Release 2 of Collaboration Suite, Oracle Web Conferencing is a powerful real-time online collaboration system that enables employees, customers, and partners to meet online. Web Conferencing is designed and developed to meet the requirements of real-time collaboration across the enterprise, in three important ways:

- By supporting all types of meetings (including live help sessions, interactive meetings and Web seminars)
- By providing integration services within the context of established business processes and enterprise applications
- By delivering real-time performance with efficient network bandwidth utilization.

ONE INTEGRATED SYSTEM FOR ALL ONLINE COLLABORATION TOOLS

Oracle's flexible, integrated feature set gives presenters and attendees a range of collaborative options. Co-browse functionality provides fully synchronous browsing of Web pages with a small or a large number of users based on HTML browser sharing. When using co-browse, requests are sent to the Real-time Collaboration server, then are parsed and sent back to all connected browsers, resulting in less bandwidth consumption than desktop sharing. However, when the added functionality provided by desktop sharing is required, presenters can share anything on their Microsoft Windows-based computer (a region, an application, or their entire desktop) with other attendees in real-time. Web Conferencing also includes Document Presentation functionality for selecting and displaying Microsoft Office documents, HTML files, image files etc. from the Web Conferencing personal materials repository. The Whiteboard feature provides meeting presenters and attendees with access to a rich set of mark-up and drawing tools, and Voice Streaming capabilities provide listen-only streaming of voice from any telephone or teleconference system through the Web Conferencing console. Other Web Conferencing features include Polling, Chat and Recording & Playback.

Oracle Collaboration Suite is a great solution to build a collaborative environment on top of OracleAS Portal. However, if you are using third party collaborative suites such as Lotus Notes Domino Server and Microsoft Exchange Server, OracleAS Portal provides pre-built portlets that can be easily configured and displayed on your portal page.

PORTAL INTEGRATION SOLUTIONS (POINT)

Portal Integration Solutions offers portlets that allow OracleAS Portal you to integrate various applications within your portal. These portlets are pre-built and easily configurable to use with your existing application. Examples of the Portal Integration Solutions portlets include:

- Lotus Notes Portlet
- Microsoft Exchange Portlet

- SAP Generic Portlet
- SAP Specific Portlets for finance, human resources, sales, and inventory
- IMAP Portlet
- SMTP Portlet
- SMS Portlet
- IBM Tn3270 Portlet
- Telnet Portlet
- Unified Messaging System Portlet
- Discussion Forum Portlet
- Site Indexing Portlet (upcoming)

This section discusses the two collaboration portlets, Lotus Notes and Microsoft Exchange.

LOTUS NOTES PORTLETS

The Lotus Notes portlet provider, implemented as an external application, provides a complete integrated solution to display application data directly from your Lotus Domino Server onto OracleAS Portal. The provider includes four portlets to integrate with OracleAS Portal: Inbox, Calendar, Contacts, and To Do. Each of these portlets renders information associated with a user's Lotus Notes mail database.

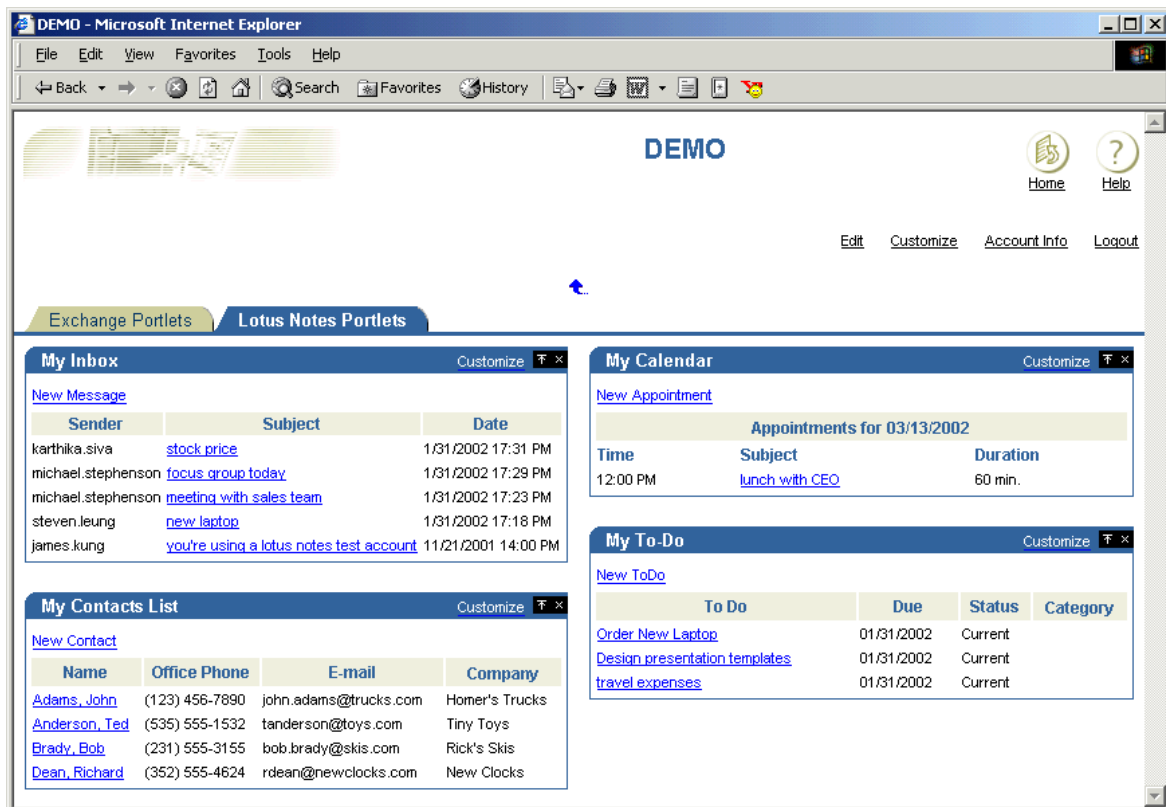


Figure 2- OracleAS Portal Lotus Notes Portlets

EXCHANGE

The Microsoft Exchange portlets offer a complete solution for routing application messaging and

contact information directly from Microsoft Exchange 5.5/2000 to OracleAS Portal. The provider includes three portlets, each of which renders information associated with a user's MS-Exchange mailbox:

- Inbox, which displays messages from the user's Exchange inbox
- Calendar, which displays today's appointments and meetings for the user
- Contacts, which displays the user's list of contacts

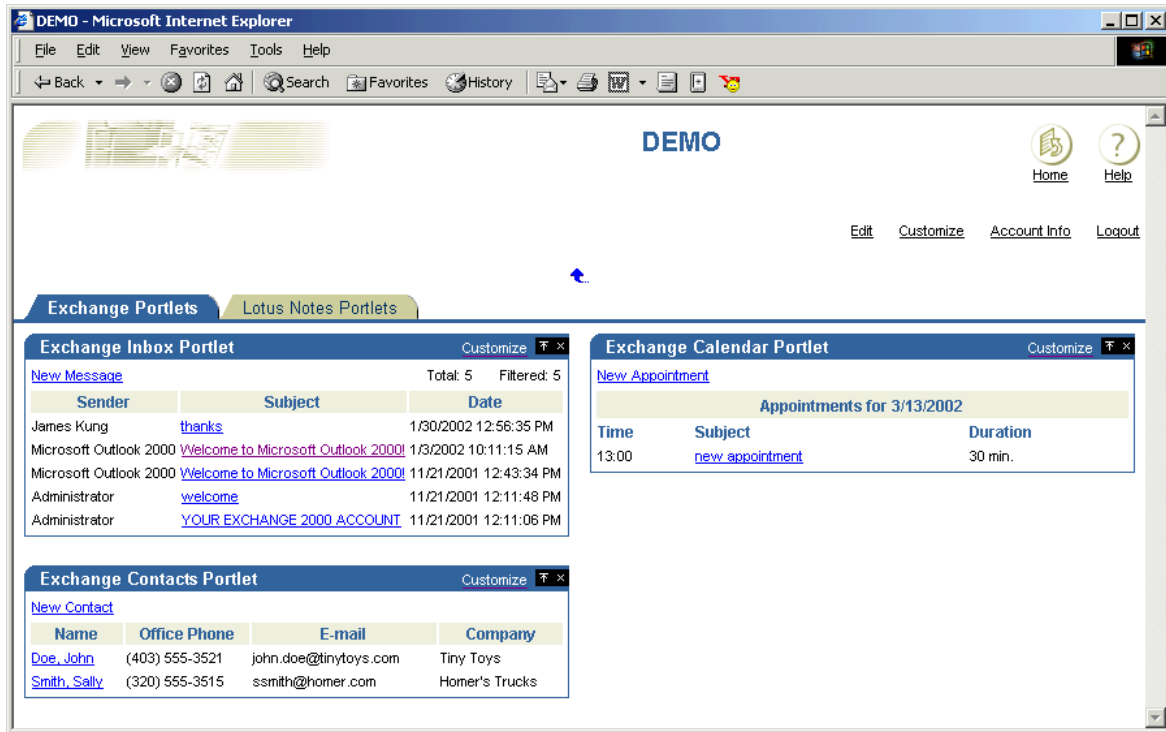


Figure 2- OracleAS Portal Exchange Portlets

PARTNER SOLUTIONS

Oracle has many partners dedicated to providing and supporting collaboration solutions for OracleAS Portal. These portlets are offered through the Oracle Portal Catalog. The Portal Catalog contains information on the members of the Portal Solution Area, as well as the products and services they offer. You can search for portlets based on portlet category, provider type, or by the supported version of OracleAS Portal. Some of the collaboration portlets offered by Oracle's partners include surveys, email, chat, interactive calendars, discussion forums, personalized news feeds, meetings portlet, discussion board, and so on.

SiteScape Forum Summary
Customize

Submit
List unseen
Search
Web files
Meyer Billmers

Discussions and Document Sharing Forums

Forum Name	New Entries
A Team of One Discussions and Documents	0
chessplayers Discussions and Documents	0
SiteScape Forum FAQs	21

Calendars (18 Jun 2001)

Today
This week

When	Description	Where	Calendar
All day	REMINDER: Send in your U.S. Open registration today		chessplayers
12:00-13:00	Workout	Gold's Gym, Maynard MA	Meyer's test calendar

Chat Sessions for Today

Chat Room	Session	Schedule	Participants
new caht room	session 1		0

Messaging

Options	Users Listening
<ul style="list-style-type: none"> Listen for messages Contact someone 	<i>There are no users listening at this time.</i>

Sitescape Collaboration Summary portlet from the Portal Catalog

BUILDING DECLARATIVE PORTLETS

OracleAS Portal's PortalTools application contains new portlets designed to capture and integrate data from multiple data sources, including relational databases, Web Services, spreadsheets, XML sources, and Web sites. The OmniPortlet and Web Clipping portlets shift the customization and integration of portal development from information technology (IT) departments to end users, empowering non-technical users to customize portal content and integrate data via self-service interfaces.

WEBCLIPPING

The Web Clipping portlet offers an easy and intuitive solution to capture content and functionality from existing Web sites or applications and present it as a portlet. The page designer and the end user can create new portlets based on "clippings" directly from the browser, without any help from the information technology (IT) department. "Clippings" are pieces of existing Web content that can be re-purposed in other Web pages, particularly portals.

The Web Clipping Studio is a tool that the page designer uses to edit the portlet. The Studio allows the user to navigate to a Web page similar to a standard browser, divide the page into "clipped" sections and choose the appropriate section for presentation in the portal. Behind the scenes, the studio records all the URLs in a secured repository, and "replays" the navigation portlet when the portlet is shown on the portal page.

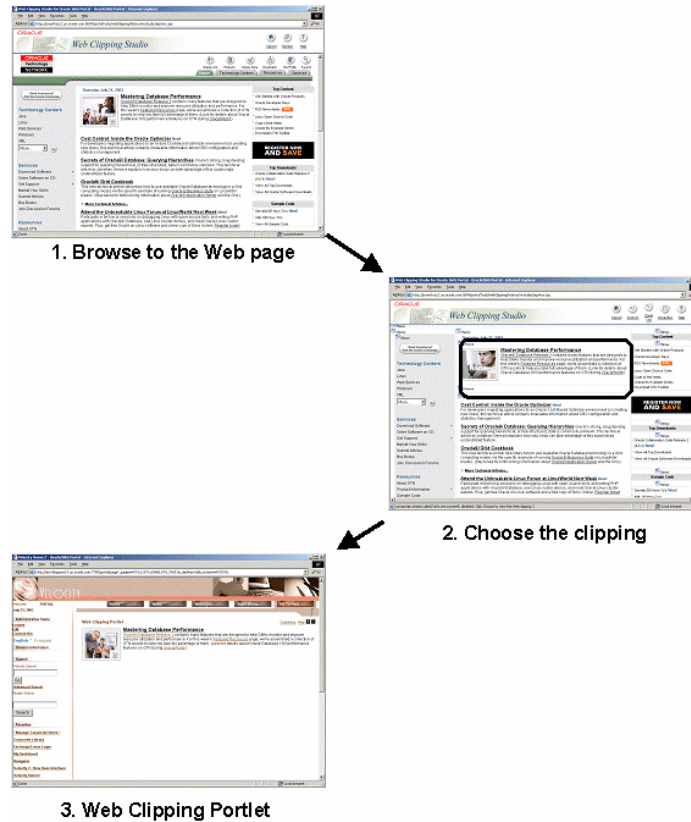
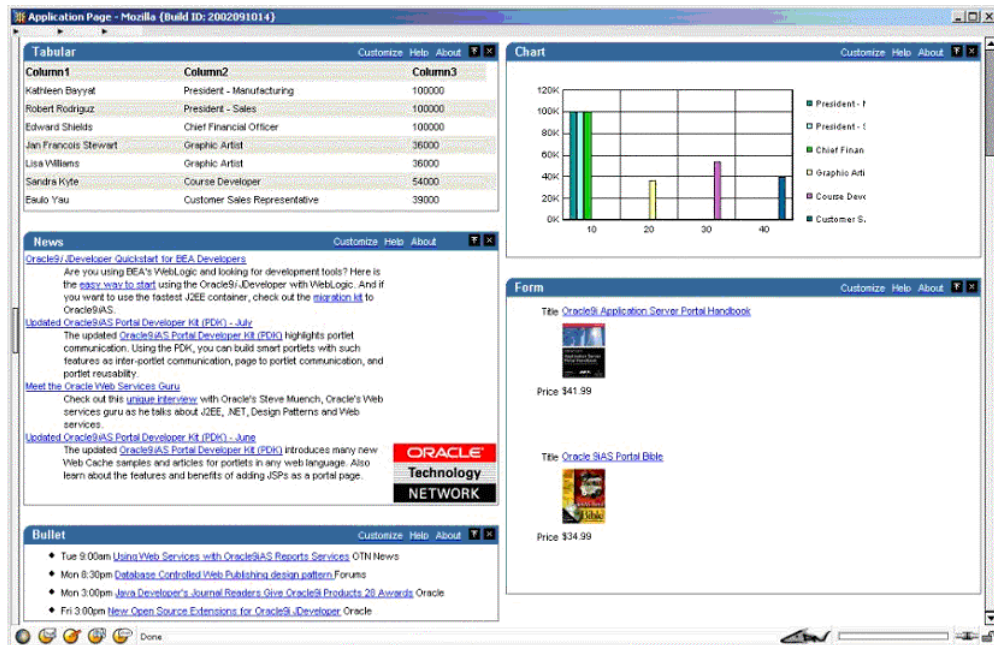


Figure 3: Basic flow to capture a page using Web Clipping

OMNIORTLET

OmniPortlet is a sub-component of OracleAS Portal specifically targeted at enabling “power-users” (portal page designers or content contributors) to quickly and easily publish data from various different data sources using a variety of different layouts through a Web-based wizard.

An OmniPortlet can be based on almost any kind of data source, such as a spreadsheet (CSV), XML, Web Services, database (JDBC), or even application data from an existing Web page. To retrieve personalized data, the page designer can define the parameters for each type of data source to filter the result of a query and the credential information used to access secured data. Out-of-the-box, OmniPortlet provides the most common layouts for portlets, including tables, charts, news, bulleted lists, and forms.



OmniPortlet – News, Spreadsheet, XML, Web Services, SQL, Web Page

Oracle provides a plethora of portlets and tools to build a collaboration environment for your enterprise portal. However, you may need to extend the functionality available from OracleAS Portal to leverage the latest Web-based technologies or to integrate your own collaboration applications.

BUILDING CUSTOM PORTLETS

The OracleAS Portal Developer Kit (PDK) is J2EE-based and includes APIs to build custom portlets and leverage technologies such as J2EE, Web Services, Struts, LDAP, and much more. The goal of the PDK is to provide the developer the ability to have as much control they need, but still reduce the amount of actual coding required by providing a declarative mechanism that lists and defines your portlets.

ADDING FEATURES TO YOUR PORTLETS

The PDK APIs provide a complete list of functionality and features that allow your portlet to be as powerful as any other application. The following are a few of the features available to you when building portlets:

- Turn existing components into portlets:
 - Java/J2EE (e.g. JSPs, Java Servlets, EJBs)
 - XML data sources (e.g. XSL, RSS)
 - Web Service (e.g. Doc, RPC)
- Build your portlets user interface:
 - Browser technologies (e.g. HTML, JavaScript, CSS, XSL, Flash, Java Applets)
 - Error handling
 - URL rewriting
- Internationalization (e.g. NLS, language support, character-set information)
- Session management
- Information storage

- End-user personalization (file, database, preference store)
- Session storage
- Parameters & Events
- Performance
 - Scalability (e.g. load balancing, failover)
 - Caching (invalidation-based, validation-based, expires-based)
- Security
 - Portlet Security (e.g. partner app, external app, portal app, mod_sso)
 - Application Security (e.g. JAAS/JAZN)
 - LDAP Security

CONCLUSION

OracleAS Portal will help you provide one common interface to access everything. Many organizations are realizing that collaboration and knowledge management applications are effective tools for attracting users and information to the portal. OracleAS Portal enables organizations to deploy comprehensive solutions that enable and foster collaboration and coordination across communities of employees, customers and partners via the enterprise portal. OracleAS Portal also provides the framework to develop process-specific portals, which provide increased value to specific users as they create work environments that are more relevant to their jobs.

FOR MORE INFORMATION

Please visit OracleAS Portal Center at <http://portalcenter.oracle.com> for in-depth information on all aspects of OracleAS Portal.

Please visit Oracle Collaboration Suite at <http://www.oracle.com/ip/develop/cs/index.html?content.html> for in-depth information on all aspects of Oracle Collaboration Suite.