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# Oracle Beehive: A Flexible Collaboration Platform for the Enterprise

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## Executive Overview

The Oracle Beehive Enterprise Collaboration Server is the only unified collaboration software platform designed from the ground up for the security, scalability, and manageability needs of large organizations. Beehive's unique, unified model combines a full range of communication and collaboration services such as email, calendar, instant messaging, team workspaces, and conferencing into a single, integrated platform. With the Oracle Beehive Enterprise Collaboration Server, organizations can select from a complete range of collaboration services for their employees while benefiting from the lower cost of ownership of a unified software platform with a single object model, architecture, and database store.

## Designed for the Enterprise

### Simplified Architecture

Oracle Beehive offers a complete set of modular collaboration services on a single, secure platform. Unlike other collaboration systems or suites that claim to be integrated but in reality have services running on different servers, Oracle Beehive is a single install running on a single mid tier providing the full range of modular communication and collaboration services needed by your employees. As a result, there is a single place to administer and manage all of the Oracle Beehive services.

### Modular Services

The collaboration services provided by Oracle Beehive cover the three main areas of enterprise communication and collaboration: messaging (email, calendar, task management, and address book), synchronous collaboration (instant messaging, presence, audio and web conferencing), and team collaboration (team workspaces with document libraries, wikis, team calendars, and contextual search). Beehive gives your organization the flexibility to deploy a portion of the services or all the services. A deployment can start with one or two services, like instant messaging and presence, and not suffer from missing functionality. Additional services can then be deployed by simply enabling them for your employees from Beehive's single administration console. No additional software needs to be installed.

Oracle Beehive's collaborative services are pre-integrated, which allows the services to provide context to each other when deployed together. For instance, the presence service understands a user's free/busy schedule from the time management service, so an appointment on the user's calendar triggers the presence service to change the user's presence to "busy" when the

appointment starts. In addition, all Beehive services respect a single set of audit, event, security and administrative policies, vastly simplifying system management and governance activities.

## Single Database Store

By storing all collaboration and communication content in a single Oracle Database store, Oracle Beehive leverages the power, flexibility, and scalability of the market-leading Oracle Database (license is included with Oracle Beehive). Oracle Beehive inherits advanced database technology such as database compression and partitioning to optimize the storage and efficiency of your collaboration repository. Through the use of Oracle Real Application Clusters (RAC), the Beehive repository can be scaled to meet the needs of the most demanding collaboration deployments, processing millions of messages and documents per day.

## Scalability

While logically Beehive is deployed as a single instance, physically there are several deployment options to suit a varying complexity of deployment needs. To meet the highest scalability demands, Oracle Beehive mid tiers can be multiplied and work in parallel to process the large amounts of information managed by Beehive. Similar, the Oracle database used by Beehive can be deployed in an Oracle RAC cluster to meet the demand imposed by the Beehive mid tiers. By leveraging both the Oracle Database and Java EE application technology, there are no limits imposed by the Beehive server with regards to number or size of workspaces, number of concurrent users, or file size (unlike another popular collaboration platform out there). Any limitations are dictated solely by the underlying hardware and network infrastructure on which Beehive is deployed, with Beehive scaling linearly and predictably as you add more servers.

## The Oracle Beehive Object Model

The Oracle Beehive Object Model (BOM) is an all-inclusive notion of collaborative objects, artifacts, and users, and the bonds between these items. The BOM embodies the unique vision of Oracle Beehive – a unified collaboration system – that includes management of collaborative artifacts regardless of type, a single notion of groups, links between artifacts and common access control.

By exposing objects in Beehive through a common object model, managing different object types in a similar way is possible, resulting in more collaboration capabilities for end-users and lower management costs for IT. For example, a user can tag related object with Beehive such as wiki pages, emails, documents, and calendar appointments all relating to a single topic. Additionally, these different objects can also be linked to each other, allowing the traversal of related data of different data types.

## Integration with Existing Infrastructure

Oracle Beehive also works within the existing IT environment. For instance, Oracle Beehive can use an existing Microsoft Active Directory, Oracle Internet Directory or other LDAP store to provide user and group information as well as authentication. By using the existing 'source of truth', changes to the user directory can propagate to Oracle Beehive's integrated collaboration platform without creating a separate management system. Oracle Beehive can also work directly with existing infrastructure like legacy messaging systems, external workflow systems, telecommunication infrastructure, portals and authentication systems.

## Administration

The Beehive platform is designed from the ground up to be easy to manage. Through Oracle Beehive's web-based administration console, Beekeeper, or scriptable command line, beectl, IT can manage Oracle Beehive's users, groups, and services from one centralized location. Administrators can set up granular access controls to manage content security, set up compliance policies and audit trails, and configure Beehive to work with existing IT infrastructure like identity management and user directory systems.

Through the use of access controls and delegation, administrators can delegate secure management of the Beehive collaboration infrastructure to the appropriate people. Using the granularity of management roles provided by Beehive, the administration of the system can be broken down into different areas, such as system management and business management, if need be.

Oracle Beehive is also integrated with Oracle Enterprise Manager Grid Control, providing a centralized management console for all applications and systems deployed across your enterprise. Oracle Enterprise Manager collects statistics and metrics from Oracle Beehive and provides trending and alerts for dozens of different Beehive services, giving organizations a complete IT dashboard for monitoring Beehive along with other mission-critical applications.

## Installation and Deployment Options

Oracle Beehive offers a number of deployment options to meet the needs of your organization. For those interested in on-premise deployments, Oracle Beehive offers cross-platform support for Linux, Microsoft and Solaris. Whether deploying all or only some of the Beehive components (Messaging, Team Collaboration, and Real-Time Collaboration), there is only a single install file that configures to point to a single database store.

You can also choose from a variety of Oracle On Demand options ranging from managed application services to a subscription-based Software-as-a-Service (SaaS) solution. With a managed application service, you purchase the Beehive license and Oracle experts manage the application on-site, at Oracle's data center, or at a partner's site. The SaaS offering, on the other hand, bundles the license, support, hosting and software management in one predictable monthly fee that avoids large up front capital expenses. These Beehive On Demand options include

access to a fully dedicated hardware and software stack, so you can extend your Beehive system to integrate with on-premise applications to meet your business requirements.

A hybrid approach based on combining these deployment models can be implemented within an enterprise to meet the unique needs of different user communities. For example, you could deploy Oracle Beehive to your sales force through a flexible On Demand deployment but choose an on-premise deployment for your finance department because of different security and compliance requirements.

## Security

Since Oracle Beehive is built on a single platform, there is only one place to secure and audit the content and actions across all Beehive services. Fine-grained access control is embedded within Oracle Beehive to ensure that the right people only have access to the information they are allowed to access. Beehive administrators can easily set-up access control policies and apply them as needed to individual users, workspaces, user groups, departments, or enterprise wide.

For added protection for sensitive emails, documents and others files, even when they are copied or distributed outside your organization, Oracle Beehive provides encryption and tracking capabilities through integration with Oracle Information Rights Management (IRM).

Organizations and government agencies that need to secure sensitive information can use Oracle IRM to classify and seal files and prevent viewing or copying regardless of file location.

Oracle Beehive also leverages advanced security features of the Oracle Database including restricted access controls, data encryption, and the ability to store audit information in a separate, secure location.

Oracle Beehive includes a two-tiered database design that separates the Beehive data into two schemas to prevent the mid tier from directly accessing live data. With this separation, users don't have access to the database, and any connection to the database from the mid tier is controlled by a secure set of database credentials.

Oracle Beehive also supports Oracle Database Vault to prevent any unauthorized access, even from privileged users, that could lead to leaks of sensitive data, intellectual property theft, or insider trading. With Database Vault, it's possible to enforce controls such as restricting logins from certain machines, or at certain times, or even requiring that two DBAs must be logged in simultaneously.

The strongest lockdown of a Beehive system would include database encryption. Oracle Beehive works with the Oracle Advanced Security option to provide database and network encryption along with two-factor authentication for data access. Oracle Advanced Security capabilities include tablespace encryption, centralized key management, and support for 3<sup>rd</sup>-party hardware security modules.

## Compliance

Compliance is an essential aspect of many IT systems, and arguably even more so in collaboration systems. The security provided by Beehive ensures users can only access what they are supposed to, however this is often not enough to ensure business are compliant with the many regulations that apply to them. Oracle Beehive provides additional capabilities to help ease the compliance needs of today's organizations. All data stored in the underlying Oracle Database can be stored as encrypted BLOBs, and additionally administrators can leverage Oracle's Data Vault technology to lock out database administrators and allow access to the Beehive schemas only by the Beehive application.

While protecting data is an important aspect of compliance, retaining it and disposing of it when required is just as important. Through Beehive's integration with Oracle Universal Records Management (URM), records can be created for documents, emails and any other Beehive content. Depending on the needs of the business, the creation of records can be left to the user to manually perform, or it can be done automatically. An administrator can then configure the URM system to retain or dispose of different artifact types as needed via defined record categories and file plans.

Administrators also have the flexibility to configure how retention impacts the artifact. For example, you could record and lock down certain documents after they are created, preventing users from modifying the documents in any way. For email, where more flexibility is needed, you could have the email recorded and managed by the URM system but still allow users to modify it - marking it as read for example.

Creating records for Beehive content ensures the data in Beehive can easily be queried when there is a legal hold or similar request. Whether the Beehive artifact has been deleted from the workspace or not, with URM you can ensure all appropriate content gets recorded and retained based on the needs of your organization.

## Auditing

Leveraging Beehive's event driven architecture and policy framework, administrators can configure Beehive to audit user's activities in the system and then create user-focused or content-focused audit reports. With granular control of what can be audited, administrators can tailor the auditing service to log what is most important for their security and compliance needs. For example, contractors could be audited for everything they do in the system, such as modify a document, forward an email, and delete a wiki page, whereas full-time employees may only require auditing of system access. Content-focused auditing provides additional capabilities such as creating audit reports for specific highly-sensitive documents or workspaces. Beehive's auditing capabilities can be configured on any of the roughly 400 user actions the server captures and separate audit trails can be managed by the server.

## End-User Client Options

Built as a modern collaboration platform, Oracle Beehive is designed as an open, extensible platform. Oracle Beehive exposes its services through a variety of standard-based interfaces including IMAP and SMTP protocols for email, CalDAV for scheduling and task management, XMPP for instant messaging, and WebDAV for document management. The support of standards-based protocols in Beehive allows for the use of open source client software, APIs and client operating systems of your choice. For example, Mozilla Thunderbird or Apple mail clients can be used for email, Mozilla Lightning or Apple iCal for scheduling purposes, Pidgin for IM, and Microsoft Web Folders or Apple Finder for document management. Oracle Beehive also provides integrations with popular desktop tools such as Microsoft Outlook and Windows Explorer.

For mobile users, Oracle Beehive along with a large partner community of device manufacturers and third-party vendors provide support for using Beehive services on the most popular mobile devices and smart phones. These include the Apple iPhone, RIM Blackberries, Windows Mobile devices, Nokia phones and a variety of other devices.

Beehive has a centralized notification service that allows users to control how and when they are notified. Notifications are triggered on a number of data types, such as meetings, tasks or voicemails, and users can configure the delivery channel they prefer, such as email, SMS, or IM.

## Service-Oriented Architecture

Using Oracle's Fusion Middleware technology, Oracle Beehive's event-driven service-oriented architecture (SOA) can easily be deployed across the enterprise in a tiered approach if needed. While protecting the information repository is a critical element, protecting the business logic provided by Oracle Beehive is just as critical. Oracle Beehive can be deployed in a three-tier approach to provide public Internet access to the services, while protecting the application and data from public exposure.

Oracle Beehive can be part of any SOA environment and is designed to support customized business workflows like a document review and approval process. Oracle Beehive packages Oracle BPEL Process Manager as the standard workflow engine, allowing actions from another system to be surfaced within Beehive and actions in Beehive to be propagated into other systems. As an example, BPEL tasks presented to an Oracle Beehive user will be integrated into the user's personal tasks system regardless of their origin. In this way, a task created by another application (for example: approve this expense report) shows up as a task in the user's personal task list in Beehive.

## Software Development Kit

Oracle Beehive's services can also be exposed through the Beehive Development Kit (BDK), a programmatic interface that exposes the collaboration services and objects through a unified application programming interface (API). Exposed as REST-base web services, Beehive objects

are represented as XML objects, providing great flexibility in how they are consumed in other applications. Adhering to the nature of REST style programming, the BDK provides basic CRUD (create, read, update, delete) operations that are identical on all object types Oracle Beehive manages. Where necessary, type specific operations are also provided to facilitate consumption of the Beehive services. For example, a generic “copy” function as well as document check-in and check-out functions are provided. These helper functions ensure that enterprises can benefit from the entire range of capabilities Beehive provides when integrating or customizing Beehive services.

Using the BDK, Oracle Beehive can be tightly integrated within other enterprise applications. Oracle Beehive can be the underlying embedded communication and collaboration technology within custom-built applications or even within Oracle applications such as Siebel CRM or PeopleSoft. These custom applications can consume any service exposed through the Oracle Beehive platform. Furthermore, an end-user would not need to be aware of Oracle Beehive in order to use the custom application. For example, by leveraging Oracle Beehive’s integration with the Oracle BPEL Process Manager, Oracle E-Business Suite expense report approvals can be linked to Beehive Task Assignments, thereby providing approvers access to expense report claims directly in their collaboration client of choice, whether it be Microsoft Outlook, Beehive Webmail, or mobile clients such as Blackberry or iPhone.

## Integration with Portals and Composite Applications

Whether they are referred to as portals, composite applications, or dashboards, organizations often embed a set of components or portlets into an application to give employees the information they need in a centralized location. Oracle Beehive is designed to provide the communication and collaboration backend to these composite applications, providing employees access to team collaboration, enterprise messaging, and real-time collaboration content and services.

Oracle Beehive provides a wide range of portlets, ranging from personal information management (PIM) information like a user's personal email and calendar to team collaboration information like a user's favorite workspaces and recent activity in those workspaces. With its support for the JSR 168 standard for portlet programming, Oracle Beehive portlets can be used by the Oracle WebCenter Suite, Oracle WebLogic Portal, IBM WebSphere, and other leading enterprise portal solutions.

## Collaboration Modules

### Enterprise Messaging

Oracle Beehive Messaging provides enterprise-class email, calendar, address book, and task management as well as additional capabilities including mobile access, integrated voicemail and fax, and integrated document management. Like other Beehive modules, messaging services are

centrally managed for streamlined provisioning and compliance management and benefit from the scalability, security, and infrastructure-ready nature of the Beehive collaboration platform.

### **End-User Client Options**

As an open, extensible platform, Oracle Beehive provides a number of options for end-user messaging clients. Beehive messaging services can be accessed through Microsoft Outlook, Beehive Webmail (an AJAX-based rich web client), standards-based clients like Apple Mail or Mozilla Thunderbird, and mobile devices like the Apple iPhone, RIM Blackberry, Microsoft Windows Mobile phones, and Nokia smartphones.

The Oracle Beehive Extensions for Outlook (OBEO) integrates Beehive's personal productivity services with the Microsoft Outlook client. Using a proprietary communication protocol, OBEO provides a richer experience for Outlook users by incorporating email, calendar, task management, address book *and* document management into a single user tool. Implemented as a MAPI service provider for Outlook, OBEO communicates over secure HTTP to the Beehive backend and is notified of changes on the server automatically.

For those interested in a web-based email client, Oracle Beehive includes the Beehive Webmail client by default in the standard Beehive install package. Webmail is based on the open source VMware Zimbra web client and gives users access to personal productivity services like email, calendar, address book, and task management. Enhancements done to the client for Beehive include workspace integration for exposing team email inboxes, team calendars and tags.

### **Mobile Device Support**

Beehive's out-of-the-box support for open mobile standards (like Push-IMAP and OMA-DS) and device management enables support for a diverse set of mobile devices and make it easy for user to configure their devices and install 3<sup>rd</sup>-party mobile software.

For those looking for a more tightly controlled mobility environment, Oracle has partnered with Notify Technology. The NotifyLink Enterprise Edition for Oracle Beehive communicates directly with the Oracle Beehive server, with all organizational data stored behind the firewall. Data is transmitted directly to wireless devices fully encrypted.

### **Voicemail**

The Oracle Beehive Voicemail service is part of the Oracle Beehive collaboration platform and designed to integrate with an organization's existing telephony infrastructure without requiring any additional voicemail infrastructure. With support for standards including SIP and VoiceXML, Beehive works with a number of PBX and PSTN infrastructure providers including Cisco, Avaya, and Nortel. In addition, Beehive works with gateways which support T.37 fax detection.

Beehive Voicemail provides all the capabilities required for a modern voicemail system, including flexible call answering (multiple custom greetings and call forwarding rules), customizable auto

attendant (corporate directory search, call routing, operator support ), IP phone support, access to voicemail from anywhere, and support for bilingual and multilingual facilities.

Beehive Voicemail integrates directly with Beehive Messaging to allow for the consolidation of email, voicemail, and fax into one inbox with voicemails and faxes delivered as .wav or .tiff attachments.

### **Integration across Beehive Services**

When Beehive Messaging and Beehive Team Collaboration services are deployed together, meetings scheduled in a team workspace automatically display in participants' personal calendars. This is also true of team tasks, email messages and notifications – although their origin is a team workspace, users can discover this information in their messaging client. With OBEO, Microsoft Outlook users also have access to their team workspace emails and documents from within Outlook. In Beehive Webmail, tags created by users in team workspaces are also available to tag emails, voicemails, contacts, and tasks.

When Beehive Messaging and Beehive Real-Time Collaboration services are deployed together, conferencing, presence, and calendar services are automatically integrated. This allows users to schedule online conferences directly from their calendaring client, and when a conference begins their presence status is automatically updated to 'Do Not Disturb: In a Meeting'. Through OBEO, users can also launch online conferences directly from the Microsoft Outlook interface to quickly join or start conferences.

### **Manageability**

All the Beehive messaging services leverage the integrated nature of the Beehive architecture along with the scalability, security and simplified compliance management of the Beehive platform.

Beehive Messaging is designed to easily integrate with an organization's existing IT infrastructure. Beehive supports directory services including Microsoft Active Directory, Open LDAP, and Oracle Internet Directory for provisioning and single sign-on (SSO). Beehive also supports anti-virus and spam filtering products including Symantec solutions. Beehive Messaging is also 'compliance ready', supporting in-place records and retention management in conjunction with Oracle Universal Records Management (URM) and providing easy integration with external email archiving products.

### **Coexistence and Migration Support**

Beehive Messaging provides calendaring and scheduling coexistence with Microsoft Exchange and IBM Lotus Domino, allowing IT to keep some users on the existing messaging system or migrate users to Oracle Beehive in a predictable manner without requiring an all-or-nothing cutover. As groups of users migrate to Beehive, the coexistence gateway ensures users on both systems can continue to schedule meetings with each other and see free/busy information to

minimize the user impact of transitioning to a new system. To perform the transition to Oracle Beehive, the Beehive Migration Tool (BMT) is used to transfer the email, calendar, tasks, and contacts from a variety of legacy messaging systems including Microsoft Exchange, IBM Lotus Domino, Novell GroupWise, Oracle Collaboration Suite (OCS) and other IMAP –based servers.

## Real-Time Collaboration

Oracle Beehive offers a set of enterprise-ready communication and real-time collaboration tools that enable users to collaborate instantly with their teams and their entire organization. The set of tools include an online web and audio conferencing service, a standards-based instant messaging service, and a full-featured solution for mobile devices.

### Instant Messaging

By supporting the open XMPP protocol, Beehive allows users to choose whatever instant messaging (IM) client is best for their environment. Independent of which standards-based XMPP client is deployed, users can take advantage of all the Beehive features, including having their presence status tied to their calendar, receiving notifications of Beehive events (like new calendar invites or important changes to a team workspace), and interacting with users through chat rooms.

### Mobile Access

When a Beehive user moves away from their desktop, they can still remain connected to their colleagues through their mobile device. Like the standard XMPP desktop client, the Beehive Mobile Communicator lets you communicate with colleagues through instant messages, lets you receive notifications of Beehive events, and keeps your status in sync with your “true” presence. In addition, mobile users can perform user searches against their corporate directory.

The Beehive Mobile Communicator is supported on the Apple iPhone, the RIM Blackberry, and devices supporting Windows Mobile 6.

### Conferencing

Beyond the simple instant messaging features, Beehive Conferencing enables users to collaborate online and in real-time with their customers and colleagues, from one-to-one instant conferences to large, scheduled web seminars. Users can share their entire desktop, record conferences for future playback, and communicate with all the participants through the integrated voice chat and text chat services.

Beehive Conferencing is supported on both Windows and the Mac. Users can join conferences from the web, from the actual desktop client, from their calendar client, or from any Conference notification (for example, email or IM).

## **Integration across Beehive Services**

The instant messaging integration with Beehive is a key value-add to the traditional XMPP clients. The integration with presence means that users can keep their presence status in sync with their mobile devices, with their calendar, and with their other IM clients. More importantly, notifications that are generated by Beehive (including custom workflows) can be sent to an IM user, keeping them updated to important changes on Beehive.

Beehive Conferencing is also fully integrated with the Beehive calendar and presence infrastructure, allowing users to more easily schedule future online conferences directly from their calendaring client of choice, such as Microsoft Outlook, Mozilla Lightning, Apple iCal, or any standards-based CalDAV client. Microsoft Outlook users can also launch online conferences directly from the Outlook interface to quickly join or start conferences. As online conferences begin, a participant's presence status is automatically updated to reflect the participant's being in the meeting.

## **Manageability**

All the Beehive real-time collaboration tools leverage the integrated nature of the Beehive architecture and the security framework of Beehive.

From a security and compliancy standpoint, the transcripts for chat rooms, peer-to-peer chats, and conferences are all stored in the personal workspace for the user and subject to the same compliancy rules set on the workspace. Likewise, conference recordings are also stored in a workspace and will inherit the compliancy rules set for the workspace in which they are stored. It is even possible to create custom workflows around these transcripts and recordings, or integrate this content with notifications.

For mobile support, Beehive includes a device management service for automating the deployment and provisioning of the Mobile Communicator.

## **Team Collaboration**

### **Team Workspaces**

Oracle Beehive team workspaces brings together a unified set of capabilities to allow users to collaborate and share information. Workspaces provide a secure environment where all the relevant data is stored, context is maintained, and policies are enforced. A team workspace can be used by a department, a project team, or any community of users, whether inside and outside the organization, and offers a convenient way for users to discover, communicate and coordinate team activities more effectively. Some of the collaboration services provided within team workspaces include a document library, a team wiki, discussion forums, a team calendar, team announcements, task management, and team email.

By using a team workspace to do their jobs, users can create a centralized repository that contains not only the final work deliverables but also all the information that went into the process. The

creation process is recorded, managed and available to the organization for future learning and context. New participants can visit the workspace and can not only see the latest content but also discover the history and evolution of that content.

### **User Directory**

As part of Team Collaboration, Oracle Beehive also provides a searchable user directory with web-based profile pages for all Oracle Beehive users. Profile pages include contact information and organizational chart information that can be directly imported from your organization's directory service. Profile pages also include a user's recent activity, shared workspaces, and shared tags.

### **Integration across Beehive Services**

When deployed with other Beehive services, workspace users have access to a combined view of one's personal and team events, one-click conference access, and user presence status. In addition, team workspace information can be propagated back into an individual user's personal workspace. For instance, if a meeting is scheduled in a team workspace, then that meeting appears on the personal calendars of those users who are members of the team workspace. This is also true of tasks, email messages and notifications – although their origin is the team workspace, users can discover this information through their personal workspace without losing the context of their origin.

### **End-User Access to Workspaces**

Team Workspaces can be accessed by a variety of clients. The primary one is the Oracle Beehive Team Collaboration Client, which provides web-based access through a web browser. This client has been designed to make it easy for users to find and access collaborative content, whether using a personal computer or web-enabled mobile phone.

In addition, the Oracle Beehive Extensions for Outlook (OBEO) and Oracle Beehive Extensions for Explorer (OBEE) both provide access to team workspaces. These extensions make it convenient for users of these tools to store and share information.

OBEE exposes Beehive team workspace folders and documents in the Windows Explorer file management tool, permitting document management activities like moving entire folders between workspaces via drag and drop or copying dozens of files from a local disk to a shared workspace. OBEE also gives users access to workspace files and folders while offline.

Workspaces can also be surfaced in portal applications through the use of Beehive portlets. Workspace lists, recent activity, team calendar, and team email portlets are available. Built using the JSR 168 standard, these Beehive portlets can be consumed in a number of portal applications and are configurable by administrators for filtering information by data type, so that the single portlet can show recent documents, recent wiki pages, or other workspace changes.

Documents stored in Beehive Workspaces are accessible not only through the extensions mentioned above, but also through standard protocols such as WebDav and FTP. This allows Beehive Workspaces to be easily accessible through a variety of client on different platforms such as Windows, Apple, and Linux. Workspace activity and content can also be monitored using RSS for consumption via an RSS reader or widget.

### **Extensibility**

The BDK allows Beehive workspaces and related data to be incorporated into custom applications and business processes. Using a REST-based approach to programming, the BDK reduces the learning curve of working with different types of objects such as emails, documents, wiki pages, meetings, tasks and contacts by exposing generic methods such as GET, PUT, POST, and DELETE. Whether you're retrieving a list of workspaces, events or emails, the methods invoked are the same, and the server determines what it needs to do based on the inputs provided to those methods.

### **Search**

Oracle Beehive allows users to efficiently search across all workspace artifacts, regardless of type, or to navigate to artifacts using user-published tags and tag clouds. Workspace search is context-sensitive and filtering of search results by artifact type, user, or date is supported. Enterprise taxonomies can be defined and their application enforced based on the policy definition for a specific workspace or folder. These capabilities augment the traditional folder structures, providing alternative navigation paths to discover managed collaborative content.

### **Tracking Context**

Often it is not the actual content that is useful, but rather it is the related information such as the author or the connection to a related object. A user searching for a specific document is sometimes more interested in knowing the author of the document than the document itself. Oracle Beehive maintains this bond between the document and the author regardless of later use and exposes it to users to streamline information discovery.

### **Version Control**

Workspace coordinators can control how documents within a specific workspace are versioned. Oracle Beehive supports manual and automatic versioning of document, allowing histories of changes to be kept if desired. Additionally, workspace coordinators can choose to enforce the versioning configuration across all folders or just some folders within a particular workspace. If the versioning configuration is not enforced by workspace coordinators, workspace members with document coordinator privileges can also configure the versioning on specific folders within a workspace.

Beehive wiki pages are automatically versioned and all prior versions are accessible to all workspace members. Additionally, workspace members can compare two versions of a wiki page to view changes made as well as restore the wiki to a previous version.

### **Content Management Integration**

While Oracle Beehive provides its own basic content management capabilities such as versioning, check-in, check-out, locking and access controls, there is also the possibility to integrate Oracle Beehive with an existing deployment of Oracle Universal Content Management (UCM). This allows information already stored and managed in Oracle UCM to be made accessible in Beehive for workspace users to continue to collaborate on. Beehive administrators can create remote repository configurations which identify which areas of an Oracle UCM repository are accessible to Beehive. These areas can be defined using static paths or search queries supported by Oracle UCM 10gR3 and 11g. Once repositories are configured by the Beehive administrators, only then can they be enabled in a Beehive team workspace if the workspace coordinator chooses to do so. Through this integration, information managed in Oracle UCM and exposed to Oracle's Web Content Management applications is available to Beehive users for collaboration while minimizing the costs and risks associated with document duplication.

## **Conclusion**

The Oracle Beehive Enterprise Collaboration Server is Oracle's modern software platform for business collaboration. Oracle Beehive provides a full range of communication and collaboration services built around a unified architecture, giving employees integrated tools for streamlined collaboration and giving IT a modern, centralized system that is more cost-effective to manage than the fragmented alternatives out there. With a rich set of collaborative tools and centralized management provided by Oracle Beehive, organizations get a system that brings measurable productivity to their employees while allowing IT to maintain a secure, auditable, scalable IT environment that results in significant operational efficiencies and cost containment.



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