Remote Campus in CollabraSuite 4

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Revolutionary Collaboration

Abstract

CollabraSuite version 4 offers a set of features dubbed Remote Campus Access which provides the capability for users logged into one campus to collaborate with users logged into another campus. This paper describes the details on the Remote Campus Access architecture and provides examples of environments that are prime candidates for leveraging this new capability.

Table of Contents

Abstract 5
Table of Contents 6
Background 7
Introduction 8
Application 8
Architecture 9
Administration 12
Conclusion 12

Background

CollabraSuite® is a collection of graphical, real-time collaboration components that can be used to build customized collaborative environments. The collaborative framework is made up of core functionality that addresses specific collaboration services. These services are deployed to create collaborative communities. CollabraSuite can be combined with other third party components to provide content rich web-based applications.

The CollabraSuite software offers a metaphorical representation of a physical workplace. The virtual environment is made up of campuses, buildings, floors, and rooms that can communicate seamlessly over distributed systems. This flexible architecture provides a means of hosting private meetings, group communications, or seminar style conferences for an entire enterprise.

When a user logs into the CollabraSuite system, they are entering a virtual room where they can meet and chat with other users, share documents, or participate in audio and/or video conversations. Not only can users collaborate with others in their current room, but they can see users working in other virtual rooms via a presence awareness capability. Users can instantly join users in other rooms simply by clicking a button. As users move throughout the collaborative environment, they carry a virtual briefcase with them – filled with documents that only they can see. Documents in a user's briefcase can easily be shared with other users by dragging and dropping them into a room. In addition to storing private documents in a user's briefcase, CollabraSuite provides the ability to store documents within rooms (virtual file cabinets). These documents can then be viewed by any user within the room.

CollabraSuite offers a rich set of components, including presence awareness, instant messaging/paging, shared whiteboard, access controls, auditing and metrics, document storage and retrieval, audio/video and web conferencing, profile manager, navigation, desktop sharing, and an associates list. CollabraSuite supports most popular browsers as well as lightweight handheld devices.

Each collaboration component is designed to add powerful collaboration features to existing applications, web pages, and portal frameworks. Components can be mixed or matched to provide a customized solution for the collaborative environment.

CollabraSuite's component-based design ensures that many types of behavior can be standardized, packaged, and reused by any J2EE application. Component vendors can provide a variety of off-the-shelf component solutions, including user interface templates and even vertical market functional components of interest in specific industries. Organizations, therefore, get a choice of standardized components to handle common or specialized tasks. Additionally, CollabraSuite's open API allows you to easily integrate your applications, tailoring the collaborative environment to meet your organization's specific needs.

The core architecture satisfies requirements critical to enterprise-level collaboration, including: scalability and performance, availability and reliability, flexibility, portability and adaptability, maintainability and supportability, extensibility, unified security and seamless integration.

Introduction

CollabraSuite 4 adds features that allow users to communicate across several campuses. In CollabraSuite, a campus contains a representation of the virtual collaborative workspace and the information about the users that collaborate within the virtual workspace. In addition, a campus also contains metadata about the types of documents stored in the environment, the types of skill sets available and the organizations to which users belong. The campus is the highest-level organizational unit within the CollabraSuite collaborative environment. As with previously released versions of the CollabraSuite software, a deployment of CollabraSuite within an enterprise application server can contain one or more campuses each containing its own representation of a collaborative environment. More information on configuring the campus can be found in the CollabraSuite Administration Guide located within the distribution media.

Since CollabraSuite supports more than one campus within a single application server deployment, the client graphical user interface requires the name of the campus in order to connect. Because of this requirement, the campus name is just one of the several parameters required when launching the graphical user interface. Once launched, the user interface will remain connected to the specified campus until the user logs out or exits the web or client application.

Prior to CollabraSuite 4, users were unable to communicate directly with users actively participating in collaborative sessions within another campus. As a result, if one user wanted to collaborate with another user located in another campus, the user would either need another instance of the CollabraSuite graphical user interface or would need to log out of the existing collaborative session and start a new session within the other campus. This resulted in disjointed collaborative sessions where the user was communicating with a specific set of users in one campus and another set of users in another campus. This also prevented all of the documents, whiteboard sessions, etc. contained within the first campus from being shared with users in the second campus.

Through the use of the Remote Campus Access feature, CollabraSuite 4 will enable users that are collaborating within one campus to see and collaborate directly with users in another campus. This version of the software contains a new administration section for configuring users from a Remote Campus Access to enter the local collaborative environment. When properly configured, users that have access rights across campuses will be able to seamlessly collaborate with users in several campuses simultaneously.

Application

The Remote Campus Access feature is tailored toward organizations that need to collaborate with a subset of users from one or more Remote Campuses. For example, consider the situation where a corporation has multiple subsidiaries, each having their own CollabraSuite environment. The corporate headquarters could enable the Remote Campus Access feature of CollabraSuite to enable a subset of users from the subsidiaries to seamlessly enter and collaborate in the CollabraSuite environment at the corporate headquarters and vice versa. While users from the corporate headquarters may have had the ability to visit other campuses before, using the RCA feature, they would be able to do so without having to leave their own environment. This enables these users to communicate with the remote campus while remaining connected to and informed of events in the home campus.

When necessary, users in the subsidiaries could also be given access to collaborate directly with each other without having to enter to corporate headquarters at all. All of the security features, such as access controls on rooms and documents, still exist in any remote campus connection, providing a secure environment for both local and remote users.

As described in these scenarios, the Remote Campus Access feature is very useful whenever a subset of users have the need to seamlessly collaborate with users located in another campus. This feature is not intended to be used as a failover mechanism or system redundancy supporting a catastrophic hardware failure. Instead, a failover solution should be architected using the redundancy features provided by the enterprise application server and database vendors provided within the infrastructure. It is also not intended for allowing interoperability between a CollabraSuite environment and an instance of another collaborative tool. However, one could assume that this is the first step in providing this type of interoperability, which will be provided in a future release of CollabraSuite.

Architecture

CollabraSuite is a Java 2 Enterprise Edition (J2EE) application that requires the use of an enterprise application server to host the application. As a J2EE application, it takes advantage of the J2EE services provided by the enterprise application server. These services include: authentication, authorization, web services, servlets and Java Server Pages from the web tier; Container-Managed Persistence (CMP), entity beans, session beans from the EJB tier along with the Java Messaging Service (JMS) for event delivery within the application server and Java Mail API for interaction with email.

The Remote Campus Access feature will work with any two or more instances of a CollabraSuite environment. These environments can be deployed within the same enterprise application server, deployed in separate application servers on the same machine, or they can be deployed on different machines where the machines have network connectivity to each other. In the multiple application server scenarios, the application servers can also be from different vendors and different versions. This allows customers to purchase the appropriate enterprise application server for their infrastructure and budget versus buying a specific application server to enable the Remote Campus Access feature of the CollabraSuite software.

As with previous versions of CollabraSuite, authentication is performed at the web tier by the enterprise application server. In CollabraSuite 4, the user authenticates once to their home campus via the application server hosting the home campus. Once authenticated, the CollabraSuite client only talks directly to the home campus and the home campus will reroute events to remote campuses and receive events on behalf of remote users. Prior to rerouting events, the home campus will authenticate itself with the remote campus. All communications between the multiple campuses are implemented using HTTP with a compressed XML payload. In most cases, this enables communications to traverse firewalls without the need for special firewall configurations. Using an XML payload provides interoperability between future versions of CollabraSuite. This was a requirement for the Remote Campus Access feature because it cannot be assumed that all deployments will be upgraded at the same time or will have the exact same versions of the CollabraSuite software. For environments that are not using SSL for the intercampus communications, such as inside a corporate environment or secure network, the CollabraSuite software assumes a trusted relationship between the environments by sending the campus identity to the remote campus. However, in an environment using SSL, the software will check the SSL certificate to verify the identity of the connecting remote campus. In either case, the

remote campus must be configured properly to communicate with the host campus. All of the inter-campus communications and the authentication are performed by code running in the Web Tier of the enterprise application server.

In order to complete the implementation of the Remote Campus Access feature, a new concept of a remote user and a remote campus were added to the EJB tier of the software. Throughout all of the code a remote user and a remote campus are treated the same as their local counterparts. For example, remote users can belong to groups and send chat messages, whiteboard events, pages, etc. The only difference between a remote user and a local user is that a remote user has a reference to a remote campus, which is the home campus for the local user, instead of the local campus. A remote campus object has an additional attribute, which is a URL that defines the location of its home campus.

Consider a scenario that consists of three users participating in a chat session located in a room on Campus A where one of the users is from a remote campus B. In this scenario the user from campus B is already configured to have remote access to campus A and the appropriate access rights to enter the room currently occupied by the two users in Campus A. Both users from Campus A log into their campus and enter the room using the standard navigation methods provided by the CollabraSuite software. The user from Campus B logs into Campus B. Since the Campus B user has remote access to Campus A, the CollabraSuite software contacts Campus A by authenticating itself and sending an HTTP request to Campus A that contains an XML message requesting the list of online users and registers for all presence awareness events. When the user in Campus B views the CollabraSuite Online Users component, it will contain both a list of active users in both Campus A and Campus B. As users move within the Campus A or Campus B environment, the Online Users component for the Campus B user will be updated accordingly. Campus B is updated with these events by requesting event updates from Campus A. Similar to the request for online user information, Campus B obtains this information by using an XML message via the use of an HTTP/HTTPS request. Since the two users from Campus A are not configured to access Campus B, they only receive notifications for events that occur within Campus A. At this point, all users are logged into their respective home campuses where both the users from Campus A are in the same room within Campus A and the Campus B user resides in a room located within Campus B. The Campus B user can see who is online in both Campus A and Campus B. Campus A users see users that are currently within a room located in Campus A. Please note that this type of remote campus connection occurs because in this scenario the Campus A user account was configured to automatically connect to remote Campus A upon log in. This is a user preference which can be enabled or disabled on a campus by campus basis. Users can connect and disconnect to remote campuses by choosing the connect or disconnect option from one of the remote campuses listed in the CollabraSuite Navigator component. Prior to this release, only one campus name, the local home campus, was displayed as the root node in the navigator. Now there are multiple root nodes where each root node is a campus.

As with previous versions of CollabraSuite, there are multiple ways to find users and collaborate with them. In this scenario, the user in Campus B uses the Online Users component, selects one of the users within campus A and chooses the option to join the room session. By selecting a room within Campus A, the remote campus, Campus B then sends a message to Campus A requesting room access by the Campus B user. Campus A will check the access list for the room and in this case grant the user access. Campus B then requests all room events for that room and Campus A sends events to its users that the Campus B user is participating in the room session within the specified room. This means that any Campus A user reviewing the Online Users list will see the Campus B user, and the two Campus A users already in the room will receive a notification when the Campus B user enters the room. Once all of the users are within the room located on Campus A, both Campus A and Campus B will coordinate the receipt of chat messages sent by the two users in Campus A to the Campus B user as well as all chat messages initiated by the Campus B user to the Campus A users.

Figure 1 provides a graphical representation of a remote user, located in Campus B, receiving a chat message posted from a user located in another campus, Campus A. In this scenario, all three users are participating in a text chat session, users within Campus A are authenticated by Campus A, the user within Campus B is authenticated by Campus B, and the user from Campus B is configured to participate in a chat session with the users located within Campus A.

One of the users from Campus A initiates a chat message to all members participating in the chat session. Since all users are located in a room in Campus A, Campus A receives the chat event via its Web tier and distributes the event by sending it to the EJB tier for logging as well as distributing a copy to each local user. Another copy of the event is wrapped within an XML message to be sent to Campus B using HTTP/HTTPS for the remote user. Campus B receives the event from Campus A through its Web tier on behalf of the initiating user from Campus A. Campus B decodes the XML message, associates the event with the appropriate user, and delivers the event to the Campus B user. This completes the delivery of the chat event to all three users as well as logging a copy to the database associated with Campus A.

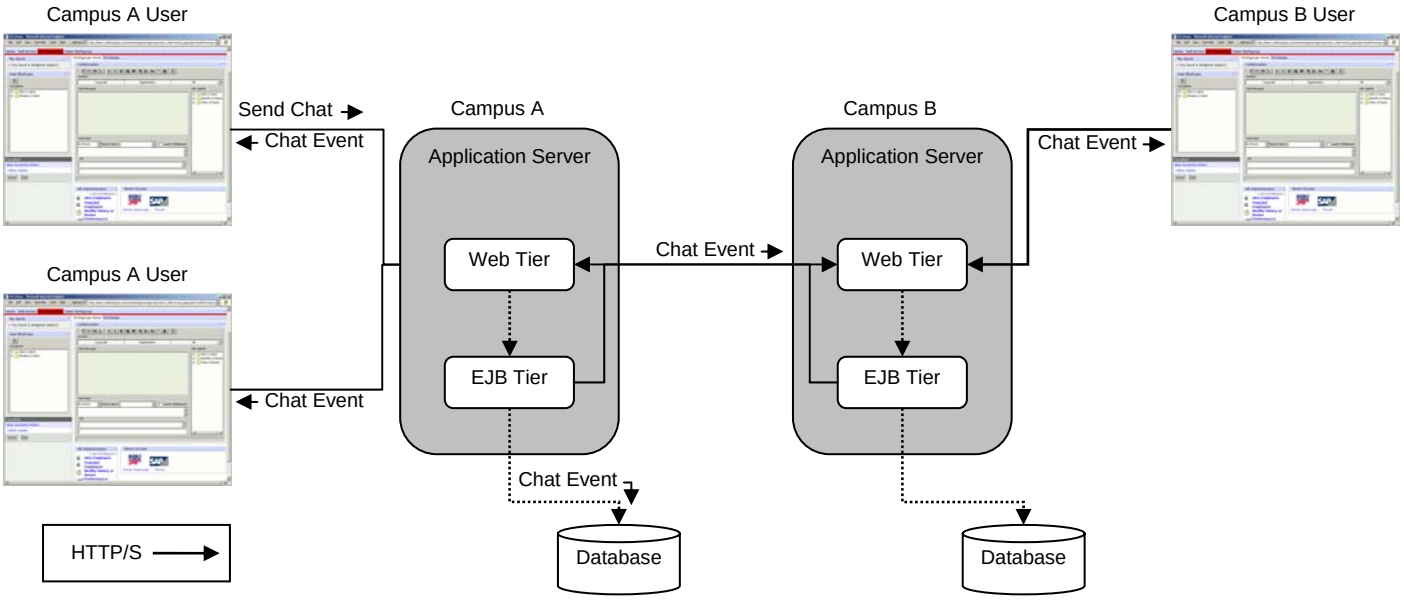

Figure 1: Remote Campus Chat

Note that since the collaborative session is contained in campus A, Campus A logged the event instead of Campus B. Thus, if the user in Campus B initiated the chat message, it would still be logged by Campus A.

A more detailed description of remote campus navigation, locating and joining remote users, etc. is provided in the CollabraSuite 4 Users Guide available to existing CollabraSuite customers via the CollabraSuite 4 distribution, or available for download at http://www.collabraspace.com/support/documentation.

Administration

The Remote Campus Access feature requires an additional level of administration to create and manage connections between campuses. This administration is accomplished via the Remote Administration page of the CollabraSuite administration application.

Using this administration page, CollabraSuite administrators from both the local and remote campus make the required configuration modifications to allow users to collaborate with users located within another campus. To configure a user from a remote campus to enter and participate with users located in another campus requires modifications by both the local campus and the remote campus administrator. The local campus administrator must define the remote campus by providing the remote campus name and the URL used to access the remote campus. This administrator then defines the set of users that are allowed access to the remote campus. This list contains all of the users that the administrator presumes will need access to the remote campus. Administrators may add as many remote campuses as necessary for their users and each contains a set of users that may require access to a specified remote campus.

To complete the process, the remote campus administrator adds an entry, a name and URL for the campus users who would like to enter remotely. This step acknowledges that a relationship exists between the two campuses. Once configured, the CollabraSuite software will retrieve the predefined list of users that are requesting access. The administrator then selects zero or more users from the list, enabling the users to enter the campus remotely. This step allows the campus administrator to control which users from the remote campus have access to the campus. Once the users are selected, the administrator must then grant remote users access to the appropriate resources, rooms, documents, etc., within the collaborative environment.

Users granted access to a remote campus can navigate within the remote campus, as well as easily navigate within their local campus. These users can access any room within that campus to which they have access, and work inside that campus just as a local user would. More detailed information on configuring a remote campus can be found in the CollabraSuite 4 Administration Guide available to existing CollabraSpace customers via the software distribution, or available for download at http://www.collabraspace.com/support/documentation.

Conclusion

The CollabraSuite Remote Campus Access feature enables users from one campus to seamlessly collaborate with users located in another campus. When a remote user participates in a collaborative session across servers, the two servers involved in the collaborative session send the collaborative events on behalf of the sender and recipient. Their respective CollabraSuite administrators must configure both campuses in order to enable this capability, and they must specify which users can participate in these remote collaborative sessions. When enabled, authentication is performed by the enterprise application server that is hosting the user account. The campus hosting the collaborative sessions, which may contain users from a remote campus, is responsible for controlling access to the resources within its own campus. Users configured to enter collaborative sessions between campuses can participate and navigate within the remote campus just as easily as within their own local campus.