Sametime

Version 9.0

Sametime 9.0

Software Development Kit

Introduction to the Community Server Toolkit

Edition Notice

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This edition applies to version 9.0 of IBM Lotus Sametime (program number 5725-M36) and to all subsequent releases and modifications until otherwise indicated in new editions.

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Chapter 1. About This Guide

This guide describes the IBM® Lotus® Sametime® Community Server Toolkit.

Intended Audience

This guide is intended for Java™ developers who want to use the Sametime Community Server Toolkit in order to enhance application logic on the server side.

This guide does not include information about Sametime Java programming or Java programming in general. For more information on Sametime Java programming, see the Sametime Java Client Toolkit documentation. For more information on the Java language and Java programming, see http://java.sun.com/.

Related Documents

- Sametime Java Toolkit documentation
- Sametime Community Server Toolkit documentation
- Sametime Community Server Architecture Whitepaper
- Working with the Sametime Server Toolkit (IBM Redbook)

Requirements

The Sametime Community Server Toolkit can be used in any JDK 1.7 Java development environment. The code should be compiled with JDK 1.6 to allow running on Domino server, since Domino runs with 1.6 JRE.

The toolkit is targeted for use with the Sametime servers on Windows, AIX, IBM i, Linux OS.

Although applications developed with this toolkit will work when run on a Sametime 2.x or later server, toolkit services that require features new to this release will not function. In particular, the code examples in the toolkit should be run on the latest version of the Sametime server.

Additional Information

Additional information can be found at the following Web sites:

- http://www.lotus.com/sametime
- http://www.ibm.com/developerworks/lotus
- http://www.redbooks.ibm.com/

Chapter 2. What is Lotus Sametime?

Lotus Sametime is a family of collaboration products providing real-time awareness, communication, screen-sharing capabilities, and IP audio/video services. Sametime brings the flexibility and efficiency of real-time communication to the business world by interconnecting people: colleagues, customers, suppliers, and partners.

Lotus Sametime includes comprehensive application development toolkits. Developers use the Client Toolkits – Sametime Links, COM, Java, and C++ – to embed real-time capabilities, such as chat and real-time help features, into e-business applications, and the Community Server Toolkit to enhance Sametime functionality on the server side.

What are the Sametime Client Toolkits?

The Sametime Client Toolkits are a collection of building blocks or components that developers use to build applications that leverage the functionality and services provided by Lotus Sametime.

The Sametime Client Toolkits comes in a variety of languages:

- Sametime Client Java Toolkit
- Sametime Links Toolkit
- Sametime C++ Toolkit
- Sametime COM Toolkit

What is the Sametime Community Server Toolkit?

The Sametime Community Server Toolkit is one member of a comprehensive, Java-based application SDK that developers can use to embed real-time capabilities into e-business applications. This server toolkit is a collection of components used by developers to build applications that affect the functionality and services provided by a Sametime server. These components can be used in any standard development environment that supports JDK 1.7.

The Sametime Community Server includes many Server Applications, each provide one or more of the Sametime functionality. The Sametime Community Server Toolkit provides the ability to write new server applications and thus, provide new services to the Sametime community.

The toolkit is easy to use and can be used to enable server applications with Sametime in any development environment that supports Java.

Accessing the Toolkit Page on the Web

To access the pages that include the documentation and toolkit, visit http://www.ibm.com/developerworks/lotus/products/. On the Products page, click “Lotus Instant Messaging and Web Conferencing (Sametime)”. The Lotus Instant Messaging and Web Conferencing (Sametime) page contains links to all the documentation and downloads.

Chapter 3. Sametime Community Server Architecture

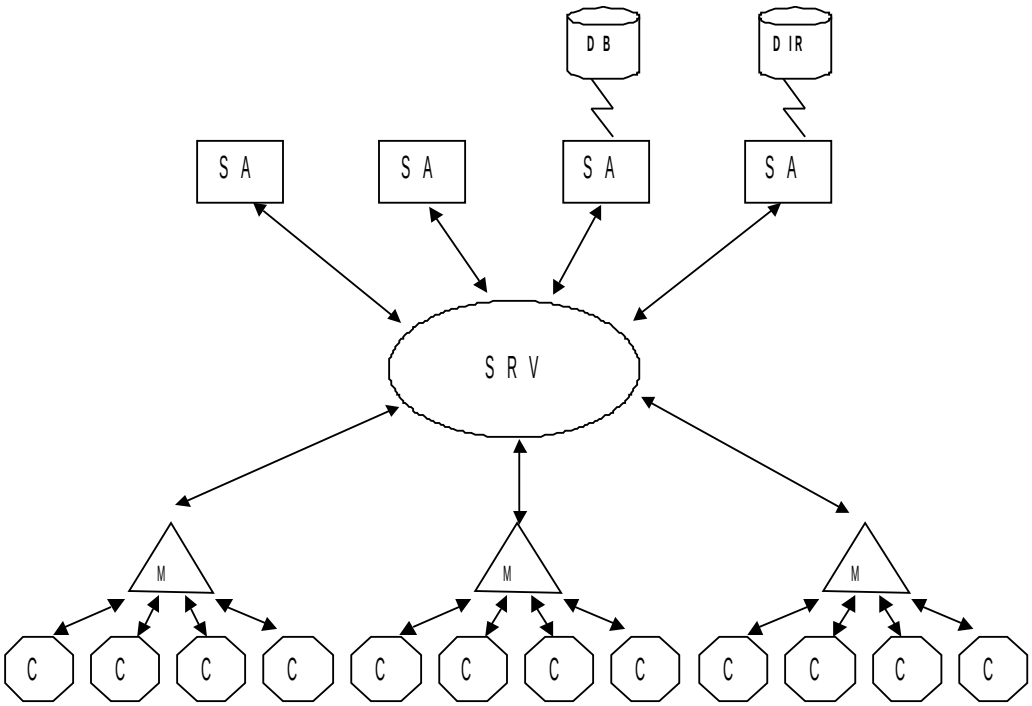
The Sametime Community server platform is a client/server environment in which the client is connected via TCP/IP to the server. The Sametime server supplies its users with awareness and real-time interaction services.

A Sametime community consists of four layers of application:

- Clients, which are connected via TCP/IP
- Multiplexers, which improve Sametime scalability by I/O concentration
- One or more community hubs, which log in Sametime clients, route messages between members, and notify subscribers of events in the community
- Server applications, which are connected to community hubs via TCP/IP

Clients, multiplexers, community hubs, and server applications are all Sametime community members. Every community member can log in to the community; community hubs log in to each other, while clients, multiplexers, and server applications log in to the community hubs. When community members are logged in to the community, they are considered 'community participants'.

The following diagram shows the Sametime Community Server architecture:



C – Client (User), M – Multiplexer, SRV – Community Server, SA – Server Application, DB –Database, DIR – Directory

Diagram 1. Sametime Community Server Architecture

For more information about Sametime architecture, see *Introducing the Sametime Community Architecture*.

Chapter 4. Why Use the Sametime Community Server Toolkit

The Sametime Community Server Toolkit can be used to enhance application logic on the server side. Basically, it allows developers to write three types of applications:

- Server applications, which extends the Sametime functionality.
- Multiplexers, which supply gateways to other communities, platforms and devices.
- Administration and helper applications.

The following are some examples of why one would use the Sametime Community Server Toolkit. The tasks, mentioned in the examples below, can be performed by using the services that are provided in the toolkit. For detailed descriptions on each service that is available, see the *Sametime Community Server Toolkit Developer's Guide*.

Server applications

The Sametime Community Server Toolkit can be used to write server applications, which would enhance functionality. Below are three examples of how a developer could use the toolkit to accomplish these tasks.

Write new Sametime activity wrappers

Write new Sametime activity wrappers for applications that needs place base awareness and place base communication; for example, online games.

Create persistent places

Create persistent places and control the characteristics and behavior of created places. For example, you can define the default number and capacity of sections in a place and the default activities in it.

Write a bot server application

Write a bot server application.

Multiplexers

The Sametime Community Server Toolkit can be used to write multiplexers, which supply gateways to other communities, platforms and devices. Below are two examples of how a developer could use the toolkit to accomplish these tasks.

Write a new Multiplexer

Write a new Multiplexer that supply gateways to other protocols and platforms, for example Sametime as Web Services. This allows a MUX application to multiplex a connection to the server on top of an existing physical connection. Multiplexing provides the MUX application with the ability to log in on behalf of many users, without the overhead of creating separate connections (and connecting threads) for each user.

Get tokens on any user

Get tokens on any user. You can also generate a token that can be used to log in as a user to Sametime. This service is useful for an application that wants to log in on behalf of the user.

Administration and helper applications

The Sametime Community Server Toolkit can be used to write administration and helper applications, which allows a developer to send and receive notifications about user activity. Below are three examples of how a developer could use the toolkit to accomplish these tasks.

Manipulate user storage information

Manipulate information in user storage. Receive notification every time a user changes their storage.

Pre-populate a users' Buddy List

Write a server-side application to pre-populate users' buddy lists.

Listen to community events

Write applications that listen to community events and perform actions when an event occurs in the community. You can register to receive notifications about user status, user storage, user privacy, and the following available services:

- **User Login** – The service sends notification when each user logs in to Sametime.
- **User Login Failed** – The service sends notification of each failed attempt to log in to Sametime.
- **User Status** – The service sends notification every time a user's status changes.
- **User Privacy** – The service sends notification every time a user changes her privacy list.
- **User Online** – Any user can log in to Sametime from different applications. This service sends user online notification when the first application logs in, and it sends user offline notification when the last application logs out.
- **User Storage** – The service sends notification every time a user changes his storage.
- **Service Up/Down** – The service sends notification each time any service becomes available or unavailable in the Sametime domain.

Chapter 5. Community Server Toolkit Services

The Sametime Community Server toolkit is divided to several services, each service supplies different functionality for the developers. The Community Server toolkit can be used in any JDK 1.7 Java development environment. The code should be compiled with JDK 1.6 to allow running on Domino server, since Domino runs with 1.6 JRE. It is an enhanced development extension of the Java Toolkit including building blocks allowing the development of all Community features.

For a detailed description on each of the following services, see the *Sametime Community Server Toolkit Developer's Guide*.

Server Application Service

The Server Application service allows a server application to log in and log out of the Sametime server, and to register for providing specific service types. In addition, the Server Application service allows sending administrator messages.

Channel Service

A channel is a virtual connection between two Sametime entities; all communication in Sametime is accomplished by using channels. The Channel service provides the ability to communicate with other Sametime entities via a propriety protocol. Using this service you can:

- Create channels to other Sametime entities.
- Register to get notification when another entity tries to open a channel to you.
- Send and receive any kind of data through these channels.
- Close the channels.

A channel encapsulates the details of connecting one community member to another. There are several ways to address a channel:

- User ID – Some user is addressed. If the recipient user has more than a single login, one of its logins is selected.
- Login ID – A particular login is addressed. No login selection is needed.
- Service Type – A server application providing the specified service type is addressed.

Community Events Service

The Community Events Service provides the ability to receive a variety of events from the community server. Using this service, you can register to receive a variety of notifications about user status, user storage, user privacy, and available services.

General Awareness Service

The General Awareness Service provides the ability to change the online attributes of the server to which you are connected. These attributes are stored in the server application that is responsible for awareness, such as the Buddy List. By adding a server to its watched list, the client application can receive notifications when attributes change.

Places Admin Service

The Places Admin Service provides the ability to administer the Places server application. Use this service to create persistent places and control the characteristics and behavior of created places. For example, you can define the default number and capacity of sections in a place and the default activities in it. The Places Admin Service also provides a directory of existing places.

Places Activity Service

The Places Activity Service provides the ability to write activity providers to a Sametime place. An activity is an application that runs "in" a place and is shared by all of its members. Communication with users in the place can be implemented in a propriety protocol between a client application and the activity provider.

An activity provider in a place is allowed to perform various tasks that are not allowed to a regular user, making the activity provider a "super-user" of sorts. Examples of such tasks are monitoring all messages in the place, controlling the way users are located in a place, and changing the number and capacity of sections.

Server Application Storage Service

The Server Application Storage Service stores user-related information as attributes directly on the Sametime server. Your Sametime applications can use this service to access standard Sametime attributes, such as Buddy List and Sametime Connect preferences, or add their own application-specific attributes.

Light Login Service

The Light Login Service allows a MUX application to multiplex a connection to the server on top of an existing physical connection. This provides the MUX application with the ability to log in on behalf of many users, without the overhead of creating separate connections (and connecting threads) for each user.

Server Application Token Service

The Token Service provides the ability to generate a token that can be used to login as a user to Sametime. This service is useful for an application that wants to log in on behalf of the user.

Online Directory Service

The Online Directory Service provides the ability to locate the server of a user, and to receive notification when a user becomes online.

Chapter 6. Community Server Toolkit and the Java Client Toolkit

The Sametime Community Server Toolkit and the Java Client Toolkit have the same architecture. Therefore the services and UI components that are available from the Java Client Toolkit can also be used when developing applications with the Sametime Community Server Toolkit.

What is the Java Client Toolkit

The Sametime Java Client Toolkit is a collection of building blocks or components that developers use to build applications that influence the functionality and services provided by Lotus Sametime. These toolkit components can be used in any standard development environment that supports JDK 1.7.

This toolkit is used by developers to embed Sametime-based services and functionality in Web applications. For example, a developer could use the toolkit to build a facility for live customer-service-style help in an online marketplace, or perhaps build awareness into a knowledge management application, or to bring application sharing into an e-business application.

The Java Toolkit UI

The Java Toolkit provides a standard user interface (UI) that can be used by developers to speed up the development time required to build a Sametime-enabled application. The standard UI is provided either by Toolkit UI components (similar to the Toolkit components providing the different Community and Meeting services) or by AWT dialogs and panels, which can be embedded inside any AWT Container.

For more information on the Java Toolkit, see the *Sametime Java Toolkit Developer's Guide* or the *Sametime Java Toolkit Tutorial*.

Chapter 7. Conclusion

Real-time collaboration has become as trivial as e-mail, and as common and necessary as the telephone system. In fact, collaborating in real time over IP is almost as natural as picking up the telephone. In many cases, real-time technology enhances collaboration. So it is, understandably, cost and time saving.

Real-time technologies like Sametime are growing. Many companies rely on Web-based, real-time collaboration to do business with their customers, partners, and suppliers. People expect real-time help in almost all E-commerce related ventures.

We are proud that Lotus Sametime is not only the leader in “out-of-the-box” business-ready, real-time collaboration, but that the Sametime Toolkits offer opportunities for unlimited customizing of solutions. The Sametime Community Server Toolkit is one member of a comprehensive, Java-based application SDK that developers can use to embed real-time capabilities into e-business applications.

A Sametime developer’s community has been established in order to allow exchange of experiences, knowledge and support among its members. A chat room, based on Sametime technology, enabling communication among members and a discussion panel, is available for exchanging ideas or just to enhance the knowledge of using Sametime.

More information, such as white papers, Developer’s Guides, References, and news, is available at the Lotus Sametime Developers Community at the website:

http://www.ibm.com/developerworks/lotus

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