

Sametime
Version 9.0

Sametime 9.0
Software Development Kit
Software Development Kit Overview



Edition Notice

Note: Before using this information and the product it supports, read the information in "Notices."

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

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Contents

Chapter 1. About this guide.....	5
Chapter 2. Introduction.....	6
Overview of the Sametime Architecture.....	6
Sametime Client Architecture.....	6
Sametime Server Architecture.....	7
The Sametime Developer Toolkits.....	8
Client Toolkits.....	8
Server Toolkits.....	8
Telephony Toolkit.....	9
Determining which toolkit to use when.....	9
Chapter 3. Sametime Connect Toolkit.....	10
The Sametime Connect Toolkit contents.....	10
Highlights of the Sametime Connect toolkit.....	10
Chapter 4. Browser IM Toolkit.....	12
The Sametime Browser IM Toolkit content.....	12
Highlights of the Sametime Browser IM toolkit.....	12
Chapter 5. Sametime Java Toolkit.....	14
The Sametime Java Toolkit contents.....	14
Highlights of the Sametime Java Toolkit.....	14
Chapter 6. Sametime Helper Toolkit.....	15
The Sametime Helper Toolkit contents.....	15
Highlights of the Sametime Helper Toolkit.....	15
Chapter 7. Sametime Connect Web API Toolkit.....	16
The Sametime Connect Web API Toolkit contents.....	16
Highlights of the Sametime Connect Web API Toolkit.....	16
Chapter 8. Sametime Community Server Toolkit.....	17
The ST Community Server Toolkit contents.....	17
Highlights of the Sametime Community Server Toolkit.....	17
Chapter 9. Sametime Directory and Database Access toolkit.....	18
The Sametime Directory and Database Toolkit contents.....	18
Highlights of the Sametime Directory and Database toolkit.....	19
Chapter 10. Remote Meeting Client API.....	20
The Sametime Remote Meeting Client API Toolkit contents.....	20
Chapter 11. Sametime Gateway Toolkit.....	21
The Sametime Gateway Toolkit contents.....	21
Highlights of the Sametime Gateway toolkit.....	21
Chapter 12. Telephony Toolkit.....	22
The Client Telephony Toolkit contents.....	22

Highlights of the Client Telephony Toolkit.....	22
The TCSPI Toolkit contents.....	22
Highlights of the TCSPI toolkit.....	23
Chapter 13. Conclusion.....	24

Chapter 1. About this guide

IBM® Sametime® release comes with a wide variety of tools for developers. Some of these tools and components are new for this release, while others have been part of earlier releases of Sametime. This paper is meant for developers who would like a quick overview of what tools are available in the Sametime Software Development Kit (SDK), what they can be used for and what is included with these tools. For a deeper dive on any particular toolkit, please refer to the Additional Information section as well as the documentation included with that particular toolkit.

No particular programming experience is needed to understand the contents of this document. However, each toolkit requires varying skill levels as well as knowledge of different programming languages such as:

- Java
- HTML
- Javascript
- Eclipse

Chapter 2. Introduction

IBM Sametime release 9.0 is a family of collaboration products providing real-time awareness, communication, screen-sharing capabilities, and IP audio/video services. IBM Sametime brings the flexibility and efficiency of real-time communication to the business world by interconnecting people: colleagues, customers, suppliers, and partners.

IBM Sametime is the first real-time collaboration product that offers a complete range of integrated, real-time services while meeting enterprise and e-business requirements for scalability, manageability, and security.

Sametime services fall into three areas:

- **Community services:** These services include awareness, instant messaging, and chat. A buddy list makes Sametime users aware of who is available (and who is online but unavailable) to receive an instant message or participate in a chat with one or more people. The instant messaging traffic is encrypted.
- **Online Meeting services:** These services include a shared whiteboard and the ability to share programs and documents online. Sametime also offers a server-based Meeting Center where users can schedule online meetings in advance and store agendas and other meeting materials.
- **Customization and Integration services:** Sametime also provides a comprehensive API that enables customers to easily integrate real-time collaborative capabilities into other applications, such as e-commerce sites, help desks, and training/information delivery applications like Sales Force Automation.

Overview of the Sametime Architecture

There are two distinct Sametime architectures a developer might need to work with; the Connect Client architecture and the Server architecture.

Sametime Client Architecture

The IBM Sametime Client is built on top of a platform runtime, Eclipse and IBM Lotus Expeditor, formerly known as IBM WebSphere® Everyplace® Deployment.

Figure 1: Sametime Connect architecture shows major IBM Sametime Connect components. The Java runtime, Eclipse RCP, and Lotus Expeditor layers form the foundation common to IBM's managed client products. The components above Lotus Expeditor, enclosed by the outline, are specific to the client. These components include public and implementation-specific plug-ins.

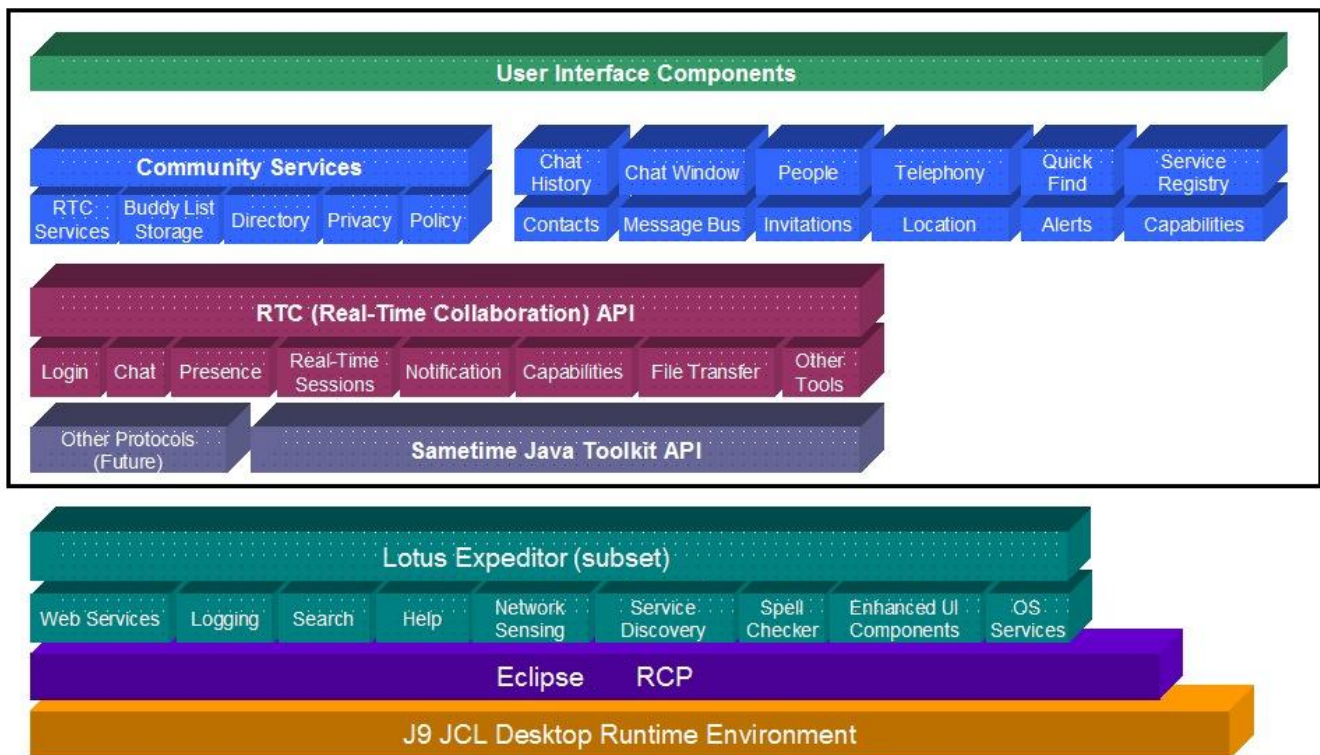


Figure 1: Sametime Connect architecture

Sametime Server Architecture

Sametime includes many server applications, which collectively provide the capabilities of the Sametime server. All client-to-client communication such as instant messaging passes through the Sametime server.

Users who log onto the Sametime server from different clients can communicate, as long as the users use clients that support Sametime's functionality. For example, a user who logs on through a Sametime-enabled word processed document can chat with a user who logs on through Sametime Connect, or through the company portal.

Once the client is logged on to the Sametime server, it has access to all Sametime services and can communicate with any other Sametime client logged onto the Sametime server, based on the:

- Capabilities of the various clients
- Privacy rules that the users defined
- Policy rules defined by the administrator and enforced by some of the server applications.

The Sametime server consists of three servers that interact with one another:

- Community server – Provides all Sametime community services such as login, instant messaging, and awareness.

- Meeting server – Provides all Sametime meeting services such as screen sharing and IP audio and video.
- Domino DNA – Provides core Sametime services such as directory access, authentication, and the HTTP server.

The Sametime Developer Toolkits

IBM Sametime includes comprehensive application development toolkits. Developers use the toolkits to embed real-time capabilities, such as chat and real-time help features, into e-business applications. The toolkits can also be used to expand Sametime's native functionality, for example building plug-ins to incorporate your company's internal directory with Sametime. One or a combination of the toolkits will allow you to develop customized real-time applications.

The following toolkits are included in the consolidated software development toolkit.

Client Toolkits

The client toolkits are intended to be used by client or browser-based applications and include the following:

- Sametime Connect Toolkit
- Sametime Browser IM Toolkit (introduced in Sametime 8.5.1)
- Sametime Java Toolkit
- Sametime Helper Toolkit (introduced in Sametime 8.0)
- Sametime Connect Web API Toolkit (introduced in Sametime 8.0.1)

The Sametime Connect, Sametime Helper and Sametime Connect Web API Toolkits require the Sametime Connect client to be installed on the machine where the application runs, but the other client toolkits do not require Sametime Connect.

Server Toolkits

The server toolkits are to be used by applications that work in conjunction with the Sametime server. The applications do not necessarily run on the Sametime server itself.

- Community Server Toolkit
- Directory and Database Access Toolkit
- Sametime Monitoring and Statistics Toolkit (introduced in Sametime 7.5)
- Online Meeting Toolkit (introduced in Sametime 7.5)
- Meeting Room Client JavaScript Extensibility API

- Sametime Gateway Toolkit (introduced in Sametime 7.5.1)

Telephony Toolkit

The telephony toolkit consolidates the Telephony Conferencing Service Provider Interface (TCSPI) toolkit with the client telephony APIs.

- Client Telephony APIs Toolkit
- Telephony Conferencing Service Provider Interface (TCSPI) Toolkit

Determining which toolkit to use when

Each Sametime toolkit provides different features and supports different target environments (desktop, Web browser, or server). Choose a toolkit based on what your application needs to do, and where it needs to run.

Table listing Sametime toolkit features and target environments summarizes the information you need to select the appropriate toolkit(s) for your application. The remaining sections of this document provide more details on each of the toolkits. Note that the target environments listed below include all operating systems supported by Sametime 9, unless otherwise noted.

Table listing Sametime toolkit features and target environments

Toolkit	Use this toolkit to:	Target environments
Sametime Connect Toolkit	Build Eclipse plug-ins to integrate with or extend the Sametime Connect client.	desktop
Sametime Browser IM Toolkit	Add Sametime features to Web pages using Javascript and HTML.	browser
Sametime Java Toolkit	Add Sametime features to Java applications.	desktop, server
Sametime Helper Toolkit	Invoke features in the Sametime Connect client from custom Microsoft Windows applications.	desktop (Microsoft Windows only)
Sametime Connect Web API Toolkit	Invoke Sametime features (liveness presence, chat, etc.) in the Sametime Connect client from web pages.	desktop
Sametime Gateway Toolkit	Build plug-ins and event consumers to extend policy compliance and logging requirements between a local Sametime community and one or many external communities.	server
Community Server Toolkit	Build Java components that add or extend services on the Sametime server.	server
Directory and Database Access Toolkit	Build C++ or Java components for the Sametime server that provide directory integration, chat logging, or virus scanning services.	server
Remote Client Meeting Toolkit	Create new capabilities for the Sametime Meeting server.	desktop, server
TCSPI Toolkit	Provide click-to-call telephony services for Sametime Connect, Sametime Web	server

Chapter 3. Sametime Connect Toolkit

The Sametime Connect Toolkit (Sametime Connect SDK) is a collection of APIs built on top of IBM® Expeditor® and Eclipse that can be used to build plug-ins that enhance the usability of the Sametime Connect Client.

This toolkit was new for Sametime 7.5.

The Sametime Connect Toolkit contents

The Sametime Connect Toolkit contains the following components:

- Integration Guide
- Javadoc
- J9 JCL Desktop runtime
- Sample plug-ins

Highlights of the Sametime Connect toolkit

The Sametime Connect Toolkit can be used to develop plug-ins that customize the Sametime Connect client. Sample plug-ins are shipped with the toolkit that surface some key functionality within the Sametime client. The Integration Guide describes these plug-ins.

For example, the Quick Response plug-in adds an icon to an existing toolbar that, when clicked, gives users a choice of several phrases that they can have inserted to their chat, such as—“Please give me a few minutes to respond” or “my phone number is 999-555-1212”.

The following images shows the Quick Response icon added to a standard chat:

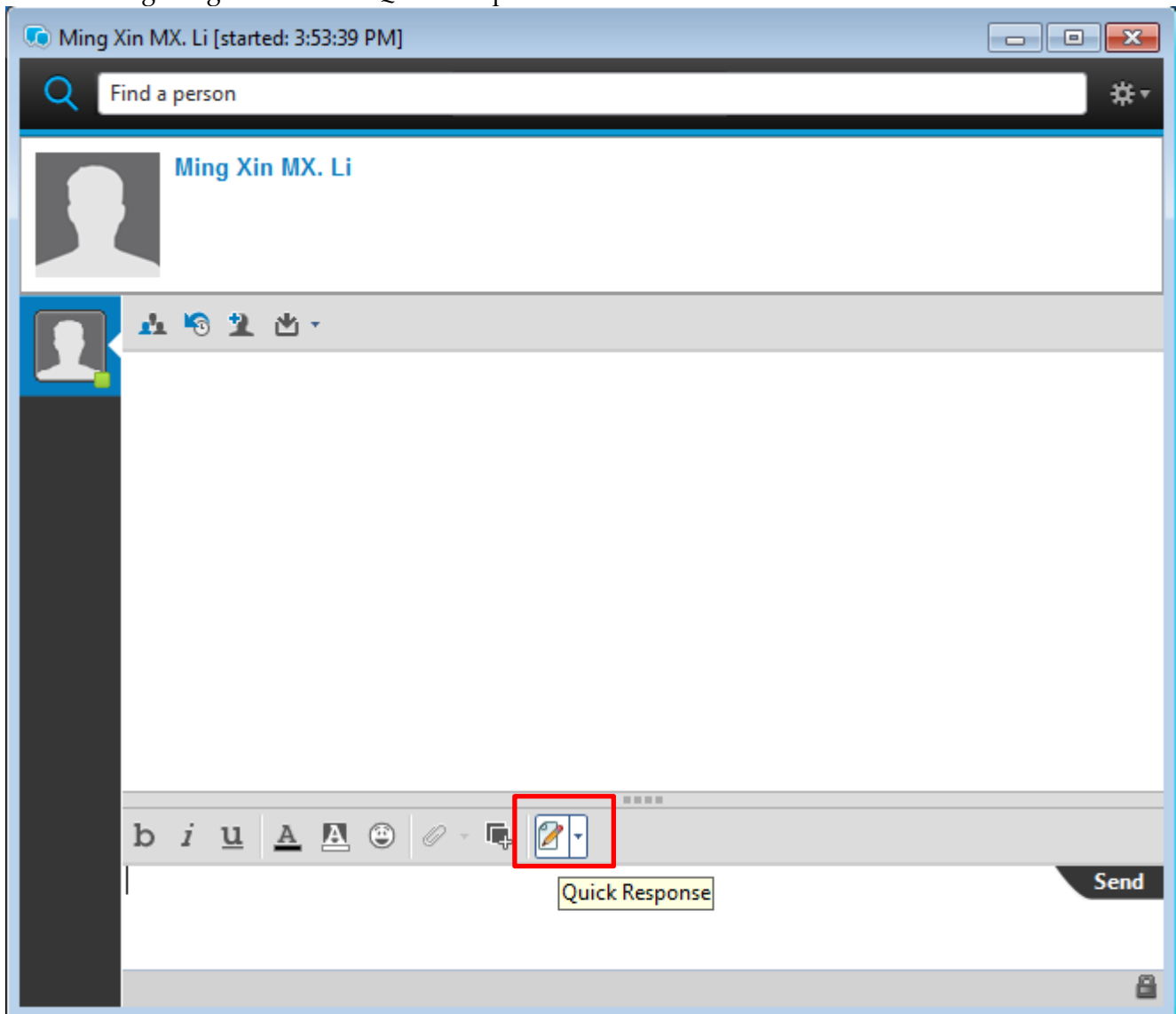


Figure 2: Quick Response add-on box

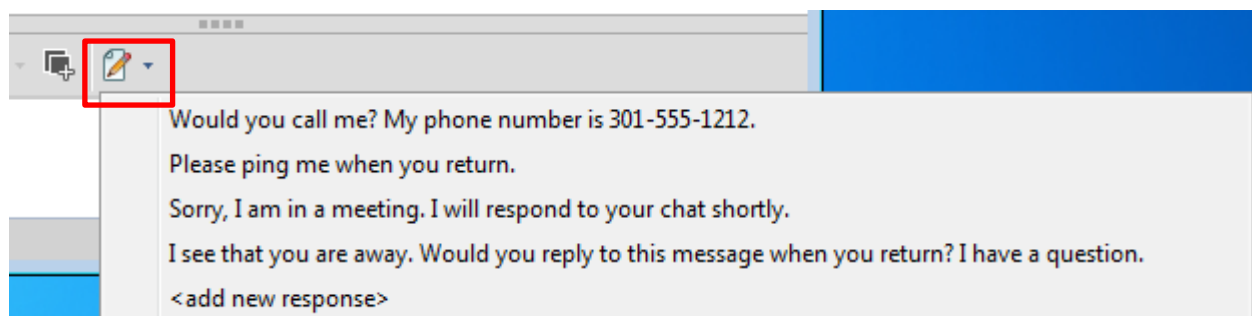


Figure 3: Quick Response quick-click

The Quick Response plug-in uses three classes, `QrPopupAddOn`, `QrOpenPopupAddOnAction`, and `QuickResponsePreferencePage`.

Chapter 4. Browser IM Toolkit

The Browser IM toolkit is a collection of APIs that can be used to build web enabled communication enabled business (CEBP) processes by embedding presence, instant messaging and other real-time capabilities inside a web application. The packaged web client is a manifestation of the Browser IM toolkit and so the toolkit can be used to extend, redesign or simply use one or more components that are available.

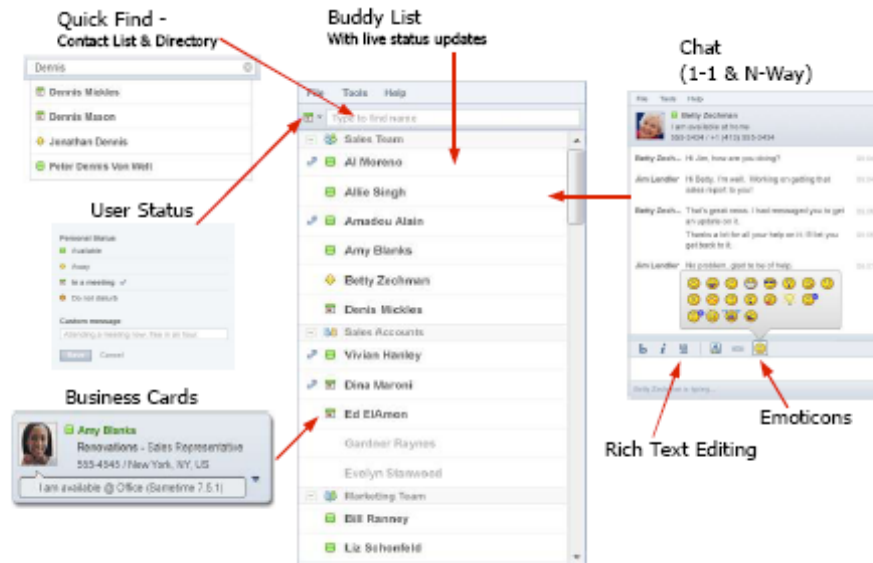


Figure 4: Browser features

The Sametime Browser IM Toolkit content

The Sametime Browser IM Toolkit contains the following component:

- Developer's Guide

Highlights of the Sametime Browser IM toolkit

The browser client API is divided into three distinct parts and each of these components is discussed in detail in the developer's guide:

1. At the lowest level is a REST API. This is actually quite a complex layer, using a mechanism known as a long poll. An initial REST request is made to the server, and the data associated with this are retrieved by means of a separate asynchronous request which waits for the data from the first request. This second separate request constantly reads from the server, sending a new request each time it times out or receives data. In other words, the browser always has a request active to the server, which is responded to when data become available.
2. The next layer up is the API referred to as the *Base Components*. These are a set of JavaScript classes that simplify the interface to Sametime, providing all of the features of the REST API in a much more easily used package by managing the long poll connection. This layer is deliberately kept as

lightweight as possible. However, while all of the communications functionality is made available, the Base Components do not provide any user-interface functions.

3. The top level API is the *User Interface* API. This provides a set of widgets that can be incorporated into a web application in a very simple manner. These widgets are based on the Dojo Toolkit technology, and each encapsulates a piece of Sametime functionality.

```
<div dojoType="sametime.LiveName"></div>
```

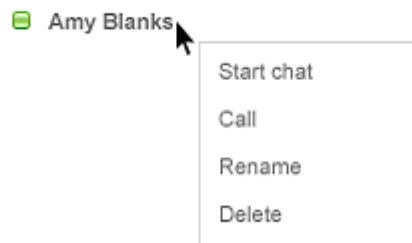


Figure 5: LiveName widget

```
<div dojoType="sametime.QuickFind"></div>
```



Figure 6: Quickfind widget

Chapter 5. Sametime Java Toolkit

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

The Sametime Java Toolkit contents

The Sametime Java Toolkit contains the following components:

- Developer's Guide
- Javadoc
- Samples

Highlights of the Sametime Java Toolkit

The Sametime Java Toolkit provides you with access to core Sametime services, such as awareness and chat.

The toolkit has a layered architecture composed of two main layers:

- Transport
- Services

The Transport Layer provides the communication link between the application and the Sametime server, while the Services Layer provides the application with the Sametime Community and Meeting services.

The Java Toolkit is modular, thread-safe, and extendable. It provides access to the entire feature set in Sametime via an object-oriented API model. With this toolkit, you can expose functionality such as file transfer, selective alerts, and announcements.

You can also create applications such as Sametime automatic response bots, and customized applications in which only a few features of Sametime are included. You can also create customized applets for your Web site using this toolkit. However, if you need to create a simple awareness application on your Web site, then you want to use the Sametime Browser IM Toolkit.

Chapter 6. Sametime Helper Toolkit

The Sametime Helper Toolkit is an API that provides an external interface to basic functionality of the IBM Sametime Client. The Sametime Helper Toolkit is not intended to directly extend the capabilities of the Sametime Client. This toolkit differs from other Sametime client toolkits by providing an external interface to basic functionality exposed in the locally running desktop IBM Sametime Client application. Applications that integrate the Sametime Helper API are essentially able to proxy the functionality of the locally running Sametime Client (Managing contacts, Starting chats, Alert notifications).

The Sametime Helper Toolkit provides a Windows native and Java object oriented API that facilitates inter-process communication between the desktop and the Sametime Client. A functionality example is the invocation of the Sametime Helper API to initiate a chat with an online contact, and results in the Sametime Client UI Chat Window opening and displaying on the desktop. Examples of integrating applications are third party business productivity applications, Internet browsers, etc.

The Sametime Helper Toolkit contents

The Sametime Helper Toolkit contains the following components:

- Developer's Guide
- Javadoc of Sametime Helper Java API
- Samples

Highlights of the Sametime Helper Toolkit

The Sametime Helper Toolkit exposes the following basic functionality of the Sametime Client:

- Contact Management, Query, and Notification
- Chat session initiation
- Instant Share initiation

Chapter 7. Sametime Connect Web API Toolkit

The Sametime Connect Web API Toolkit is a web application programming interface (API) that provides an external interface to basic functionality of the IBM Sametime Client. It allows Web developers to Sametime-enable their Web pages and applications with "livenames." Web-based applications that integrate the Connect Web API are essentially able to proxy the functionality of the locally running Sametime Client (managing contacts, starting chats, presence status).

The Connect Web API Toolkit differs from the Sametime Web-based toolkits in that the IBM Sametime Client must be installed and running.

The Sametime Connect Web API Toolkit contents

The Sametime Connect Web API Toolkit contains the following components:

- Developer's Guide
- Samples

Highlights of the Sametime Connect Web API Toolkit

The Sametime Connect Web API Toolkit exposes the following basic functionality of the Sametime Client:

- Contact Management, Query, and Notification
- Chat session initiation
- Instant Share initiation

Chapter 8. Sametime Community Server Toolkit

The Sametime Community Server Toolkit provides the ability to write new server applications and provide new services to the Sametime community.

The Sametime Community Server Toolkit can be used to enhance application logic on the server side. The Server toolkit now gives you the ability to:

- Enhance and extend Sametime services
- Create your own Sametime service
- Support new clients.

However, with the release of the Sametime Community Server toolkit, developers now have the tools to take the benefits of real-time functionality to even higher levels. This toolkit has not changed from the Sametime 7.0 release.

The ST Community Server Toolkit contents

The Sametime Community Server toolkit contains the following components:

- Release Notes
- Tutorial
- Developer's Guide
- Javadoc Reference
- The "Server Architecture" white paper
- The "Server Toolkit FAQ"
- Samples

Highlights of the Sametime Community Server Toolkit

A customer may choose to enhance the IM services provided by Sametime by using the Community Server toolkit to develop an application that supports features like off-line messages. An off-line message is a message sent to the user while he or she is off-line. The messages will be saved and sent to the user the next time they are on-line.

Chapter 9. Sametime Directory and Database Access toolkit

The Sametime Directory and Database Access Toolkit provides the ability to:

- Log chat transcripts in a database for later retrieval.
- Customize the generation and validation of the authentication token.
- Scan a transferred file for viruses.
- Retrieve user data from different storage types.

The Sametime Directory and Database Toolkit contents

The Sametime Directory and Database Toolkit contains the following components:

- The Sametime Directory and Database Access API
- Documentation: Developer's Guide
- Sample implementations
- Templates you can use to get started quickly

For Antivirus Scanning:

- APIs
- Developer's guide
- Sample code and binaries

For obtaining and updating user information:

- Javadoc
- Developer's Guide
- Sample code and binaries

Highlights of the Sametime Directory and Database toolkit

You can customize the Directory and Database Access Toolkit in the following ways:

- Log chat transcripts for later use
- Generate, modify and validate tokens
- Scan files for viruses
- Manage user data in several data repositories

One application of the Directory and Database toolkit would be to extract data from a separate storage directory. For example, a customer whose employee photos are stored in a non-LDAP or Domino data repository can use the UserInfo SPI to develop a new black box and insert the photos into Sametime's business card feature.

Chapter 10. Remote Meeting Client API

The IBM Sametime Remote Meeting Client API offers a collection of Java APIs allowing third parties to create new capabilities against the Sametime Meeting server. This SDK can be used to create the following types capabilities:

- Room Querying tools
- Room Management tools
- Room Reporting tools
- Server validation tools
- Custom Clients or 'bot' users and features.
- Custom Login pages
- Custom server-side hooks.

The Sametime Remote Meeting Client API Toolkit contents

The Toolkit contains:

- A Developer's Integration Guide
- Javadoc
- Java APIs and dependencies
- Many Sample applications (server -side and client-side)
- Helpful developer scripts.

Chapter 11. Sametime Gateway Toolkit

The IBM Sametime Gateway is a fully extensible platform, built on the IBM Websphere Application Server. The Websphere Application Server provides a container environment for the Gateway components, as well as infrastructure services for administration, transport, authentication and system extensions.

The Sametime Gateway provides for interaction between a local community and one or many external communities, as well as:

- Protocol translation
- Presence
- Secure dual authentication between servers
- Adding message handler plug-ins and processing content which has be logged

The Sametime Gateway Toolkit contents

The Sametime Gateway Toolkit contains:

- A Developer's Integration Guide
- Javadoc
- Sample plug-ins

Highlights of the Sametime Gateway toolkit

One application of the Sametime Gateway would be to monitor internal to external communications in order to be compliant with a variety of laws and regulations. One of the sample plug-ins implements various interfaces to create an object that tracks details and messages of conversations that meet certain criteria. The plug-in demonstrates how to extract the needed information from the gateway notification messages and pass it down into your business logic.

Chapter 12. Telephony Toolkit

The IBM Sametime Telephony toolkit includes the Client Telephony Toolkit and the Telephony Conferencing Service Provider Interface (TCSPI) Toolkit. The Telephony Toolkit provides documentation and samples to enable service providers to integrate telephony services, including voice and video, with IBM Sametime. Telephone calling services can be provided for either the IBM Sametime Connect client, the Sametime server, or both. For the Sametime Connect client only, service providers can also integrate voice over IP (VoIP) and video services using the APIs included in this toolkit.

The Client Telephony Toolkit contents

The Client Telephony Toolkit contains the following components:

- Client Telephony Development Overview Guide
- Javadoc

Highlights of the Client Telephony Toolkit

IBM Sametime Connect 9.0 provides the following telephony services:

- Click-to-Call: conference calling services
- Voice Chat: peer-to-peer voice over IP (VoIP).
- Video Chat: peer-to-peer VoIP with video.

These services are described in the toolkit along with information on how you can use the provided APIs to integrate with them.

The TCSPI Toolkit contents

The TCSPI Toolkit contains several components, as well as documentation. The documentation supplied is an Implementers Guide and a ReadMe.

The TCSPI Toolkit contains the following components:

- Javadoc
- SampleConference.xml
- Mock service provider
- ConferenceManager.properties file

The SampleConference.xml is used for conference management and creation. This is a subset of the XML DTD; returned after the conference is created. During conference creation, a serialized XML representation of the initial conference data is passed into the processCreateConference() method. The XML DTD is defined in the SampleConference.xml file.

The mock service provider illustrates how a service provider works. It can be used to learn and model using the API for application development.

The `ConferenceManager.properties` file stores settings relative to installation, configuration, and asynchronous requests. Each asynchronous request in the TCSPI has a configurable timeout value.

The TCSPI toolkit is part of the Telephony toolkit, which combines the TCSPI toolkit with client telephony APIs. Note that this toolkit contains Javadoc for the `com.ibm.collaboration.realtime.telephony` packages that in the 7.5 release were stored in the Sametime Connect Toolkit Javadoc.

Highlights of the TCSPI toolkit

Telephony service providers use the TCSPI to create a server side plug-in to hook into their PBX systems.

- Telephone call management- Using a combination of PSTN, VoIP, and other telephony technologies.
- Integration - Integration with a real-time collaboration offering from IBM, such as Instant Messaging and The Sametime web conferencing system.
- Audio conference calls control and management - Controls are possible for the users and moderators.

Chapter 13. Conclusion

IBM Sametime presents many out-of-the-box capabilities and tools available to developers. Sametime provides a depth and breadth of customization that cannot be matched by any other, enterprise ready, secure instant messaging application currently on the market.

In addition to the documentation included with the various toolkits discussed in this article, visit [IBM developerWorks](#), where you can browse other articles that you might find useful.

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