



JABBER: INSTANT MESSENGER

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Why Instant Messaging?

□ **Before IM**

- Unix talk and IRC
- AIM: Introduced IM to mainstream

□ **Applications of IM**

- CRM
- B2B Exchanges
- Leisure: File-sharing, Gaming, et al.

□ **Ubiquity:** Web, Database, Email and “IM”

□ **Growth:** JMS in J2EE; messaging system for enterprise

What is Jabber?

- **Jeremie Miller:** Creator of Jabber.
- **Open Source**
- **Jabber Community:** A friendly community of end users and developers who value freedom of communication
- **Jabber Inc and Jabber Software Foundation:** to help Jabber grow
- Based on Decentralized client/server architecture
- XML Based Data Formats.
- **XMPP:** A set of **stable standards** for real-time communications, published by the IETF

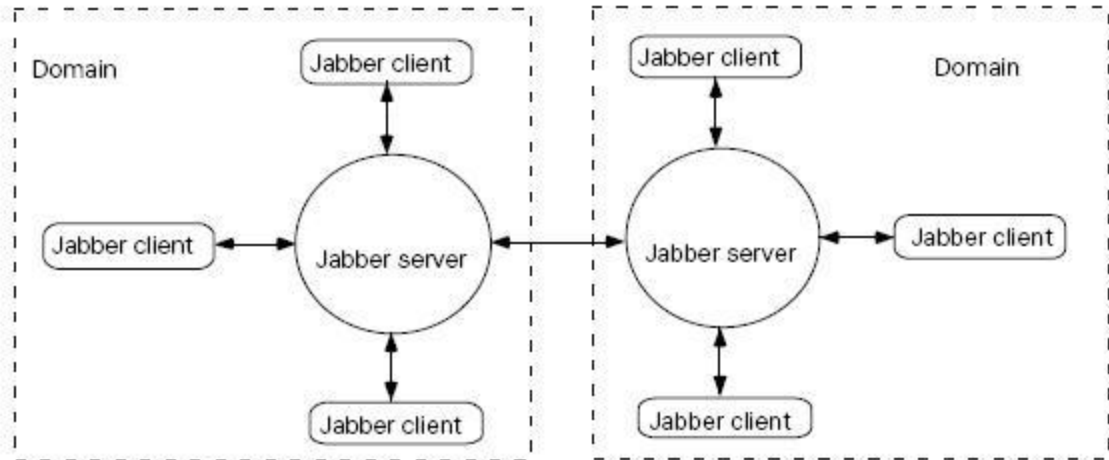
Why Jabber?



- It's Open!
- It's Decentralised!
- It's Secure!
- It's Free!

Jabber: Core Concepts

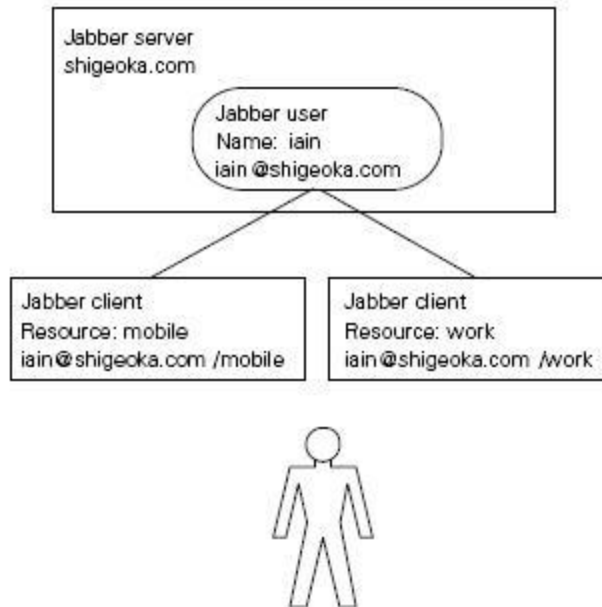
- Network
- Domain
- Server
- User
- Resource



Distributed Jabber servers define and control Jabber domains in a hub and spoke architecture. Jabber servers that exchange messages with other Jabber servers create federated domains and expand their Jabber network. Here we see two Jabber servers (shigeoka.com and manning.com) federated to form a Jabber network encompassing both domains.

Jabber: Resources

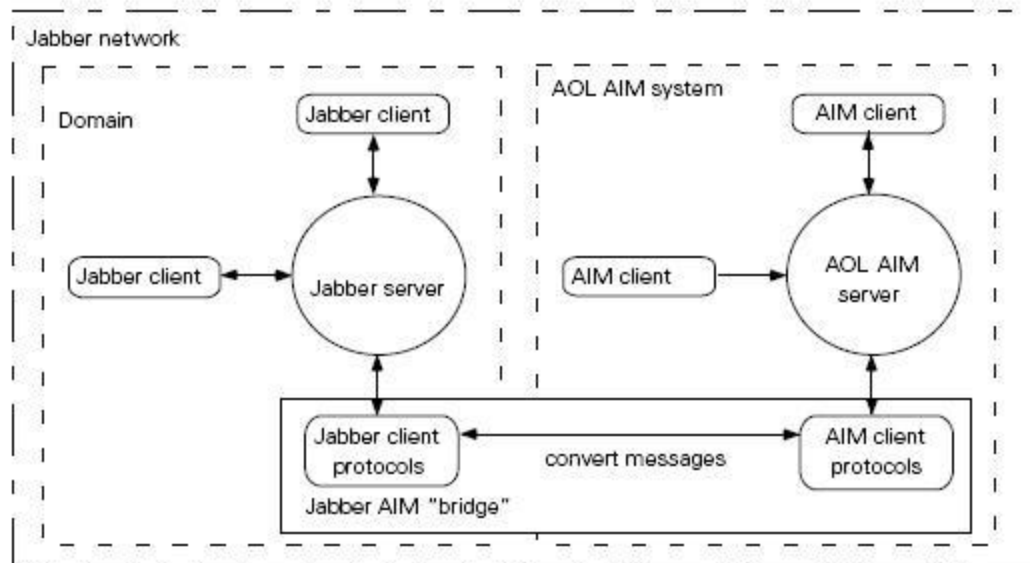
- **Resource:** “Particular” message delivery endpoint for a user



A user has two clients logged into the “Iain” user account on the Jabber server shigeoka.com. They are represented in the Jabber network by two resources, creating three distinct messaging endpoints for the same user: the generic iain@shigeoka.com and the client endpoints iain@shigeoka.com/mobile, and iain@shigeoka.com/work.

Jabber: Transports

- **Transports:** bridge IM systems acting on behalf of Jabber users to deliver messages to non-jabber implementations



Jabber clients or server components known as transports can bridge IM systems by serving as bridges. Here a Jabber AIM bridge acts on behalf of Jabber users to deliver AOL AIM messages.

What is XMPP?



- XML-inspired protocol for
 - ▣ near real time,
 - ▣ extensible instant messaging (IM)
 - ▣ presence information (a.k.a. buddy lists)
 - ▣ Voice over IP and file transfer signaling have been added.

Why XML?

- Open
 - ▣ On track to replace HTML
- Simple
- Flexible
 - ▣ DTD and Namespaces
- Portable
 - ▣ Marked up text files sent over network
 - ▣ Supported by C/C++, Delphi, Perl, Java et al.

Core Jabber Protocols

- Message
- Presence
- Info/Query
- Roster Management
- Registration
- Authentication

Types of IM Messages

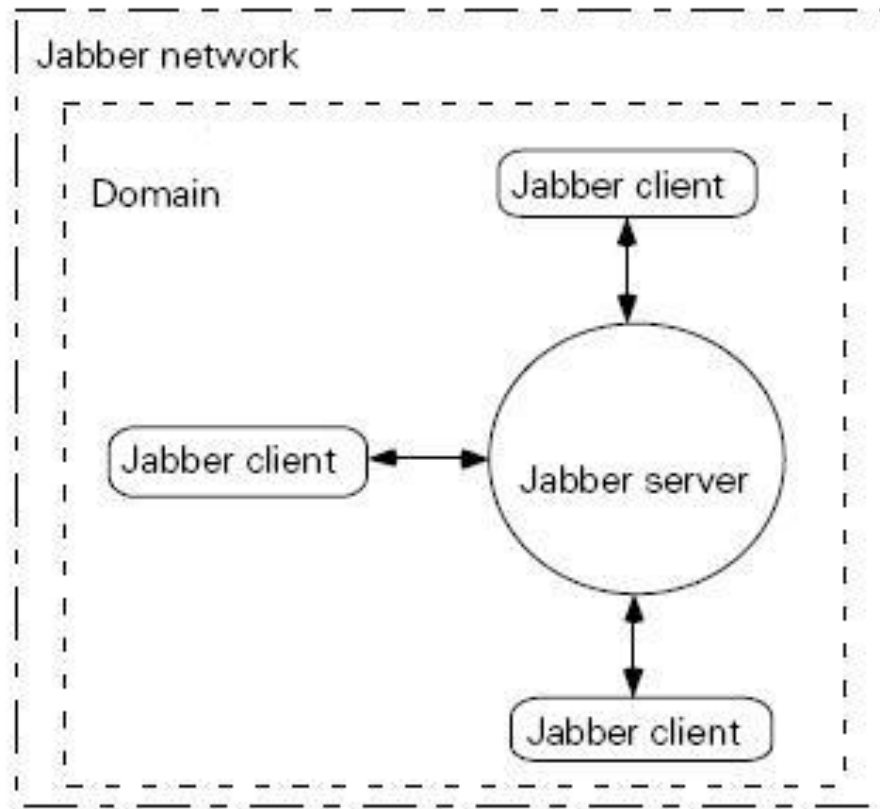
- Normal
- Chat
- Group Chat
- Headline
- Error
- Out of Band

Project Details

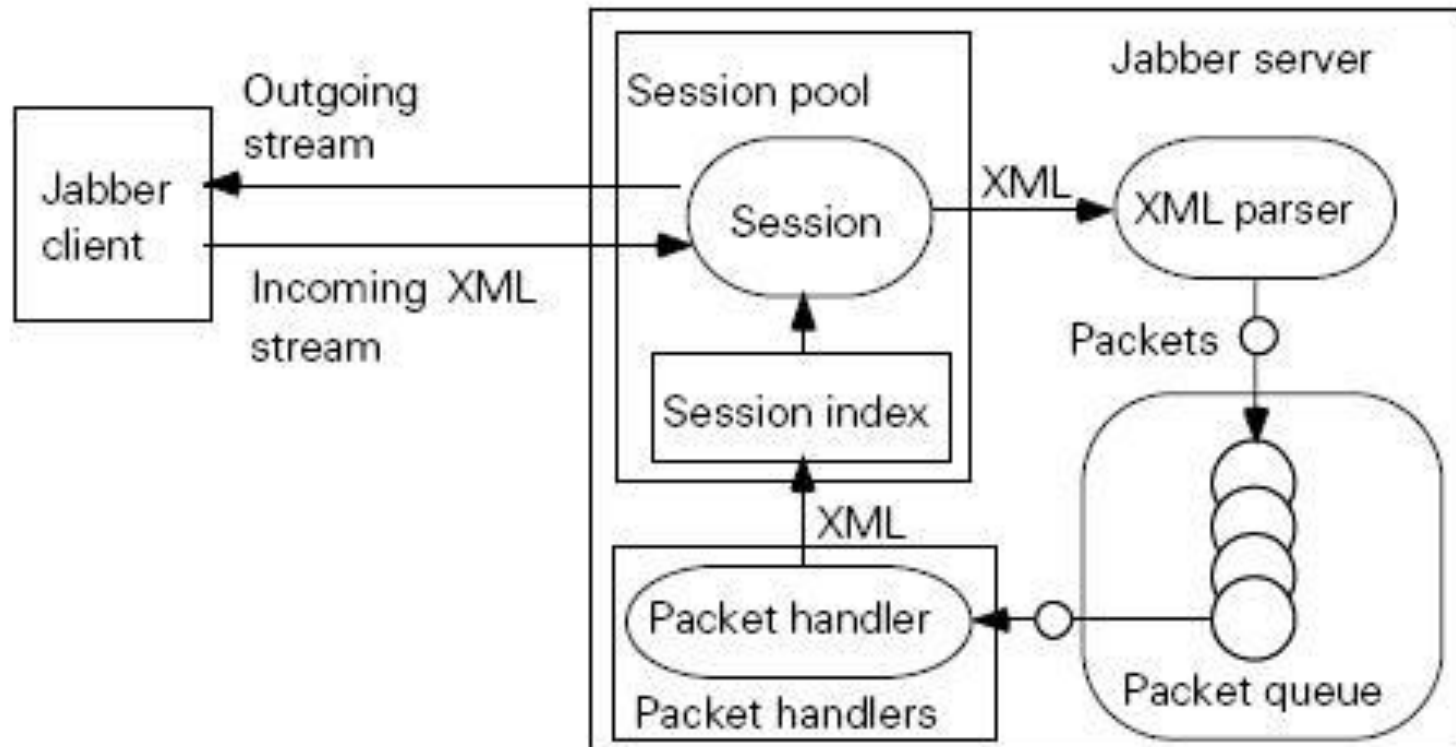
□ **Technologies Used:**

- **Language:** J2SE 6.0, XML
- **API:** SAX (Xerces 1.0), Collections Framework, Swing
- **Protocol:** Jabber

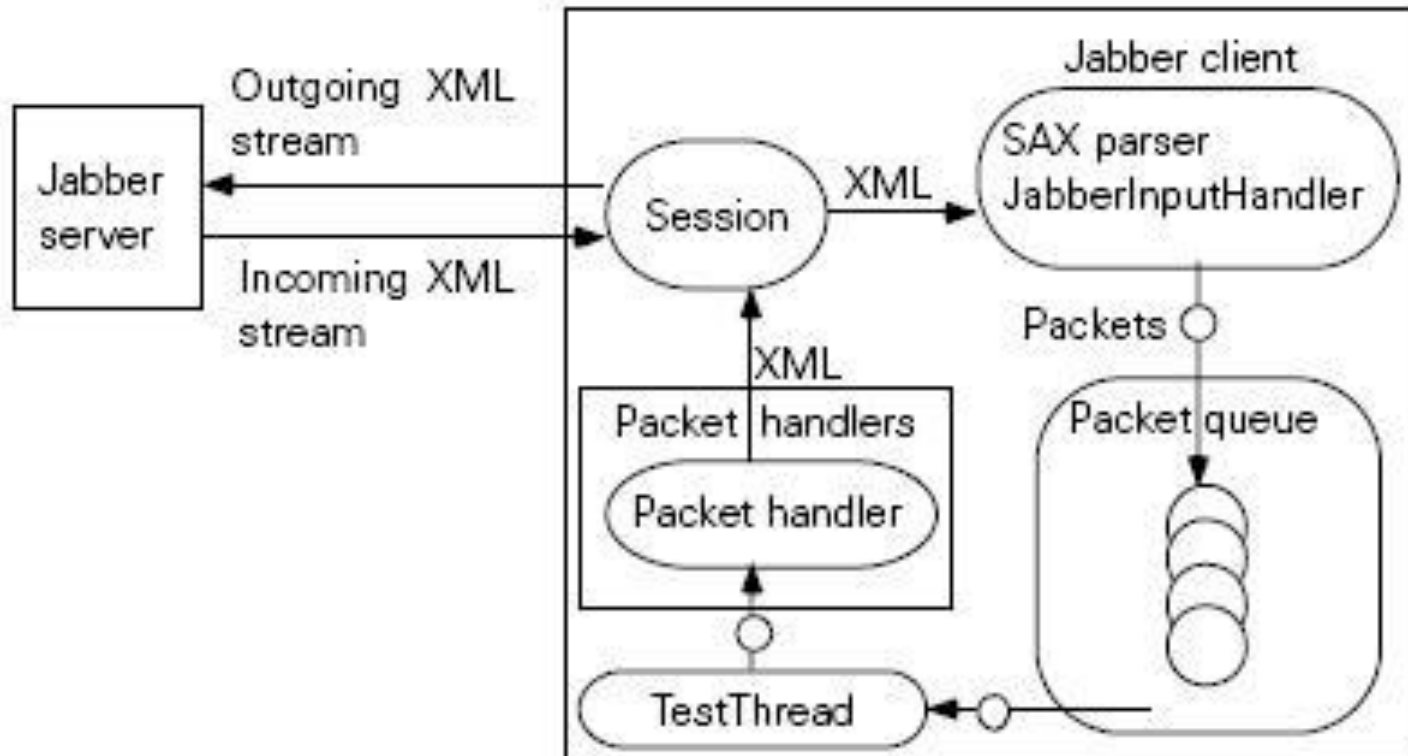
Project: Implementation Focus



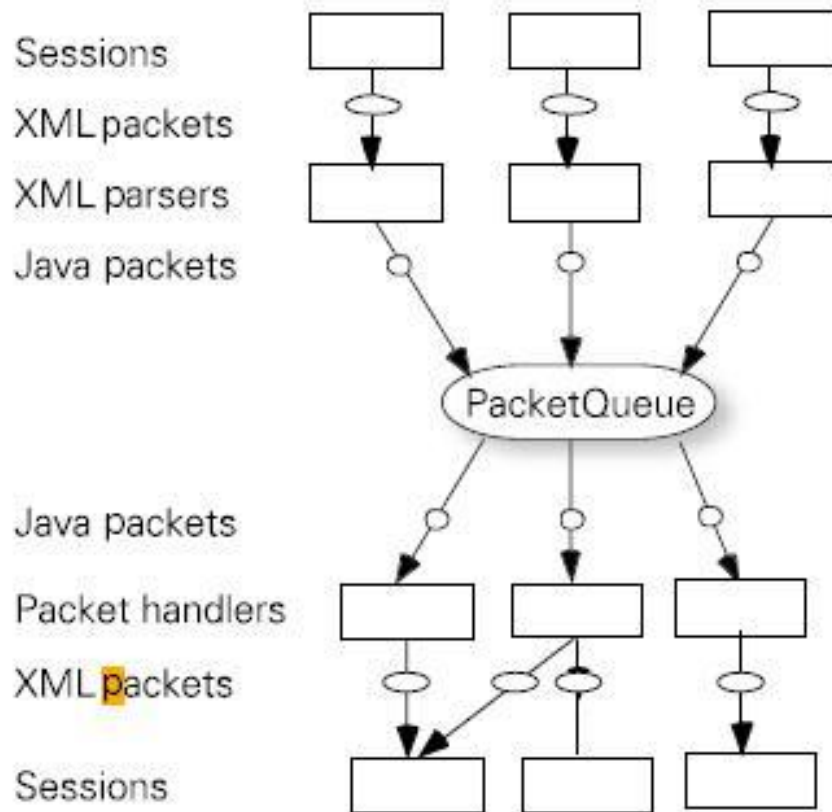
Project: Server Architecture



Project: Client Architecture

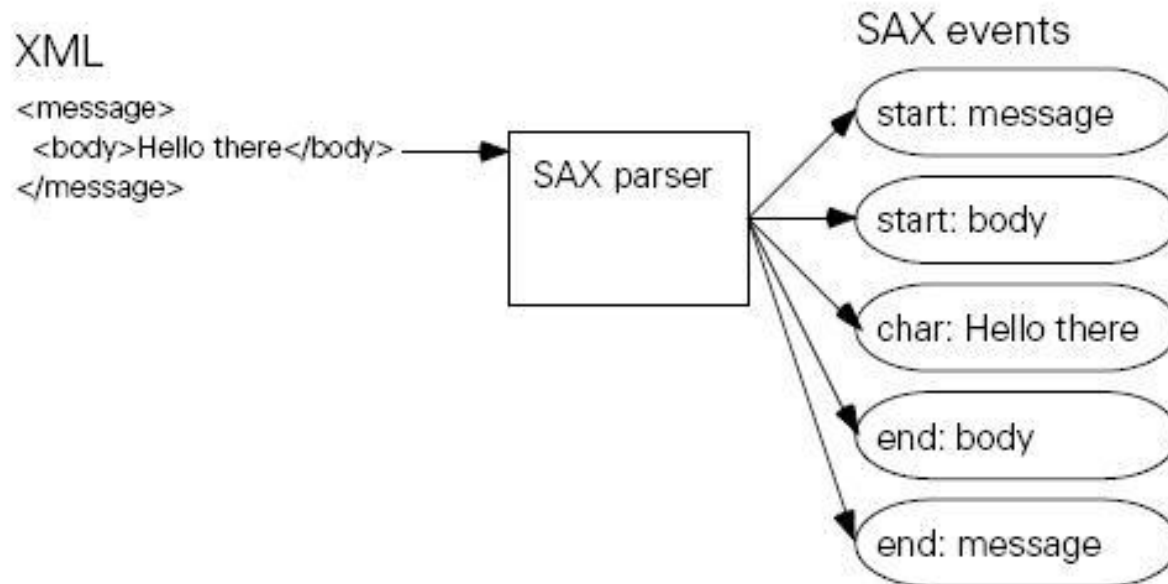


Project: PacketQueue as FocalPoint



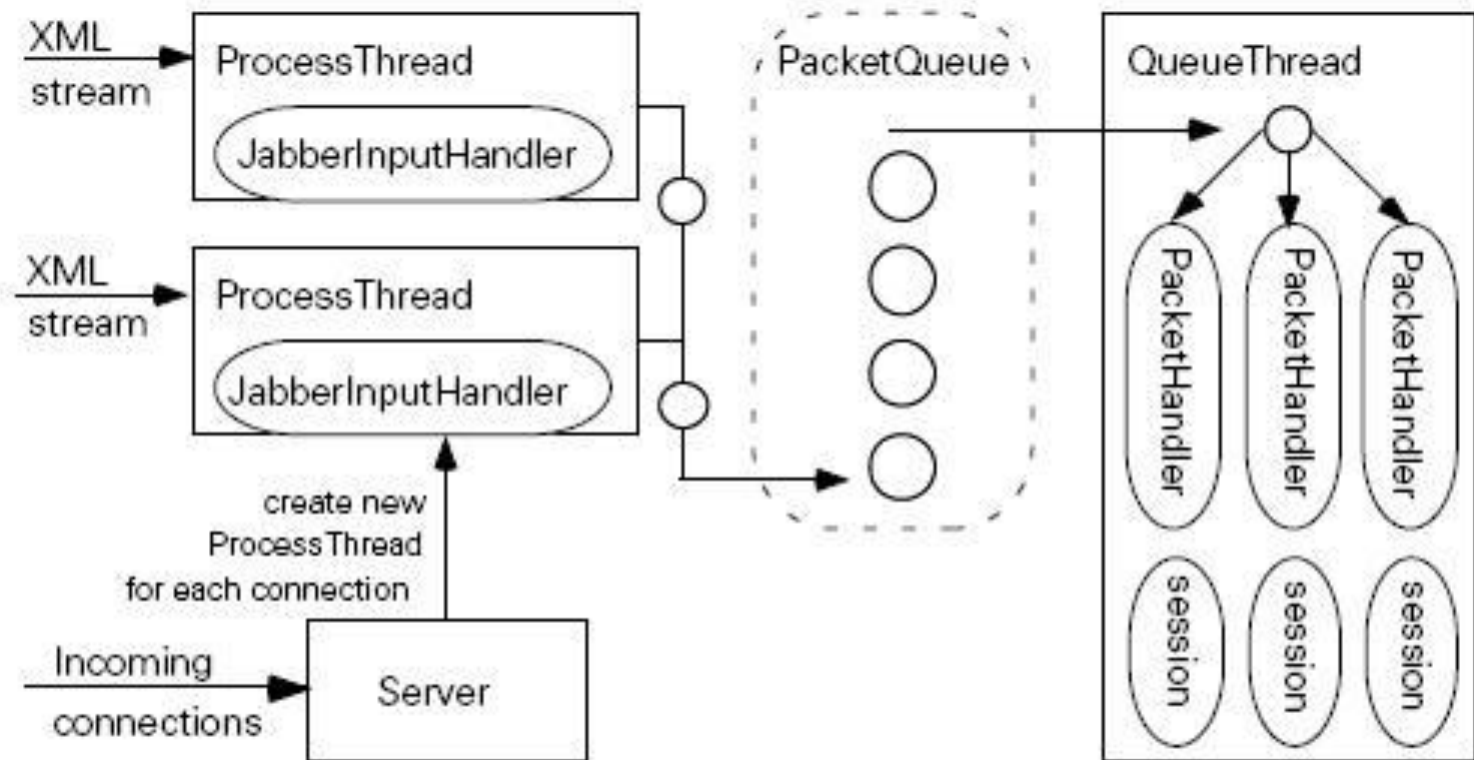
The PacketQueue accepts packets from parallel XML parsing streams, and feeds parallel packet handlers.

Project: SAX Parser



A SAX parser reads XML text, and issues corresponding SAX content events for handlers to process.

Project: PacketHandlers



The server consists of one server, one PacketQueue, one QueueThread, and many ProcessThreads (one for each connected Jabber client).

Project: Server Timeline Sequence

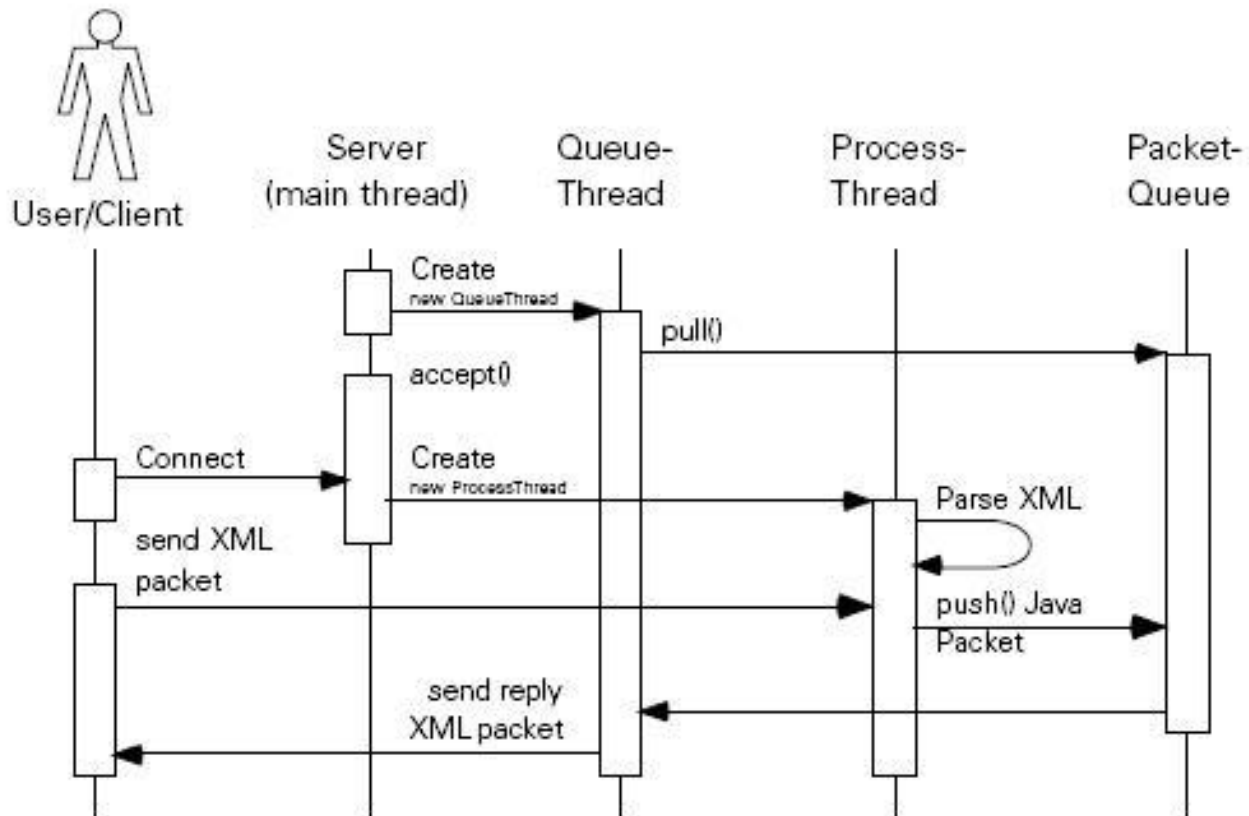
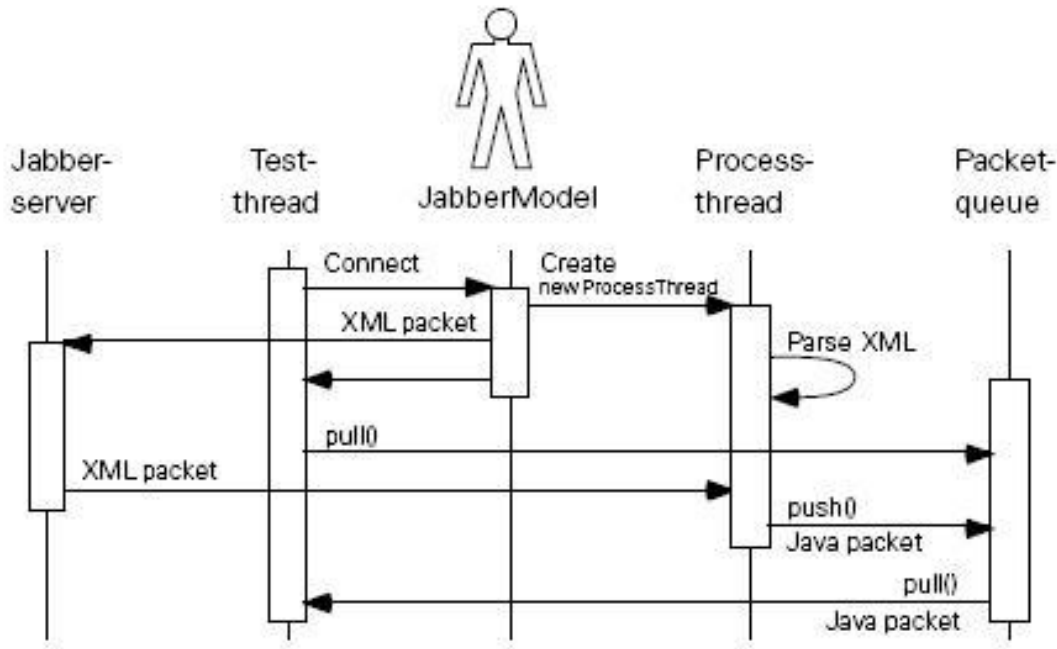


Figure 3.6 Sequence diagram of the server thread operations

Project: Client TimeLine Sequence



The TestThread (replacing the server's QueueThread) uses the JabberModel to create a ProcessThread and its associated packet handling classes. The TestThread operates by sending packets using the JabberModel and pulling responses from the PacketQueue. The TestThread also hands Packets to packet handling classes for special handling.