

Instant Messaging in Java

The Jabber Protocols

IAIN SHIGEOKA



MANNING

Greenwich
(74° w. long.)

For electronic information and ordering of this and other Manning books, go to www.manning.com. The publisher offers discounts on this book when ordered in quantity. For more information, please contact:

Special Sales Department
Manning Publications Co.
209 Bruce Park Avenue Fax: (203) 661-9018
Greenwich, CT 06830 email: orders@manning.com

©2002 by Manning Publications Co. All rights reserved.

No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by means electronic, mechanical, photocopying, or otherwise, without prior written permission of the publisher.

Many of the designations used by manufacturers and sellers to distinguish their products are claimed as trademarks. Where those designations appear in the book, and Manning Publications was aware of a trademark claim, the designations have been printed in initial caps or all caps.

☺ Recognizing the importance of preserving what has been written, it is Manning's policy to have the books they publish printed on acid-free paper, and we exert our best efforts to that end.



Manning Publications Co.
209 Bruce Park Avenue
Greenwich, CT 06830

Copyeditor: Lois Patterson
Typesetter: Shan Young
Cover designer: Leslie Haines

ISBN 1-930110-46-4

Printed in the United States of America

1 2 3 4 5 6 7 8 9 10 - VHG 05 04 03 02

contents

preface xiii
about this book xv
author online xxi
acknowledgments xxii
about the cover illustration xxiii

PART I INSTANT MESSAGING PRIMER 1

1 *Introduction to IM concepts* 3

1.1 Background on messaging 4
A brief history of Jabber 11 ▪ *Goals of the Jabber project* 12

1.2 What is Jabber? 13
Jabber's XML-based data formats 14 ▪ *Jabber's simple architecture* 18 ▪ *Jabber's four core concepts* 21

1.3 Benefits of the Jabber protocols 27

1.4 Drawbacks of the Jabber protocols 28

1.5 Conclusion 29

- ## 2 *Jabber technical fundamentals* 31
- 2.1 The Jabber messaging model 32
 - Benefits* 35
 - Drawbacks* 36
 - Relying on distributed servers* 38
 - How Jabber packet routing works* 39
 - Step-by-step: a message's path through Jabber* 44
 - 2.2 The core Jabber protocols 45
 - Message: Delivering data* 45
 - Presence: updating user online status* 45
 - Info/Query: handling everything else* 45
 - 2.3 Jabber session example 47
 - 2.4 Conclusions 56

PART II PROTOCOLS, CODE, AND ADVANCED IM 57

- ## 3 *IM concepts and Jabber protocols* 59
- 3.1 A basic Java Jabber server 60
 - Goals for our server* 60
 - Our server software* 61
 - The basic server design* 62
 - 3.2 The session pool maintains client connections 63
 - The Session class represents a connection* 64
 - The SessionIndex class provides session lookup* 66
 - 3.3 XML parsing subsystem 69
 - Representing Jabber packets* 69
 - The PacketQueue class as server focal point* 77
 - SAX parsing in Java* 80
 - 3.4 Packet handling and server threads 87
 - Packet handling in QueueThread* 90
 - Parsing XML in the ProcessThread* 95
 - The main application Server class* 97
 - 3.5 Testing the server 98
 - 3.6 Conclusion 100

- 4** *The Jabber message protocols* 101
- 4.1 Messaging is the heart of IM 102
 - 4.2 The message protocol 103
 - Normal messages* 104 ▪ *Chat messages* 105
 - Groupchat messages* 106 ▪ *Headline messages* 108
 - Error messages* 109 ▪ *Out-of-band messages* 110 ▪ *Reality check: one message, many user interfaces* 112
 - 4.3 Java Jabber client 113
 - Goals* 114 ▪ *The client design* 115 ▪ *The client model* 116 ▪ *Using the client model* 123 ▪ *Results* 131
 - 4.4 Conclusions 132
- 5** *The presence protocols* 133
- 5.1 *The need for presence* 134
 - 5.2 *The presence protocol* 134
 - 5.3 Adding groupchat support 138
 - Groupchat protocols* 138 ▪ *Server modifications* 144
 - Client modifications* 157
 - 5.4 Shortcomings of our server and basic groupchat 161
 - 5.5 Conclusions 162
- 6** *Info/Query and client registration* 163
- 6.1 Info/Query: the catch-all protocol 164
 - The IQ protocol* 165 ▪ *IQ extensions* 167
 - 6.2 Registration creates and manages accounts 169
 - User accounts* 170 ▪ *The register protocol* 171
 - 6.3 The Jabber server modifications 175
 - Adding user accounts* 175 ▪ *Adding registration support* 183
 - 6.4 Conclusions 186

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.