

# **Pro Crystal Enterprise/Business Objects XI Programming**



Carl Ganz, Jr.

## **Pro Crystal Enterprise/Business Objects XI Programming**

**Copyright © 2006 by Carl Ganz, Jr.**

All rights reserved. No part of this work may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage or retrieval system, without the prior written permission of the copyright owner and the publisher.

ISBN-13: 978-1-59059-759-0

ISBN-10: 1-59059-759-1

Printed and bound in the United States of America 9 8 7 6 5 4 3 2 1

Trademarked names may appear in this book. Rather than use a trademark symbol with every occurrence of a trademarked name, we use the names only in an editorial fashion and to the benefit of the trademark owner, with no intention of infringement of the trademark.

Lead Editor: Matthew Moodie

Technical Reviewer: Ryan Follmer

Editorial Board: Steve Anglin, Ewan Buckingham, Gary Cornell, Jason Gilmore, Jonathan Gennick, Jonathan Hassell, James Huddleston, Chris Mills, Matthew Moodie, Dominic Shakeshaft, Jim Sumser, Keir Thomas, Matt Wade

Project Manager: Sofia Marchant

Copy Edit Manager: Nicole LeClerc

Copy Editor: Ami Knox

Assistant Production Director: Kari Brooks-Copony

Production Editor: Ellie Fountain

Compositor/Artist: Kinetic Publishing Services, LLC

Proofreader: Linda Seifert

Indexer: Kevin Broccoli

Cover Designer: Kurt Krames

Manufacturing Director: Tom Debolski

Distributed to the book trade worldwide by Springer-Verlag New York, Inc., 233 Spring Street, 6th Floor, New York, NY 10013. Phone 1-800-SPRINGER, fax 201-348-4505, e-mail [orders-ny@springer-sbm.com](mailto:orders-ny@springer-sbm.com), or visit <http://www.springeronline.com>.

For information on translations, please contact Apress directly at 2560 Ninth Street, Suite 219, Berkeley, CA 94710. Phone 510-549-5930, fax 510-549-5939, e-mail [info@apress.com](mailto:info@apress.com), or visit <http://www.apress.com>.

The information in this book is distributed on an “as is” basis, without warranty. Although every precaution has been taken in the preparation of this work, neither the author(s) nor Apress shall have any liability to any person or entity with respect to any loss or damage caused or alleged to be caused directly or indirectly by the information contained in this work.

The source code for this book is available to readers at <http://www.apress.com> in the Source Code/Download section. You will need to answer questions pertaining to this book in order to successfully download the code.

# Contents

Foreword .....	xv
About the Author .....	xvii
About the Technical Reviewer .....	xix
Acknowledgments .....	xxi
Introduction .....	xxiii
<b>CHAPTER 1    Welcome to BusinessObjects XI .....</b>	<b>1</b>
History .....	1
From Report Writing to Business Intelligence .....	2
BusinessObjects XI Release 2 .....	3
Licensing .....	4
Service-Oriented Architecture .....	5
Reporting Considerations .....	6
Preprinted Forms .....	7
High-Volume Printing .....	7
Legal Issues .....	8
Availability and Distribution .....	8
BusinessObjects XI vs. SQL Server Reporting Services .....	9
Market Considerations .....	9
Feature Differences .....	11
Summary .....	12
<b>CHAPTER 2    BusinessObjects XI Server Architecture .....</b>	<b>13</b>
InfoStore .....	13
FileStore .....	14
Servers .....	16
Programmatic Access .....	19
Central Management Server .....	22
File Repository Servers .....	24
Event Server .....	26
Page Server .....	29
Job Servers .....	32

Cache Server .....	34
Report Application Server.....	37
Server Groups .....	39
Creating a Server Group.....	41
Adding Servers to a Server Group.....	41
Extracting the Servers in a Group.....	42
The Auditing Database .....	42
Scalability .....	43
Backups and Disaster Recovery.....	44
Summary .....	45

### ■ CHAPTER 3 Administration Tools..... 47

Central Configuration Manager.....	47
Properties Tab.....	48
Dependency Tab.....	49
Connection Tab.....	50
Configuration Tab.....	50
Protocol Tab .....	53
Import Wizard.....	53
Publishing Wizard .....	57
Administration Launchpad.....	61
Central Management Console .....	61
InfoView.....	62
Administration Tool Console.....	62
Business Views Manager.....	68
Crystal Reports Explorer.....	69
Summary .....	72

### ■ CHAPTER 4 Using the Central Management Console..... 73

Folders and Reports .....	73
Folders.....	74
Reports .....	75
Objects .....	96
Calendars .....	97
Events .....	98
File and Schedule Events.....	99
Custom Events.....	101
Summary .....	102

<b>CHAPTER 5</b>	<b>BusinessObjects XI SDK Programming I</b>	103
	Connecting to BusinessObjects XI	103
	Connecting with User IDs	104
	Connecting with Tokens	106
	Connecting with Trusted Connections	108
	Examining the Connection Objects	109
	Querying the InfoStore	112
	The InfoStore SQL Language	113
	Working with the InfoStore	125
	Extracting Folder Information	126
	Creating Folders	129
	Deleting Folders	130
	Report Refresh Options	131
	Scheduling Reports	131
	Report History in the CMC	132
	Building Your Own Report History	133
	Adding New Reports	138
	Run Now	139
	Retrieving and Saving Schedules	140
	Adding Executable Code	144
	Handling Report Parameters Generically	145
	Summary	148
 <b>CHAPTER 6</b>	 <b>BusinessObjects XI SDK Programming II</b>	 149
	Scheduling	149
	Notifications	149
	Alerts	152
	Report Format Options	156
	TextFormatTabSeparated	159
	TextFormatPaginated	159
	TextFormatCharacterSeparated	160
	RichTextFormat	162
	RichTextEditableFormat	163
	PlainTextFormat	163
	PDFFormat	163
	ExcelFormat	164
	ExcelDataOnlyFormat	165
	Destination Options	166
	Printer Options	170

Programming Categories .....	171
Programming Events .....	173
Programming Calendars .....	175
Data Access Techniques .....	177
BO XI Web Controls .....	179
Getting Started .....	179
Web Controls .....	187
.NET Providers .....	192
Membership Provider .....	193
Using the .NET Providers .....	194
Summary .....	197

## ■ CHAPTER 7   **Crystal Reports and BusinessObjects XI** ..... 199

Crystal Reports Viewer Control .....	199
Setting Up the Control .....	199
Communicating with the BusinessObjects XI Server .....	204
Running a Report on Disk .....	205
Passing Parameters .....	207
Passing an Entire SQL Statement to Crystal Reports .....	208
Embedded vs. Nonembedded Reports .....	209
Exporting Reports .....	213
Filtering .....	215
Field Structure .....	216
Sections .....	217
Database Connectivity .....	220
Printer Options .....	220
Summary Information .....	220
Unmanaged RAS .....	221
Passing Data Sources .....	222
Crystal Reports Web Services .....	224
Summary .....	227

## ■ CHAPTER 8   **Programming the Report Application Server** ..... 229

Introduction to RAS Programming .....	229
Working with Reports .....	230
Connecting to the Data Source .....	231
Building the Body of the Report .....	236
Exporting Reports .....	265
Setting Parameters .....	267

Filtering Reports .....	268
Sorting .....	269
Charts .....	272
Report Options .....	274
Summary Information .....	276
Printing Reports .....	277
Saving Reports .....	279
Summary .....	280

## ■ CHAPTER 9 Enterprise Solutions Using the BusinessObjects XI SDK .....

On-Demand Web Service .....	281
On-Demand Web Service Internals .....	282
Scheduling Assemblies .....	289
Creating Criteria Screens .....	294
Building the WinForms Interface .....	295
Web Interface .....	308
BO XI Windows Service Monitor .....	313
Reporting Against the InfoStore .....	318
GetReportTree Web Service .....	319
Reporting Against the XML Output .....	325
Building Dynamic Menus .....	327
Storing Custom Metadata .....	330
Using Your RDBMS .....	330
Custom Properties .....	331
The Limits of Crystal .....	334
Summary .....	335

## ■ CHAPTER 10 Security .....

Security Considerations .....	337
Managing Security Through the CMC .....	338
Creating Users .....	339
Creating Groups .....	341
Adding Users to Groups .....	342
Extracting the Users in a Group .....	343
Subgroups .....	345
Access Levels and Security Rights .....	347
Roles .....	348
Rights .....	349

Limits .....	355
Non-Enterprise Security Management .....	359
Validating NT Group Users .....	360
License Keys .....	362
Summary .....	366
 <b>CHAPTER 11 BusinessObjects Unified Web Services SDK .....</b>	 367
Configuring the Unified Web Services SDK .....	367
Why Use the Web Services SDK? .....	370
Programming Web Services .....	370
Services .....	370
Creating a Connection .....	371
Queries .....	373
Extracting Data .....	376
Working with Reports .....	380
Working with Folders .....	389
Managing Servers .....	390
Managing Security .....	392
Summary .....	393
 <b>CHAPTER 12 Third-Party Solutions .....</b>	 395
APOS Systems Inc. ....	395
AddressBook Gateway .....	395
Archive Manager .....	396
Bursting Manager .....	398
InfoScheduler .....	400
Instance Manager .....	402
Instance Monitor .....	404
Key Performance Indicator .....	404
Object Manager .....	406
RealTime Monitor .....	408
Report Package Booster .....	412
RunTime Manager .....	413
Solutions Kit for ESRI GIS .....	413
View Time Security .....	416
Software Forces .....	418
.rpt Inspector Enterprise Suite .....	418



Teleran Technologies.....	421
iGuard .....	421
iSight .....	422
CRD .....	424
Excel Solutions.....	425
Syncfusion's Essential XlsIO.....	427
SoftArtisans's OfficeWriter .....	431
Word Solutions.....	434
Summary .....	435
 ■ INDEX .....	 437