

ORACLE PRESS™ — EXCLUSIVELY FROM MCGRAW-HILL/OSBORNE

OCA Oracle Application Server 10g Administrator Exam Guide (Exam 1Z0-311)

Prepare for the Exam with this Complete Study Kit

ORACLE®

10g Certified Associate

SAM R. ALAPATI
Oracle Certified Professional



Book and CD-ROM
contain 300+ Practice
Exam Questions



ORIGINAL • AUTHENTIC

Oracle Press™

ONLY FROM OSBORNE

ORACLE®

Oracle Press™



OCA Oracle Application Server 10g Administrator Exam Guide

(Exam 1Z0-311)



GIFT OF THE ASIA FOUNDATION
NOT FOR RE-SALE

QUÀ TẶNG CỦA QUỸ CHÂU Á
KHÔNG ĐƯỢC BÁN LẠI

Sam R. Alapati

This publication and CD may be used in assisting students to prepare for the OCA Oracle Application Server 10g Administrator Exam. Neither Oracle Corporation nor The McGraw-Hill Companies warrant that use of this publication and CD will ensure passing the relevant exam.

McGraw-Hill

New York Chicago San Francisco
Lisbon London Madrid Mexico City Milan
New Delhi San Juan Seoul Singapore Sydney Toronto

The McGraw-Hill Companies
160 Spear Street, Suite 700
San Francisco, California 94105
U.S.A.

To arrange bulk purchase discounts for sales promotions, premiums, or fund-raisers, please contact McGraw-Hill at the above address.

OCA Oracle Application Server 10g Administrator Exam Guide (Exam 1Z0-311)

Copyright © 2006 by The McGraw-Hill Companies. All rights reserved. Printed in the United States of America. Except as permitted under the Copyright Act of 1976, no part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of publisher, with the exception that the program listings may be entered, stored, and executed in a computer system, but they may not be reproduced for publication.

Oracle is a registered trademark of Oracle Corporation and/or its affiliates.

Screen displays of copyrighted Oracle software programs have been reproduced herein with the permission of Oracle Corporation and/or its affiliates.

1234567890 CUS CUS 019876

Book p/n 0-07-226272-9 and CD p/n 0-07-226273-7
parts of
ISBN 0-07-226271-0

Acquisitions Editor
Tim Green

Technical Editor
John Watson

Composition
G&S Book Services

Production Coordinator
Katherine Bishop

Copy Editor
Harlan James

Illustration
G&S Book Services

Project Manager
Jody McKenzie

Proofreader
Lori Newhouse

Series Design
Roberta Steel and Peter Hancik

Acquisitions Coordinator
Jennifer Housh

Indexer
Randi Dubnick

Cover Series Design
Damore Johann Design, Inc.

This book was composed with Adobe® InDesign®.

Information has been obtained by McGraw-Hill from sources believed to be reliable. However, because of the possibility of human or mechanical error by our sources, McGraw-Hill, or others, McGraw-Hill does not guarantee the accuracy, adequacy, or completeness of any information and is not responsible for any errors or omissions or the results obtained from the use of such information.

Oracle Corporation does not make any representations or warranties as to the accuracy, adequacy, or completeness of any information contained in this Work, and is not responsible for any errors or omissions.

CONTENTS AT A GLANCE

Part I

Architecture, Installation, and Management	1
1 Overview and Architecture	3
2 OracleAS 10g Installation	43
3 Managing Oracle Application Server 10g	101

Part II

Access Control and Identity Management	139
4 Managing the Oracle Internet Directory	141
5 Managing the Oracle HTTP Server	211
6 Single Sign-On, SSL, and OracleAS Certificate Authority	271

Part III

OracleAS 10g Middle-Tier Components	321
7 OracleAS Portal	323
8 Managing OC4J and Configuring J2EE Applications	367
9 OracleAS Web Cache	433
Appendix: About the CD	489
Glossary	493
Index	513

CONTENTS

Acknowledgments	xix
Introduction	xxi

Part I

Architecture, Installation, and Management	I
---	----------

I Overview and Architecture	3
--	----------

An Overview of the Oracle Application Server	4
Key Solution Areas	6
Key Components	6
J2EE Applications and Web Services	7
J2EE Applications	7
OracleAS 10g Components to Support J2EE Applications ...	9
J2EE Services	14
Web Services	14
Oracle Components to Support Web Services	15
Creating and Managing Business Portals	15
OracleAS Components to Support Portals	16
Wireless Applications	17
OracleAS Wireless	17
Providing Business Intelligence for the Web	19
OracleAS Business Intelligence Components	19
Accelerating Performance with Caching	21
OracleAS Web Cache	21
Identity Management	23
OracleAS 10g Identity Management Components	24
Oracle Application Server Architecture	26
The OracleAS Infrastructure	27
The OracleAS Middle Tier	29
Managing the Oracle Application Server	29
Application Server Control	30

Distributed Configuration Management	31
Oracle Process Management and Notification Server	31
Important OracleAS 10g Terminology	31
OracleAS Installation	31
OracleAS Infrastructure	31
Metadata Repository	32
Middle-Tier Components	32
Directory Server	32
Oracle Application Server Instance	32
The ias_admin User	33
OracleAS Farm	33
Oracle Application Server Cluster	33
✓ Two-Minute Drill	35
Q&A Self Test	39
 2 OracleAS 10g Installation	 43
Oracle Application Server 10g Components	44
Oracle Application Server Middle Tier	45
OracleAS Infrastructure	45
OracleAS Developer Kits	46
Oracle Application Server Topology	46
Installing OracleAS 10g	47
Getting the Necessary Software	48
General Installation Requirements	49
Software Requirements	51
Checking Kernel Parameters and Shell Limits	53
Checking the Ports	56
Creating Necessary Operating System Users and Groups	59
Creating Necessary Directories	61
Setting the Environment	63
Editing the /etc/hosts File	65
Installing from CD-ROM vs. Installing from the Hard Drive	66
Where to Install	67
Installing the OracleAS Infrastructure	68
OracleAS 10g Infrastructure Installation Types	68
The Installation Choices	70

Order of Installation	71
What if You Create Just the Metadata Repository?	72
Some Installation Issues	72
Installing the OracleAS Infrastructure	73
Accessing the OracleAS Infrastructure	78
Accessing the OAS Welcome Page	78
OID Server	79
SSO Server	81
Post-Installation Tasks	81
Starting and Stopping the OracleAS Infrastructure	84
Installing the OracleAS Middle Tier	85
Checking the Installation Requirements	86
The Middle-Tier Installation Process	87
Accessing and Verifying the Middle-Tier Components	90
✓ Two-Minute Drill	94
Q&A Self Test	97

3 Managing Oracle Application Server 10g 101

Oracle Process Management and Notification Server	102
OPMN Components	103
OPMN Event Scripts	104
Debugging OPMN	104
The opmnctl Command-Line Tool	104
The opmnctl Options	105
The Application Server Control Interface	111
Application Server Control and the Management Agent ...	111
Grid Control	113
How the Application Server Control Does Its Job	113
Capabilities of the Various Management Tools	117
Additional OracleAS 10g Tools	118
The OracleAS Hi-Av Tool	118
The Application Server Control Topology Viewer	120
The Application Server Control Home Page	121
Starting Up and Shutting Down the Application	
Server Control	121
Obtaining Information about the Host Computer	126
The Application Server Control Home Pages	126

The Correct Startup and Shutdown Sequence	130
The Startup Sequence	130
The Shutdown Sequence	131
✓ Two-Minute Drill	132
Q&A Self Test	135

Part II

Access Control and Identity Management 139

4 Managing the Oracle Internet Directory 141

Directories and the LDAP	142
LDAP	143
LDAP Components	144
Oracle Internet Directory	149
How Oracle Internet Directory Works	150
Security Benefits of OID	150
Hosted and Non-Hosted Environments	151
Default Directory Information Tree	151
OID Architecture	152
Configuration Parameters for the OID Instance	155
Managing OID	155
The OID Command-Line Tools	156
A Brief Introduction to LDIF Files	161
The Oracle Directory Manager	168
Routine OID Administration at a Glance	173
OID Log Files	174
Identity Management and the OID	174
Benefits	174
Oracle Identity Management	175
The Identity Management Process	176
Oracle Identity Management System Components	176
Identity Management and the OracleAS Infrastructure	178
Oracle Directory Integration and Provisioning	179
Oracle Internet Directory Metadata	180
Identity Management Realms	181
Oracle Application Server Administration Model	187
Delegation of OID Administration	188

Access Control and OID	188
The iASAdmins Group	188
Managing Users and Groups	189
Password Policy Management	190
Delegated Administrative Service	191
Architecture of DAS	192
Managing DAS	193
Using the OID Self-Service Console	195
Configuring an Identity Management Realm	198
Managing Users and Groups Using DAS	199
Assigning Privileges to Users and Groups	200
OracleAS Portal and the Oracle Internet Directory	200
Caching OID Information in the OracleAS Portal	200
OracleAS Portal Entries in OID	201
Configuring OID Settings in the OracleAS Portal	202
Accessing DAS from OracleAS Portal	202
✓ Two-Minute Drill	203
Q&A Self Test	207
 5 Managing the Oracle HTTP Server	 211
Introduction to the Oracle HTTP Server	212
Important OHS Components	213
Oracle HTTP Server Modules	213
The Oracle HTTP Server Processing Model	214
Starting and Stopping the Oracle HTTP Server	215
Oracle HTTP Server Installation and Configuration	215
Basic Oracle HTTP Server Configuration Directives	220
Managing Processes and Connections	228
Managing the Oracle HTTP Server	230
Managing from the Command Line	230
Using the Application Server Control to Manage OHS	231
Server Properties Page	233
Using Oracle HTTP Server Log Files	235
OHS Configuration Directives	238
The Server Configuration Context	238
Virtual Host Context	239
Directory Context	239

.htaccess Context	245
What Are Block Directives?	245
Merging Containers and Contents	247
Virtual Hosting	248
Using Special Configuration Directives	253
Directory Indexing	256
Access Restriction Directives	260
✓ Two-Minute Drill	264
Q&A Self Test	267

6 Single Sign-On, SSL, and OracleAS

Certificate Authority	271
OracleAS Single Sign-On	272
OracleAS Single Sign-On Server Components	272
Single Sign-On Authentication Flow	275
Configuring and Managing the SSO Server	277
Command Line	277
Using the Application Server Control	278
Single Sign-Off	278
Administering Partner and External Applications	281
Monitoring the SSO Server	284
Accessing the SSO Server from OracleAS Portal	285
Using the Secure Sockets Layer	285
Private and Public Key Cryptography	286
A Typical SSL Session	289
Requirements for Using SSL	290
Oracle Wallet Manager	291
Default Locations for Storing Oracle Wallets	291
Starting Oracle Wallet Manager	292
Managing Wallets	293
Uploading and Downloading Wallets	294
Managing Certificates	295
Enabling OracleAS Components to Use SSL	296
The Oracle HTTP Server and SSL	296
Configuring Oracle Internet Directory for SSL	297
Configuring OracleAS SSO for SSL	298

Configuring OracleAS Web Cache for SSL	299
OracleAS Portal and SSL	299
OracleAS Certificate Authority	299
Public Key Infrastructure	300
Key Features of OracleAS Certificate Authority	302
OracleAS PKI Management Tools	303
OracleAS Certificate Authority Architecture and Configuration	305
Creating a Complete Wallet	307
Accessing OracleAS CA User Pages	310
✓ Two-Minute Drill	312
Q&A Self Test	316

Part III

OracleAS 10g Middle-Tier Components 321

7 OracleAS Portal 323

OracleAS Portal	324
The Portal Hierarchy	324
Relationships among the OracleAS Portal Components	325
Portal Page Appearance	327
Content Classification	327
Prerequisites for Accessing the OracleAS Portal	328
Three-Tier Architecture	329
How OracleAS Portal Assembles Pages	331
Managing the OracleAS Portal	333
OracleAS Portal Administrative Services	334
Using Administrative Portlets	334
Managing the Portal Instance with the Application Server Control	336
Monitoring the OracleAS Portal Instance	338
OracleAS Portal Schema, User, and Group Management	339
Default OracleAS Portal Schemas	340
Managing Portal Users	340
Managing Groups	342
OracleAS Portal User and Group Privileges	343

Administering the Portlet Repository	344
Providers	344
Portlet Repository Administrative Tasks	348
Exporting and Importing Portal Content	348
Creating a Transport Set	349
Exporting the Transport Set	350
Importing the Transport Set	352
OracleAS Portal Configuration Tasks	352
Configuring the Self-Registration Feature	352
Configuring the OracleAS Portal for WebDAV	353
Setting Up the OracleAS Portal for WebDAV	354
The Oracle Portal Configuration Assistant	356
Using the Portal Dependency Settings Tool	356
Configuring Language Support	357
✓ Two-Minute Drill	358
Q&A Self Test	362

8 Managing OC4J and Configuring J2EE Applications 367

Introduction to J2EE	368
J2EE Components	368
Terminology	370
Oracle Containers for Java	373
Default OracleAS OC4J Instances	374
Creating an OC4J Instance	374
Using the dcmctl Utility	375
Using the Application Server Control	377
Managing the OC4J Instance	379
Using OPMN	379
Using DCMCTL	380
Using the Application Server Control	380
Configuring OC4J	387
The mod_oc4j Configuration Files	387
The OC4J Server Configuration Files	389
server.xml	390
J2EE Application Deployment Files	398

Description of the Application (J2EE Deployment)	
XML Files	400
Using the Application Server Control to Configure OC4J ...	406
Deploying J2EE Applications	406
Deployment Methodologies	407
Data Sources	407
Deploying Web Application Modules	415
Deploying J2EE (EJB) Applications	417
Maintaining and Monitoring Applications	420
Deploying and Registering Web Providers	421
✓ Two-Minute Drill	422
Q&A Self Test	428
 9 OracleAS Web Cache	 433
Introduction to the OracleAS Web Cache	434
The Reverse Proxy Web Caching Mechanism	436
Maintaining Consistency and Reliability	437
Request and Response Headers	438
Compression	439
OracleAS Web Cache Ports	439
Caching Principles	440
OracleAS Web Cache Management	448
Default Oracle Web Cache Users	448
Using opmnctl	448
Using the Application Server Control	450
Standalone Configuration Management Tools	453
OracleAS Web Cache Administration Tasks	455
Modifying Security Settings	455
Configuring Listening Ports	455
Configuring Site Definitions	457
Specifying Origin Server Settings	458
Using OracleAS Diagnostic Tools	461
Configuring Access and Event Logs	462
Manual Rollover of the Access and Event Logs	464
Creating and Configuring Caching Rules	465
How Caching Rules Work	466

Predefined Caching Rules	470
Creating Your Own Caching Rules	471
Expiration Policies	473
Configuring Expiration Policies	473
Creating Expiration Policies	475
Sending Invalidation Requests	476
Structure of the Invalidation Requests	477
Invalidation Request Methods	477
Performance Assurance with Expiration and Invalidation ...	480
✓ Two-Minute Drill	481
Q&A Self Test	485
Appendix: About the CD	489
Glossary	493
Index	513