

Robert G. Freeman and Charles A. Pack

OCP

Oracle® Database 12c Administrator Certified Professional STUDY GUIDE

EXAM 1Z0-063

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Oracle® Database 12c Administrator Certified Professional

Study Guide



Robert G. Freeman
Charles A. Pack

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Best regards,

A handwritten signature in black ink, appearing to read 'Chris Webb', written in a cursive style.

Chris Webb
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For my Carrie, my kids, and my parents.

—Robert G. Freeman

For my wife, Donna, and our daughter, Jenny.

—Charles A. Pack

Acknowledgments

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Finally, a very important thanks goes out to *you*. Thanks for buying this book. Thanks for wanting to become an Oracle Certified Professional. Thanks for any nice comments you might leave on websites here and there. Thanks for trusting us to help you succeed at the test!

—Robert G. Freeman

Thanks to Robert Freeman and Jeff Kellum for the opportunity to write this book. Thanks to my colleagues at CSX, some of the brightest and hardest working people I've ever known, for continuously challenging me to stay technically sharp.

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—Charles A. Pack

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Introduction

There is high demand for professionals in the information technology (IT) industry, and Oracle certifications are the hottest credentials in the database world. You have made the right decision to pursue your Oracle certification because it will give you a distinct advantage in this highly competitive market.

Many readers may already be familiar with Oracle and do not need an introduction to Oracle databases. For those who aren't familiar with the company, Oracle, founded in 1977, sold the first commercial relational database and is now the world's leading database company and second-largest independent software company, with revenues of more than \$37 billion, and is headquartered in Redwood City, California.

Oracle databases are the de facto standard for large Internet sites, mission-critical enterprise applications, and cloud solutions. With the acquisition of Sun Microsystems, Oracle offers complete enterprise business solutions with engineered systems capable of running world-class databases and applications. Enterprise Resource Planning (ERP) application suites, data warehouses, and business applications at many large and medium-size companies rely on Oracle. The demand for DBA resources remains higher than for other professions during weak economic times.

This book is intended to help you pass the Oracle Database 12c: Advanced Administration exam, which will establish your credentials as an Oracle Certified Professional (OCP). The OCP certification is a prerequisite for obtaining an Oracle Certified Master (OCM) certification. Using this book and a practice database, you can learn the necessary skills to pass the 1Z0-063 Oracle Database 12c: Advanced Administration exam.

Why Become Oracle Certified?

The number-one reason to become an OCP is to gain more visibility and greater access to the industry's most challenging opportunities. Oracle certification is the best way to demonstrate your knowledge and skills in Oracle database systems.

Certification is proof of your knowledge and shows that you have the skills required to support Oracle core products. The Oracle certification program can help a company to identify proven performers who have demonstrated their skills and who can support the company's investment in Oracle technology. It demonstrates that you have a solid understanding of your job role and the Oracle products used in that role.

OCPs are among the best paid in the IT industry. Salary surveys consistently show the OCP certification to yield higher salaries than other certifications, including Microsoft, Novell, and Cisco.

So whether you are beginning your career, changing your career, or looking to secure your position as a DBA, this book is for you!

Oracle Certifications

Oracle certifications follow a track that is oriented toward a job role. The primary certification tracks are Database, Applications, Java, Enterprise Management, Virtualization, and Operating Systems. Within each track, Oracle has a tiered certification program of OCA and OCP. Only the Database track has OCM. The Database track is clearly for the database administrator job role.



For the latest certification information on all of Oracle certification paths, please visit the Oracle website at http://education.oracle.com/pls/web_prod-plq-dad/db_pages.getpage?page_id=39&p_org_id=1001&lang=US.

The role of database administrator (DBA) has become a key to success in today's highly complex database systems. The best DBAs work behind the scenes but are in the spotlight when critical issues arise. They plan, create, maintain, and ensure that the database is available for the business. They have tools to proactively monitor the database for performance issues and to prevent unscheduled downtime. The DBA's job requires broad understanding of the architecture of Oracle database and expertise in solving problems.

Sybex has Oracle certification study guides for the Database track. In the following sections, I will introduce you to the different tiers in the Oracle Database 12c certification track.

Oracle Database 12c Administrator Certified Associate

The Oracle Certified Associate (OCA) credential is the first step toward achieving the Oracle Certified Professional (OCP) certification. OCA shows that you have the fundamental knowledge and skills to support an Oracle Database 12c database. This certification requires you to pass two exams that demonstrate your Oracle basics:

- 1Z0-061: Oracle Database 12c: SQL Fundamentals
- 1Z0-062: Oracle Database 12c: Installation and Administration

If you have already passed any one of the following tests, you need not take the 1Z0-061 exam; you need to pass only 1Z0-062.

- 1Z0-051: Oracle Database 11g: SQL Fundamentals I
- 1Z0-047: Oracle Database SQL Expert

The 1Z0-061 exam can be taken at a testing location or from your home using the Internet. The 1Z0-062 test is offered at a Pearson VUE facility.



To register for the test, visit Pearson VUE at <http://www.pearsonvue.com>.

Oracle Database 12c Administrator Certified Professional

The Oracle Certified Professional credential shows that you have the skill and technical expertise to manage and implement enterprise databases. The OCP tier challenges you to demonstrate your continuing experience and knowledge of Oracle technologies. The OCP test will measure your knowledge in setting up and managing multitenant architecture databases and in backup and recovery. The Oracle Database 12c Administrator Certified Professional certification requires you to have the OCA certification as well as to pass the following exam:

- 1Z0-063: Oracle Database 12c: Advanced Administration

In addition, the OCP candidate must take one instructor-led Oracle University hands-on requirement class.



You should verify the list of approved hands-on courses at the Oracle education website at http://education.oracle.com/pls/web_prod-plq-dad/db_pages.getpage?page_id=244#5.

Oracle Database 12c Administrator Certified Master

The highest level of certification available in any track is the Oracle Certified Master. The OCM certification credential shows that you have the highest level of expertise in an Oracle product. To become a certified master, you must first achieve OCP status and then complete two advanced instructor-led classes at an Oracle education facility. You must also pass a hands-on examination at an Oracle education facility. At the time of writing this book, the Oracle Database 12c: Certified Master exam has not been released.

More Information and Resources

You can find most current information about Oracle certification at <http://education.oracle.com/certification>. You may be asked to choose your country of residence before being directed to the site. Follow the links under Certifications to choose the track and learn more.

Choose the Database track to view the different certification versions available. Choose Oracle Database 12c Administrator Certified Associate, and then click on the test to know more about the test contents, the objectives covered in the test, and the passing score and to register for the test.

The Oracle documentation is available online at <http://tahiti.oracle.com>. Oracle documentation contains a wealth of information, which can be used to supplement what you learn from this book.

Oracle provides training series with step-by-step instructions to perform a variety of Oracle Database 12c tasks. The Oracle by example (OBE) tutorial can be found at <http://apex.oracle.com/pls/apex/f?p=44785:1>.

Oracle Technology Network (<http://www.oracle.com/technology/index.html>) is a great resource for database administrators and developers. You can read articles, view sample code, access documentation, participate in forums, and most importantly, download Oracle Database 12c, Oracle Enterprise Manager Cloud Control 12c, and other Oracle products.

OCA/OCP Study Guides

The Oracle Database 12c administration track certification consists of three tests: two for OCA and one for OCP. Sybex offers study guides to help you achieve OCA and OCP certification.

- *OCA: Oracle Database 12c Administrator Certified Associate Study Guide* (9781118643952)—Covers exams 1Z0-061: Oracle Database 12c: SQL Fundamentals and 1Z0-062: Oracle Database 12c: Installation and Administration.
- *OCP: Oracle Database 12c Administrator Certified Professional Study Guide* (9781118644072)—Covers exam 1Z0-063: Oracle Database 12c: Advanced Administration.

These two books are offered in a boxed set as *OCP: Oracle Certified Professional on Oracle Database 12c Certification Kit* (9781118957684).

Oracle Exam Requirements

The Oracle Database 12c: Advanced Administration exam covers several core subject areas. As with many typical multiple-choice exams, there are several tips that you can follow to maximize your score on the exam.

Oracle Database 12c: Advanced Administration (1Z0-063) Requirements

To pass the Oracle 12c: Advance Administration exam, you need to master the following subject areas in Oracle 12c:

- Oracle Database 12c: Backup and Recovery
- Oracle Data Protection Solutions
- Performing Basic Backup and Recovery
- Configuring for Recoverability
- Using the RMAN Recovery Catalog
- Implementing Backup Strategies

- Performing Backups
- Configuring RMAN Backup Options and Creating Backup of Non-Database Files
- Using RMAN-Encrypted Backups
- Diagnosing Failures
- Recovering Files Using RMAN
- Using Oracle Secure Backup
- Using Flashback Technologies
- Using Flashback Database
- Transporting Data
- Duplicating a Database
- Monitoring and Tuning of RMAN Operations
- Oracle Database 12c: Managing Multitenant Architecture
- Multitenant Container and Pluggable Database Architecture
- Creating Multitenant Container and Pluggable Databases
- Managing a CDB and PDBs
- Managing Storage in a CDB and PDBs
- Managing Security in a CDB and PDBs
- Managing Availability
- Managing Performance
- Moving Data, Performing Security Operations, and Interacting with Other Oracle Products

Tips for Taking the Oracle Database 12c: Advanced Administration Exam

The following tips are presented to help you prepare for and pass the exam.

- The exam consists of between 70 and 95 questions to be completed in 120 to 150 minutes. Answer the questions you are sure of first, before you run out of time.



The exam details were not released at the time of this writing. These above details are based on the Oracle 11g exam. Check Oracle's website at education.oracle.com for specifics.

- Many questions on the exam have answer choices that at first glance look identical. Read the questions carefully. Do not jump to conclusions. Make sure you clearly understand what each question asks.

- Most questions are based on scenarios. Some of the scenarios contain nonessential information and exhibits. You need to be able to identify what's important and what's not.
- Do not leave any questions unanswered. There is no negative scoring. After selecting an answer, you can mark difficult questions or the ones you are unsure of and come back to them later.
- When answering questions you are not sure about, use a process of elimination to get rid of the obviously incorrect answers first. Doing this greatly improves your odds if you need to make an educated guess.
- If you are not sure of your answer, mark it for review and then look for other questions that may help you eliminate any incorrect answers. At the end of the test, you can review the questions you marked earlier.



You should be familiar with exam objectives, which are included at the beginning of each chapter. Please check the objectives list on the Oracle Education website for any changes or updates. The detail page for each exam shows the passing score, number of questions, and minutes allocated along with exam fees and any other requirements.

What Does This Book Cover?

This book covers everything you need to pass the Oracle Database 12c: Advanced Administration exam. Each chapter begins with a list of exam objectives.

Chapter 1: Performing Oracle User-Managed Backups This chapter introduces Oracle user-managed backup and recovery. A review of Oracle's architecture with respect to backup and recovery is presented. Management of the Oracle database with respect to backup and recovery is included. The chapter covers putting the database in ARCHIVELOG mode as well as Oracle offline and online backups.

Chapter 2: Performing Oracle User-Managed Database Recoveries This chapter introduces the reader to Oracle user-managed recoveries. Both complete and incomplete recoveries are examined. Backup and recovery of the database control file are included along with the recreation of the temporary tablespace data files. Finally, we discuss recovery from the loss of online redo logs and the password files.

Chapter 3: Configuring and Backing Up Oracle Databases Using RMAN This chapter introduces the reader to RMAN and discusses configuration of RMAN for backup and recovery operations. Both offline and online backups are discussed. The chapter then proceeds to cover backups of an Oracle database by RMAN.

Chapter 4: Using the RMAN Recovery Catalog This chapter provides an introduction to the RMAN recovery catalog. It also provides information on when you might want to use

a recovery catalog, how to set up a recovery catalog, and how to register a database with the recovery catalog. We also discuss the use of RMAN's new virtual private catalog.

Chapter 5: Recovering Databases with RMAN This chapter dives into RMAN recoveries. It examines RMAN recoveries in both NOARCHIVELOG and ARCHIVELOG mode and discusses recoveries using both full backups and incremental backups. We explore faster recoveries using image copies as well as recoveries using a backup control file.

Chapter 6: Tuning and Monitoring RMAN and the Automatic Diagnostic Workflow This chapter covers RMAN reporting, monitoring, and tuning. It discusses the use of various views to monitor and report on RMAN operations. The RMAN REPORT and LIST commands are also covered in this chapter. We discuss various RMAN administration commands as well.

Chapter 7: Performing Oracle Advanced Recovery This chapter explores advanced RMAN recovery topics, including incomplete recoveries using RMAN. The chapter also discusses using RMAN for database duplication and tablespace point-in-time recoveries. It includes a discussion on using RMAN in disaster recovery situations. We close out Chapter 7 with a discussion on backup and recovery for Oracle multitenant databases.

Chapter 8: Understanding Flashback Technology In this chapter, we provide a brief overview of Flashback functionality and examine Automatic Undo Management, the cornerstone upon which key Flashback technologies rely. We discuss Flashback Drop and the Recycle Bin, Flashback Query, Flashback Versions Query, Flashback Transaction, Flashback Temporal Validity Query, Flashback Table, Flashback Data Archive, and Flashback Database.

Chapter 9: Diagnosing the Database and Managing Performance In this chapter, you'll learn about the tools that help the DBA diagnose problems in the database and about the tools that assist with detecting and resolving performance issues.

Chapter 10: Managing Database Resources This chapter discusses resumable space allocation, transportable tablespaces and databases, shrinking segments, and storage resource management in the Oracle 12c multitenant architecture, specifically how permanent and temporary tablespaces are managed in container databases (CDBs) and pluggable databases (PDBs).

Chapter 11: Creating Oracle Multitenant Databases This chapter is an introduction to the concepts of the Oracle multitenant architecture, new to Oracle 12c, and an introduction to creating multitenant CDBs and PDBs.

Chapter 12: Managing Oracle Multitenant Databases In this chapter, we explore how to manage the multitenant database environment that is based on the Oracle Database 12c multitenant architecture. We differentiate between CDBs and PDBs. You will learn how to connect to, start up, and shut down CDBs and PDBs.

Chapter 13: Oracle Utilities This chapter describes the use of Oracle-supplied database utilities in the Oracle Database 12c multitenant architecture. We discuss moving data,

performing security operations, and interacting with other Oracle products in the multitenant environment.

Chapter 14: Oracle Security in CDBs and PDBs This chapter focuses on security considerations in the Oracle Database 12c multitenant architecture. We discuss managing common and local users, common and local privileges, and common and local roles. We also discuss enabling common users to access data in specific PDBs.

What's Available Online?

The book includes a number of companion study tools, which can be downloaded from www.sybex.com/go/ocp12csg. See Appendix B for information on how to access and install these tools:

Test Preparation Software The test preparation software prepares you for the 1Z0-063 exam. You'll find all the review and assessment questions from the book *plus* two additional practice exams that appear exclusively from the downloadable study tools.

Electronic Flashcards The companion study tools include hundreds of flashcards specifically written to hit you hard, so don't get discouraged if you don't ace your way through them at first! They're there to ensure that you're really ready for the exam. And no worries—armed with the review questions, practice exams, and flashcards, you'll be more than prepared when exam day comes!

Bonus Lab Appendix We have included a number of bonus labs designed to give you additional hands-on practice.

Glossary A complete glossary of common terms is available at www.sybex.com/go/ocp12csg.

How to Use This Book

This book provides a solid foundation for the serious effort of preparing for the Oracle Database 12c: Advanced Administration exam. To best benefit from the book, use the following study method:

1. Take the assessment test immediately following this introduction. (The answers are at the end of the test.) Carefully read the explanations for any questions you get wrong, and note in which chapters the material is covered. This information should help you plan your study strategy.
2. Study each chapter carefully, making sure you fully understand the information and the test objectives listed at the beginning of each chapter. Pay close attention to any chapter related to questions you missed in the assessment test.