

# Oracle® Certified Professional Program Candidate Guide

*Oracle8™ Certified Database Administrator Track*

*Oracle® Candidate Certification Guide*

*October 2000*

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### *Oracle Candidate Certification Guide*

*Oracle8 Certified Database Administrator Track*

*October 2000*



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Visit the OCP Web site at <http://education.oracle.com/certification>

# 1

## *The Benefits of Oracle Certification*

The demand for professionals in information technology (IT) is high, and the competition for jobs is intense. Individuals, experienced or new to the profession, need to know what skills make them attractive to employers. Employers look for ways to distinguish employees and prospective employees who have the solid foundation of skills needed for effective performance.

The Oracle Certified Professional (OCP) Program helps the IT industry make these distinctions by establishing a standard of competence in specific job roles. An Oracle Certification is a valuable, industry-recognized credential that signifies a proven level of knowledge and ability.

### **Benefits to the Technical Professional**

The Oracle Certified Professional Program can give you a distinct advantage. An OCP Certification demonstrates that you have a solid understanding of a job role and the Oracle products used in that role. Being an Oracle Certified Professional can help raise your visibility and increase your access to the industry's most challenging opportunities.

OCPs have testified to the value of Oracle Certification<sup>1</sup>:

- 97% said they have benefited from certification
- 89% said they gained more confidence in their Oracle expertise after becoming certified
- 96% would recommend the program to a professional colleague

### **Benefits to the IT Employer**

The Oracle Certified Professional Program is also valuable to hiring managers who want to distinguish among candidates for critical IT positions. For companies that send employees through annual IT training, certification ensures a return on the training investment by validating the knowledge and understanding gained in training sessions. Companies can also combine certification with an employee development program to enhance employee loyalty and performance on the job.

Hiring certified professionals has a direct impact on a company's bottom line, as these conclusions from a research study by International Data Corporation<sup>2</sup> suggest:

- Certified professionals handled 40% more support calls per person, per day, than uncertified staff.
- Companies that advocated certification reported 49% less downtime than those that did not.
- For the majority of companies surveyed, the savings from increased effectiveness paid the costs of certification in fewer than nine months.

<sup>1</sup> Source: "Highlights From The 1999 Oracle Certified Professional Benefit Survey," *Market Analysis and Research Strategies*, 1999.

<sup>2</sup> Source: "Benefits and Productivity Gains Realized Through IT Certification," *International Data Corporation*, 1997.



## *Oracle8 Certified Database Administrator Track*

### **Oracle8 DBA Certification Track Overview**

The expertise of Oracle Database Administrators (DBAs) is integral to the success of today's increasingly complex system environments. The best DBAs operate primarily behind the scenes. They are on watch for ways to fine-tune day-to-day performance and to prevent unscheduled crises, such as a crashed database or hours of expensive downtime. This critical work requires a broad understanding of the architecture and processes of Oracle database, as well as plenty of hands-on experience solving problems. The best DBAs know they stand between optimal performance and an event that could bring their company to a standstill.

The Oracle8 Certified Database Administrator Track is a certification path that results in the award of a credential to proven performers in the role of database administrator. The track consists of five tests designed so you can translate your impressive knowledge and skills into a tangible, well-recognized professional certification.

### **Three paths to Oracle8 DBA Certification**

The Oracle8 Certified Database Administrator Track offers three paths to become certified. Candidates can freely combine exams from DBA tracks for Oracle8 and higher to complete their certification, subject to the requirement of completing one extra exam. See the chart on the following page for a list of the exams that are accepted under each path.

**Oracle8 Core Path (5 Exams):**  
Candidates can take the core exams exclusively from the Oracle8 track.

**Oracle8 Mixed Release Path (6 exams)**  
Candidates can combine the core exams from any Oracle DBA track for version Oracle8 or higher, then take one extra exam: 1Z0-010 Oracle8: New Features for Administrators.

**Oracle 7.3 to Oracle8 Upgrade Path (1 exam):**  
Candidates certified on Oracle 7.3 can take exam 1Z0-010 Oracle8: New Features for Administrators to upgrade their certification to Oracle8.

### **Candidate Qualifications**

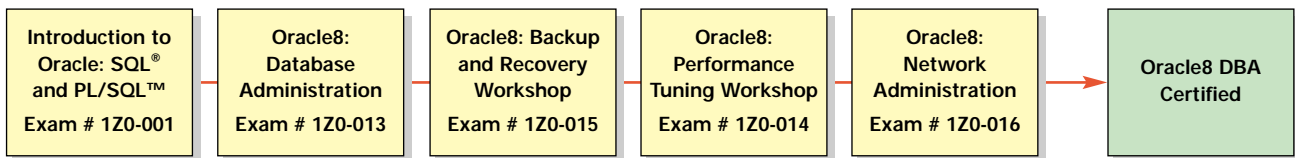
Most candidates for DBA certification combine up-to-date training with some level of on-the-job experience. There is no "typical" candidate.

If you are seeking certification to gain entry into the IT industry, you will need more than training to earn the credential. Many of the questions in the OCP tests are based on realistic job scenarios. In addition to the appropriate training, you will need hands-on experience with the software. Trial versions are included in most Oracle University training products.

## Oracle8 Certified Database Administrator Track

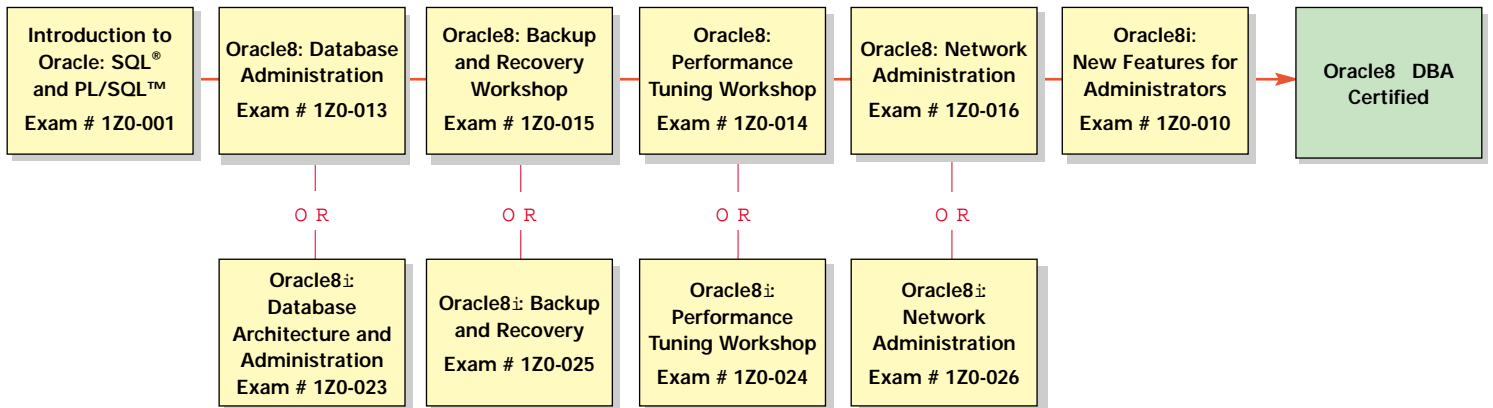
### Core Path

Pass the following exams (in any order):



### Oracle8 Mixed Release Path (6 exams)

Pass the following exams (in any order), selecting the core exams from both the Oracle8 and/or Oracle8i Track



### Upgrade Path

Candidates certified on Oracle7.3 and/or Oracle8 must pass the following exam(s):



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## *Preparing for the Oracle8 Certified DBA Tests*

Oracle recommends that you prepare for the Oracle8 Certified Database Administrator exams by combining offerings from Oracle University with practice and on-the-job experience. Start by reviewing the topics covered on the exam in the Test Content Checklist in this guide. Then look over the following preparation methods for a combination that suits your background.

### **Oracle University Preparation Tools**

*Instructor-led training* or *technology-based training* offered by Oracle University are the best way to prepare to become an Oracle Certified Professional. These courses lay the foundation of knowledge you will need to pass the OCP tests.

Refer to the curriculum map on the following page to chart your optimal preparation based on Oracle University instructor-led training and technology-based training. Your local Oracle University representative can advise you on the best option. For more information, visit the Oracle University Web site at <http://education.oracle.com/globalsites>.

### **Preparing On Your Own**

Experience is the best way to deepen your understanding of the topics covered in Oracle University courses. Oracle recommends that you extend your classroom learning by applying your new skills and knowledge either on the job or through practice and self-study.

### **Test Content Checklist**

Use the Test Content Checklist to identify all of the test topics for which you must prepare. Oracle may make modifications to the Test Content Checklist, so visit the OCP Web site at <http://education.oracle.com/certification> to download the latest version of this guide.

### **Additional Preparation Tools**

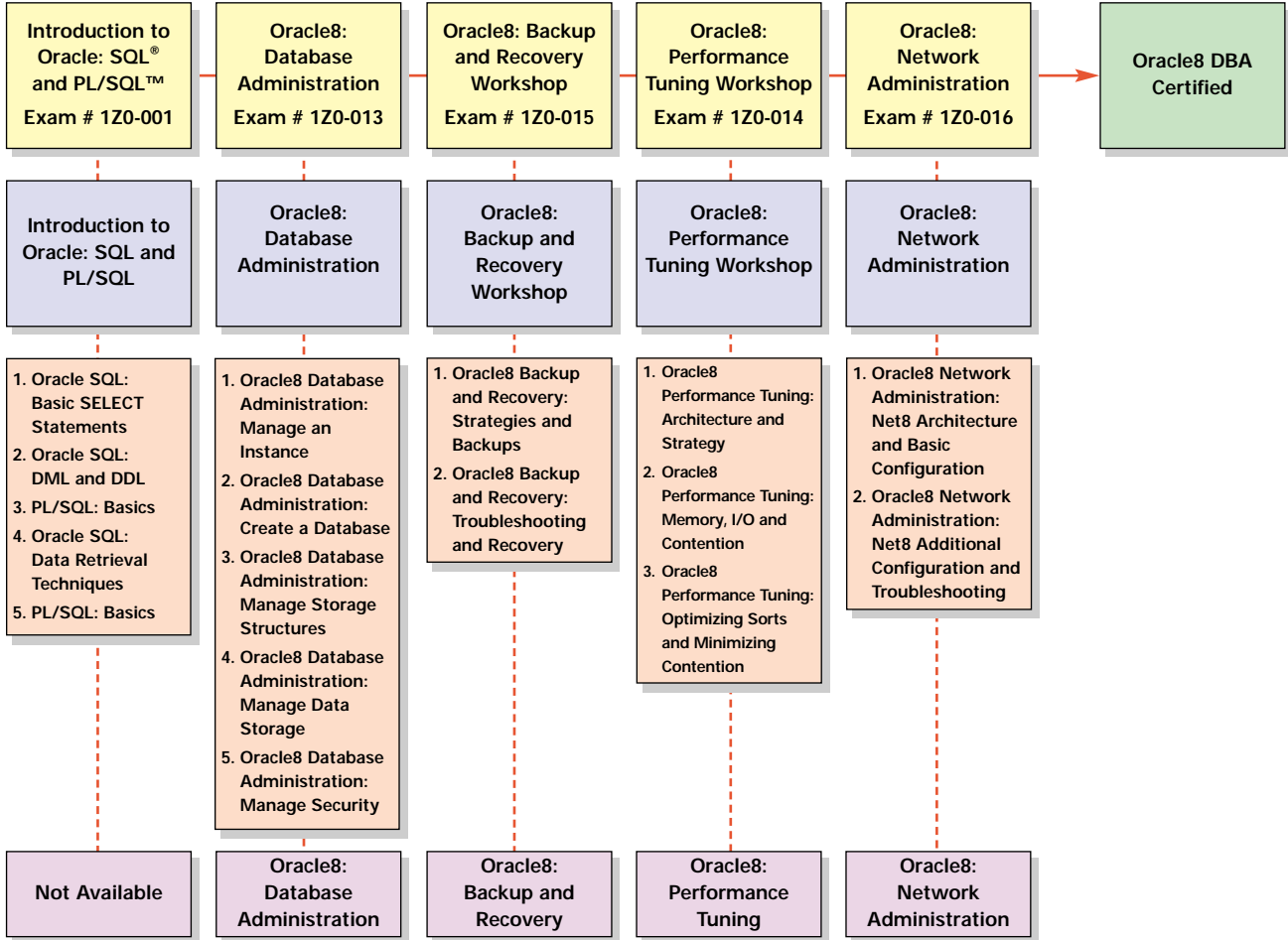
#### ■ Practice Tests

Oracle and Self Test Software have partnered to develop the highest quality practice tests available to individuals seeking Oracle Certified Professional status. To purchase practice tests, visit the OCP web site at <http://education.oracle.com/certification/>.

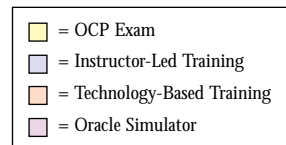
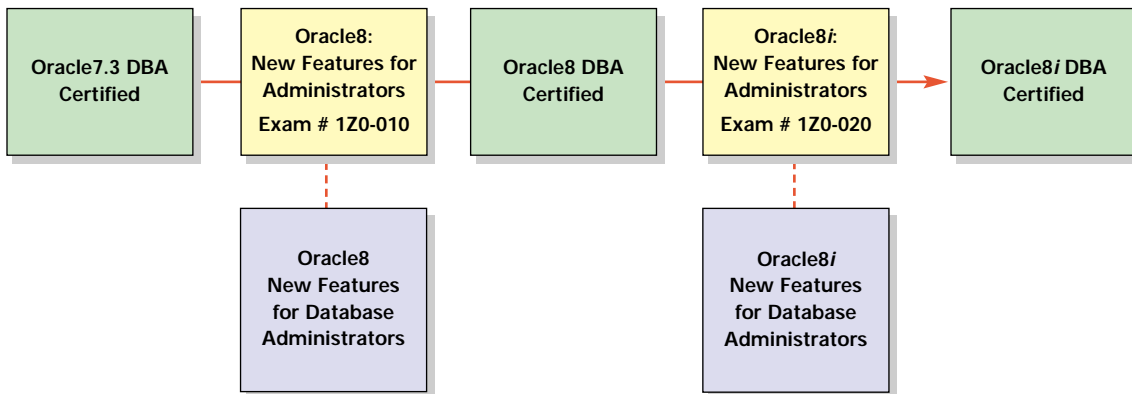
## Oracle8 Certified Database Administrator Exams and Training

Listed below each exam are the Oracle University training methods.  
Choose which method you prefer to prepare for the exams.

### Core Path



### Upgrade Path



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## Registering for Your Tests

The OCP tests are offered through Prometric, the world's largest provider of testing to the information technology industry. Prometric features more than 800 authorized Prometric testing centers worldwide.

All tests are delivered by computer and consist of multiple choice, free response, and interactive graphical questions. A brief tutorial precedes each test to familiarize you with the test delivery system. You should attempt to answer every question in the tests because incomplete answers are scored as incorrect.

### Reviewing the Candidate Agreement

Candidates pursuing OCP certification must accept the terms of the Oracle Certified Professional Candidate Agreement before taking the tests.

You will be presented with the agreement on-screen before the exam starts. You can also review the agreement before your appointment by visiting the OCP Web site at <http://education.oracle.com/certification>.

### Scheduling Your Test

1. There are two convenient ways to register for testing:
  - a. Register online at <http://www.2test.com> (Online registration is not available for beta and discounted exam registration.)
  - b. Call the Prometric Regional Service Center (RSC) serving your country during normal business hours (a list of RSCs is located on the last page of this guide)
2. Make sure that you have both the number and title of the test that you are registering for. The Prometric customer service representative will ask for your name and contact information, as well as your preference as to date, time, and location for testing. Schedule your appointment to take the test at any available time Monday through Saturday during normal authorized Prometric testing center hours. Hours vary by location. Be sure to note when and where you are scheduled to take the test.
3. When you register, ask the Prometric customer service representative for a list of valid forms of identification that you will need to present when you take your test. You will not be allowed to take the test without valid identification.

4. The test fee is payable to Prometric by check or major credit card (VISA, MasterCard, or American Express) at the time of registration. If you pay by check, you cannot schedule your test until payment has been received by Prometric.
5. You must schedule a test at least 24 hours in advance.

### Changing or Canceling Your Appointment

To cancel or reschedule your test appointment, you must call the Prometric Regional Service Center. The cancellation policy by region is:

- The Americas: One business day in advance
- Asia Pac: By midday (Sydney time) the previous business day
- EMEA: Two business days in advance
- Tokyo/Japan: Three business days in advance

Candidates who do not appear for the test or who cancel less than one business day prior to the test will not receive a refund.

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## *Taking Your Tests*

### **On Test Day...**

1. Arrive at the testing center at least 15 minutes prior to your scheduled appointment.
2. Sign the test log and present two forms of identification. One must be a government-issued photo identification. Both forms of identification must contain your signature.
3. The test administrator will give you a brief orientation and escort you to a computer terminal where you will take the test. You are not allowed to bring papers, books, bags, or calculators into the room.

### **Obtaining Your Test Results**

You will receive your score report immediately after the test. Beta exam score reports are sent to candidates following analysis and scoring of the beta exam. Your results are automatically forwarded to Oracle following testing. Please keep a copy of all test reports for your records.

### **Retaking a Test**

If you wish to retake a test, you must wait at least 30 days. Oracle encourages you to make use of the diagnostic feedback supplied with the score report to review the areas that need further study. You may take a particular test up to three times in a twelve-month period.

# 6

## After You Are Certified

You will receive a certificate by mail from Prometric within 30 days after successfully completing all tests in a certification track. You can use your certificate as verification that you are an Oracle Certified Professional.

If you do not receive your certificate, write to [fulfillment@prometric.com](mailto:fulfillment@prometric.com) and provide your name, candidate ID, and current mailing address.

In addition, you will receive information on how to obtain a copy of the OCP logo. The logo may be used on business cards and resumes.

### Upgrading Your Certification

Oracle is committed to keeping the OCP Program current with the latest technology. To ensure the value of your Oracle Certified Professional credential, you may find it advantageous to upgrade your certification to the latest version.

### Retirement of an OCP Track

Once Oracle announces the retirement of a track, you will have at least six months to pass the remaining exams in the retiring track. If you do not upgrade your certification by the deadline, you will be required to complete all tests within the new track. To obtain the latest credential, consult the OCP Web site at <http://education.oracle.com/certification>.

### Updating your Demographic Information

Candidates may update their mailing address, phone number and/or email address by sending an email to: [rebecca.dimaio@prometric.com](mailto:rebecca.dimaio@prometric.com) or call the Exam Hotline at 1.800.891.EXAM (3926)

Include your first and last name, Prometric ID number and daytime phone number in the body of your email message.





## *Special Testing Opportunities*

### **Special Opportunities: Beta and Tryout Tests**

Oracle may offer beta or tryout versions of OCP tests as new and updated questions are developed. Beta and tryout tests are generally offered free or at a discount from the regular test price. Participating in beta and tryout tests is a good way to economize on your certification and to be among the first professionals to be certified on a new track or product release.

Beta score reports are sent to candidates following analysis and scoring of the beta test.

Visit the “What’s New” section of the OCP Web site at <http://education.oracle.com/certification> to find beta and tryout opportunities. Oracle provides detailed descriptions of each beta and tryout offer to help you decide if the tests are right for you.

Visit the OCP Web site at <http://education.oracle.com/certification>



## Test Content Checklists

*The following test content checklists show the objectives covered in the OCP exams.*



## Test Content Checklist

### *Test 1 – Introduction to Oracle: SQL<sup>®</sup> and PL/SQL<sup>™</sup> (Exam# 1Z0-001)*

#### Overview of Relational Databases, SQL and PL/SQL

- Discuss the theoretical and physical aspects of a relational database
- Describe the Oracle implementation of the RDBMS and ORDBMS
- Describe the use and benefits of PL/SQL

#### Writing Basic SQL Statements

- List the capabilities of SQL SELECT statements
- Execute a basic SELECT statement
- Differentiate between SQL statements and SQL\*Plus commands

#### Restricting and Sorting Data

- Limit the rows retrieved by a query
- Sort the rows retrieved by a query

#### Single Row Functions

- Describe various types of functions available in SQL
- Use character, number, and date functions in SELECT statements
- Describe the use of conversion functions

#### Displaying Data from Multiple Tables

- Write SELECT statements to access data from more than one table using equality and nonequality joins

- View data that generally does not meet a join condition by using outer joins
- Join a table to itself

#### Aggregating Data Using Group Functions

- Identify the available group functions
- Describe the use of group functions
- Group data using the GROUP BY clause
- Include or exclude grouped rows by using the HAVING clause

#### Subqueries

- Describe the types of problems that subqueries can solve
- Define subqueries
- List the types of subqueries
- Write single-row and multiple-row subqueries

#### Multiple-Column Subqueries

- Write multiple-column subqueries
- Describe and explain the behavior of subqueries when null values are retrieved
- Write subqueries in a FROM clause

#### Producing Readable Output with SQL\*Plus

- Produce queries that require an input variable

- Customize the SQL\*Plus environment
- Produce more readable output
- Create and execute script files
- Save customizations

#### Manipulating Data

- Describe each DML statement
- Insert rows into a table
- Update rows in a table
- Delete rows from a table
- Control transactions

#### Creating and Managing Tables

- Describe the main database objects
- Create tables
- Describe the datatypes that can be used when specifying column definition
- Alter table definitions
- Drop, rename, and truncate tables

#### Including Constraints

- Describe constraints
- Create and maintain constraints

#### Creating Views

- Describe a view
- Create a view
- Retrieve data through a view
- Insert, update, and delete data through a view
- Drop a view

## Test 1 – Introduction to Oracle: SQL and PL/SQL, continued

### Oracle Data Dictionary

- Describe the data dictionary views a user may access
- Query data from the data dictionary

### Other Database Objects

- Describe database objects and their uses
- Create, maintain, and use sequences
- Create and maintain indexes
- Create private and public synonyms

### Controlling User Access

- Create users
- Create roles to ease setup and maintenance of the security model
- Use the GRANT and REVOKE statements to grant and revoke object privileges

### Declaring Variables

- List the benefits of PL/SQL
- Describe the basic PL/SQL block and its sections
- Describe the significance of variables in PL/SQL
- Declare PL/SQL variables
- Execute a PL/SQL block

### Writing Executable Statements

- Describe the significance of the executable section
- Write statements in the executable section
- Describe the rules of nested blocks
- Execute and test a PL/SQL block
- Use coding conventions

### Interacting with the Oracle Server

- Write a successful SELECT statement in PL/SQL
- Declare the datatype and size of a PL/SQL variable dynamically
- Write DML statements in PL/SQL
- Control transactions in PL/SQL
- Determine the outcome of SQL DML statements

### Writing Control Structures

- Identify the uses and types of control structures
- Construct an IF statement
- Construct and identify different loop statements
- Use logic tables
- Control block flow using nested loops and labels

### Working with Composite Datatypes

- Create user-defined PL/SQL records
- Create a record with the

### %ROWTYPE attribute

- Create a PL/SQL table
- Create a PL/SQL table of records
- Describe the difference between records, tables, and tables of records

### Writing Explicit Cursors

- Distinguish between an implicit and an explicit cursor
- Use a PL/SQL record variable
- Write a cursor FOR loop

### Advanced Explicit Cursor Concepts

- Write a cursor that uses parameters
- Determine when a FOR UPDATE clause in a cursor is required
- Determine when to use the WHERE CURRENT OF clause
- Write a cursor that uses a subquery

### Handling Exceptions

- Define PL/SQL exceptions
- Recognize unhandled exceptions
- List and use different types of PL/SQL exception handlers
- Trap unanticipated errors
- Describe the effect of exception propagation in nested blocks
- Customize PL/SQL exception messages



## Test Content Checklist

### *Test 2 – Oracle8: Database Administration (Exam# 1Z0-013)*

#### Oracle Architectural Components

- List the structures involved in connecting a user to an Oracle Server
- List the stages in processing a query
- List the stages in processing a DML statement
- List the stages in processing COMMITs

#### Using Administration Tools

- Use the Server Manager Line Mode
- Identify administration applications supplied with the Oracle Enterprise Manager
- Use Oracle Enterprise Manager components

#### Managing an Oracle Instance

- Set up operating system and password file authentication
- Create the parameter file
- Start up an instance and opening the database
- Close a database and shutting down the instance
- Get and setting parameter values
- Manage sessions
- Monitor ALERT and trace files

#### Creating a Database

- Prepare the operating system
- Prepare the parameter file
- Create the database

#### Data Dictionary Views and Standard Packages

- Construct the data dictionary views
- Use the data dictionary
- Prepare the PL/SQL environment using the administrative scripts
- Administer stored procedures and packages

#### Maintaining the Control File

- Explain the uses of the control file
- Examine the contents of the control file
- Obtain the control file information
- Multiplex the control file

#### Maintaining Redo Log Files

- Explain the use of online redo log file
- Obtain log and archive information
- Control log switches and checkpoints
- Multiplex and maintain online redo log files
- Plan online redo log files
- Troubleshoot common redo log file problems

#### Managing Tablespaces and Datafiles

- Describe the logical structure of the database
- Create tablespaces

- Change the size of tablespaces using different methods
- Change the status and storage settings of tablespaces
- Relocate tablespaces
- Prepare necessary tablespaces

#### Storage Structure and Relationships

- List the different segment types and their uses
- Control the use of extents by segments
- State the use of block space utilization parameters by objects
- Obtain information about storage structures from the data dictionary
- Locate the segments by considering fragmentation and life-spans

#### Managing Rollback Segments

- Plan the number and size of rollback segments
- Create rollback segments using appropriate storage settings
- Maintain rollback segments
- Obtain rollback segment information from the data dictionary
- Troubleshoot rollback segment problems

## Test 2 – Oracle8: Database Administration, continued

### Managing Temporary Segments

- Distinguish the different types of temporary segments
- Allocate space for temporary segments within a database
- Obtain temporary segment information for a database or instance

### Managing Tables

- Distinguish between different Oracle data types
- Create tables using appropriate storage settings
- Control the space used by tables
- Analyze tables to check integrity and migration
- Retrieve information about tables from the data dictionary
- Convert between different formats of ROWID

### Managing Indexes

- List the different types of indexes and their uses
- Create B\*tree and Bitmap indexes
- Reorganize indexes
- Drop indexes
- Get index information from the data dictionary

### Maintaining Data Integrity

- Implement data integrity constraints and triggers
- Maintain integrity constraints and triggers

- Obtain constraint and trigger information from the data dictionary

### Using Clusters and Index-Organized Tables

- Create and maintaining clusters
- Use index-organized tables
- Retrieve information about clusters and tables from the data dictionary

### Loading and Reorganizing Data

- Load data using direct-load insert
- Load data into Oracle tables using SQL\*Loader conventional and direct paths
- Reorganize data using export and import

### Managing Users

- Create new database users
- Alter and drop existing database users
- Monitor information about existing users

### Managing Profiles

- Create and assigning user profiles to users
- Control use of resources with profiles
- Alter and dropping profiles
- Administer passwords using profiles
- Obtain information about profiles, assigned limits, and password management

### Managing Privileges

- Identify system and object privileges
- Grant and revoking privileges
- Control operating system or password file authentication

### Managing Roles

- Create and modifying roles
- Control availability of roles
- Remove roles
- Use predefined roles
- Display role information from the data dictionary

### Auditing

- Differentiate between database auditing and value-based auditing
- Use database auditing
- View enabled auditing options
- Retrieve and maintaining auditing information

### Using National Language Support

- Choose character set and national character set for a database
- Specify the language-dependent behavior using initialization parameter, environment variables, and the ALTER SESSION command
- Use the different types of NLS parameters
- Explain the influence on language-dependent application behavior
- Obtain information about NLS usage



## Test Content Checklist

### Test 3 – Oracle8: Backup and Recovery (Exam# 1Z0-015)

#### Backup and Recovery Considerations

- Define business, operational, and technical requirements for a backup and recovery strategy
- Identify the components of a disaster recovery plan
- Discuss the importance of testing a backup and recovery strategy

#### Oracle Recovery Structures and Processes

- Identify Oracle processes, file structures, and memory components as they pertain to backup and recovery
- Observe the importance of checkpoints, redo logs, and archives
- Identify the process of synchronizing files during a checkpoint
- Multiplex control files and redo logs

#### Oracle Backup and Recovery Configuration

- Identify recovery implications of operating in “Noarchive” mode
- Describe the differences between “Archivelog” mode and “Noarchivelog” mode
- Configure a database for “Archivelog” mode and automatic archiving
- Use init.ora parameters to duplex archive log files

#### Oracle Recovery Manager Overview

- Determine when to use RMAN
- List the uses of Backup Manager
- Identify the advantages of RMAN with and without a recovery catalog
- Create a recovery catalog
- Connect to Recovery Manager

#### Oracle Recovery Catalog Maintenance

- Use Recovery Manager to register, resynch, and reset a database
- Maintain the recovery catalog using change, delete, and catalog commands
- Query the recovery catalog to generate reports and lists
- Create and execute scripts to perform backup and recovery operations
- Create, store, and run scripts

#### Physical Backups without Oracle Recovery Manager

- Perform database backups using operating system commands
- Describe the recovery implications of closed and open backups
- Perform closed and open database backups
- Identify the backup implications of the “Logging” and “Nologging” modes

- Identify the different types of control file backups
- Discuss backup issues associated with “read only” tablespaces
- List the data dictionary views useful for backup operations

#### Physical Backups Using Oracle Recovery Manager

- Identify types of RMAN backups
- Describe backup concepts using RMAN
- Perform incremental and cumulative backups
- Troubleshoot backup problems
- View information from the data dictionary

#### Types of Failures and Troubleshooting

- List the types of failure that may occur in an Oracle database environment
- Describe the structures for instance and media recovery
- Use the DBVERIFY utility to validate the structure of an Oracle database file
- Configure checksum operations
- Use log and trace files to diagnose backup and recovery problems

## Test 3 – Oracle8: Backup and Recovery, continued

### Oracle Recovery Without Archiving

- Note the implications of media failure with a database in noarchivelog mode
- Recover a database in noarchivelog mode after media failure
- Restore files to a different location if media failure occurs
- Recover a database in noarchivelog mode using RMAN

### Complete Oracle Recovery with Archiving

- Note the implications of instance failure with an archivelog database
- Describe a complete recovery operation
- Note the advantages and disadvantages of recovering an archivelog database
- Recover an archivelog database after media failure
- Recover an archivelog database using RMAN and Backup Manager

### Incomplete Oracle Recovery with Archiving

- Identify the situations to use an incomplete recovery to recover the system
- Perform an incomplete database recovery
- Recover after losing current and active logs
- Use RMAN in an incomplete recovery
- Work with tablespace point-in-time recovery

### Oracle Export and Import Utilities

- Use the Export utility to create a complete logical backup of a database object
- Use the Export utility to create an incremental backup of a database object
- Invoke the direct-path method export
- Use the Import utility to recover a database object

### Additional Oracle Recovery Issues

- List methods for minimizing downtime
- Diagnose and recover from database corruption errors
- Reconstruct a lost or damaged controlfile
- List recovery issues associated with an offline or read-only tablespace
- Recover from the loss of a Recovery Catalog



## Test Content Checklist

### *Test 4 – Oracle8: Performance Tuning Workshop (Exam# 1Z0-014)*

#### Business Requirements and Tuning

- List the different roles associated with the tuning process
- Define the steps associated with the tuning process
- Identify different tuning goals

#### Oracle Alert, Trace Files and Events

- Identify the location and usefulness of the alert log file
- Identify the location and usefulness of the background and user process trace files
- Retrieve and display wait events
- Set events through OEM to be alerted about predefined situations

#### Utilities and Dynamic Performance Views

- Collect statistics using the dynamic troubleshooting and performance views
- Diagnose statistics using the UTBSTAT/UTLESTAT output report
- Use appropriate OEM tuning tools

#### Tuning Considerations for Different Applications

- Use the available data access methods to tune the logical design of the database
- Identify the demands of online transaction processing systems (OLTP)

- Identify the demands of decision support systems (DSS)
- Reconfigure systems on a temporary basis for particular needs

#### SQL Tuning

- Identify the roles of the DBA in application tuning
- Use star queries and hash joins to enhance data access operations
- Use optimizer modes to enhance SQL statement performance
- Use Oracle tools to diagnose SQL statement performance
- Track and register module usage for packages, procedures, and triggers
- Identify alternative SQL statements to enhance performance

#### Generic Operating System Tuning Issues and Oracle

- List the primary steps for operating system tuning
- Identify similarities between operating system and database tuning
- Explain the difference between a process and thread
- Describe paging and swapping

#### Tuning the Shared Pool

- Tune the library cache and data dictionary cache
- Measure the shared pool hit percentage
- Size the shared pool appropriately
- Pin objects in the shared pool
- Tune the shared pool reserved space
- List the UGA and session memory considerations

#### Tuning the Buffer Cache

- Describe the how the buffer cache is managed
- Calculate the buffer cache hit ratio
- Examine the impact of adding or removing buffers
- Create Multiple Buffer Pools
- Size Multiple Buffer Pools
- Monitor buffer cache usage
- Make appropriate use of table caching

#### Tuning the Redo Log Buffer

- Determine if processes are waiting for space in the redo log buffer
- Size the redo log buffer appropriately
- Reduce redo operations

## Test 4 – Oracle8: Performance Tuning Workshop, continued

### Database Configuration and I/O Issues

- Diagnose inappropriate use of SYSTEM, RBS, TEMP, DATA and INDEX tablespaces
- Detect I/O problems
- Ensure that files are distributed to minimize I/O contention
- Use striping where appropriate
- Tune checkpoints
- Tune background process I/O

### Using Oracle Blocks Efficiently

- Determine an appropriate block size
- Optimize space usage within blocks
- Detect and resolve row migration
- Monitor and tune indexes
- Appropriately size extents

### Optimize Sort Operations

- Identify the SQL operations that require sorts
- Ensure that sorting is done in memory where possible
- Use direct writes for large sorts
- Allocate temporary space appropriately.

### Rollback Segment Tuning

- Use dynamic performance views to check rollback segment performance
- Reconfigure and monitor rollback segments
- Define the number and size of rollback segments
- Allocate rollback segments to specific transactions

### Monitoring and Detecting Lock Contention

- Define the levels of Oracle locking
- List possible causes of lock contention
- Use Oracle utilities to diagnose lock contention
- Resolve contention in an emergency
- Prevent locking problems
- Recognize Oracle errors arising from deadlocks

### Latch and Contention Issues

- Use Oracle tools to diagnose and resolve free list contention
- Identify specific latch contention situations
- Diagnose and resolve redo allocation and redo copy latch contention
- Diagnose and resolve LRU latch contention

### Tuning with Oracle Expert

- List the features of Oracle Expert
- Create a tuning session
- Gather, view, and edit the input data
- Analyze the collected data using rules
- Review tuning recommendations
- Implement tuning recommendations



## Test Content Checklist

### Test 5 – Oracle8: Network Administration (Exam# 1Z0-016)

#### Overview

- Identify networking business trends and problems
- Describe Oracle's networking solutions

#### Basic Net8 Architecture

- Define the procedure by which Net8 establishes a server connection
- Identify the key components of Net8 architecture and their interaction

#### Basic Net8 Server Side Configuration

- Configure the listener using the Net8 Assistant
- Start the Net8 listener using Listener Control utility (LSNRCTL)
- Stop the Net8 listener using LSNRCTL
- Identify additional LSNRCTL commands
- Set up multiple listeners on the same node

#### Basic Net8 Client Side Configuration

- Establish a connection from the Net8 client side using the host-naming method
- Configure Net8 client side files and connecting using the local-naming method

- Use Net8 Assistant to define preferences on the client sideUsage and Configuration of Oracle Names

#### Usage and Configuration of Oracle Names

- Configure centralized naming using Net8 assistant
- Store the network configuration in the local filesystem
- Store the network configuration in a region database
- Start and stop the Names server using Names Control utility

#### Usage and Configuration of Oracle Intelligent Agent for OEM

- Define the purpose of the Oracle Intelligent Agent
- Start and stop the Oracle Intelligent Agent using the Listener Control utility
- Identify the configuration files used to define the intelligent agent

#### Usage and Configuration of the Multi-Threaded Server

- Identify the components of the Multithreaded Server (MTS)
- Configure dispatchers using init.ora
- Configure shared servers using init.ora

- Specify the listener address for Multithreaded Server
- Set up connection pooling using the Multithreaded Server

#### Usage and Configuration of Connection Manager

- Identify the capabilities of Connection Manager
- Configure connection concentration
- Enable network access control
- Configure Multi-Protocol functionality

#### Troubleshoot the Network Environment

- Set logging and tracing parameters
- Analyze and troubleshoot network problems using log and trace files
- Format trace files using Trace Assistant

#### Security In the Network Environment

- Identify network security risks during data transmission
- Identify security features in Oracle Networking products
- Identify the features of the Advanced Networking Option
- Configure the components of the Advanced Networking Option



## Test Content Checklist

### *Oracle8 New Features for Administrators (Exam# 1Z0-010)*

*Exam Updated October 16, 2000*

#### Using Partitioning: Conceptual Overview

- Describe the benefits of partitioning
- Describe the general partitioning rules
- Describe the general partition restrictions

#### Implementing Partitioned Indexes

- Describe the different types of partitioned indexes
- Plan an indexing strategy to support your applications
- Describe general partition restrictions

#### Supporting Commands and Guidelines for Partitioned Tables and Indexes

- Explain the various commands to support partition management
- Describe restrictions that apply to certain operations
- Describe the privileges required for manipulating partitioned tables and indexes
- Describe data dictionary tables that provide information on partitions

#### Parallelizing INSERT, UPDATE, and DELETE Operations

- Describe the advantages of parallel data manipulation language (DML)
- Enable parallel DML for a session
- Use hints and the parallel clause to set the degree of parallelism for a DML statement
- Execute parallel UPDATE and DELETE operations on partitioned tables
- Use the data dictionary views associated with parallel DML operations

#### Identifying New ROWID Structure

- Describe the new ROWID format in Oracle8
- Use the new ROWID format in Oracle8
- Use the DBMS\_ROWID package

#### Defining Object Relational Features

- Define an object relational database
- Describe the object concepts in Oracle8

- Create a basic object type
- Create and use an object view

#### Managing Large Objects

- Compare and contrast long and large object (LOB) data types
- Create and maintain LOB data types
- Differentiate between internal and external LOBs
- Utilize the DBMS\_LOB PL/SQL package

#### Implementing Oracle Advanced Queuing

- Define the advanced queuing concepts
- Create and send messages using the ENQUEUE procedure
- Administer the queues and queue tables

## Oracle8: New Features for Administrators, continued

### Using Additional New Features

- Implement new types of constraint checking and enforcement
- Implement reverse key indexes
- Describe index-organized tables
- Create and use index-organized tables
- Identify the new security enhancements
- Configure a large pool System Global Area (SGA) area
- Take advantage of National Language Support (NLS) enhancements
- Use external procedures
- Describe the Oracle8 raised size ceilings

### Introduction to Recovery Manager

- Describe the Recovery Manager architecture
- Discuss the benefits of using Recovery Manager
- Identify the types of backups
- Describe the use of the Recovery Manager Catalog
- List associated data dictionary views

### Using Catalog Commands and Reports in Recovery Manager

- Maintain the contents of the recovery catalog
- Generate reports and lists from the recovery catalog
- Create and execute scripts to perform backup and recovery operations

### Using RUN Commands and Scripts in Recovery Manager

- Manage backup, copy, restore, and recovery operations using the Recovery Manager
- Create and execute scripts to perform backup and recovery operations

### Enhancements to Networking

- Describe the concept of multiplexing
- Describe the concept of connection pooling
- Describe the new features of naming services
- Describe the connectivity features

- Describe the security features
- Describe the performance benefits
- Describe the possibilities of configuration and administration

### Implementing Password Management

- Implement account locking
- Implement password aging and expiry
- Implement password complexity verification

### Migrating Server and Applications

- Explain the Migration Utility
- Explain the steps to complete a migration to Oracle8
- Explain the migration options



## Test Content Checklist

### *Oracle8i: New Features for Administrators (Exam# 1Z1-020)*

*Exam updated on September 28, 2000*

#### Java in the Database

- Describe Oracle java components
- Describe JServer installation
- Tune JServer

#### Optimizer and Query Improvements

- Describe the features of optimizer plan stability
- Describe the contents of the DBMS\_STATS Package
- Explain Top-N SQL queries
- Identify new SQL keywords for computing subtotals
- Identify new sort processing options
- Explain automatic parallel execution

#### Summary Management

- Build and Manage Materialized views for Oracle Summaries
- Build and Manage Dimensions

#### Indexes and Index-Organized Tables

- Describe bitmap indexes improvements
- Describe a function-based index
- Build an index online
- Compute index statistics
- Describe an index-organized table (IOT)
- Explain logical ROWIDs

- Create multiple indexes on an IOT

- Explain how to partition an IOT

#### Object Relational Features and LOBs

- Define LOBs from a DBA perspective

#### Partitioning Improvements

- Revise the general partitioning concepts
- Implement range, hash, and composite partitioning
- Explain ENABLE/DISABLE ROW MOVEMENT
- Explain the new partition pruning capabilities
- Describe partition-wise join
- Review partition maintenance operations

#### Object Relational Features and LOBs

- Define LOBs from a DBA perspective

#### Oracle Universal Installer: Migration and Upgrade

- List the features of the Oracle Universal Installer
- Migrate an Oracle7 database to Oracle8i
- Upgrade an Oracle8 database to Oracle8i

#### Tablespace Management

- Manage locally managed tablespaces

- Manage transportable tablespaces

- Use read-only tablespace enhancements

#### Database Resource Manager

- List the features of the database resource manager
- Limit the use of resources using the database resource manager

#### Manageability Enhancements

- Identify database limits
- Relocate and reorganize tables
- Remove unused columns from a table
- Define temporary tables
- Identify SQL\*Loader enhancements
- Monitor long-running operations
- Define new constraints features
- Define new Export/Import features

#### Availability and Recoverability Enhancements

- Learn RMAN new features
- Implement duplex and multiple archive logs
- Set up a standby database in sustained recovery mode
- Start up a database for read operations

## Oracle8i: New Features for Administrators, continued

- Suspend database I/Os
  - Describe the functionality of LogMiner
  - Implement fast-start fault recovery
  - Manage corrupt block detection and repair
  - Describe the new possibility of dynamically change the number of free lists
- Features of NET8**
- Describe the new service naming scheme
  - Explain automatic registration
  - Describe load balancing
  - Configure the network for JServer
- SQL\*Plus, PL/SQL, and National Language Support Enhancements**
- Use SQL\*Plus for database management
  - Describe the use of PL/SQL for: Event Triggers, Autonomous Transactions, Native Dynamic SQL
  - Describe other PL/SQL enhancements
- Database Security**
- Describe N-Tier authentication
  - Describe invoker's rights security management
  - Implement application context areas
  - Implement fine-grained access control



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