

The Oracle Database Administrator

Types of Oracle Users

- The types of users and their roles and responsibilities at a site can vary.
 - A small site can have one database administrator who administers the database for application developers and users.
 - A very large site can find it necessary to divide the duties of a database administrator among several people, and among several areas of specialization.
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Database Administrators (1/2)

- A database administrator's responsibilities can include the following tasks:
 - Installing and upgrading the Oracle server and application tools
 - Allocating system storage and planning future storage requirements for the database system
 - Creating primary database storage structures (tablespaces) after application developers have designed an application
 - Creating primary objects (tables, views, indexes) once application developers have designed an application
 - Modifying the database structure, as necessary, from information given by application developers
 - Enrolling users and maintaining system security
 - Ensuring compliance with your Oracle license agreement
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Database Administrators (2/2)

- Controlling and monitoring user access to the database
 - Monitoring and optimizing the performance of the database
 - Planning for backup and recovery of database information
 - Maintaining archived data on tape
 - Backing up and restoring the database
 - Contacting Oracle Corporation for technical support
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Application Developers

- Application developers design and implement database applications.
 - Their responsibilities include the following tasks:
 - Designing and developing the database application
 - Designing the database structure for an application
 - Estimating storage requirements for an application
 - Specifying modifications of the database structure for an application
 - Relaying the above information to a database administrator
 - Tuning the application during development
 - Establishing an application's security measures during development
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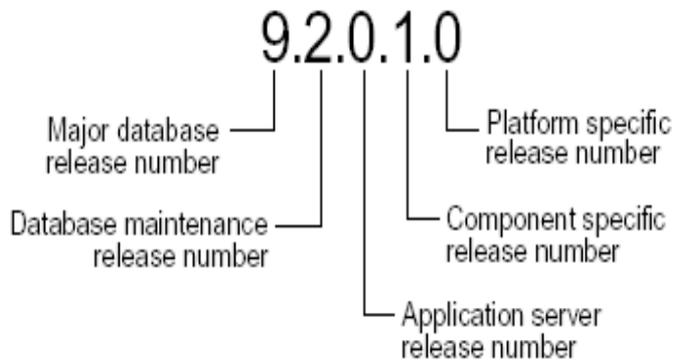
Database Users

- Database users interact with the database through applications or utilities.
 - A typical user's responsibilities include the following tasks:
 - Entering, modifying, and deleting data, where permitted
 - Generating reports from the data
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Identifying Your Oracle Database Software Release

- As many as five numbers may be required to fully identify a release.
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Release Number Format



Checking Your Current Release Number

- To identify the release of the Oracle database server that is currently installed and to see the release levels of other Oracle components you are using, query the data dictionary view `PRODUCT_COMPONENT_VERSION`.
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A sample query

- `COL PRODUCT FORMAT A35`
 - `COL VERSION FORMAT A15`
 - `COL STATUS FORMAT A15`
 - `SELECT * FROM
PRODUCT_COMPONENT_VERSION;`
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PRODUCT	VERSION	STATUS
NLSRTL	9.2.0.1.0	Production
Oracle9i Enterprise Edition	9.2.0.1.0	Production
PL/SQL	9.2.0.1.0	Production
TNS for Solaris:	9.2.0.1.0	Production

Database Administrator Usernames

- Two user accounts are automatically created with the database:
 - SYS (default password: CHANGE_ON_INSTALL)
 - SYSTEM (default password: MANAGER)
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SYS

- ❑ When any database is created, the user SYS is automatically created and granted the DBA role.
 - ❑ All of the base tables and views for the database's data dictionary are stored in the schema SYS. These base tables and views are critical for the operation of Oracle.
 - ❑ To maintain the integrity of the data dictionary, tables in the SYS schema are manipulated only by Oracle. They should never be modified by any user or database administrator, and no one should create any tables in the schema of user SYS.
 - ❑ Ensure that most database users are never able to connect using the SYS account.
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SYSTEM

- ❑ When a database is created, the user SYSTEM is also automatically created and granted the DBA role.
 - ❑ The SYSTEM username is used to create additional tables and views that display administrative information, and internal tables and views used by various Oracle options and tools.
 - ❑ Never create in the SYSTEM schema tables of interest to individual users.
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The DBA Role

- ❑ A predefined role, named DBA, is automatically created with every Oracle database.
 - ❑ This role contains most database system privileges.
 - ❑ Therefore, it is very powerful and should be granted only to fully functional database administrators.
 - ❑ The DBA role does not include the SYSDBA or SYSOPER system privileges. These are special administrative privileges that allow an administrator to perform basic database administration tasks, such as creating the database and instance startup and shutdown.
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SYSDBA and SYSOPER

System Privilege	Operations Authorized
SYSDBA	<ul style="list-style-type: none">▪ Perform STARTUP and SHUTDOWN operations▪ ALTER DATABASE: open, mount, back up, or change character set▪ CREATE DATABASE▪ CREATE SPFILE▪ ARCHIVELOG and RECOVERY▪ Includes the RESTRICTED SESSION privilege Effectively, this system privilege allows a user to connect as user SYS.
SYSOPER	<ul style="list-style-type: none">▪ Perform STARTUP and SHUTDOWN operations▪ CREATE SPFILE▪ ALTER DATABASE OPEN/MOUNT/BACKUP▪ ARCHIVELOG and RECOVERY▪ Includes the RESTRICTED SESSION privilege This privilege allows a user to perform basic operational tasks, but without the ability to look at user data.

Connecting with Administrative Privileges: Example

- Assume that user scott has issued the following statements:
 - CONNECT scott/password
 - CREATE TABLE admin_test(name VARCHAR2(20));
 - Later, scott issues these statements:
 - CONNECT scott/password AS SYSDBA
 - SELECT * FROM admin_test;
 - User scott now receives the following error:
 - ORA-00942: table or view does not exist
 - This is because scott now references the SYS schema by default. The table was created in the scott schema.
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Selecting an Authentication Method

- The following methods are available for authenticating database administrators:
 - Operating system (OS) authentication
 - Password files
 - Your choice will be influenced by whether you intend to administer your database locally on the same machine where the database resides, or whether you intend to administer many different databases from a single remote client.*
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Database Administrator Authentication Methods

