Oracle7 Server

Release 7.3
Oracle7 Server Release 7.3 Key Features:

Hardware and Software Requirements:
Oracle7 is fully portable to more than 80 distinct hardware and operating system platforms, including 40+ UNIX, VMS, MVS, VM, HP MPE/XL, Siemens, ICL, Novell Netware, OS/2, Windows, Windows NT, and Macintosh.
Transaction Processing and Decision Support

Transaction Processing

Multithreaded Server Architecture
Scalable SMP performance
Shared database buffer cache
Shared SQL cache (SQL statements, PL/SQL procedures, functions, packages, and triggers)
Shared dictionary cache
Fast and Group Commits
Deferred Writes
Serializable Transactions

Oracle7 Parallel Server*

Clustered, MPP, and hybrid parallel systems support
Multiple nodes share access to a single Oracle7 database
Easy incremental expansion of processing resources
Linear scalable increases in performance
High availability applications
Consolidated system administration
Parallel Disk Affinity

* Requires appropriate optional feature bundle: Parallel Query option, Distributed option, Parallel Server option, or Advanced Replication option
SQL Optimizer

Cost-based, syntax-independent optimization
ANALYZE table statistics generation
Nested-loop and sort-merge join selection
"Star" query algorithm support
Manual UNION ALL predicate push-down
Histograms

Transactional Data Access

B-tree single column and concatenated column indexes
Clustered tables, hash-clusters, application-specific hash functions
ROWIDs
Query results directly from index lookup
Integrated bitmapped indexes

Concurrency Control and Reliable Results

Unrestricted row-level locking
No lock escalation
Contention-free queries
Unique sequence number generation
Non-blocking, multiversion read-consistent query results
Oracle7 Parallel Query*

Parallel execution of table scans, sorts, joins, and aggregates
Parallel direct database reads and direct database writes
Parallelization of user-written code
Parallel CREATE INDEX and CREATE TABLE AS SELECT
Parallel, direct-path data loading
Oracle7 Parallel Server for SMP and MPP architectures*
Fully integrated parallel query architecture
Application transparency
Supports all standard server features and options
Dynamic workload balancing
Dynamic data partitioning

* Requires appropriate optional feature bundle: Parallel Query option, Distributed option, Parallel Server option, or Advanced Replication option
High Availability

  Online backup by file, table-space, or database
  Online recovery
  Parallel recovery
  Parallel backup/restore utility
  Read-only tablespaces
  Mirrored multisegment log files
  Checksums on database and redo log file blocks
  Dynamic resizing of database files
  Oracle7 Parallel Server for highly available applications*
  Standby database

* Requires appropriate optional feature bundle: Parallel Query option, Distributed option, Parallel Server option, or Advanced Replication option
Distributed Systems

Distributed Queries and Transactions

- Transparent remote and distributed query
- Distributed, optimized joins
- Location transparency, network transparency
- Integrated distributed query architecture
- Transparent, multisite distributed transactions
- Distributed SQL updates and remote procedure calls (RPCs)
- Commit transparency
- Automatic failure detection and resolution

Open Gateways

- Data source transparency
- Transparent SQL gateways
- Transparent procedural gateways
- Distributed queries and update transactions
- Compliant with XA standard for TP-monitor coordinated two-phase commit*

* Requires appropriate optional feature bundle: Parallel Query option, Distributed option, Parallel Server option, or Advanced Replication option
Data Replication

Multiple, read-only snapshots (basic primary site replication)
Full transactional consistency and data integrity
Full and subset table replication
Incremental refresh of snapshot copies
Event and demand based refresh
Symmetric Replication
Updatable snapshots (both master and snapshot tables updatable)
Multiple master configurations (full table replication between master sites)
Hybrid configurations (combine snapshot and multiple master configurations)
Fail-over configuration support
Automatic conflict detection and resolution
Distributed schema management
Synchronous and Asynchronous Replication support
Application Development

SQL Implementation

100-percent ANSI/ISO SQL 92 Entry Level compliant-NIST tested
ANSI/ISO standard precompilers applications interface (API)
Robust SQL extensions including UNION,
INTERSECT, MINUS, outer join, and tree-structured queries (CONNECT BY)
SQL3 inline views (query in the FROM clause of another query)
Updatable join views

Declarative Integrity Constraints

100-percent ANSI/ISO standard declarative entity and referential integrity constraints
CHECK, DEFAULT, not NULL constraints
PRIMARY, FOREIGN, UNIQUE keys
Optional DELETE CASCADE
Stored Procedures

PL/SQL procedural extension to ANSI/ISO standard SQL
Strongly typed variable declarations (SQL datatypes)
Block structure
Flow control including FOR and WHILE loops,
  IF/THEN/ELSE
SQL cursor support
Static and dynamic SQL support
Robust exception handling
Subprogram types: procedures, functions, and packages
Subprograms stored in shared, compiled form
Called from Oracle and third-party tools**, Oracle Pre-compilers,** Oracle Call Interface,
SQL*Module,** other stored procedures, database triggers
Remote procedure calls (RPCs) protected by transparent two-phase commit
User-defined PL/SQL functions in SQL
Cursor Variables for easy retrieval of multi-row result sets
Wrapper utility hiding PL/SQL application code in binary source format
Server side file I/O

** Requires Oracle or 3rd-party tool, Oracle Precompiler, or Oracle SQL*Module
Database Triggers

    Procedural code executed automatically on INSERT, UPDATE, or DELETE
    Triggers execute either BEFORE or AFTER operations
    Triggers fire once per statement or once per row
    Modeled after ANSI/ISO SQL3 specification

Programmatic Interfaces

    Oracle Precompilers**
    Embedded SQL and PL/SQL application development
    100-percent entry-level ANSI/ISO X3.135- 1992 compliant
    FIPS flagger meets FIPS 127-2 requirements
    Oracle Call Interface: procedure/function call interface
    Oracle SQL*Module**
    SQL Module language application development
    100-percent entry-level ANSI/ISO X3.135- 1992 compliant
    FIPS flagger meets FIPS 127-2 requirements
    Multi threaded client application support

** Requires Oracle or 3rd-party tool, Oracle Precompiler, or Oracle SQL*Module
National Language Support

Full 8- and 16-bit NLS support for European and Asian languages
Unicode UTF-2 variable width encoding
Per-session control of language preference with system defaults
Character set conversion for heterogeneous client/server and distributed database environments
National calendar support
Data Security

Choice of internal or external user authentication
External choices include: operating system, OS
security package, network operating system,***
security service,*** authentication device***
Encrypted passwords
Full datastream encryption through DES and RSA
RC4 encryption algorithms***
Complete protocol support and application
transparency
Fine-grained database privileges
Hierarchical role-based security for group-level
access control
Site customized DBA roles
Roles are basis for ANSI/ISO SQL3 security standard
Evaluated at US TCSEC C2, European ITSEC E3
Automatic auditing on per-session or per-object basis
Application-specific or context-sensitive auditing via
PL/SQL stored procedures and database triggers

*** Requires Oracle Advanced Networking Option
Systems Management

Oracle Enterprise Manager

Systems Manager-easy to use, GUI, menu-driven
   DBA utility for Windows
Secure remote database administration
Data Dictionary and Dynamic Performance Tables
Application Identification Facility
PROFILEs limit user resource consumption
Job Queues for automatic scheduling of PL/SQL
   stored procedure execution
Remote SQL Tracing
SNMP Support: public RDBMS MIB, Oracle7 private
   MIB, Replication MIB
Table TRUNCATE
Enable/disable constraints and triggers
Advanced space management features
Oracle Expert and Oracle Trace
Oracle Developer/2000 Key Features

WYSIWYG Layout Editor

Object Navigator View all application objects, drag drop, speed search, create and remove objects
Inch, centimeter, character cell measurement units
X and Y coordinate indicators
Size indicators
Alignment grids
Rulers
Cut, copy, paste operations
Same-size and align operations
Object rotation
Zoom capability
Drawing tools for boilerplate text and graphics, color and pattern palettes
Rectangles, rounded rectangles, lines, polygons, polylines, circles, ellipses, arcs, symbols, freehand drawings
Boilerplate text
Color and pattern palettes
Integrated PL/SQL Debugger

Access to both client and server PL/SQL code
Incremental compilation
Global search and replace
Set break points
Specify conditions on break points
Step through source code with options to:
  - Step into
  - Step over
  - Step out
  - Step to source location
Browse call stack
Browse and edit local variables and argument values
Fire debug triggers on:
  - Entry into every source line
  - Entry into a specific source line
  - Entry into the debugger
  - Entry into a break point
Access to system text editors
Image and Graphics File Formats

TIFF
BMP
PCX
PICT (Image)
JFIF/JPEG
GIF
CALS
RAS
PCD
CGM
Oracle format
Sound format
AIFF-c

Unlimited Data Access

Oracle Server
SQL Server, Access, Rdb, DB2/400
Oracle Open Gateway-supported databases:
  DB2
  DB2/400
  DRDA
  APPC
  EDA/SQL
Any data source via transactional triggers
Microsoft Excel SYLK files
Lotus 1-2-3 WKS files
ASCII delimited files
dBASE
National Language Support

   ASCII and EBCDIC
   Major 8-bit and multibyte character sets
   Fully translatable user interfaces

Storage Methods

   Oracle Server
   Operating system files

User Interface Portability

   MS-Windows
   Macintosh
   Motif
   Character mode

Product Integration

   Embed charts in forms and reports
   Embed graphics in any OLE 2 container application
   Pass data between forms, graphics and reports
   Integrate with third-party packages through operating system calls and/or 3GL extensions
   Integration of third-party VBX custom controls
   OLE 2.0 container
   Call DLLs directly from PL/SQL
   Generate and reverse-engineer forms and reports using Modeller/2000
   Integrate with third-party packages through operating system calls and/or 3GL extensions
Forms Features

Property palette View and edit object properties
Toolbars
Graphical menu editor Create, drag, and drop menu items
Accessible object orientation
Object groups for quick reuse of components
Property classes for easy reuse of object properties and methods
Method inheritance and override

Application Generation Capabilities

Master-detail relationships of arbitrary complexity
Application menus
Query, insert, update, delete
Query-by-example
Resource locking
Transaction logic
Graphical user interfaces
Integrity constraints
Extensible default applications
Default query capabilities
Exact-match relational operators
Wildcards text search
Case-insensitive or case-sensitive queries
Procedural Capabilities

Integrated procedural language, PL/SQL
Editing and debugging of PL/SQL
Library management for reusing PL/SQL
Oracle7 stored procedure support
Timers
Extensions through 3GL programs:
   C++
   COBOL
   FORTRAN
   Ada
   Pascal
   PL/I
GUI Applications

- Toolbars
- Dynamic lists
- Drop-down lists
- MDI
- Mouse support
- Drag and drop
- Dialog boxes
- Combo boxes
- List boxes
- Check boxes
- Push buttons
- Iconic buttons
- Radio groups
- Text items
- Multiline text items
- Images
- Interactive charts
- Scroll bars
- Menu styles: full-screen, bar-style, pull-down
- Menu items: check, radio, separator
- Modal Windows
- Non-modal Windows
- Lists of values
- Alerts
- Boilerplate text
- Boilerplate graphics: lines, arcs, rectangles, rounded rectangles, polygons, ellipses
- Colors, Patterns, and Fonts
Form Security

Role-based application security
Restricted design access to forms, menus, libraries
Separate runtime engine
Reports Features

Default Report Styles

   Tabular
   Form
   Form letter
   Master-Detail
   Mailing label
   Matrix
   Simple matrix
   Matrix break
   Nested matrix

Powerful Data Control

   Unlimited number of queries
   Group filters
   Dynamic graphical data
   Calculated columns
   Support for DDL and DML
Extensive Aggregation Capabilities

Average
Count
First
Last
Maximum
Minimum
Percent total
Standard deviation
Sum
Variance

Windows Enhancements

Bitmap and ASCII reports from one runtime executable
Batch reporting engine
Run reports in background
Report scheduling
Cancel reports during execution

Common Graphical Painter for:

Data model
Layout model
Parameter screen
Procedural Capabilities

Integrated procedural language, PL/SQL
Report level triggers
Formatting triggers
Runtime input validation
Data filters
Computations
Oracle Procedure Builder for editing and debugging PL/SQL
Library management for reusing PL/SQL
Support for Oracle7 stored procedures
Extensions through 3GL programs:
  C
  C++
  COBOL
  FORTRAN
  Ada
  Pascal
  PL/I

Printer Portability

Develop reports independently of printer specifications
Print reports to both PostScript and non-PostScript printers

Report Security

Restricted access to reports, queries, libraries
Separate runtime engine
Graphics Features

Charting Capabilities

- Cross-tabular charts
- Strip charts
- Column charts
- Bar charts
- Line charts
- Pie charts
- Mixed charts
- Scatter charts
- Double-Y charts
- High-Low-Close charts
- Table charts
- Gantt charts
- Chart templates

Multimedia Capabilities

- Images
- Sounds
- Record and play back
Procedural Capabilities

Integrated procedural language, PL/SQL
Library management for reusing PL/SQL
Procedure execution on:
  Timers
  Open/Close document
  Mouse clicks
  Post-query execution
  Custom-query execution
  Chart row creation
Support for Oracle7 stored procedures
Support for Oracle7 alerts
Foreign function call interface to DLLs
Extensions through 3GL programs:
  C
  C++
  COBOL
  FORTRAN
  Ada
  Pascal
  PL/I
Programmatic Control

Create and modify application objects including:
  Charts
  Queries
  Timers

Modify chart attributes including:
  Chart type
  Pie slice explosion
  Drill-down relationships
  Format triggers
  Field mapping
  Label formats, Label fonts
  Title
  Axis labels, Axis scaling
  Grid lines
  Tick marks
  Legend location
  Legend label stacking
  Number of categories

Create or clone any graphical object including:
  Images
  Rectangles
  Arcs
  Lines
  Polygons
  Groups

Change object graphical attributes such as:
  Color
  Pattern
  Size
  Position
  Rotation
Database Connectivity Features SQL Support

SQL Support

Core ODBC Data manipulation statements:
- Select (with support for Order By, Group By, and Having)
- Insert
- Update
- Delete

Core ODBC Data definition statements:
- Create Table
- Create Index
- Create View
- Alter Table
- Drop Table
- Drop Index
- Drop View
- Grant
- Revoke

Transaction processing:
- Commit
- Rollback

Commit Processing

AutoCommit mode selectable
Data Access

Data Dictionary through views
Upper/lower/mixed case identifiers
Read only and read-write access

PL/SQL Support

Developer/2000 Support Modes
Primary Key - Updatable and Non-Updatable
Cursor - Close at commit
Locking - Delayed

PL/SQL supported datatypes
BINNARY INTEGER, NUMBER and its subtypes
CHAR and its subtypes, VARCHAR2, VARCHAR
LONG, RAW, LONG RAW, BOOLEAN, DATE

PL/SQL supported statements
DECLARE, BEGIN, END
COMMIT WORK, ROLLBACK
OPEN, CURSOR, FETCH, CLOSE,
GOTO, SELECT INTO, UPDATE, INSERT,
DELETE, NULL

Cursor management
DECLARE, OPEN, CLOSE
explicit/implicit attributes (%FOUND, %NOTFOUND,
%ROWCOUNT, %ISOPEN)
cursor in loop constructs, and FOR UPDATE
OF WHERE CURRENT OF

Functions
SUM, AVG, MAX, MIN, COUNT, ABS, FLOOR
SIGN, SQRT, ROUND, ASCII, LOWER, UPPER
LTRIM, RTRIM, SOUNDEX

Exceptions – All Stored procedures
User Productivity

Automatic datatype conversions between Developer/2000-Oracle SQL datatypes and MS SQL Server datatypes
Character set translation between client and server-side character sets
Oracle's NLS support allows for applications to be developed in and for most major languages and character sets

Oracle Open Gateways: Supporting Over 30 Databases

Adabas, CA-IDMS, CA-Datacom, DB2/MVS, DB2/400, DB2/VM, DB2/VSE, DMS II, FOCUS, IMAGE/SQL, IMS, Infoman, Informix, Ingres, ISAM, M Technology, Model 204, Oracle, QSAM, Rdb, RDMS, RMS, SAP, SESAM, SQL Server, SUPRA, Sybase, System 2000, Teradata, TOTAL, UDS, Video Jukebox, VSAM