ORACLE DATABASE MOBILE SERVER® 12c

KEY NEW FEATURES IN 12.1

- Support for Oracle NoSQL Database as a storage repository
- Device Management for iOS platforms
- Platform support for Android 4.4 and iOS 8
- Java DB as a client database
- Support for Java 1.8
- Storing large objects external to the client database

KEY BENEFITS

- Secure, efficient, resilient mobile data synchronization with Oracle Database and Oracle NoSQL Database.
- Remote application, user, and device management
- Standards-based encryption for device data, at rest and in transit
- Robust and reliable mobile data synchronization over unreliable networks
- Highly scalable server configuration, supporting large and growing mobile or IoT deployments

Oracle Database Mobile Server 12c is the best way to securely connect mobile applications and embedded "Internet of Things" devices to Oracle Database or Oracle NoSQL Database. Any organization with a mobile workforce or network of remote devices can benefit from using Oracle Database Mobile Server to safely and reliably link them into their existing enterprise infrastructure. Oracle Database Mobile Server is designed to work with devices that use Oracle Berkeley DB, Oracle's high performance mobile data store as well as open source database products like SQLite and Java DB.

Oracle Database Mobile Server Overview

Oracle Database Mobile Server 12c is a reliable, secure way to link mobile applications and embedded devices into existing enterprise infrastructure. It is well suited for mission critical applications or any application where high performance and reliability are required. It extends the application grid to mobile devices, allowing access to enterprise data and applications in the absence of a network connection. When a network connection is available, Oracle Database Mobile Server uses highly efficient data synchronization to allow reliable and secure data exchange with a backend Oracle Database or a backend Oracle NoSQL Database.

The three main components of Oracle Database Mobile Server are:

1) Mobile Client, resides on mobile platform to facilitate sync and remote management
2) A middle tier consisting of Synchronization, Device and Application Management components, coupled with the Mobile Manager console, provide scalable, secure management of data, applications and devices.
3) Mobile Development Kit (MDK), a suite of tools for packaging, publishing and testing applications.

Multi-Platform Mobile Client

Oracle Database Mobile Server supports many different client platforms, including Java, Android, Blackberry, iOS, Windows Desktop & Mobile, and Linux. The Mobile Client provides support for Oracle Berkeley DB, SQLite and JavaDB.

- Berkeley DB is a widely deployed, mature embedded database library that provides enterprise class features, including high throughput, low-latency reads, non-blocking writes, data scalability and in-memory caching in a small memory footprint. Berkeley DB offers a SQL API that is SQLite compatible. Berkeley DB offers features that allow it to scale well beyond the limitations of the SQLite native library, while retaining the ease-of-use of the SQLite API.

- SQLite is a very popular open source embedded database library and is widely used in smart phones, including Android and Blackberry devices. It is a small footprint, transactional database library that is self-administering, requiring no external DBA.

- Java DB is Oracle's supported distribution of the Apache Derby open source database. It supports standard ANSI/ISO SQL through the JDBC and Java EE APIs. Java DB is included in the JDK. Java DB, along with the pure java mobile client provides a 100% java stack on the client side.

The Mobile Client supports all three client databases with a rich set of data synchronization features. Data synchronization can be enabled in a variety of ways – automatic background sync, manual sync through a GUI or command line application, or from a customer application using synchronization API calls.

A device agent on the Mobile client allows administrators to remotely manage the device by sending commands or querying the system. Application life-cycle management can be achieved by enabling remote application updates.

Enterprise Ready Mobile Server

At the core of the Oracle Database Mobile Server product is the server itself, which can be deployed on standard application servers (Weblogic, Glassfish, TomEE) and commodity server hardware running industry standard operating systems including Windows, Linux, Solaris, HP-UX and IBM AIX. The Mobile Server provides a reliable, bi-directional synchronization system and a powerful administration interface.

Repository Selection

Oracle Database Mobile Server allows you to choose whether you want the Oracle Database or Oracle NoSQL Database as your data repository. It is certified against the Oracle Database 12c version, including the recently introduced multitenant architecture.

If you prefer a key-value database, it is also certified against Oracle NoSQL Database which is designed to provide highly reliable, scalable and available data storage across a configurable cluster of server nodes. The combination of Oracle Database Mobile Server and Oracle NoSQL database provides the key components to collect, and analyze data from Internet of Things (IoT) devices. Analyzing the data can provide keen insights to improve any business. Oracle NoSQL database provide the ability to dynamically partition the data across the server nodes, thus supporting massively parallel big data processing as well as data collection from tens of thousands of client devices.

Robust and Scalable Synchronization System

Based on a “publish/subscribe” or “pub-sub” model, the Oracle Database Mobile Server synchronization system allows efficient asynchronous and synchronous incremental data synchronization between mobile applications or devices and the repository in the data center.

Oracle Database Mobile Server features a robust and resilient synchronization process. In the event of a network failure, the client will resume the operation from the last acknowledged checkpoint rather than restart the transmission. The result is that a successful synchronization can be achieved even over unreliable network connections.

Oracle Database Mobile Server is capable of analyzing information contained in the mobile application to automatically create the application's server-side synchronization logic. It provides a flexible architecture that enables customization of the synchronization process at multiple levels. Callback support enables interleaving various application-specific tasks during the various synchronization phases. Developers can choose to optimize only the resource intensive *Compose* phase of synchronization by implementing java classes that leverage their insights into the data model. Alternatively, developers can fully control the synchronization system by independently managing the data queues that contain the uploaded data and the client updates to be downloaded.

Conflicts can occur when the same data has been modified by the server and the client, or by multiple clients. Oracle Database Mobile Server automatically detects such conflicts

and resolves them based on a highly customizable rule set.

Comprehensive Management and Administration

Oracle Database Mobile Server employs a secure, centralized repository to provide a unified interface for distributing and managing software and data on remote systems. Mobile Manager, a web-based administration interface for Mobile Server, enables 100% server-side management of all mobile applications, devices, users and mobile servers. The administrator can create users and groups, assign application access privileges, send device commands and retrieve device diagnostic information from a single interface. Integration with enterprise Oracle OID and LDAP directories further simplifies user management. In addition, the administrator can manage the synchronization process by setting its frequency, resolving errors, or analyzing and tuning its performance from the same interface. A scripting language is available that can be used to batch administration functions to minimize administrator overhead. Integration with Apple's iOS MDM client allows Mobile Server to perform extended device management commands on that platform. For example, Oracle Database Mobile Server can lock a device, install configuration and provisioning profiles and even wipe a lost or stolen device.

Rapid Application Development Support

The Mobile Development Kit (MDK) is included with Oracle Database Mobile Server. It consists of a set of tools, APIs, tutorials and code samples that accelerate the development of mobile applications.

The main component of the MDK is the Mobile Database Workbench (MDW), a visual development tool for designing synchronized databases. Wizards in the MDW accelerate creation of synchronized databases by allowing developers to quickly define and customize snapshots of enterprise data models for incorporation into these databases. The Packaging Wizard enables bundling all application components (executables, libraries, images, help files etc.) into a JAR file for simple upload to the Mobile Server from where it can be deployed to mobile, embedded or lightweight business environments easily.

Developers can use Oracle JDeveloper, Oracle Application Development Framework, Oracle Mobile Application Framework as well as 3rd party tools like Cordova and Titanium to visually develop applications that enable access to critical business data. Oracle Database Mobile Server includes support for deploying and managing applications with those frameworks.

Oracle Database Mobile Server also supports open standards such as ODBC, JDBC, and ADO.NET. Tutorials and samples included in the documentation and MDK install highlight how to leverage specific features or develop applications on a particular platform.

Table 1 Supported client platforms

O/S	ODBC	JDBC	ADO.Net
Java	N/A	Yes	N/A
Android	N/A	Yes	N/A
Blackberry	N/A	Yes	N/A
Windows Desktop and Mobile	Yes	Yes	Yes
iOS	N/A	N/A	N/A
Linux	Yes	Yes	N/A

High Performance and Scalability

Oracle Database Mobile Server delivers impressive out-of-the-box performance, enabling users to access information quickly and efficiently. Support for multiprocessor systems ensures top performance for larger databases and greater numbers of connected users.

Oracle Database Mobile Server integrates closely with Oracle WebLogic Server to enable scaling of Mobile Server deployments by taking advantage of the load balancing features.

On the mobile device side, Berkeley DB's small footprint, extreme scalability, and fine-grain locking make it suitable for almost any application. It supports a high degree of concurrency, including support for concurrent Vacuum and Backup commands.

Unparalleled Device and Application Security

Oracle Database Mobile Server provides standard device commands as well as the infrastructure to implement customized commands to support enterprise business processes and security best practices. For example, you can issue commands to synchronize the database, perform diagnostics, or change application settings. In the event of a device loss, theft, or other security concern, you can delete applications and databases, uninstall the client or reset the password. SSL based encryption protects data integrity while data is in transit between the device and the enterprise database.

Table 2 Key Oracle Database Mobile Server Features

Berkeley DB	Synchronization System	Mobile Manager
• Footprint is 1 MB • Very broad platform support • High performance • Non-blocking writes • In-memory caching • Concurrent access by multiple threads or processes • Full ACID transactions • Automatic recovery • Scales to TB of data in a single table • JDBC, ODBC, ADO.NET APIs • SQL API compatible with SQLite, SQL-92 • 128-bit AES encryption • Fine-grain locking • Zero administration	• Flexible & reliable bi-directional synchronization • Asynchronous architecture for high scalability • Multi-threaded architecture • Custom synchronization invocation • Automatic (background) Synchronization • Support for schema evolution • SSL encryption & data compression • Network failure recovery • Built-in and custom conflict detection / resolution • Ability to synchronize data and applications	• EM compliant UI • Single Sign-On capability using Oracle Identity Management • Scripting language for batch administration • Extension APIs • User management • Application provisioning and deployment • Device management including remote diagnostics • Unified interface to monitor synchronization and resolve errors

Market Industries

Organizations of all types can leverage Oracle Database Mobile Server 12*c* to increase employee productivity, reduce operation costs, and improve customer satisfaction. Oracle Database Mobile Server has delivered demonstrable impact in a wide variety of applications, including sales force automation, data collection, customer relationship

management (CRM), and field service applications. It has an established presence in a range of industries including financial services, healthcare, transportation, logistics, government, retail, military, and law enforcement. It is also commonly used as a building block for custom solutions by ISVs and System Integrators (SIs).

Contact Us

For more information about Oracle Database Mobile Server, please visit oracle.com or call +1.800.ORACLE1 to speak to an Oracle representative.

Oracle is committed to developing practices and products that help protect the environment