ORACLE DATA SHEET

.NET Development with ODAC 12.2c Release 1

Oracle Data Access Components (ODAC) offers four components that simplify .NET development with the Oracle Database: Oracle Data Provider for .NET, Oracle Developer Tools for Visual Studio, Oracle Providers for ASP.NET, and .NET stored procedures. In ODAC 12.2c Release 1, Oracle includes integration with Microsoft Visual Studio 2017, Database Resident Connection Pooling, and connection pooling for Oracle Multitenant and Edition-Based Redefinition. ODAC is a free download from Oracle Technology Center (OTN). It can integrate with 32-bit and 64-bit applications and is installable via Oracle Universal Installer, xcopy, NuGet, or Microsoft Installer.

KEY BENEFITS

- Easy to use and learn
- No charge
- Visual Studio 2017 certified
- Native Windows installer and NuGet
- Supports Oracle Database 12c features, such as Application Continuity and Sharding
- Access all database editions, including Express, and database versions 10.2 and later

Oracle Data Provider for .NET

Oracle Data Provider for .NET (ODP.NET) features optimized ADO.NET data access to the Oracle database while providing full accessibility to the latest .NET Framework 4.6.2 and 4.7. ODP.NET developers can take advantage of Oracle's unique database functionality, including Application Continuity, Transaction Guard, Sharding, and multitenant container databases. ODP.NET gives .NET programmers better performance, flexibility, and more feature availability through features, such as self-tuning and faster data retrieval; TimesTen In-Memory Database provider support, and promotable transactions. ODP.NET developers can use the .NET Framework, but not have to sacrifice powerful Oracle data management capabilities.

For more information, visit ODP.NET home page.

Oracle Developer Tools for Visual Studio

Oracle Developer Tools for Visual Studio (ODT) is a tightly integrated "Add-in" for Microsoft Visual Studio 2017, and Visual Studio 2015.

ODT makes developing .NET code for Oracle easy and fast, allowing developers to stay in Visual Studio for the entire development lifecycle. ODT makes it easy to browse and edit Oracle schema objects using integrated visual designers and can automatically generate .NET code via a simple drag and drop. Developers can easily modify table data, execute Oracle SQL statements, edit and debug PL/SQL code, and generate SQL deployment scripts. The integrated context sensitive online help, including the Oracle SQL and PL/SQL Users Guides, puts the Oracle documentation at their fingertips.

ODT includes a SQL Tuning Advisor tool to help developers tune arbitrary SQL statements and an Oracle Performance Analyzer, which analyzes a running .NET

application's use of the Oracle database and provides detailed recommendations.

ODT and ODP.NET are seamlessly integrated with Oracle Database 12c multitenant container databases (CDBs) allowing developers to easily and quickly create, clone, plug or unplug pluggable databases (PDBs) for use during development and testing. These PDBs can be viewed and managed directly from Server Explorer in Visual Studio. ODP.NET works out of the box with PDBs, requiring no code changes to use them in .NET.

ODT includes Schema Compare tools integrated within Visual Studio. These tools allow developers to detect changes between individual Oracle schema objects or entire schemas. When it comes time for deployment, these tools can be used to generate a deployment ("diff") script to upgrade the target database to include the new schema changes required. Schema comparisons can be performed against live database instances or against a set of SQL scripts stored in an Oracle Database Project.

For more information, visit Oracle Developer Tools for Visual Studio home page.

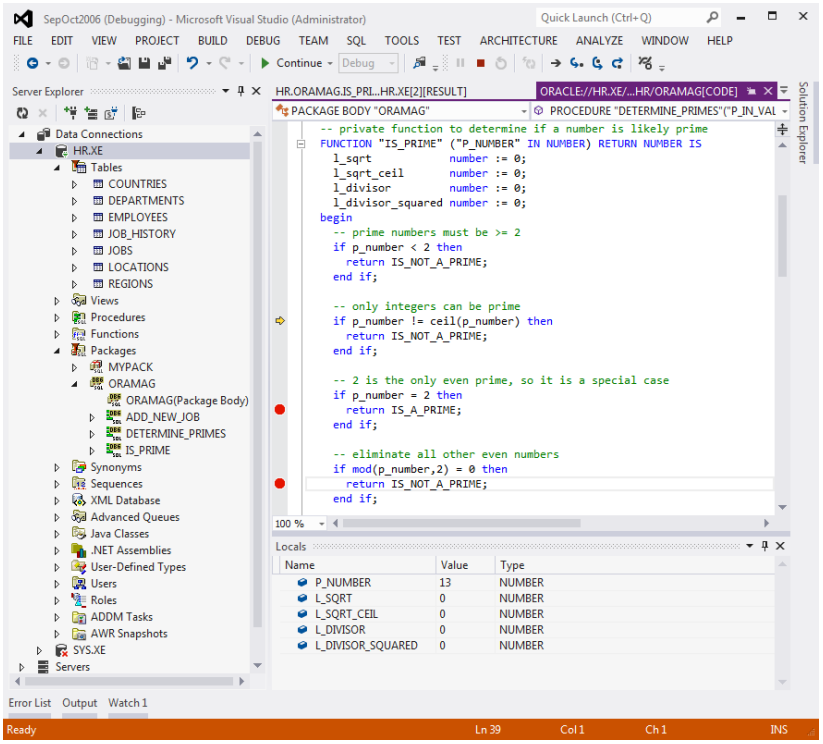

Figure1. Browsing the Oracle schema (left) and editing and debugging PL/SQL (right) are just two examples of Oracle's tight Visual Studio integration.

Oracle Providers for ASP.NET

ASP.NET includes service providers that store application state in databases. By storing state in a database, applications ensure web data is highly available and equally accessible among all web servers.

Oracle Providers for ASP.NET support these service providers for use with the Oracle database. For developers already familiar with ASP.NET providers, the Oracle Providers for ASP.NET are easy to learn since they share a common schema and application programming interface with other existing ASP.NET providers.

Standard ASP.NET controls and services interact with the providers transparently without any Oracle-specific coding required. Oracle offers the following ASP.NET providers: Membership Provider, Role Provider, Site Map Provider, Session State Provider, Profile Provider, Web Events Provider, Web Parts Personalization Provider, and Cache Dependency Provider.

For more information, visit Oracle Providers for ASP.NET home page.

.NET Stored Procedures

The Oracle Database Extensions for .NET is a feature of Oracle Database on Windows that makes it easy to develop, deploy, and run stored procedures and functions written in a .NET managed language, such as C# or VB.NET. .NET stored procedures or functions are developed using Microsoft Visual Studio and deployed using the tightly integrated ODT .NET Deployment Wizard. After deployment, a .NET stored procedure can be called from .NET; from SQL or PL/SQL; from another .NET, PL/SQL, or Java stored procedure; from a trigger; or from anywhere else a stored procedure or function call is allowed.

For more information, visit the Oracle Database Extensions for .NET home page.

New Features

Microsoft Visual Studio 2017 and .NET Framework 4.6.2 and 4.7

ODAC 12.2c Release 1 components are certified for Visual Studio 2017 and .NET Framework 4.6.2 and 4.7. Visual Studio 2017 developers can access all of ODT's features at design-time. ODP.NET, Managed and Unmanaged Drivers are certified for both .NET Framework 4.6.2 and 4.7.

Database Resident Connection Pooling

Database Resident Connection Pooling (DRCP) optimizes resource usage by pooling connections at the database server level. With DRCP, server connections can be shared across applications running on different client machines to optimize resource usage and scalability on the server. DRCP is available with either managed or unmanaged ODP.NET. It can be combined with client side pooling, which optimizes resource usage and scalability on the client side.

Multitenant and Pluggable Databases Connection Pooling

Oracle Multitenant is a database architecture that enables administrators to easily consolidate multiple pluggable databases without changing the application. This architecture delivers all the benefits of managing many databases as one, yet retains the isolation and resource prioritization of separate databases.

Managed and unmanaged ODP.NET support hosting connections to multiple pluggable databases from a singe connection pool. This feature enhances application performance and scalability, plus makes developing with multiple pluggable databases from the same application easier.

Edition-Based Redefinition Connection Pooling

Edition-based redefinition enables applications to upgrade the database component while it is in use, thereby minimizing or eliminating down time. Managed and

unmanaged ODP.NET support using a single connection pool to connect to multiple editions. This feature enhances performance and scalability during use of different editions from the same application. Additionally, developing for multiple editions from the same application is now easier.

Connection Configuration Upon Open

Managed and unmanaged ODP.NET introduce the ConnectionOpen event handler, which allows developers to provide setup logic and change settings before ODP.NET connections are dispensed from the OracleConnection.Open() method invocation. This feature is similar in concept to a logon trigger, but more optimal for client side initialization settings. It works with both pooled and non-pooled connections. The ConnectionOpen event handler provides a centralized, standardized location for ODP.NET connection initialization.

Application Continuity

Oracle Application Continuity enables database requests to automatically replay transactional or non-transactional operations in a non-disruptive and rapid manner in the event of a severed database session, which results in a recoverable error. Application Continuity improves end-user experience by masking planned and unplanned related errors. Applications can be developed without complex logic to handle exceptions, while automatically replaying database operations upon a recoverable error.

ODP.NET, Unmanaged Driver supports Application Continuity in Oracle Database 12c Release 2 and higher. Unmanaged ODP.NET can recover from severed database session errors transparently without requiring application logic to handle error recovery scenarios.

Sharding and ODP.NET Routing

Oracle Sharding provides the ability to horizontally partition the data across multiple independent Oracle databases (shards). Based on a key specified in the connect string, ODP.NET, Unmanaged Driver can route the database requests to a particular shard.

Oracle Sharding is a shared-nothing architecture that allows near-linear scaling of the database across low-cost commodity database servers located in one or more local or global data centers. Other key benefits include global data distribution (store particular data close to consumers) and fault containment (failure of one shard does not affect the availability of other shards). Global Data Services manages the location of data among the shards and allows ODP.NET client requests to be routed to the appropriate shard in this distributed database system.

ODP.NET, Unmanaged Driver and Oracle Database 12c Release 2 and higher support sharding.

Longer Schema Identifiers

Managed and unmanaged ODP.NET support schema object identifier names, such as tables, columns, views, stored procedures, and functions, up to 128 characters in length. This 128-character upper bound is a new feature in Oracle Database 12c Release 2, which ups the limit from the previous 30 characters.

ODP.NET PL/SQL Boolean Data Type

Booleans store TRUE or FALSE values. ODP.NET, Managed Driver supports the

OracleBoolean data type when using the database's PL/SQL Boolean data type from Oracle Database 12c Release 2 or higher.

The ODP.NET OracleBoolean data type eases parameter binding and data type mapping setup with Boolean values.

"Offline" Schema Comparison in Visual Studio

The Schema Compare tools included with Oracle Developer Tools for Visual Studio now add support for performing a schema comparison between a set of SQL scripts stored in an Oracle Database Project and an Oracle Database instance.

The scripts in the Oracle Database Project can be automatically updated to reflect changes in the database instance and vice versa. The Oracle Database Project can also be added to source control and shared with multiple development team members.

Dependencies and References Viewer in Visual Studio

Oracle Developer Tools for Visual Studio includes a new Dependencies and References Viewer tool that allows database developers to inspect relationships amongst Oracle schema objects. For example, users can see all Oracle schema objects that are required by a particular PL/SQL package.

Get Started Today

You can quickly start developing .NET applications with Oracle databases. Just download ODAC 12.2c Release 1 from ODAC OTN download page.

Find getting started tutorials at the OTN .NET Developer Center.

CONTACT US

For more information about Oracle products, visit oracle.com or call +1.800.ORACLE1 to speak to an Oracle representative.