.NET Development with ODAC 18c 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 the first ODAC 18c release, Oracle includes Microsoft .NET Core data provider support and Oracle OLAP Provider for OLE DB. ODAC is a free download from Oracle Technology Center (OTN). It can integrate with 32-bit and 64-bit applications and is installable via Microsoft Installer, NuGet, xcopy, or Oracle Universal Installer.

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 and .NET Core features. 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; fast connection failover, and runtime load balancing. ODP.NET developers can use .NET, but not have to sacrifice powerful Oracle data management capabilities.

For more information, visit ODP.NET website.

Key Benefits

- Easy to use and learn
- No charge
- Visual Studio 2017 certified
- Native Windows installer and NuGet
- Easy cloud deployment
- Supports Oracle Database Cloud, including autonomous and Exadata Express editions
- Access all on-premises database editions, including Express Edition, and database versions 11.2 and later

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.

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 is seamlessly integrated with Oracle Database 18c 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.

ODT includes Schema Compare tools integrated within Visual Studio. These tools allow developers to detect changes between individual Oracle schema objects or entire schemas. Schema comparisons can be performed against live database instances or against a set of SQL scripts stored in an Oracle Database Project.

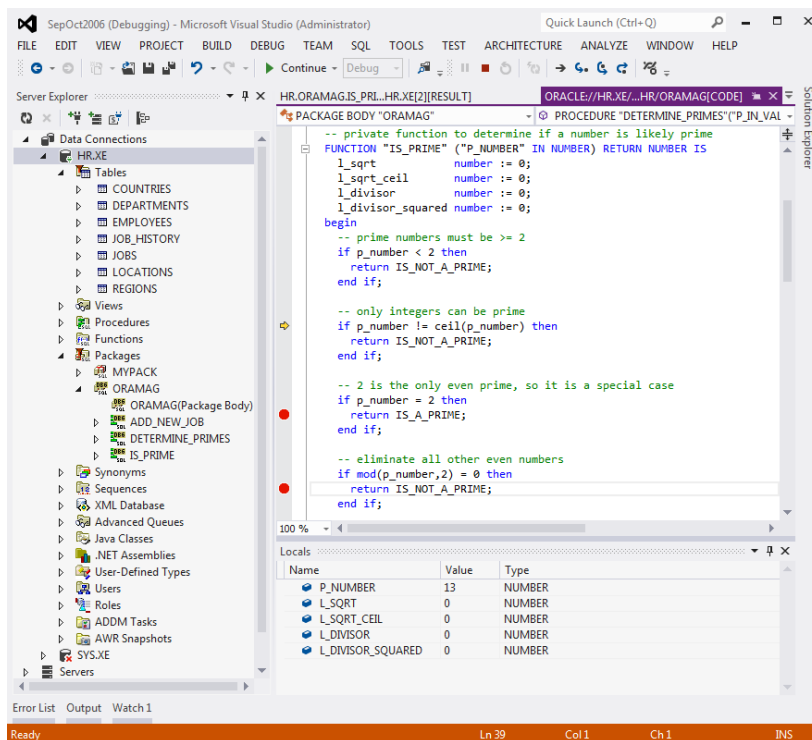For more information, visit Oracle Developer Tools for Visual Studio website.

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 website.

.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 website.

NEW FEATURES

ODP.NET Core

The release of ODAC 18c introduces a new .NET provider: ODP.NET Core. ODP.NET Core runs on Microsoft .NET Core and supports multiple platforms: Windows, Oracle Linux, and Red Hat Linux.

For developers, ODP.NET Core is very similar to ODP.NET, Managed Driver sharing much of the same functionality, application programming interfaces (API), and even the same namespace. Managed ODP.NET developers will find the transition smooth to migrate to ODP.NET Core.

ODP.NET Core follows the .NET Standard 2.0 specification. This also allows ODP.NET Core to run on .NET Framework 4.6.1 and higher versions.

One key difference between managed ODP.NET and ODP.NET Core is the Configuration API. ODP.NET Core introduces a number of classes, most prominently OracleConfiguration that enables configuration via provider API property settings. File-based settings are still available using tnsnames.ora and sqlnet.ora, but .NET configuration files are not available, such as web.config.

ODP.NET Core is supported for .NET Core 2.1 or higher versions of the .NET Core 2.x family.

New 18c Features

- ODP.NET Core on Linux and Windows
- Oracle OLAP data access from Microsoft Office
- .NET Framework 4.7.1 and 4.7.2 certification
- Improved ODP.NET password security

Microsoft Office and Oracle OLAP Provider for OLE DB

The new Oracle OLAP Provider for OLE DB enables Microsoft Excel users to use pivot tables to leverage Oracle Database 18c Analytic Views support of the MDX (Multi-Dimensional Expression) query language. Oracle Database version 18.3 or later is required and Oracle Database In-Memory is strongly recommended.

.NET Framework 4.7.1 and 4.7.2

ODP.NET 18c is certified for .NET Framework 4.7.1 and 4.7.2, the newest third digit releases from Microsoft. For future .NET Framework 4.7.x releases, ODP.NET 18c is automatically certified and supported. This support extends to all the ODP.NET drivers: core, managed, and unmanaged.

Secure Passwords with OracleCredential

ODP.NET OracleCredential class allows application developers to store user names and passwords outside of the connection string without exposure in a memory dump. It provides a more secure method to specify the Oracle password when logging in.

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