

New Features PowerBuilder® 12.0

Document ID: DC00357-01-1200-01

Last revised: March 2010

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PowerBuilder Classic and PowerBuilder .NET

PowerBuilder 12.0 installs with two separate IDEs. The familiar PowerBuilder IDE is rebranded as PowerBuilder Classic. The new IDE is called PowerBuilder .NET.

The PowerBuilder Classic IDE retains the same basic functionality as in earlier PowerBuilder releases. The PowerBuilder .NET IDE hosts the Visual Studio isolated shell and is designed for compliance with the common language specifications for .NET.

PowerBuilder .NET includes one new target type (WPF Window Application) and two new project types (WPF Window and WCF Client Proxy). You can migrate PowerBuilder Classic client-server and Windows Forms targets to PowerBuilder .NET using the WPF Window Application target wizard.

The .NET Assembly target type is available in both PowerBuilder Classic and PowerBuilder .NET, but in PowerBuilder .NET, you can take advantage of language enhancements for fuller .NET compliance. You can also migrate .NET Assembly targets from PowerBuilder Classic to PowerBuilder .NET.

For information about PowerBuilder .NET targets and projects, see the *PowerBuilder .NET Features Guide*.

Platform support

PowerBuilder 12.0 adds support for the Windows 7 Professional 32-bit platform, and has also been tested on Windows XP (SP3), Windows XP Tablet PC (SP 3), Windows Server 2003 (SP 2), and Windows Vista (SP 2). PowerBuilder 12.0 maintains support for deployment to Windows Server 2008 (SP 2), but no longer supports deployment to Windows 2000.

Enhancements for the ADO.NET Interface

The PowerBuilder 12 ADO interface has been extended to support ADO.NET providers. Now, you can connect at runtime to any data source that adheres to the ADO.NET 2.0 Common Provider model.

The Database Profile Setup dialog automatically detects and lists all ADO.NET providers on the system. Otherwise, this dialog is unchanged from the previous version, enabling you to define profiles for each provider in the same way.

At runtime, the user specifies the provider name defined in the namespace DBParm. If PowerBuilder fails to load the provider it returns an error.

This section describes changes to features that support connecting PowerBuilder applications to ADO.NET providers.

- ADO.NET for Oracle
- ADO.NET for Adaptive Server® Enterprise
- ADO.NET Microsoft SQL Server
- ADO.NET for SQL Anywhere®
- ADO.NET for Informix
- ADO.NET for DB2

ADO.NET for Oracle

ODP.NET Driver Updates

This section describes PowerBuilder changes supporting Oracle Data Provider for .NET (ODP.NET) connections.

Drivers for these ODP.NET versions are updated:

- For Oracle 10g, the *Oracle.DataAccess.dll* driver was upgraded from Version 10.1.0.301 to 2.102.2.20.
- For Oracle 11, the *Oracle.DataAccess.dll* Version 2.111.6.20 driver was added.

Both drivers are ADO.NET 2.0 compatible.

Note The PowerBuilder ADO.NET interface no longer includes a driver for Oracle ODP.NET 9i. Users of that provider should migrate to Oracle ODP.NET 10g.

New Features of ODP.NET 2.0 for Oracle 10.2 and Earlier

The following new features are supported:

- **Client Identifier:** The client identifier is a predefined attribute for the Oracle application context namespace, USERENV. Like proxy authentication, the client identifier enables tracking user identities. However, unlike proxy authentication, the client identifier does not require separate sessions for the proxy user and end user. Also, the client identifier does not need to be a database user, and can be set to any string. Most important, the client identifier enables ODP.NET developers to use application context and Oracle Label Security, and to configure an Oracle Virtual Private Database (VPD) more easily.

Configure the client identifier for Oracle ADO.NET data providers in the Driver Specific tab of the Database Profile Setup dialog.

- **Connection Pool Optimizations for RAC Databases:** An Oracle Data Provider for ADO.NET optimizes connection pooling for Real Application Cluster (RAC) databases by balancing work requests across Oracle RAC instances, based on load balancing advisory and service requirements. In addition, the ODP.NET connection pool can be enabled to proactively free resources associated with connections that have been severed when an Oracle RAC service, instance, or node goes down.

Specify ODP.NET connection pool optimizations as arguments to the ProviderString DBParm parameter. You can enter driver-specific parameters at the bottom of the Connection tab of the Database Profile Setup dialog.

- **Large Object Retrieval:** You can retrieve entire columns of large object (LOB) data even if the select list does not contain a primary key, row id, or unique key. To use this enhancement, set the InitialLOBFetchSize property value to -1 for CLOB and BLOB objects.
- **LONG Retrieval:** You can retrieve entire columns of LONG and LONGRAW data even if the select list does not contain a primary key, row id, or unique key. To use this enhancement, set the InitialLONGFetchSize property value to -1.
- **XMLType:** The Oracle XMLType datatype is mapped to the PowerBuilder string type, with these limitations:
 - XMLType cannot be used in Where clauses within PowerBuilder Embedded SQL statements or in a DataWindow® object.
 - XMLType columns cannot be selected directly by an Oracle cursor.

For example:

```
CREATE OR REPLACE Function p_Ora_sp_char_11
return types.cursorType
AS
  l_cursor      types.cursorType;
begin
  open l_cursor for select col1 from
t_Ora_sp_char_11;
  return l_cursor;
end;
```

To use the preceding statement in PowerBuilder, modify it to:

```
CREATE OR REPLACE Function p_Ora_sp_char_11
return types.cursorType
AS
  l_cursor      types.cursorType;
begin
  open l_cursor for select x.col1.getStringval()
from t_Ora_sp_char_11 x;
  return l_cursor;
end;
```

- XMLType cannot be a parameter of a procedure or function, because PowerBuilder binds XMLType as a string type, but Oracle does not support that usage. The following SQLPLUS statement illustrates:

```
declare
ss varchar2(1000);
BEGIN
```

```
ss := '<Date>1994-08-07</Date>';  
mysp2(ss);  
END;
```

- **Client Access Through a Proxy:** With proxy authentication, the end user typically authenticates to a middle tier (such as a firewall), that in turn logs into the database on the user's behalf, as a proxy user. After logging into the database, the proxy user can switch to the end user's identity and perform operations using the authorization accorded to that user.

The Connection tab of the Database Profile Setup dialog provides a Connect As dropdown control. To create a proxy connection, enter a different value that is not one of the predefined control items (Default, SYSOPER, and SYSDBA).

- **Transparent Application Failover Notification:** Transparent Application Failover (TAF) notification enables an application connection to automatically reconnect to another database instance if the connection is severed. When a failover occurs, applications may wish to be notified.

A new DBParm, SvrFailover, supports TAF notification. By default, SvrFailover is set to 0. If SvrFailover is set to 1 (true or yes), the transaction object invokes the DBNotification event when a failover occurs.

New Features for ODP.NET 2.0 for Oracle 11g

The following new features are supported:

- **ODP.NET Configuration:** Developers can now configure ODP.NET using configuration files, including the .NET application configuration file, *web.config*, and *machine.config*. Settings in the machine.config file override the registry settings. The settings in the application configuration file or the *web.config* file overrides the values in the *machine.config* file.
- **Additional Connection Pool Optimizations for RAC and Data Guard:** ODP.NET now cleans up the connection pool when the database down event is received from Real Application Clusters (RAC) or Oracle Data Guard. This is in addition to the events for which ODP.NET previously cleaned up the connection pool: node down, service member down, and service down.
- **Windows-Authenticated User Connection Pooling:** You can now manage operating system-authenticated connections as part of ODP.NET connection pools, through Windows account management.
- **Connection Pool Performance Counters:** ODP.NET publishes performance counters for connection pooling, which can be viewed using the Windows Performance Monitor.

For PowerBuilder, the counters can be set in the Windows registry or in the application configuration file.

The following ADO.NET 1.1 features are *not* supported:

- **Oracle User-Defined Types:** PowerBuilder does not support UDT types.
- **Bulk Copy Operations:** ADO.NET 1.1 enables applications to efficiently load large amounts of data from a table in one database to another table in the same or a different database.

PowerBuilder does not support bulk copies; instead it uses pipelines for table copy operations.

ADO.NET for Adaptive Server® Enterprise

This section describes changes for connections to Adaptive Server Enterprise ADO.NET database providers.

ADO.NET Driver update

Drivers for these ADO.NET versions are updated:

- The ASE 12.5x ADO.NET driver, *Sybase.Data.AseClient.dll*, is updated from Version 1.1.411.0 to 1.1.670.0.

The ASE 12.5x ADO.NET driver is ADO.NET 1.1 compatible, and does not support ADO.NET 2.0.

- The ASE 15 ADO.NET driver is updated from *Sybase.Data.AseClient.dll* Version 1.15.50.0 to *Sybase.AdoNet2.AseClient.dll* 1.15.325.0.

The ASE 15 ADO.NET driver is ADO.NET 2.0 compatible.

New Features for ASE 15

The ASE 15 ADO.NET driver supports these new ASE identity types:

Bigint identity
Int identity
Smallint identity
Tinyint identity
unsigned bigint identity
unsigned int identity
unsigned smallint identity

ADO.NET Microsoft SQL Server

This section describes changes to the PowerBuilder ADO interface for Microsoft SQL Server:

New Features for SQL Server 2005 and Earlier

The following new features are supported:

- Large value types:
 varchar(max)
 nvarchar(max)
 varbinary(max)

xml, varchar(max) and nvarchar(max) are mapped to the PowerBuilder string type; varbinary(max) is mapped to the PowerBuilder blob type.
- PowerBuilder supports SQL Server database mirroring, and a DBNotification event is fired when failover occurs.

A new DBParm parameter, FailoverPartner, enables you to set the SQL Server failover partner server, as in the SQL Native Client (SNC) interface.

Query notifications are *not* supported by the PowerBuilder ADO interface for SQL Server.

New Features for SQL Server 2008

The following SQL Server 2008 features are supported:

- New datatypes:
 date
 time
 datetime2
 varbinary(max) (filestream)

The SQL Server date, time and datetime2 datatypes are mapped to PowerBuilder date, time and datetime types. varbinary(max) (filestream) is mapped to the PowerBuilder blob type. The maximum scale of time or datetime2 is 6.
- The new T-SQL commands support:
 MERGE statement
 Grouping sets
 Row constructors
 Table hints
 The new T-SQL command works in the PowerBuilder ADO interface for SQL Server, as in the SNC interface.

These SQL Server 2008 features are *not* supported:

- `datetimeoffset` datatype
- Table-valued parameters

ADO.NET for SQL Anywhere®

Connect to a SQL Anywhere database using an `iAnywhere.Data.SQLAnywhere` provider. PowerBuilder applications can perform all database related operations, such as exploring SQL Anywhere database objects like tables and procedures, and retrieving and updating data in the Database Painter.

ADO.NET for Informix

Access an Informix database using the `IBM.Data.Informix` provider (Informix client SDK version 3.5 or above). You can explore an Informix Database and perform all database related operations using the Database Painter.

Note The Informix `DATETIME HOUR TO SECOND` type is treated as type `TIME` in PowerBuilder. Also, the `TIME` type column is displayed in the Database Painter as `DATETIME`, because the two variants of Informix `DATETIME` type are indistinguishable in the resultset schema.

The `IBM.Data.Informix` driver does not support the `BindSPInput dbparm`.

ADO.NET for DB2

PowerBuilder supports DB2 using the `System.Data.Odbc` provider for both runtime and design time operations.

Enhancements to the Runtime Packager

In PowerBuilder 12.0, the Runtime Packager is enhanced to allow generation of a Microsoft Merge Module (MSM file) instead of an MSI file.

If you select the PowerBuilder .NET Components option, the MSM or MSI file created by the Runtime Packager now includes the runtime files required for applications developed in the new PowerBuilder .NET IDE. However, the installation package you create with the PowerBuilder .NET Components option still includes the runtime files required for .NET applications and components that you develop in the PowerBuilder Classic IDE.

In the Runtime Packager, you can also select an option to include DLL files required for exporting graph or DataWindow data to a file with the Microsoft Excel 2007 format. The *Sybase.PowerBuilder.DataWindow.Excel12.dll* and *PBDWExcel12Interop120.dll* files are added to the MSM or MSI file when you select the MS Excel12 Support check box and create an installation package from the Runtime Packager. The Microsoft Excel 2007 format also requires .NET Framework 3.0 or later, but this must be installed separately on the runtime computer, since it is not included in the package generated from the Runtime Packager.

New properties, functions, and database parameters

The following new items are documented in the online Help for PowerBuilder 12.0:

- OriginalSize property for buttons and picture controls in DataWindow objects
- Clear (gridFlag) syntax for RichTextEdit controls
- ClearAll function for RichTextEdit controls
- CloseUserObject, OpenUserObject, and OpenUserObjectWithParm functions are supported for visual user objects
- PBAddCookie and PBGetCookies functions for Web Service proxy objects
- Eleven SoapPBCookie methods for getting and setting cookie properties
- Four SoapConnection methods for setting proxy server bypass conditions
- GenerateEqualIsNull database parameter for all database connections
- NCharBind database parameter for SQL Server (SNC) connections

Deprecated functionality

The ability to build a COM or COM+ component is not available in PowerBuilder as of version 12.0. However, you can still connect to COM and COM+ components from standard PowerBuilder client-server applications.