Zen v15

What's New in Zen v15

An Overview of New Features and Changed Behavior

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About This Document

This document contains information about the features and enhancements in this release. It does not provide comprehensive usage instructions for the software. Its purpose is to summarize what is new and different from the previous release.

The Zen family of products includes three editions of the database engine:

- Enterprise Server
- Cloud Server
- Workgroup

Throughout the Zen documentation, all content covers all three editions unless differences are explicitly called out. For example, you will occasionally encounter topics that apply only to Zen Workgroup. Unless stated otherwise, anything that applies to Enterprise Server also applies to Cloud Server.

In addition to the three database engines, Zen has two client editions that provide application access to remote engines:

- Client
- Client Reporting Engine

Throughout the Zen documentation, all content concerning access methods applies to both client and engine editions unless differences are explicitly called out

We would appreciate your comments and suggestions about this document. Your feedback can determine what we write about the use of our products and how we deliver information to you. Please post your feedback in the community forum on the Actian website.

chapter

1 What's New in Zen v15 SP1

An Overview of New and Changed Features

This General Availability release of Zen v15 SP1, version 15.10, offers the following new features and changes:

- Platform Support Changes
- System Data v2
- Zen SQL
- Performance Improvements
- Zen 64-bit ODBC DSN Setup
- ADO.NET Support
- Defragmenting Files with System Data V2
- PSA Renamed ZenSA
- Customizing Zen Product Configuration During Installation

This document may be updated after the release. Download the latest version from the Actian website.

Platform Support Changes

- Zen v15 SP1 adds support for Windows 11 and Server 2022.
- This release has been successfully tested on Windows 11, version 21H2, and Windows Server 2022, version 21H2.

System Data v2

Zen v15 introduced system data v2 for data files in the 13.0 format, in which you can access record insert and update time stamps using the column names sys$create and sys$update for Btrieve keys 125 and 124, respectively. In Zen v15 SP1, these keys now have a TIMESTAMP(7) format, YYYY-MM-DD HH:MM:SS.sssssss, with septasecond precision. For more information and a working query example, see Accessing System Data v2 in *SQL Engine Reference*.

Zen SQL

This release offers the following new Zen SQL capabilities:

- DATEFLOOR is a general-purpose scalar function that rounds a time stamp down to the nearest specified interval. This function is a Zen SQL extension.
- EVERYN is a general-purpose scalar function for rounding time stamps to help group records within regular intervals, such as "every 6 seconds." This value can then be used in a PARTITION BY or GROUP BY to return results comparable to the InfluxDB feature GROUP BY TIME. This function is a Zen SQL extension.

- A new ILIKE operator, which is a case-insensitive version of LIKE. This function is a Zen SQL extension.
- LAG is a standard windowing function that retrieves a value from an earlier row.

Two windowing limitations in Zen v15 have been removed in this release:

- An OVER clause no longer requires a PARTITION BY, thus allowing the entire result set to be a single partition.
- A PARTITION BY column no longer has to be a base column.

For more information, see topics under SELECT in *SQL Engine Reference*.

Performance Improvements

Zen v15 SP1 offers performance improvements:

- This release can shorten execution times for SQL queries that use indexed columns. To take advantage of this improvement, the data file must be in 13.0 file format and have had its indexes created by a Zen v15 SP1 database engine. Existing files in formats before 13.0 must be rebuilt in Zen v15 SP1 to 13.0. Files already in 13.0 must have all indexes dropped and recreated in Zen v15 SP1.
- Client tracing performance has been improved to be comparable to engine tracing.

Zen 64-bit ODBC DSN Setup

The default size of the buffer used to cache an array fetch has been raised from 8 to 64 KB. Its value can be set anywhere from 1 to 64 KB.

ADO.NET Support

Zen v15 SP1 ADO.NET SDK has the following changes:

- Zen ADO.NET SDK for .NET Framework supports integration of data provider tools with Visual Studio 2022.
- ADO.NET Data Provider 4.5 has added support for .NET 6.
  - .NET 6 makes Data Provider 4.5 compatible with .NET 5 and .NET 3.x.
  - Samples in the SDK for Data Provider 4.5 have been upgraded to require Visual Studio 2022 and target .NET 6 Framework.
  - Support has been added for Microsoft Entity Framework 6.1 and later.
- ADO.NET Data Provider 4.4 is unchanged from Zen v15.

Defragmenting Files with System Data V2

Data files that use system data v2 can now be defragmented.

PSA Renamed ZenSA

Pervasive System Analyzer (PSA) has been renamed Zen System Analyzer (ZenSA), with a corresponding name change to its log file from psa.log to zensa.log.

Customizing Zen Product Configuration During Installation

It is now possible to override default Zen product configuration settings during their installation by creating the file bcfg_install.txt and locating it in the same folder as the ptksetup.ini file. Each product

download has a variation of this file with the name bcfg_install_<product>_<lang>.txt. The file includes instructions for its use to automatically configure Zen Server, Client, Workgroup Engine, or Reporting Engine during installation.

chapter

2

What Was New in Zen v15

An Overview of New and Changed Features

The General Availability release of Zen v15, version 15.00, offers the following new features and changes:

- System Data v2
- SQL Windowing Functions
- Performance Improvements
- Administration Improvements
- Compatibility Improvements
- Btrieve 2 Additions
- ADO.NET Support
- Location of Embarcadero BPL Extensions
- Platform Support Changes
- Deprecated Features and Platforms

This document may be updated after the release. Download the latest version from the Actian website.

System Data v2

System data v2 is a new option for Btrieve data files created or converted to 13.0 format in Zen v15. It adds time stamps and keys for record creation and update. The creation key is similar to classic system data in that it can be used for transaction logging and continues to use key number 125. The new update key uses key number 124. This update key enables users and applications to identify rows that have changed since a specific point in time without having to implement their own user-defined time stamps.

Like classic system data, system data v2 can be managed with Zen file maintenance and rebuild tools. In addition, the **butil -stat** command displays the type of system data in a file.

When present, system data v2 time stamps are accessible through SQL queries using the column names sys$create and sys$update. These read-only virtual columns have the SQL_TIMESTAMP (93) data type. In addition, Zen CREATE and ALTER TABLE statements now accept the keyword SYSDATA_KEY_2, which creates or rebuilds the data file in 13.0 format using system data v2.

For more information, see the Zen v15 documentation, especially *Advanced Operations Guide*, *Btrieve API Guide*, *Zen Programmer's Guide*, and *SQL Engine Reference*.

SQL Windowing Functions

This release extends Zen SQL with the keywords OVER and PARTITION BY and their syntax to support a subset of the ANSI SQL windowing functions, such as rolling averages. For more information, see SELECT in *SQL Engine Reference*.

Performance Improvements

Zen v15 offers new or enhanced database settings for tuning performance, as well as several SQL engine performance improvements.

- File Close Delay

  Zen v15 has a new feature called File Close Delay to enable the engine to hold a data file open for a set period after the last application has closed it. It is controlled by a new engine setting with a default value of 50 milliseconds and may be disabled by setting it to zero. The default value can result in noticeable performance improvements for both Btrieve and SQL applications that repeatedly open and close a data file.

  The **butil** tool now has a new **-close** option to close files in the delayed-close state.

  For more information, see *Advanced Operations Guide*.

- Transaction Log Buffer Size

  This release raises the default size of the transaction log file from 16 MB to 64 MB. The default size of the buffer that captures transaction log entries has increased from 8 MB to 32 MB. These larger values can improve performance by allowing to the Microkernel to write log information to disk less frequently.

- The SQL DELETE statement may use the DeleteExtended Btrieve operation to improve the speed of multiple row deletions.
- SQL statements using LIKE or NOT LIKE may see improvement when the SQL engine can use Btrieve extended operations.
- SQL statements involving scalar subqueries may see significant improvement, as in the following example:

```
DELETE FROM History_Log WHERE Log_Time <
    (SELECT Log_Time FROM History_Log ORDER BY Log_Time LIMIT 1 OFFSET 100000)
```

Administration Improvements

The **butil -stat** subcommand and the **bcfg** and **bmon** tools now accept a **-JSON** option. With this option, command output is in JSON format, which can be easier to consume in scripting languages.

On Windows, engine errors are logged to the Windows event log as well as to the zen.log file. This improvement makes engine errors more easily available to third-party monitoring tools.

Compatibility Improvements

Zen v15 offers a new compatibility setting called Limit File Size. In environments where Btrieve file formats have been converted to version 13.0 to gain new features, the maximum file size of 64 TB may be a concern. You can use this setting to prevent files of version 13.0 or later from exceeding the version 9.5 maximum file size of 256 GB.

Btrieve 2 Additions

This release adds support for the following features and languages to the Zen Btrieve 2 API:

- BulkDelete to match enhancements to Btrieve functionality
- System data v2 in the 13.0 file format
- Go and Java

ADO.NET Support

The Zen v15 ADO.NET SDK has the following changes:

- ADO.NET Data Provider 4.3 is no longer supported.
- ADO.NET Data Provider 4.4 is unchanged:
  - Support for all versions of Microsoft .NET Framework
  - Support for Microsoft Entity Framework 6.1 and later
  - Providers supporting .NET Core 2.0 and later and .NET Entity Framework Core 3.1 and later are available in a separately downloadable SDK.
- ADO.NET Data Provider 4.5 has been added:
  - Support for all versions of Microsoft .NET Framework
  - Support for Microsoft Entity Framework 6.1 and later
  - Providers supporting .NET Core 2.1 and later and .NET Entity Framework Core 3.1 and later are available in a separately downloadable SDK.

Location of Embarcadero BPL Extensions

The main Zen installer no longer includes BPLs for PDAC. These libraries are still available in the PDAC SDK for download at esd.actian.com.

Platform Support Changes

- Zen v15 now runs on Windows 10 IoT Enterprise. See *Getting Started with Zen* for installation steps.
- This release has been successfully tested on Windows 10, version 20H2.

Deprecated Features and Platforms

- The ActiveX and OLE DB SDKs have been discontinued as development platforms in this release. ActiveX and OLE DB applications developed with previous releases will continue to work in Zen v15.

Support for Windows 7 and Windows 2008 R2 has been dropped in this release.