

Increase the performance of your compiled COBOL applications

Automatic Binary Optimizer for z/OS[®] optimizes previously compiled COBOL program modules to increase application performance and reduce CPU usage without source recompilation. It performs high-fidelity optimizations and generates code that fully exploits z14[™], z13[®] and zEC12 architecture without changing program logic or behavior. Automatic Binary Optimizer for z/OS must be licensed on all machines where the optimizer is used and where the optimized applications are deployed and executed.

Automatic Binary Optimizer for z/OS:

- Delivers new technology to improve the performance of already compiled COBOL programs.
- Allows you to directly optimize compiled programs. Source level migration, recompilation, and performance options tuning are not required.
- Leverages the latest technology advancements in COBOL optimizations.
- Allows you to optimize COBOL programs compiled with Enterprise COBOL for z/OS, V4 to VS COBOL II V1.3.
- Lets you generate code to target the latest deployment systems (z14, z13s, z13, zEC12, and zBC12).
- Delivers a simple, easy-to-install setup, which is also configurable, to allow setting of target architecture.
- Leverages z/OS support to automatically load optimized modules without requiring application JCL changes.
- Complements Enterprise COBOL for z/OS, V5 and V6. Both Automatic Binary Optimizer and Enterprise COBOL can be used to improve the performance of COBOL applications:
 - Use Enterprise COBOL for z/OS to optimize COBOL source that is changed.
 - Use Automatic Binary Optimizer for z/OS to optimize COBOL program modules that are not in the recompile plan.
- Integrates with IBM[®] DevOps Tools for problem analysis of optimized applications across your development lifecycle, which includes IBM Application Delivery Foundation for z Systems[®] family of products:
 - IBM Developer for z Systems Enterprise Edition, which includes the IBM Debug for z Systems (previously known as IBM Debug Tool for z/OS)
 - IBM Fault Analyzer for z/OS
 - IBM Application Performance Analyzer for z/OS

Trial editions of Automatic Binary Optimizer for z/OS are available with a 90-day evaluation license at no charge. The trial editions allow you to test and evaluate the benefits of optimizing your existing COBOL applications in non-production environments. The trial editions are available as either an on-premise installed trial or as a simplified cloud service:

- The on-premise version of IBM Automatic Binary Optimizer for z/OS Trial is available through IBM Shopz.
- The Automatic Binary Optimizer for z/OS Trial Cloud Service is a simplified version of the Automatic Binary Optimizer for z/OS Trial that does not require installation of the trial product.

Highlights

Automatic Binary Optimizer for z/OS V1.3 delivers the following enhancements:

- Improved performance of already compiled COBOL programs on the z14 server and z/OS V2.3 operating system
- Ability to exploit the new Vector Packed Decimal Facility of z14, delivering additional performance improvements
- Ability to generate optimized programs with additional performance gains on previously supported IBM Z hardware (z13, z13s, zEC12 and zBC12)
- Less memory and CPU resources required for the optimization process
- Inclusion of Installation Verification Program (IVP), BOZJIVP, to verify that Automatic Binary Optimizer for z/OS is installed correctly and is functional
- Delivery of a new tool, IBM Run Time Instrumentation Profiler, to help identify COBOL modules that are good candidates for optimization using the Automatic Binary Optimizer

Performance improvements

Automatic Binary Optimizer for z/OS, V1.3 delivers additional performance improvements in the generated optimized COBOL programs. Areas of improved performance include programs with:

- SEARCH ALL statements
- Long or variable length MOVE and compares
- Multiply, divide and exponentiation operations compiled with VS COBOL II compiler
- Many sequential CALL operations
- Use of comp-1 data items and comp-2 data items
- Computations and MOVEs on decimal data types containing more than 18 fractional digits
- ARITH(EXTEND) option that have decimal multiply operations containing 30 or 31 digits
- Decimal divide operations on constant, literal or read only data items
- ON SIZE ERROR clauses
- All forms of decimal arithmetic specifically for z14 hardware by using the ARCH(12) option

Automatic Binary Optimizer for z/OS, V1.3 exploits the new Vector Packed Decimal Facility of z14. The Vector Packed Decimal Facility allows the dominant COBOL data types, packed and zoned decimal, to be handled in 16 byte wide vector registers instead of in memory, resulting in improvements in COBOL computational performance. Binary coded decimal computationally intensive COBOL programs optimized with Automatic Binary Optimizer V1.3 targeting z14 [ARCH(12)], can delivery CPU resource reductions over the original Enterprise COBOL for z/OS, V4 compiled programs on z14.

Version V1.3 provides reductions in resource usage. Significantly less system resources, including memory usage and CPU time, is required by Version 1.3 to optimize load modules as compared to Automatic Binary Optimizer for z/OS, V1.2. With Version 1.3, compute intensive applications are expected to deliver additional performance improvements when compared to Version 1.2. These improvements increases the return on investment of Automatic Binary Optimizer for z/OS.

Usability features

Automatic Binary Optimizer for z/OS, V1.3 is easier to use with the implementation of additional usability features. Additional usability features include:

- An Installation Verification Program (IVP), BOZJIVP, is delivered to verify that Automatic Binary Optimizer for z/OS is installed correctly and is functional
- A new tool, IBM Run Time Instrumentation Profiler, is delivered to help identify COBOL modules that are good candidates for optimization with the Automatic Binary Optimizer for z/OS.
- Compared to V1.2, Automatic Binary Optimizer for z/OS V1.3 generates optimized programs that use less memory and CPU resources. This results in operational cost savings in the optimization phase.
- Compared to V1.2, Automatic Binary Optimizer for z/OS V1.3 generates optimized programs with additional reductions in CPU time, elapsed time, and service units that are consumed. This results in operational cost savings in the execution environment.
- The BOPT directive has been enhanced to allow certain dataset members to be excluded from optimization.
- The listing transform produced by Automatic Binary Optimizer for z/OS has been enhanced to provide a list of the COBOL compiler options in effect at compilation time for the COBOL CSECTs.
- SYSIN files now allow comments and line continuation support.
- Any error messages issued by the binder during the Automatic Binary Optimizer for z/OS, optimization process will be included in the log file to help with diagnostics.
- A new optimizer option, LOG, is delivered to allow generating additional member-level log files into a particular data set.

Supported key COBOL language features

Automatic Binary Optimizer for z/OS supports the following key COBOL features:

- ARITH(EXTEND | COMPAT)
- CICS
- CICS HANDLE ABEND
- CICS HANDLE AID
- CICS language translator generated SERVICE LABEL statements
- CMPR2
- Db2
- DLL
- ENTRY
- IMS
- I/O and debugging declaratives
- NOOPTIMIZE, OPTIMIZE(STD | FULL)
- NUMPROC(NOPFD | PFD | MIG)
- Program segmentation
- RECURSIVE
- RENT and NORENT
- SORT and MERGE
- SQL
- SSRANGE
- TEST
- THREAD
- TRUNC(STD | BIN | OPT)
- User written SERVICE LABEL statements
- XML

Automatic Binary Optimizer for z/OS, V1.3 supports COBOL programs that were compiled with:

- Enterprise COBOL for z/OS, V4
- Enterprise COBOL for z/OS and OS/390®, V3
- COBOL for OS/390, V2
- COBOL for MVS™ & VM, V1.2
- COBOL/370, V1.1
- VS COBOL II, V1.3 and V1.4 (LE-enabled only)

Tooling support

Optimized applications created with Automatic Binary Optimizer for z/OS are supported by IBM DevOps Tools for problem analysis across your development lifecycle, which include IBM Application Delivery Foundation for z Systems family of products:

- Developer for z Systems Enterprise Edition, which includes Debug for z Systems (previously known as Debug Tool for z/OS). Helps examine, monitor, and control the execution of application programs.
- Fault Analyzer for z/OS.
 - Helps developers analyze and fix application and system failures.
 - Gathers information about an application and the surrounding environment.
- Application Performance Analyzer for z/OS. Helps developers in the design, development and maintenance cycles with a non-intrusive application performance analyzer.

Additional information can be found on the Application Delivery Foundation for z Systems website.

Trial product

Trial editions of Automatic Binary Optimizer for z/OS are available with a 90-day evaluation license at no charge. The trial editions allow testing and evaluation of the benefits of optimizing your existing COBOL applications in non-production environments. The trial editions are available as either an on-premise installed trial or as a simplified cloud service:

- The on-premise version of IBM Automatic Binary Optimizer for z/OS Trial is available through IBM Shopz.
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System requirements

The following table presents the system requirements for Automatic Binary Optimizer for z/OS, V1.3 and Automatic Binary Optimizer for z/OS Trial, V1.3:

Required Software	Required Hardware	Optional Software Programs
<p>Automatic Binary Optimizer for z/OS, V1.3 and Automatic Binary Optimizer for z/OS Trial, V1.3 can be run on the following operating systems with applicable program temporary fixes (PTFs) installed. For details of the PTFs, refer to the Program Directory.</p> <ul style="list-style-type: none"> • z/OS V2.3 (5650-ZOS), or later • z/OS V2.2 (5650-ZOS) • z/OS V2.1 (5650-ZOS) 	<p>Optimized modules produced by the Automatic Binary Optimizer can run on the following servers:</p> <ul style="list-style-type: none"> • IBM z14 (z14) • IBM z13 (z13) • IBM z13s (z13s) • IBM zEnterprise® EC12 (zEC12) • IBM zEnterprise BC12 (zBC12) 	<p>Depending on the functions used, one or more of the following programs with applicable PTFs might be required. For details of the PTFs, refer to the Program Directory.</p> <ul style="list-style-type: none"> • IBM Application Delivery Foundation for z Systems V3.1 (5655-AC6) <ul style="list-style-type: none"> – IBM Developer for z Systems Enterprise Edition V14.1 (5655-AC5) – IBM Debug for z Systems V14.1 (5655-Q50) – IBM Fault Analyzer for z/OS V14.1 (5655-Q41) – IBM Application Performance Analyzer for z/OS V14.1 (5655-Q49)

For more information

To learn more about IBM Automatic Binary Optimizer for z/OS and Automatic Binary Optimizer for z/OS Trial, contact your IBM representative or IBM Business Partner, or visit: Automatic Binary Optimizer for z/OS at <https://www.ibm.com/us-en/marketplace/improved-cobol-performance>.

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