

IBM Automatic Binary Optimizer for z/OS
2.2



Chapter 1. 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 targets z16, z15™ Models T01 and T02, z14 Models M01-M05, and z14 ZR1 architecture without changing program logic or behavior.

Automatic Binary Optimizer for z/OS delivers the following benefits:

- Advanced technology that improves the performance of previously compiled COBOL programs.
- Direct optimization of already compiled COBOL programs.
- Source-level migration, recompilation, and performance options tuning are not required.
- Ability to leverage the latest COBOL optimization technology.
- Ability to generate code to target IBM Z® deployment systems (z16, z15 Models T01 and T02, z14 Models M01-M05, and z14 ZR1).
- Reductions in CPU usage and operating costs by directly optimizing COBOL modules that are compiled with VS COBOL II 1.3 to Enterprise COBOL for z/OS 6.4.
- Ability to use the Vector Packed Decimal Enhancement Facility 2 of the latest hardware for additional performance improvements.
- Inclusion of the ABO Assistant, a suite of tools that help simplify the Automatic Binary Optimizer for z/OS evaluation and accelerate the deployment of Automatic Binary Optimizer for z/OS optimized COBOL modules for both batch COBOL and COBOL/CICS® applications.
- Inclusion of the Installation Verification Program (IVP), BOZJIVP, to verify that Automatic Binary Optimizer for z/OS is installed correctly and is functional.
- Inclusion of the IBM® Run Time Instrumentation Profiler, to help identify COBOL modules that are good candidates for optimization using the Automatic Binary Optimizer.
- Support of z/OS to automatically load optimized modules without requiring application JCL changes.
- Delivery of simple, easy-to-install setup, which is also configurable, to allow setting of target architecture.
- Full support by IBM DevOps Tools, which includes the Application Delivery Foundation for z/OS family of products:
 - Developer for z/OS Enterprise Edition, which includes Debug for z/OS
 - Fault Analyzer for z/OS
 - Application Performance Analyzer for z/OS

Complementary to Enterprise COBOL for z/OS

Automatic Binary Optimizer for z/OS is complementary to Enterprise COBOL for z/OS. Using Automatic Binary Optimizer for z/OS together with Enterprise COBOL bring these benefits:

- Speeding up migration by reducing the migration scope and effort
- Maximizing the application performance while minimizing the test effort
- Directly optimizing already compiled program modules using cutting edge technology to target the latest IBM zSystems while completely avoiding the pitfalls of a compiler migration

Migrating to Enterprise COBOL for z/OS 6.4 typically requires significant development and test resources. Use Automatic Binary Optimizer for z/OS to complement Enterprise COBOL for z/OS for migration:

- Use Enterprise COBOL for z/OS as the production build compiler for code under active development or maintenance.
- Use Automatic Binary Optimizer for z/OS to optimize modules for code that is not regularly updated.

Since Automatic Binary Optimizer for z/OS optimizes the already binaries directly, there is no need to recompile source, nor analyze, test and fix issues in existing source that might include invalid data/code and uninitialized variables. Overall testing and migration effort will be minimized while still achieving the best performance for your COBOL programs on the latest IBM zSystems.

Additional information can be found on the [Enterprise COBOL for z/OS](#) website.

Chapter 2. Highlights

Automatic Binary Optimizer for z/OS 2.2 delivers the following new and improved features:

- Ability to generate optimized programs with additional performance gains on the latest IBM Z hardware, including IBM z16
- Expansion of the range of compiler versions that are eligible for optimization to include compiled programs produced by Enterprise COBOL for z/OS 5.1 to 6.4
- Enhanced ABO Assistant to support online (or CICS/COBOL) applications

The price metric for Automatic Binary Optimizer for z/OS 2.2 is execution-based, sub-capacity licensing. Automatic Binary Optimizer for z/OS 2.2 generates the SMF 89 records, and you can use the IBM Sub-Capacity Reporting Tool (SCRT) 27.1.2 or later to see Automatic Binary Optimizer for z/OS in the SCRT reports.

Fully supports IBM z/Architecture including the latest z16

IBM Automatic Binary Optimizer for z/OS 2.2 takes advantage of Vector Packed Decimal Enhancement Facility 2 for additional reduction of CPU usage, and improves performance of critical COBOL applications without recompilation.

Expands eligibility of COBOL binaries for optimization

With IBM Automatic Binary Optimizer for z/OS 2.2, COBOL modules that are compiled with VS COBOL II 1.3 to Enterprise COBOL 6.4 are all eligible for optimization. IBM Automatic Binary Optimizer for z/OS enables COBOL customers to quickly take advantage of future IBM Z hardware enhancements without recompiling source.

Enhanced ABO Assistant to support online (or CICS/COBOL) applications

The ABO Assistant included in the IBM Automatic Binary Optimizer for z/OS is enhanced to simplify ABO evaluation and accelerate ABO deployment for batch and online COBOL applications.

Chapter 3. Other IBM Automatic Binary Optimizer for z/OS features

Advanced optimization technology

Automatic Binary Optimizer for z/OS uses advanced technology to optimize COBOL code and targets the latest IBM z/Architecture®. Automatic Binary Optimizer for z/OS helps future-proof the performance of COBOL applications, without the need for recompilation or source code changes when upgrading to new IBM Z hardware.

Automatic Binary Optimizer for z/OS can directly optimize the compiled binary code in COBOL modules, ensuring the COBOL program logic remains the same. Automatic Binary Optimizer for z/OS requires no option tuning, and there are no interoperability concerns after optimization. This allows improvements in the performance of COBOL applications more efficiently and with less testing.

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
- I/O and debugging declaratives
- IMS
- 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 2.2 supports COBOL programs that were compiled with:

- Enterprise COBOL for z/OS 6

- Enterprise COBOL for z/OS 5
- Enterprise COBOL for z/OS 4
- Enterprise COBOL for z/OS and OS/390® 3
- COBOL for OS/390 2
- COBOL for MVS™ and VM 1.2
- COBOL/370 1.1
- VS COBOL II 1.3 and 1.4 (LE-enabled only)

ABO Assistant

Automatic Binary Optimizer for z/OS includes the ABO Assistant, a suite of tools to help in understanding COBOL applications and to make it easier to use Automatic Binary Optimizer for z/OS to improve performance. The ABO Assistant can be used to simplify the Automatic Binary Optimizer for z/OS evaluation and accelerate the deployment of Automatic Binary Optimizer for z/OS optimized COBOL modules for both batch COBOL and COBOL/CICS applications. The ABO Assistant automatically identifies and optimizes top CPU-consuming COBOL modules and produces a report showing the before and after performance results. It can be used to quickly obtain concrete performance evaluation results and to help prepare key optimized modules for deployment. Tools included in Automatic Binary Optimizer for z/OS are:

- The SMF Analyzer provides streamlined SMF analysis directly on z/OS to find, filter, sort, and report on the top CPU-consuming applications. The SMF Analyzer produces a prioritized report on the jobs and COBOL programs that consume the most CPU across all the jobs running on a system.
- The Program Analyzer and Optimizer automates the individual steps required to efficiently optimize the top CPU-consuming COBOL batch applications using Automatic Binary Optimizer for z/OS and produces a report on the CPU time-savings from using Automatic Binary Optimizer for z/OS.
- The CICS SMF Analyzer can be used to analyze CICS SMF data to find the top CPU-consuming applications. The CICS SMF Analyzer produces a prioritized report on the programs and transactions that consume the most CPU across all the programs running in the CICS region. For the top CPU-consuming COBOL programs, Automatic Binary Optimizer for z/OS can then be used to optimize the compiled programs to reduce the CPU time, reduce transaction time, and improve response time. To demonstrate the Automatic Binary Optimizer for z/OS improvements, a second report using the SMF data gathered for the Automatic Binary Optimizer for z/OS optimized modules is produced using the CICS SMF Analyzer.

Using the two reports from the original run and from the Automatic Binary Optimizer for z/OS optimized run, the ABO Assistant produces a comparison report that shows the total CPU reduction from using Automatic Binary Optimizer for z/OS as well as the change in CPU time for each individual program.

- The Run Time Instrumentation Profiler profiles COBOL applications to determine performance bottlenecks.

Tooling support

Optimized applications that were 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/OS family of products:

- Developer for z/OS Enterprise Edition, which includes Debug 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/OS](#) website.

The IBM Sub-Capacity Reporting Tool (SCRT) is used to manage capacity. SCRT 27.1.2 or later is required to see Automatic Binary Optimizer for z/OS in your SCRT reports.

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-premises installed trial or as a simplified cloud service:

- The on-premises 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.

Chapter 4. System requirements

The following table presents the system requirements for Automatic Binary Optimizer for z/OS 2.2 and Automatic Binary Optimizer for z/OS Trial 2.2:

Required Software	Required Hardware	Optional Software Programs
<p>Automatic Binary Optimizer for z/OS 2.2 and Automatic Binary Optimizer for z/ OS Trial 2.2 can be run on the following operating systems with applicable PTFs installed. For details of the PTFs, refer to the <i>Program Directory</i>.</p> <ul style="list-style-type: none">• z/OS 2.5 (5650-ZOS), or later• z/OS 2.4 (5650-ZOS)• z/OS 2.3 (5650-ZOS)	<p>Optimized modules produced by the Automatic Binary Optimizer can run on the following servers:</p> <ul style="list-style-type: none">• z16• z15 Models T01 and T002• z14 Models M01-M05• z14 ZR1	<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 <i>Program Directory</i>.</p> <ul style="list-style-type: none">• IBM Application Delivery Foundation for z/OS 3.2 (5655-AC6)<ul style="list-style-type: none">– IBM Developer for z/OS Enterprise Edition 14.2 (5655-AC5)– IBM Debug for z/OS 14.2 (5655-Q50)– IBM Fault Analyzer for z/OS 14.1.8 (5655-Q41)– IBM Application Performance Analyzer for z/OS 14.2 (5655-Q49)

Chapter 5. 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](https://www.ibm.com/products/automatic-binary-optimizer-zos) at <https://www.ibm.com/products/automatic-binary-optimizer-zos>.

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