Datasheet
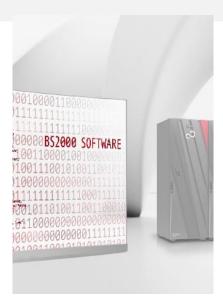
Fujitsu Software BS2000 C/C++ V3.2

The C/C++ compiler supports object-oriented programming (OOP) with C++ on BS2000 business servers.

Topics

Product characteristic

Depending on the selected language mode, the C/C++ V3.2 compiler in BS2000 supports:

- C code conforming to the Kernighan & Ritchie C definition,
- C code conforming to the ANSI/ISO C Standard 9899:1990 with Amendment 1:1994(E),
- C++ code conforming to the Stroustrup C++ definition (C/C++ V3.0B or later),
- C++ code conforming to the ANSI/ISO C++ Draft.

C++ is a powerful programming language which supports the principles of object-oriented programming, such as encapsulation, inheritance, and polymorphism. C++ is particularly suitable for use in the development of reusable software building blocks in the form of class libraries.

C/C++ permits selective use of the advantages of object-oriented programming. The C language set is also available.

The C/C++ V3.2 programming system is available in the following selectable units:

C/C++ full configuration for OSD /390:

- with AID support,
- with /390 code generator,
- without x86 code generator.

The language set of the C++ compiler supports the following elementary functions for object-oriented programming:

- Templates
- Exception handling
- Run-time type information
- New-style casts
- Abstract data types
- Hidden information
- Classes
- Overloading
- Multiple inheritance.

C/C++-RS (shipment via special release only):
Full configuration for business servers with x86
processor architecture:
- with AID support,
- with /390 code generator,
- with x86 code generators for business servers with
  x86 processor architecture (SQ- and SE-series).

C/C++ V3.2 supports the POSIX functionality and the
POSIX file system in BS2000.
CRTE is the common runtime environment for C/C++,
COBOL85 and COBOL2000. CRTE is a software
requirement for use of the C/C++ compiler and for
running C/C++ applications.
CRTE is not shipped in combination with the C/C++
compiler and must be ordered separately.

C/C++ supports the POSIX functionality in BS2000
OSD/BC V2.0 or higher.
The C/C++ compiler can be invoked under the POSIX
shell in accordance with XPG4 specifications. Sources
and includes can be read from the POSIX file system
UFS. Generated objects and compiler listings can be
stored in UFS.
Input/output operations on UFS files are possible via
the C/C++ POSIX RTS. This is particularly useful for
processing unstructured data streams, which are a
common feature in UNIX-systems environments.
AID can be used for symbolic and non-symbolic
debugging of C++ programs in BS2000.
This provides the same test environment for C/C++
that many developers are familiar with from ASSEMBH,
COBOL85, COBOL2000, FORTRAN or PLI1.

Functional description

C++ supports object-oriented programming, which is
based on the following principles:
Encapsulation:
Objects encapsulate states and functions. In C++,
objects are described by means of class definitions. A
class definition collectively defines data and the
functions that operate on this data.
Software produced according to this principle is more
robust, easier to maintain and easier to extend, since
there are fewer dependencies between the modules
and the details of the implementation are
encapsulated in classes.
Inheritance:
Classes can inherit attributes from other classes.
Inheritance permits better structuring of the software
and helps reduce the amount of code, as common
sections of code can be reused.
Polymorphism:
Objects of different types can share a common
function interface, enabling a developer to use the
various objects without needing to know their type.
The use of polymorphism produces software that is
more general-purpose, more flexible and more
reusable.
C++ supports the creation of class libraries. Class
libraries are reusable software building blocks.
C++ avoids runtime errors by strict type checking. This
greatly improves the stability of the programs.

Program description

The C/C++ development system comprises the C/C++
compiler and the Common Runtime Environment
CRTE.
The C/C++ compiler supports the language set of the
ANSI/ISO C++ Draft 1996 as defined in the "Working
Paper for Draft Proposed International Standard for
Information Systems Programming Language C++,
Doc.No.: X3J16/96-0219R1 or ISO WG21/N1037 dated
2.12.1996".
This includes templates, exception handling,
new-style casts, namespaces, and run-time type
information (RTTI).
The C language set as defined by Kernighan & Ritchie
and C ANSI/ISO incl. Amendment 1 is also supported.
Code is generated directly as machine code for
business servers with /390 instruction architecture.
The generated /390 format guarantees object
compatibility for the execution of BS2000 customer
applications even in the event of future changes in
architecture.
CRTE includes language-specific and
language-neutral libraries, e.g., for program linking,
mathematics, standardized event and error handling,
as well as for storage and I/O management.
The header files for the C and C++ library functions
are also included in CRTE. Some CRTE libraries are
shareable and can be preloaded as a subsystem.

With CRTE the standard C++ library conforming to the ANSI C++ Draft and the Tools.h++ © Rogue Wave library are also shipped.

The standard C++ library includes a string class, container classes, iterators, generic algorithms, numeric classes, and operations, as well as input/output classes.

The Tools.h++ © library contains general-purpose "Foundation Classes". These include string classes with pattern matching mechanisms, classes for handling date and time, virtual streams, container classes and internationalization classes.

The following functions can be used in BS2000 versions in which a POSIX subsystem is available:

- Input/output of POSIX files during compilation
- Use of POSIX library functions conforming to XPG4
- Control of the C/C++ compiler via the POSIX shell

CRTE is required as the runtime environment for the C/C++ compiler and programs generated with it. CRTE is the common runtime environment for C/C++, COBOL85 and COBOL2000 programs.

Technical Details

Requirements	
Technical Requirements Hardware	BS2000 Business Server
Technical Requirements Software	BS2000 OSD/BC V11.0, OSD/XC V11.0 CRTE V11.0 or higher SDF V4.1 or higher BINDER V2.3 or higher BUILDER V1.0 or higher LLMAM V3.4 or higher PLAM ab V3.1 or higher **Optional software:** EDT V16.6 or higher AID for symbolic debugging POSIX-BC for the C/C++ compiler under POSIX DAB to speed up load times
User Requirements	Knowledge of C/C++ and BS2000

Installation	
Operating Mode	Batch and interactive dialog
Implementation Language	C/C++, SPL4 and Assembler
User Interface	Commands in English Messages in English or German
Installation	Please refer to the relevant release notices.

Documentation and Training	
Documentation	**Documentation in English and German:** C/C++ Compiler User Guide POSIX Commands of the C/C++ Compiler User Guide CRTE User Guide AID Debugger for C/C++ User Guide BS2000 C Libraries Reference Manual BS2000 C++ Libraries Reference Manual POSIX C Libraries Reference Manual **Documentation in English only:** Standard C++ Library User Guide and Reference Tools.h++ © User Guide Tools.h++ © Class Reference Tools.h++ Copyright © Rogue Wave Software, Inc. These manuals are available on the manual server.
Training	See course offer (German only)

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