

Supported Languages

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For all software listed below, the versions listed are the only versions supported. This means that versions not mentioned are not supported.

This section gives you the list of programming languages and the versions of these languages that can be analyzed by CAST Analyzers. This list includes SQL languages which can be analyzed on participating database servers.

Please also consult [Third-party Software Required by CAST Analyzers](#).

SAP Abap

Language Version	SAP versions
Abap 4	ABAP/4 and ABAP Object are used with following SAP systems:
Abap Objects	<ul style="list-style-type: none"> • SAP 4.x • ECC5 • ECC6



Please see [SAP Extractors and SAP versions](#) (part of the [CAST SAP Extractor Admin Guide](#)) for a table listing which version of the CAST SAP Extractor needs to be used with the various SAP versions.

VB .Net

Visual Studio Version	.NET Framework Version	Comments
.NET 2002 .NET 2003	.NET Framework 1.0 .NET Framework 1.1	<p>All application types are supported except:</p> <ul style="list-style-type: none"> - Crystal Reports Applications <p>Known limitations:</p> <ul style="list-style-type: none"> - Win32 function calls are not displayed. - Reflection is not managed <p>Note that when working with .NET Framework 1.1, the .NET Framework 1.1 SP1 must be installed.</p>
.NET 2005 with no SP .NET 2005 with SP1 .NET 2008	.NET Framework 2.0	<p>All default application types are supported except:</p> <ul style="list-style-type: none"> - Crystal Reports Applications (in application group "Windows") - Office applications - Smart Device applications - Starter Kit applications - Database applications - Test applications - Workflow applications <p>Imported application types are not supported.</p> <p>Known limitations:</p> <ul style="list-style-type: none"> - Win32 function calls are not displayed. - Reflection is not managed. - Compact framework - VB.Net XML documentation

.NET 2008	.NET Framework 3.0 .NET Framework 3.5	Same support as for .NET 2005 with no SP. In addition: - Limited support of new syntaxes (no support of extension methods) - Limited support of WCF/WPF - Limited support of LINQ - Limited support of AJAX - No support of Silverlight
VB.NET 2010	.NET Framework 4.0	Same support as for .NET 2008. In addition : - Limited support of new syntaxes - Limited support of new types of web controls - Limited support of new types of projects - No support of Silverlight



- Only applications written in **VB.NET** and **C#** are supported (other .NET languages, like J#, are not supported).
- Code must be compiled in debug mode prior to packaging with the CAST Delivery Manager Tool.
- Please see the CAST Management Studio help page "Handling ASP.NET applications" for more information about ASP.NET support.

C#

Visual Studio Version	.NET Framework Version	Comments
.NET 2003	.NET Framework 1.1	Visual C# Projects: Windows Application, Class Library, Windows Control Library, ASP.NET Web Application, ASP.NET Web Service, Web Control Library, Console Application, Windows Service Known limitations: • Win32 function calls are not displayed. • Reflection is not managed. Note that when working with .NET Framework 1.1 , the .NET Framework 1.1 SP1 must be installed.
.NET 2005 with no SP .NET 2005 with SP1 .NET 2008	.NET Framework 2.0	- Visual C#/Web: ASP.NET WebApplication, ASP.NET WebSite, and ASP.NET WebService are supported. - Visual C#/Windows: Windows Application, Class Library, Windows Control Library, Web Control Library, Console Application, Windows Service are supported Known limitations: • Win32 function calls are not displayed. • Reflection is not managed. • Compact framework
.NET 2008	.NET Framework 3.0 .NET Framework 3.5	- Visual C#/Web: ASP.NET WebApplication, ASP.NET WebSite, ASP.NET WebService, ASP.NET server controls are supported. - Visual C#/Windows: Windows Forms Application, Console Application, Windows Service, Windows Forms Control Library are supported. Same limitations as for .Net 2005. In addition: • Limited support of new syntaxes (no support of extension methods, partial methods, anonymous functions, Event Add On and Event Remove On) • Limited support of WCF • Limited support of WPF • Limited support of LINQ • Limited support of AJAX • No support of Silverlight
.NET 2010	.NET Framework 4.0	No support for Silverlight projects: The Silverlight assemblies will be resolved as .NET framework assemblies when possible (mscorlib, System ..etc..), when not possible, i.e. Silverlight specific assemblies, they will appear as missing in the wizard page. Limited support for Dynamic Types (calls involving Dynamic types are not resolved). A message will be displayed in the log file during the analysis: <i>"A method call involving a dynamic object (e.g. dynamic.method() or method(dynamic)) has been detected. This call will not be resolved."</i> When analyzing C#, covariance and contra-variance during implicit conversions are not supported – resolution errors will be displayed in the log file.



- Only applications written in C# are supported.
- Code does not require pre-compilation.
- Please see the CAST Management Studio help page "Handling ASP.NET applications" for more information about ASP.NET support.
- The CAST Microsoft .NET Analyzer (new) does not analyze projects whenever the targeted framework is missing and not installed on the analysis machine. In this case, the analyzer generates the following warning :

The project (or website) '%PROJECT_PATH%' has been identified as targeting the Microsoft .NET framework version %PROJECT_FRAMEWORK_VER% but that version of the framework is not installed. In order to run the analysis, you will need to install that .NET framework version.

Whenever several projects are analyzed together, the projects with missing frameworks are skipped and those with frameworks are analyzed.

C/C++

Language/Version	Comments
C (C99 normalization)	<p>Project discoverers for the CAST Delivery Manager Tool are available for:</p> <ul style="list-style-type: none"> • Visual C++ 2003 • Visual C++ 2005 • Visual C++ 2008 • Visual C++ 2010 • Visual C++ 2012 <p>No project discoverers (for the CAST Delivery Manager Tool) are available for other supported C versions (i.e. Visual C++ 6 and non-Microsoft versions) as such, Analysis Units must be defined manually.</p> <ul style="list-style-type: none"> • Oracle Pro*C and IBM DB2 SQC extensions (EXEC SQL commands embedded in C code) are supported.
C++ (2003 normalization and 2011 normalization (partially))	<p>Project discoverers for the CAST Delivery Manager Tool are available for:</p> <ul style="list-style-type: none"> • Visual C++ 2003 • Visual C++ 2005 • Visual C++ 2008 • Visual C++ 2010 • Visual C++ 2012 <p>No project discoverers (for the CAST Delivery Manager Tool) are available for other supported C++ versions (i.e. Visual C++ 6 and non-Microsoft versions) as such, Analysis Units must be defined manually.</p> <p>C++ 11 normalization is partially supported. Support currently includes:</p> <ul style="list-style-type: none"> • Lambda expressions • "auto" and "decltype" keywords • Trailing return types for functions (auto foo (int x, int y) -> returnType;) • "override" and "final" keywords • Scoped enums • RValue Reference • Other miscellaneous features (nullptr, static_assert, noexcept, ...) <p>Oracle Pro*C++ and IBM DB2 SQC++ extensions (EXEC SQL commands embedded in C++ code) are supported.</p>



Note that:

- **Objective-C** is not standard C/C++ and as such is not supported.

Mainframe

Language Version	Comments

Cobol ANSI 85 JCL z/OS IMS/DB CICS	<p>The Mainframe Analyzer is based on the Cobol 85 standard but it does not take into account all specific Cobol extensions to this standard.</p> <p>Supported Cobol Extensions</p> <ul style="list-style-type: none"> • Terminal Format • Pointer Variables declaration • Level-78 variables (Micro Focus) • Command mode EXEC CICS • Command mode EXEC SQL • Command mode EXEC DLI <p>Copybook pre-processing</p> <p>In addition to the standard COPY directive, the following specific directives are supported:</p> <ul style="list-style-type: none"> • Panvalet (++)INCLUDE) • Librarian (-INC) • OpenVMS (<copyDir>:<copyName>) <p>Replacement rules used in COPY REPLACING directives are</p> <ol style="list-style-type: none"> 1) Replacements can be applied to words or parts of word. 2) Patterns used to replace parts of words must be delimited by the following characters: :, (,), \ or " 3) Patterns that are not delimited by the above characters are considered as being used to replace entire words. 4) LEADING and TRAILING clauses mean that the replacement will be applied on parts of words and as such, patterns must respect the rule 2 (first character and last character will be removed from the pattern). <p>IMS</p> <p>The Mainframe Analyzer takes into account IMS/DB only (DBD, PSB, CBLTDLI calls and EXEC DLI macros). IMS/DC is not taken into account.</p> <p>DBMS</p> <p>Non-relational mainframe DBMS other than IMS/DB are not supported (ex: DATACOM, IDMS, IDS2, DMS2, ADABAS...). DB2 and Oracle (ProCobol) are supported.</p>
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IBM SQL-PSM

SQL-PSM for z/OS and OS/390

Language Version	Comments
SQL-PSM DB2/390 (Mainframe) V6	
SQL-PSM Universal Database for z/OS and OS/390 (Mainframe) V7	
SQL-PSM Universal Database for z/OS (Mainframe) V8	
SQL-PSM Universal Database for z/OS (Mainframe) V9	XQuery and XPath are not taken into account.
SQL-PSM Universal Database for z/OS (Mainframe) V10	XQuery and XPath are not taken into account.



- For **DB2 z/OS**, a specific extractor is delivered by CAST. It extracts information from the DB2 system catalog into flat files. These files must then be transferred onto a Windows workstation for packaging via the CAST Delivery Tool Manager.
- For **DB2 OS/390**, the database must be replicated on a DB2 UDB (Unix, Linux, Windows) server for analysis.
- Stored procedures, functions and triggers are taken into account but their content is not analyzed. Only schemas, tables, views and types are saved with their links.

SQL-PSM DB2 Universal Database (for Unix, Linux, Windows)

Language Version	Comments
SQL-PSM Universal Database V7.1 (fixpack 3) & V7.2	
SQL-PSM Universal Database V8.2	
SQL-PSM Universal Database V9.1.x	XQuery and XPath are not taken into account.
SQL-PSM Universal Database V9.5	XQuery and XPath are not taken into account.
SQL-PSM Universal Database V9.7	XQuery and XPath are not taken into account.
SQL-PSM Universal Database V10.1	XQuery and XPath are not taken into account.



The DB2 Reference Guide in the CAST Management Studio help contains information about supported syntax for SQL-PSM Universal Database V9.5 and V9.7.

Oracle PL/SQL

Language Version	Comments
Oracle 8i (8.1.6.x, 8.1.7.x)	
Oracle 9i R1 (9.0.1.1.x)	
Oracle 9i R2 (9.2.0.1.x)	
Oracle 10g R1 (10.1.0.x) with x 2	
Oracle 10g R2 (10.2.0.x) with x 2	
Oracle 11g R1 (11.1.0.6 - 11.1.0.7)	<p>The following syntax introduced in Oracle 11g R1 is supported (other new syntax is not supported):</p> <ul style="list-style-type: none"> • New datatypes: <ul style="list-style-type: none"> • BINARY_DOUBLE • BINARY_FLOAT • BINARY XML • SIMPLE_INTEGER • PL/SQL CONTINUE statement • Compound trigger type • REGEXP Built-ins <ul style="list-style-type: none"> • REGEXP_LIKE • REGEXP_REPLACE • REGEXP_SUBSTR • REGEXP_INSTR • REGEXP_COUNT • NON ANSI JOIN relations between tables



Note that the OPEN FOR statement for CURSORS (available since version 10G) is not supported.

J2EE Languages and Technologies

Language Version	Comments
Java JDK 1.1 - 1.6	Limitations for versions 1.5 and 1.6 are listed in Analysis Limitations
JSP 1.1	JSPX documents (JSP in XML format) are not supported
JSP 1.2	JSPX documents (JSP in XML format) are not supported
JSP 2.0	JSPX documents (JSP in XML format) are not supported
STRUTS Framework	<ul style="list-style-type: none"> • Struts 1.0, 1.1 (including Tiles 1.0 and STXX 1.0 - 1.2) • Struts 2.0 - 2.1 (from v 7.0.5 only)
EJB 2.0	
EJB 2.1	
EJB 3.0	Only @Stateless, @Stateful, @Local and @Remote annotations are supported
JPA 1.0 (part of EJB 3.0)	
WSDL 1.1	
Spring IoC 1.2.x, 2.x	
Hibernate 2.x, 3.2	
Struts Validator 1.2, 1.3	

Java Server Faces 1.2	
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Web Languages

Language Version	Comments
JavaScript 1.2	
JavaScript 1.5	
JScript 1.0 & 2.0	
JScript 3.0 to 5.6	
Up to VBScript 5.5	VBScript 5.5 support means complete support up to IIS 5 and IE 5.5
HTML 2.0 to 4.01	
XHTML 1.x	Unattended syntax error: unescaped script content
ASP	

Sybase T-SQL

Language Version	Comments
Sybase T-SQL 11.9.2	
Sybase T-SQL 12.0	
Sybase T-SQL 12.5.x with x <= 3	
Sybase T-SQL 12.5.4	Supported with limitations: Sybase 12.5.4 database should be at syntax level 12.5.3 or lower. New syntaxes introduced in 12.5.4 are not supported
Sybase T-SQL 15.0 +ESD#2 Sybase T-SQL 15.0.2	Supported with limitations: Sybase 15.0.x database should be at syntax level 12.5.3 or lower. New syntaxes introduced in 12.5.4 and 15.0.x are not supported
Sybase T-SQL 15.5	Supported with limitations: Sybase 15.5 database should be at syntax level 12.5.3 or lower. New syntaxes introduced in 12.5.4, 15.0.x and 15.5 are not supported



Please also see **Common limitations for Microsoft T-SQL and Sybase T-SQL** in the **Microsoft T-SQL** section below.

Microsoft T-SQL

Language Version	Comments
Microsoft T-SQL 7	
Microsoft T-SQL 2000	
Microsoft T-SQL 2005	
Microsoft T-SQL 2008	The MS SQL Server / Sybase Reference Guide in the CAST Management Studio help contains information about supported syntax for Microsoft T-SQL 2008

i Common limitations for Microsoft T-SQL and Sybase T-SQL

- For duplicated objects (objects with the same name belonging to the same database but with different users), only one of the objects is managed.
- Some limitations on bracketed and quoted object names (for example no support of object names containing a carriage return, but most of the identifiers are supported).
- Most of the syntaxes related to administration commands (e.g. create database, create user, dbcc etc) are not supported.
- Grouped Stored Procedures are partially supported (only the first procedure of the group is taken into account).
- Cross server links are not created.

Microsoft Visual Basic

Language Version
VB 4 32 bits
VB 5
VB 6

i Only Microsoft Visual Basic is supported.