Quickly build, test and deploy high-performance Web services, portal and J2EE applications to support e-business on demand

WebSphere software

IBM WebSphere Studio Application Developer Version 5.1.2

Highlights

- ***Accelerate the development of Web services, portal and J2EE applications with visual tools, templates and wizards***
- ***Leverage existing skills and shorten the learning curve for Web development with drag-and-drop, reusable components and point-and-click database connectivity***
- ***Streamline application testing with integrated unit test environment and visual debugger and detect performance issues early with graphical performance profiling and trace tools***
- ***Integrate your business applications with interoperable Web services***
- ***Collaborate and share assets across the team using the included Rational ClearCase LT version control***
- ***Visualize and graphically edit code through the UML Visual Editor for Java and EJB***
- ***Adapt and extend the development environment with a wide range of IBM, IBM Business Partner and Eclipse-based plug-ins***

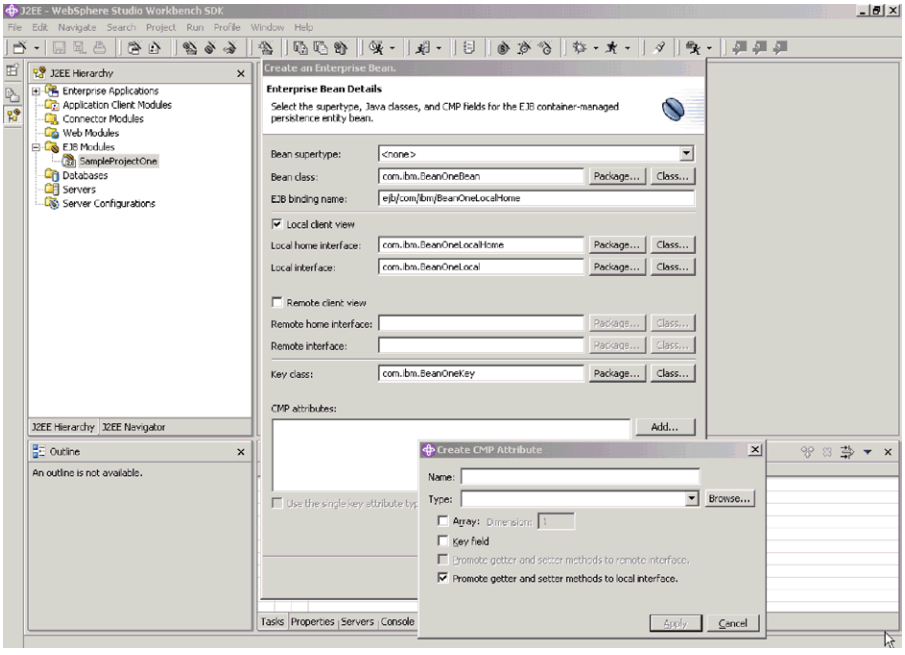

Figure 1. IBM WebSphere Studio Application Developer includes J2EE tools to help create and customize session and entity EJB components.

Deliver high-quality applications quickly

Today's business environment demands speed and flexibility to respond to rapidly changing requirements. To meet these demands, you need a development environment that increases productivity, minimizes your learning curve and shortens the development and test cycle so you can deliver high-quality applications quickly. Award-winning IBM WebSphere® Studio Application Developer is an open, comprehensive development environment that provides a flexible, portal-like integration of application development tools for visually constructing, coding, testing and deploying Web services, portal and Java™ 2 Enterprise Edition (J2EE™) applications. WebSphere Studio Application Developer speeds application development with best practices, visual tools, templates, code generation, and one of the most comprehensive development environments in its class.

Built on Eclipse, an open, industry-supported platform for development tools, WebSphere Studio Application Developer enables you to adapt and extend your development environment with best-of-breed plug-in tools from IBM, IBM Business Partners and the Eclipse community to match your needs and to maximize developer productivity. As a result, you work within a common, unified user interface that can help increase productivity and reduce the time needed to learn new functions and practices. In addition, WebSphere Studio Application Developer provides development teams with a common view across projects and enables them to share resources stored in a common repository.

To help build dynamic e-business applications, WebSphere Studio Application Developer software offers an integrated development environment (IDE) with advanced tools and features, including:

J2EE support

Provides concurrent support for J2EE, Version 1.2 and Version 1.3 projects; features full Enterprise JavaBeans™ (EJB™, Version 2.0 support, including message-driven beans, EJB Query Language (EJB QL), Container-Managed Persistence (CMP) Version 2.0, Web archive (WAR) and enterprise archive (EAR) deployment support, simplified J2EE project structure; includes unit test environment for multiple configurations of IBM WebSphere Application Server to support projects with different unit test environments.

Extend Java technology-based programming capabilities

WebSphere Studio Application Developer gives developers robust Java technology application development tools with Java Development Kit Version 1.4 support.

With the Visual Editor for Java, you can create GUIs with drag and drop ease using either AbstractWindow Toolkit (AWT) or by using Swing components. The Visual Editor for Java also allows you to see GUI design changes immediately with dynamic updates between source code and visual design.

The Unified Modeling Language (UML) Visual Editor for Java and EJB provides graphical editors as an alternative way to visualize and edit Java code using standard UML diagrams, and helps you better understand and manage complex code.

Extend applications with Web services support

WebSphere Studio Application Developer provides the tools you need to discover, create, build, test, deploy and publish Web services. WebSphere Studio Application Developer includes support for Universal Description, Discovery and Integration (UDDI), Version 2; Simple Object Access Protocol (SOAP); Web Services Description Language (WSDL); and support for Web Services Inspection Language (WSIL). Support for Web Services Interoperability (WS-I) Basic Profile, Version 1.0 helps ensure interoperability between Web services and reduces the time required to create, validate and detect Web services.

- *Easily create, validate and detect interoperable Web services that are industry compliant and compatible with your partners using WS-I Basic Profile, Version 1.0 and the WSDL editor and enhanced Web services explorer*
- *Quickly generate WSDL and WSIL files to describe your Web services and prepare them for inspection*
- *Encode input and output messages with SOAP*
- *Create a Java proxy to interface with client applications*
- *Generate Web services test clients without coding*
- *Deploy to the UDDI, Version 2 registry*

Simplify XML development

The comprehensive XML functions within WebSphere Studio Application Developer help developers create, edit and transform XML documents.

- *Create, view and validate document type definition (DTD) and XML schemas and create XML documents from DTDs.*
- *Generate a document access definition (DAD) script—used by IBM DB2® XML Extender—to either compose XML documents from existing DB2 data or deconstruct XML documents into DB2 data.*
- *Create and map XML files and define mappings between relational database (RDB) tables and DTD files.*
- *Interpret Extensible Stylesheet Language (XSL) transformation script step by step using the Xalan processor, or create an HTML or XML document by applying an XSL stylesheet to an XML document.*

Build database-driven applications

WebSphere Studio Application Developer provides integrated tools to create database-driven applications from queries, beans and EJBs. The database connection wizard makes it easy to establish a Java Database Connectivity (JDBC™) connection to a database—like IBM DB2 Universal Database™, IBM Informix®, Oracle, Microsoft® SQL Server® or MySQL.

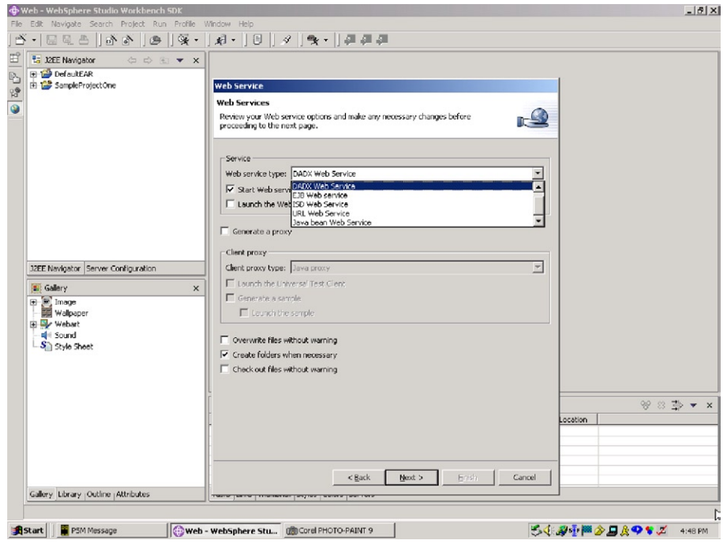

Figure 2. The Web services creation wizard makes it easy to generate new Web services from existing assets, such as JavaBeans and EJB components. WebSphere Studio automatically generates the WSDL files describing the Web service, a SOAP deployment descriptor and a test client that can be used to test the Web service.

The SQL query wizard and SQL query builder provide a visual interface for creating and executing SQL statements. You can create a simple query using the SQL query wizard, or you can use the SQL query builder that supports a wider range of statements. A built-in SQL-to-XML wizard helps you create XML and XSL documents, DTD specifications, Extensible Stylesheet Definition (XSD) schemas, HTML files, and related artifacts. SQL for Java (SQLJ) support enables you to rapidly create and debug applications using SQLJ and DB2 SQLJ stored procedures and improves data access performance for static SQL connections.

Simplify object-to-relational mapping

Object-to-relational mapping is easy with top-down, meet-in-the-middle and bottom-up support. You can create and test EJB components simply with wizards. You can build applications that target, extract and display the data you want to present, formatted to your customized design. WebSphere Studio Application Developer supports many-to-many mappings to help you generate multiple persistence implementations.

Simplify Web development and Web site management

Easy-to-use wizards and tools bring virtually all aspects of Web development (HTML, JSP and servlets) into a common interface and enable developers with diverse technical backgrounds, and even those unfamiliar with Java, to build rich, data-driven applications.

- *Simplify application development with Struts tools to visually map and construct Web applications using Model-View-Controller design and the Struts 1.1 framework*
- *Quickly build rich Web user interfaces and Web forms with reusable, drag-and-drop JavaServer Faces components. JSF eliminates much of the routine hand-coding required for event handling, user input validation and data binding for Web applications*
- *Connect your Web applications to relational databases and Web services using simple point-and-click tools that support Service Data Objects, an emerging industry standard for accessing heterogeneous data*
- *Use 4GL skills to build and debug business logic and data-driven Web applications in Enterprise Generation Language (EGL), a high-level procedural language that generates to Java*

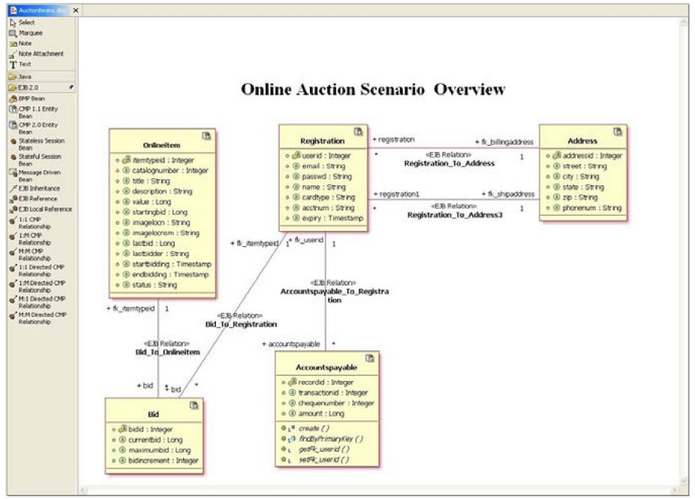

Figure 3. The UML Visual Editor for Java and EJB provides graphical editors as an alternative way to visualize and modify existing code and to better understand and manage complex code using standard UML diagrams.

- *Build interactive Web user interfaces with the performance and maintenance characteristics of thin clients using Faces client components that extend the JSF specification*
- *Easily build rich-function Web pages in a visual or source editing mode using the advanced-function HTML and JSP editor*
- *Rapidly import an entire Web site, change styles and apply them globally, and visually add or delete pages from a tree-structure view using the Web Site Designer*
- *Create and animate original art with drag-and-drop ease using WebArt Designer and Animated GIF Designer components.*[1]

Generate J2EE applications with EGL

EGL is a "fourth generation language" (4GL) environment that enables procedural developers to rapidly develop and debug data-driven Web applications and business logic using familiar programming constructs and without coding in Java. EGL incorporates constructs and functionality from Informix 4GL to make WebSphere Studio a perfect development environment for Informix developers. EGL is tightly integrated with WebSphere Studio saving procedural developers significant time. For example, EGL is integrated with Java Server Faces (JSF) allowing for rapid development of JSP-based applications with all of the page logic written in EGL rather than in Java. You can "drag and drop" records and data items defined in EGL onto a JSP automatically establishing the linkage between the JSP and the EGL data item.

Rapidly develop portlets

WebSphere Studio includes a set of visual portlet development tools and a WebSphere Portal unit test environment so you can build and test portlets.
New portlets are created using wizards which generate a portlet project structure that conforms to J2EE, and also creates a complete portlet for you. The wizards can create portlets that comply with the IBM Portlet API, and those that comply with JSR 168, the industry standard specification for portlet aggregation, personalization, presentation, and security. You can layout the interface for portlets using Page Designer, and create portlets using the Struts framework and the Web Diagram Editor to visualize the structure and event flows, and to make applications easier to maintain. In addition, you can combine portlets with Java Server Faces to develop your portlets visually, using the Faces components.

Automate application assembly

With earlier generations of tools, developers had to manually assemble Java archive (JAR) and WAR files into an EAR file for deployment. WebSphere Studio Application Developer auto-mates EAR assembly and generates deployment descriptors for new applications to save you time.

Streamline application testing

Quick-loading unit test environments and a visual debugger provide an environment for rapidly testing and debugging local and server-side code on WebSphere Application Server, IBM WebSphere Application Server - Express and Apache Tomcat.

- *Create and configure server instances using the built-in wizards or WebSphere Studio can create them automatically*
- *Step through applications and set breakpoints*
- *Modify code while debugging without restarting the unit test server using Hot Method Replace*
- *Test client-side JavaScript and Active Script using Active Script Debugger*
- *Create, test and deploy J2EE applications to BEA WebLogic Server, Version 6.1, 7.0 and 8.1 using the Deployment Toolkit for WebSphere Studio, WebLogic Edition*

Find application performance problems early in the development cycle

The graphical performance profiling and tracing tools in WebSphere Studio Application Developer allow you to detect application performance issues early in the development cycle. You can view object creation, execution sequences, thread interaction and object references to gain a better understanding of applications. The performance analyzer displays which operations take the most time, helping you improve runtime memory use. You can easily isolate repetitive execution behavior to eliminate redundancy, identify and extract patterns, trace errors and use color-coding to mark classes.

Performance analysis and tracing

Debug and resolve problems within multi-tier systems through the Log and Trace Analyzer, which provides a consolidated view of logs and traces produced by various components of a deployed system. Help capture and correlate events from end-to-end execution in the distributed stack for a more structured analysis of distributed applications.

Improve team productivity with effective change management

To create engaging Web applications quickly and cost-effectively, you depend on the diverse, collaborative input of your entire development team—including graphic designers, developers and business analysts. WebSphere Studio Application Developer is tightly integrated with IBM Rational® ClearCase® and IBM Rational ClearQuest® software configuration management solutions. This deep integration enables a wide range of change management operations to be performed directly from within WebSphere Studio Application Developer, and allows an integrated view of projects that helps to increase both collaboration and team productivity. WebSphere Studio Application Developer includes IBM Rational ClearCase LT for reliable, entry-level version control and out-of-the-box team support. WebSphere Studio Application Developer also provides support for Concurrent Versions System and third-party software configuration management systems through vendor plug-ins.

Visualize and graphically edit code

The Unified Modeling Language (UML) Visual Editor for Java and EJB enables you to graphically visualize and edit J2EE code using standard UML diagrams and helps you better understand and manage complex code. The UML Visual Editor also provides graphical editors as an alternative way to modify existing code—something that is particularly useful for re-factoring class hierarchies.

For creating new code, WebSphere Studio Application Developer enables you to add UML class diagrams directly into a Java or EJB project, automatically generate corresponding code and edit that code either directly from UML class diagrams or from the Java or EJB project.

The class diagram editor can be used to create new beans, create and edit relationships between beans or explore and discover existing relationships involving beans, classes and interfaces. The diagrams can help you identify and highlight relationships within the code that are not easily gleaned using the other editors and help you communicate with software architects and other members of the overall development project.

Concurrent support for J2EE technology, Version 1.2 and Version 1.3

Concurrent support for J2EE technology, Version 1.2 and Version 1.3 means you can access new tools features and the latest innovations from open-source technologies. You can also take advantage of J2EE technology, Version 1.3 improvements—and migrate to WebSphere Application Server, Version 5 at your own pace.

With WebSphere Studio Application Developer, your new applications are optimized for one of the top-selling J2EE technology application servers on the market.

Build on a solid foundation

WebSphere software platform for e-business from IBM delivers the reliability, flexibility and high performance of WebSphere Application Server with leading-edge, open standards. IBM WebSphere Studio Application Developer leverages the WebSphere platform with integrated tools that create a rich development and deployment environment to meet your changing e-business needs.

For more information

To learn more about IBM WebSphere Studio Application Developer, or to download a trial version, visit: **ibm.com**/software/awdtools/studioappdev

IBM WebSphere Studio Application Developer, Version 5.1.2 at a glance

Tools Integration

- Based on the Eclipse platform to provide seamless integration among WebSphere Studio configurations and third-party plug-ins
- Single development environment for Java and J2EE technologies, XML, Web, JSP, Web services

Java

- Java Development Kit (JDK™), Version 1.4.1
- Red Hat Linux Version 7.2 or Version 8.0 or SuSe Linux, Version 7.2 or Version 8.1
- Configurable Java Runtime Environment (JRE)
- Local and remote debugging
- Refactoring
- Scrapbook for testing code snippets
- Visual Editor for Java with event handling to build Java technology application GUIs with AWT and Swing components; includes Javadoc generation and template support

J2EE, Version 1.2 and Version 1.3 support

- Support for EJB, Version 1.1 and Version 2.0; Servlet, Version 2.2 and Version 2.3; JSP, Version 1.1 and Version 1.2
- Support for JAR, EAR, WAR packaging
- Support for bean-managed persistence (BMP) and container-managed persistence (CMP)
- Support for Java Message Service (JMS) and EJB QL
- Object-to-relational mapping (top-down, meet-in-the-middle and bottom-up)
- Many-to-many mapping wizard
- Generated EJB test client
- Support for building J2EE applications with JDK 1.4.1, targeting WebSphere Application Server 5.1
- EJB client JAR support to automate the creation of EJB clients
- EJB snippet support to simplify generation of EJB client access code
- UML Visual Editor for Java and EJB to visualize and edit Java and J2EE components

XML

- XML authoring tools: XML editor, DTD editor, XML schema editor
- XML transformation tools: XML-to-XML mapping editor, XSLT generator, XSL trace editor
- Database-to-XML mapping tools: visual document access definition (DAD) builder for RDB-to-XML mapping, DAD script
- XPath wizard, XSL editor
- XML schema wizard to create XML schema definitions used in service definitions and modeling business data

IBM WebSphere Studio Application Developer, Version 5.1.2 at a glance (continued)

Web

- Support for HTML, XHTML, CHTML, WML, Struts and visual custom tags
- Web diagram editor to visually map and construct Web applications with Model-View-Controller design and Struts 1.1 framework
- Visually manage entire Web site using Web Site Designer
- Quickly build rich, data-driven Web applications using Page Designer with round-trip raw edit capability and drag-and-drop support for JSF components[1]
- Free layout support for page design
- Wizards for Java servlet and JSP editor
- Templates and samples for creating rich-media images
- Web site management and analysis tools
- Active script debugging for JavaScript and Visual Basic Script

Portal

- Support for IBM Portlet API and the JSR 168 standard portlet API
- Visual portlet development and WebSphere Portal unit test environment
- Integration with JavaServer Faces for rich UI and forms capabilities and the Struts framework and the Web diagram editor for visualizing application structure and flows
- Integrated WebSphere Portal test environment for unit testing portal applications
- Portlet templates enable developers to quickly customize their own portlets
- Remote Server Attach supports the debugging of portlets running on a remote machine

Enterprise Generation Language

- Code in EGL and generate to Java
- Debug entire application including EGL, JSP and Java code within one environment
- Map traditional text-based applications to GUI-driven designs using server-side onPageLoad event that lets you retrieve data and manipulate the UI component tree after it is created, but before it is displayed for more intuitive controller logic.

IBM WebSphere Studio Application Developer, Version 5.1.2 at a glance (continued)

Web Services

- Support for UDDI, Version 2.0; SOAP, Version 1.1; WSDL, Version 1.1; WSIL
- Create, validate and detect WS-I compliant Web services
- Ability to discover and publish services to the UDDI business registry
- Ability to create or transform Web services from existing artifacts, such as JavaBeans, EJBs, SQL query
- Ability to build Web services by wrapping artifacts as SOAP and describing them in WSDL
- Ability to develop Web services client application from samples
- Ability to deploy and test Web services into WebSphere Application Server or Tomcat test environments
- WSDL editor
- Web services client wizards to facilitate all steps in Web services development

Database

- Support for IBM Cloudscape™, DB2, Informix, Microsoft SQL Server, MySQL, Oracle9i and Sybase
- Database explorer to browse or import database schemas
- Database view to create and work with database schemas
- SQL query builder and wizard to visually create and execute SQL statements
- Relational schema center to map relational database tables to XML
- Object-to-relational mapping
- Ability to generate and test DAD file
- SQLJ support
- Database view for viewing query result and Stored Procedure Builder

Team development

- File-based pluggable repositories for more flexibility in SCM and team development
- Tight integration with Rational ClearCase and Rational ClearQuest
- Includes IBM Rational ClearCase LT
- Built-in support for CVS
- Catch up/release mode to synchronize code
- Support for namespace versioning integration with Rational ClearCase LT

IBM WebSphere Studio Application Developer, Version 5.1.2 at a glance (continued)

Testing and deployment

- Test environment for JSP files, servlets, HTML files and EJB
- EJB test client
- Monitor requests and responses between browser and application servers using TCP/IP monitor
- Ability to manage server instances and server configurations
- Ability to test different run-time environments locally or remotely
- Performance profiling and tracing
- Testing and publishing tools for Web and EJB projects
- Support for Ant scripting and JUnit testing framework
- Log analyzer for WebSphere Application Server software activities, and object-level profiling

Server support

- Tomcat 3.2.1 and 4.0 (Web projects only)
- Unit test environment and support for WebSphere Application Server Advanced Edition, Version 4
- Unit test environment and support for services offered by WebSphere Application Server, Version 5 and 5.1
- Unit test environment and support for services offered by WebSphere Application Server-Express, Version 5 and 5.1 (Web projects only)
- Deployment support for BEA WebLogic Server, Version 6.1, 7.0 and 8.1 through toolkit

Development operating-system support

- Microsoft Windows NT® and Windows® 2000
- Microsoft Windows XP
- Linux

IBM WebSphere Studio Application Developer, Version 5.1.2 at a glance

Hardware requirements

- Intel® Pentium® II minimum; Pentium III 500MHz or later recommended
- Display, minimum requirements:
  – For Microsoft Windows® 2000, and Windows XP: SVGA (800 x 600) display minimum; 1024 x 768 recommended
  – For Linux: XVGA (1024 x 768) display minimum
- 512MB RAM minimum; 768MB RAM recommended
- Disk space requirements: 1.3GB minimum for installing WebSphere Studio Application Developer and additional disk space for development resources (minimum disk space can be reduced if optional features and run times are not installed).
- A mouse or alternative pointing device

Software requirements

- Windows 2000 Professional SP 2 or later, or Windows XP Professional SP 1 or later
- Red Hat Linux Version 7.2 or Version 8.0 or SuSe Linux, Version 7.2 or Version 8.1
- Browsers:
  – For Windows: Microsoft Internet Explorer, Version 5.5 SP1 or later, or Netscape Navigator Version 4.76 or later. (The Universal Test Client and Web Services Explorer require the use of Netscape Navigator, Version 6.0 or later or Microsoft Internet Explorer, Version 5.0 or later.)
  – For Linux: Netscape Navigator, Version 4.6 or Version 6.0 or Mozilla, Version 7.0 or later.
  (The Universal Test Client and Web Services Explorer require the use of Netscape Navigator Version 4.6, or Mozilla Version 7.0 or later.)
- TCP/IP installed and configured

Note: Java Runtime Environment (JRE) Version 1.3 must be installed to profile your applications.

Run-time environment support

- WebSphere Application Server - Express (Version 5.0 or 5.1) installed locally or remotely
- WebSphere Application Server (Version 4.0, 5.0 or 5.1) installed locally or remotely
- Apache Tomcat (Web application support only)

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1 WebArt Designer and AnimatedGIF Designer are not supported by Linux.

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