

API Live Creator

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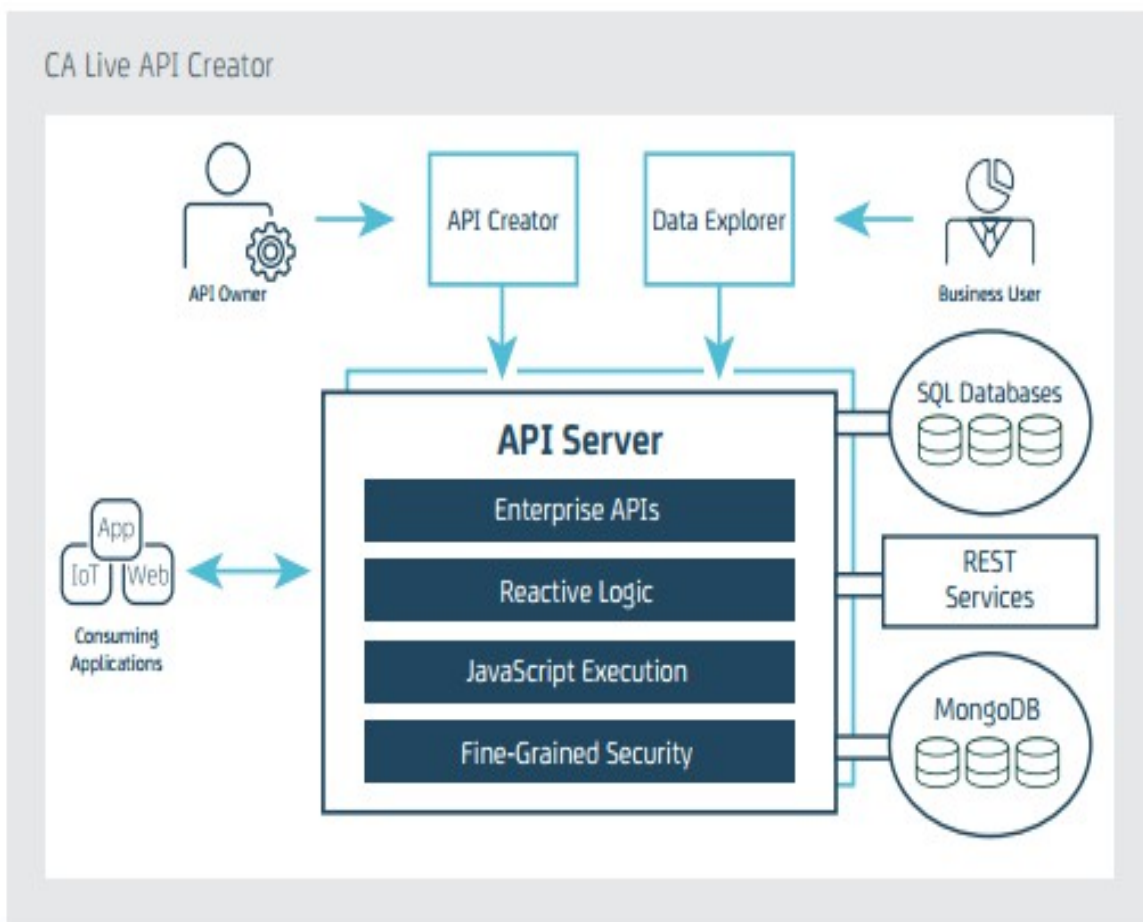
Miracle Software Systems, Inc.

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INTRODUCTION OF CA LIVE API CREATOR:

CA Live API Creator creates application back-ends exposing enterprise-class REST/JSON APIs, including access to existing data and applications. It enables developers to create new REST endpoints that join data across diverse data sources using a point-and-click approach. API owners can extend the API with declarative business rules, JavaScript event processing, role-based security and interactive testing. The CA Live API Creator Reactive Logic model yields systems that are highly scalable and reliable. Its optimized services run more efficiently and with less fragility than services manually coded by skilled developers and architects.



CA Live API Creator Components

Live API Creator accelerates and simplifies the creation, execution, and monitoring database-oriented APIs. The resultant APIs integrate, manage, and secure multiple databases.

CA Live API Creator Product Components



API Creator

- Point-and-click interface for API creation
- Graphical API customization and rule definition
- Extensible and reusable

API Server

- Runtime execution of APIs, logic, events, etc.
- Flexible deployment and scale
- Multiple interfaces for maximum control

Data Explorer

- Automatic user interface available in any browser
- Customizable and skinnable
- Completely interactive extension of application logic

Live API Creator includes the following components:

- Client applications that you access from your browser:

API Creator:

[API Creator](#) is a Web Console you can use to specify your API, your logic (rules and JavaScript), database location, and your security settings. It is an HTML5/JavaScript interface, so it runs in your browser.

For more information about the browsers Live API Creator supports, see [Supported Platforms](#).

Data Explorer:

Data Explorer is a self-contained service you can use for API testing, prototyping, and back-office data maintenance. Data Explorer uses the REST API's for your base tables to create a fully executable and running HTML5/JavaScript multi-table user interface to the underlying data. It runs on desktop and tablet browsers.

API Server

A backend service and web app that stores the security settings in the admin database and enforces them in the course of processing REST retrieval/update requests. Typical clients are Web/Mobile Apps or other systems. API Server operates as a WAR file. You deploy it into standard containers on-premises or in the cloud.

The Admin Database:

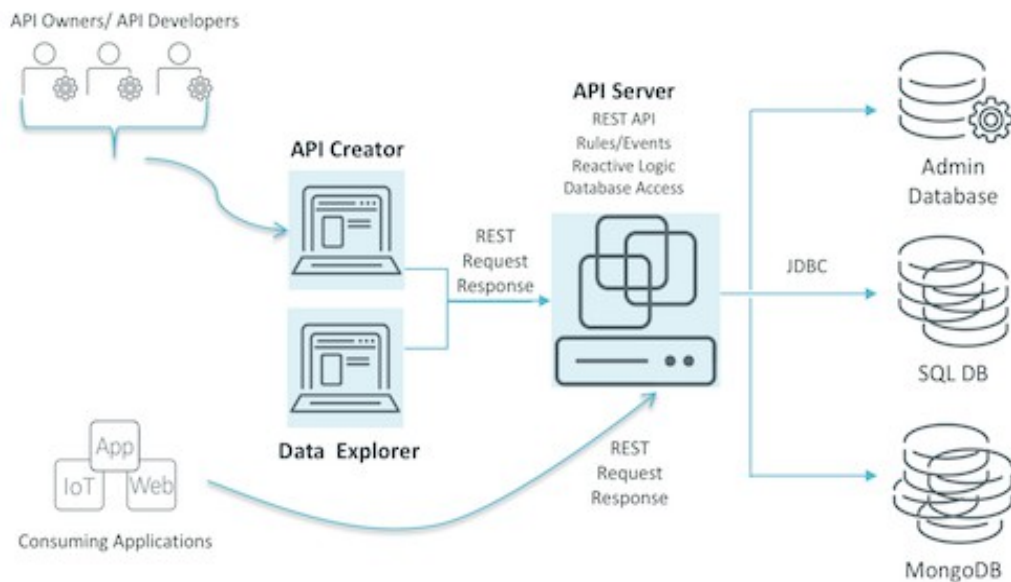
The admin database (meta repository) stores your API definitions, logic, and security settings. It is transparent for cloud/appliance users. Access the admin database using Live API Creator's REST API.

- You can export admin contents into a file for maintenance in a source control system.
- You can script the creation of APIs into an API server using the Admin command-line interface (CLI).

•Identity Management.

In typical deployments, API Creator calls out to your security system (Active Directory (AD), LDAP, OAuth) for authentication, or pluggable authentication. To facilitate development, you can use the default authentication provider.

Architecture:



Live API Creator provides declarative definition of the following services:

API: Create the default API by connecting to your database: GET, POST, PUT, and DELETE for each table, including GET/POST access to each view and stored procedure. You can create nested document resources or endpoints.

Integration: Resources can combine data from multiple sources (SQL, Mongo, and RESTful), including updates between them.

Security: Enforces end-point access and row/column security.

Logic: Enforces database integrity on updates, with a combination of spreadsheet-like Rules and server-side JavaScript. Rules automate multi-table change detection/propagation and SQL handling, so are 40X more concise than conventional code.

Specify your settings in Live API Creator. Activation is instantaneous. There is no code generation or deployment.

The Data Explorer is created from the schema. Use this component to test your API and for back-office database maintenance.

Live API Creator fits into an enterprise architecture. The following are typical integrations:

Web/Mobile Apps:

API Servers figure significantly in app development, ranging from basic connectivity, to object generation, to partitioning. Live API Creator provides a number of services for client app development, resulting in meaningfully improved re-use and reduced development time.

Databases:

Access cloud/on-premises SQL databases by way of JDBC. Their tables, views, and stored procedures are valid endpoints, per security settings. Updates are subject to database logic, such as triggers. Use JavaScript events to invoke stored procedures directly.

Existing Systems:

For retrieval, API Server connects well to existing databases, with the following caveat. Some systems that store data as blobs (e.g., xml or json data), often to define new columns without schema changes. This practice essentially hides the columns to sql, and other software such as Business Intelligence, etc. And to API Creator.

For updates, API Server (like any RESTful server) operates in a standard three-tiered architecture. It is analogous to an App Server, accessed by RESTful APIs rather than technology specific access such as J2EE. Like App Servers, such a tier can provide services for

- **Integration.** Your API can integrate data from multiple databases, and send/receive messages from other systems.

For more information about viewing an example of integration, see the Business to Business Example.

- **Scalability:** You can scale multiple API Servers under a Load Balancer for increased response and fail over
- **Logic and Security:** API servers provide a modern approach to enforcing logic, instead of (for example) proprietary triggers. In the case of API Creator, the bulk of this logic is

Reactive, using spreadsheet-like rules which are substantially more succinct than conventional code.

Like App Servers, you need to be aware of applications that access the data directly, without going through the APIs. Such access does not enforce the logic and security defined in API Creator.

Conversely, if you have existing systems that already enforce your logic, it's important to use API Creator to work within that context. There are several scenarios, including:

- **Read Only**- in the simplest case, update logic is not an issue if you are just reading data
 - **Update considerations** - there are common scenarios for update:
 - **Triggers**: If you are using database triggers, these will naturally fire as the API Server issues SQL updates.
 - **Stored Procedures**: you can invoke these from JavaScript (for example, from Table Events), using the connection made available by the API Server
 - **External Logic**: Logic is sometimes externalized in Application Servers (for example, as or bound into a object access layer). Depending on how you architect them, they can be easy or difficult to call (for example, consider transaction boundaries).
 - **Screen Logic**: Often, external logic is bound into screen logic (for example, controllers attached to buttons). This is the 'fat client' ant-pattern, since such logic is typically not available outside the screen. We recommend that you migrate it to a shared server such as Live API Creator.

Usage Overview

Live API Creator basic usage overview, based on the components:

1. Install an API Server

For more information about installing API Server.

See [Install Requirements](#) .

<http://docs.liveapicreator.com/docs/installation/jetty/install-requirements>

2. Log on to Live API Creator

For more information about logging on to Live API Creator.

See [Log on to Live API Creator](#) .

<http://docs.liveapicreator.com/docs/home/logon>

3. Get an Overview

User the API Creator Welcome Window to get an overview of Live API Creator.

4. Create an API

The API Server needs access to your database, whether it be stored in the cloud or within your firewall. Create an API, or API project, using the pre-supplied Northwind database or connect to one of your own databases. The Northwind database is part of the CA Live API Creator Tour and is an easy way to start. Supply your database credentials and the system builds the default API, the JavaScript Object Model, and the Data Explorer UI. Your default API includes end points for each table, view, and stored procedure. **Important!** Refresh the schema if you change your REST API.

5. Explore your REST API

You can test your REST API in the REST Lab or in the Data Explorer.

- Manage and test data using the [REST Lab](http://docs.liveapicreator.com/docs/debugging/rest-lab) .
<http://docs.liveapicreator.com/docs/debugging/rest-lab>
- You can execute (GET/PUT/POST/DELETE) on any of your RESTful endpoints. [API Docs](http://docs.liveapicreator.com/docs/live-api/api-docs) is a quick reference guide and a complete Swagger documentation of all your API endpoints.
<http://docs.liveapicreator.com/docs/live-api/api-docs>

- Data explorer is a self-contained service that creates a fully executable and running HTML/JavaScript user interface to the underlying data using the REST API's for your base tables.

6. Secure Access to your APIs

[Authentication](#) (also known as Identity Management) controls who can see and use your APIs. Access Control is a role-based service that determines what a specific user can see and do with the api. You can secure individual resources and protect both row and column on base table endpoints.

<http://docs.liveapicreator.com/docs/logicdesigner/security/authentication>

7. Add Reactive Logic

One of the most important features of API Server is the [Reactive Logic](#) engine used to enforce business policies and rules. Like a spreadsheet, rules are invoked (i.e. react) to changes in the data from PUT, POST, and DELETE on base tables. Your database design may require changes to support some of these new features (like sums and counts) or you can use the validations to enforce transaction integrity. The entire engine supports extensible libraries in Java and JavaScript.

<http://docs.liveapicreator.com/docs/logic-designer/business-logic/reactive-logic>

8. Analyze REST Services

The results of every REST call can be seen our browser based log display. We also capture the metrics of the SQL queries and the performance of each rule execution.

You can install and configure CA Live API Creator to run:

- As an on-premise service.
 - Install on Jetty.

<http://docs.liveapicreator.com/docs/installation/jetty>

For more information about the on-premise installation requirements.

- Install on Apache Tomcat.

<http://docs.liveapicreator.com/docs/installation/installing-on-tomcat>

- As a cloud-based service. You can deploy the WAR file to the cloud:
 - Install on Amazon Web Services Elastic Beanstalk.
<http://docs.liveapicreator.com/docs/installation/install-war-on-aws>
 - Install on Microsoft Azure.

<http://docs.liveapicreator.com/docs/installation/azureinstallation>

- Install in a Cloud Foundry Environment.

<http://docs.liveapicreator.com/docs/installation/cloud-foundry-installation>

Install and Use the Admin Command Line Interface

You can use any REST-compatible tool and language, such as curl or your web browser, to use the Live API Creator APIs. You can administer Live API Creator administration services and APIs using the tools by manually setting HTTP headers and remembering the ID of various objects or you can use the command line interfaces (CLIs) **liveapicreator-cli** and **liveapicreator-admin-cli**. For more information about the **liveapicreator-admin-cli**, see the **npm site**.

Advanced users can administer an API service using **liveapicreator-cli**. But the **liveapicreator-admin-cli** makes it quite a bit easier.

Install and Use the Command Line Interface

Use the Live API Creator Command Line Interface (CLI), a Node.js command-line tool to:

Access CA Live API Creator REST API and logic services.

Call GET, POST, PUT and DELETE.

Read/write objects from/to file or stdin (suitable for pipe work!).

See the **npm site** for more information about:

Installing the CLI.

Accessing the CLI help.

Logging on to the API Server.

Describing a specified system resource.

Retrieving data for a specified resource, table, or view.

Getting a Single REST endpoint (compressed or JSON format).

Inserting (POST) a JSON payload.

Updating (PUT) a JSON payload.

Deleting a REST resource.

Logging out of API Server.

Supported Platforms

CA Live API Creator supports the following versions of software. Maintain the minimum requirements for a host machine running Live API Creator:

Requirement	Minimum
Networking	IPv4 or IPv6 interface
Processor	One or more core processors, 2 GHz or faster. Recommended: Dual-core processor
Memory	1 GB with 400 MB Java heap size Recommended: 8 GB or higher
Operating Systems A dedicated server running one of the following: <ul style="list-style-type: none"> • Redhat Enterprise Linux 6.0 and higher • CentOS 6.5 or 	

higher

- Windows 7
- Windows 8
- Microsoft Windows Server 2008
- Microsoft Windows Server 2012
- Mac OSX 10.10
- Amazon Linux 3.14

Deployment

in

Amazon

Web

Services

environment,

including

AWS

Elastic

BeanStalk,

is

supported.	
Web Browsers	<ul style="list-style-type: none"> • Chrome • Safari • Internet Explorer 11 • Firefox <p>Use the latest production-level versions of these browsers whenever possible. Do not use development, test, or beta versions of these browsers. Versions that are not publicly released might not work properly with Live API Creator.</p>
Databases	<ul style="list-style-type: none"> • IBM DB2 for z/OS • IBM DB2 v10.5 for Linux, Unix, and Windows • MySQL 5.5.36 or higher • MySQL 5.6.19 or higher • MariaDB, Amazon Aurora, and other 100% MySQL-compatible databases • Oracle 11g or higher • Microsoft SQL Server 2012 version 11.0 • Microsoft SQL Server 2008 R2 or higher

	<ul style="list-style-type: none"> • PostgreSQL 9.0 or higher • Nuodb 2.0 or higher • Apache Derby/JavaDB version 10.8 or higher • MongoDB 2.4 or higher
Admin Databases	<ul style="list-style-type: none"> • MySQL 5.6.x (tested version: 5.6.23) with root user and password • MariaDB 10.x (tested version: 10.1) with root user and password <ul style="list-style-type: none"> • 500 MB for tablespace (1 - 10 GB recommended) • Apache Derby/JavaDB version 10.8 or higher <p>Note: You can run Live API Creator with an embedded JavaDB database for demonstration</p>

	<p>and evaluation purposes. MySQL and MariaDB are not required for these purposes.</p>
Drivers	<ul style="list-style-type: none"> • IBM DB2 JDBC driver 10.5fp6 <p>Note: This driver supports IBM DB2 for z/OS and IBM DB2 v10.5 for Linux, Unix, and Windows.</p> <ul style="list-style-type: none"> • MySQL JDBC 5.1.26 or MariaDB JDBC 1.2.3 • Oracle JDBC 12.1 • Microsoft SQL Server JDBC 4.0 • PostgreSQL JDBC 9.4 • JavaDB/Derby 10.12 • NuoDB JDBC 1.0
Java	<ul style="list-style-type: none"> • Java SE Development Kit

	<p>(JDK) 1.7.0 u75 or 1.8.0 u40</p> <ul style="list-style-type: none"> • OpenJDK 1.7 and higher
Java Containers	<ul style="list-style-type: none"> • Apache Tomcat 7 and 8 • Java Servlet Container: Apache Tomcat 7.x (tested 7.0.64) or Tomcat 8.x (tested 8.0.28) • Jetty 8 • Glassfish 4.0
Runtime Environment	Node.js 4.x
API Documentation	Swagger version 2.0