Qlik® Analytics Platform

One Platform to Meet your Embedded Needs
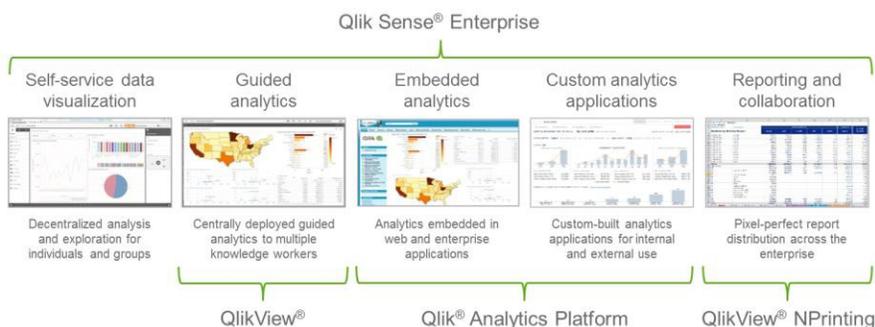
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Introduction

Qlik has a simple philosophy: Visual Analytics should allow you to see the whole story within your data. Qlik's vision of analytics for everyone goes beyond just self-service, but also delivers for web and application developers who are building and embedding visual analytic solutions. We don't limit the possibilities for what the greater visualization and app building community can imagine.

Building engaging visual analytics

Introducing Qlik® Analytics Platform

Part of the Qlik® Sense family of products, the Qlik® Analytics Platform puts the power of the QIX associative data indexing engine and visualizations in the hands of application developers through powerful, open and modern APIs, allowing customers and partners to easily and with great flexibility embed Qlik's powerful visual analytics capabilities right into their own applications.

Qlik® platform-enabled visual analytics

Integration Capabilities

Qlik® Analytics Platform provides many integration capabilities that enable development in a wide range of environments.
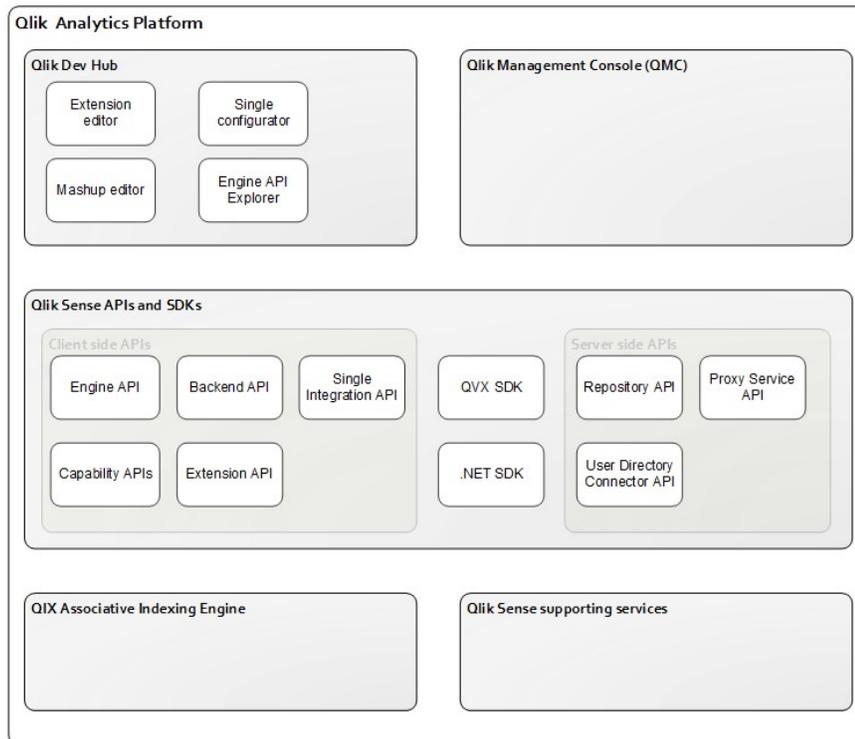
Capabilities	Description
Connecting to custom data sources	The Qlik Sense platform allows you to integrate custom data sources by using the Qlik data eXchange (QVX) SDK. It encapsulates the logic in a custom connector and provides a seamless user experience.
Extending Qlik Sense with custom visualizations	Qlik Sense visualization extensions enable new ways of visualizing data and enhance user input and interaction. The visualization extensions are regular Qlik Sense objects that you have added your own rendering code to. They can be charts of different types, or other items like tables or filter panes. In QlikView, these types of extensions are referred to as Object Extensions. Visualization extensions can be integrated with other systems and visual libraries, new selection objects and productivity components can be added, and it can all be done using open standards such as HTML5, JavaScript and CSS.
Embedding Qlik Sense in web applications	Qlik Sense apps, sheets and visualizations can be embedded in for example: Portals - Web applications - Intranet and Extranet sites There are two ways of embedding the Qlik Sense content: - iFrame integration using the Single Integration API - Div integration using the Capability APIs
Expanding Qlik Sense	You can integrate Qlik Sense in your own software using the Qlik® Sense APIs and SDKs. It can, for example, be integrated as a: - Windows application - Web-based application You can also leverage the Qlik engine in your applications, as well as automate common tasks and build your own client.
Client side integration	Qlik Sense visualization extensions enable you to enhance the overall experience of a Qlik® Sense app. They create new ways of visualizing data and enhance user input and interaction. Visualization extensions can be integrated with other systems and visual libraries, new selection objects and productivity components can be added, and it can all be done using open standards such as HTML5, JavaScript and CSS.

Architecture

The Qlik® Analytics Platform gives you full API access to the Qlik engine to build rich and smart data-driven analytics applications. It takes advantage of the platform to let you build web applications for deployments such as Extranet and/or the Internet.

The Qlik® Analytics Platform consists of:

- Qlik Dev Hub
- Qlik Management Console (QMC)
- Qlik Sense APIs and SDKs
- Qlik Indexing (QIX) Engine
- Qlik Sense supporting services

Qlik® Analytics Platform architecture diagram

Standard, Modern and Open Technologies

The Qlik® Analytics Platform relies on the following technologies:
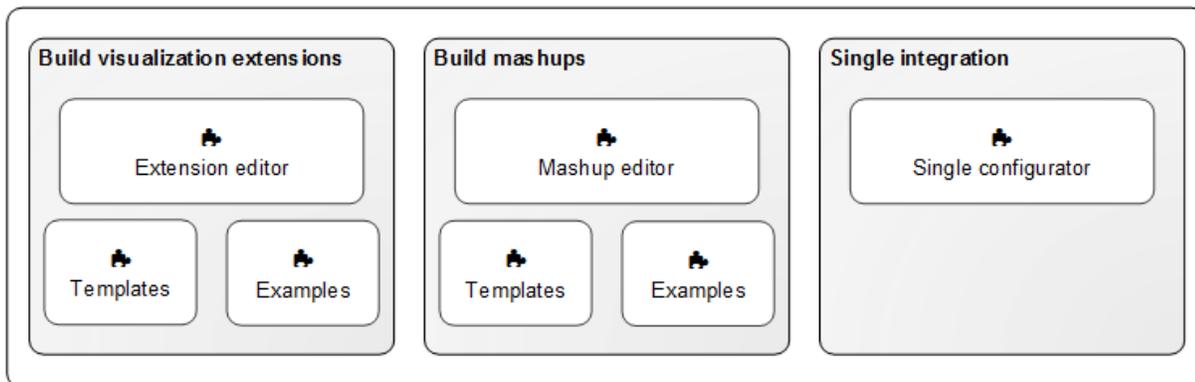
- HTML5
- WebSocket

- CSS3
- JSON
- Canvas
- REST

In addition to this, the Qlik® Analytics Platform uses the following libraries:

- AngularJS
- RequireJS

Qlik Dev Hub

Qlik Dev Hub is a developer workbench for building custom apps, embedded analytics and extensions that allow easier access to the capabilities in the Qlik® Analytics Platform. Qlik Dev Hub comes with a number of visualization and mashup templates and can be used for getting started building custom visualizations and mashups.

Qlik Dev Hub tools

The Qlik Dev Hub's tools include:

Tools	Description
Mashup Editor	The Mashup editor assists you in creating your mashups displaying Qlik Sense data on your website.
Extension Editor	The Extension editor helps developers getting started developing visualization extensions. It supports the JavaScript, QEXT, CSS and HTML formats.
Single Configurator	The Single configurator is a tool that provides an easy way of creating simple mashup pages without having to write any code at all. It returns a Qlik Sense object, which is identified in an URL. The Qlik Sense object is typically visualization from an app, for example a Line chart.
Engine API Explorer	The Qlik Engine API Explorer is a tool that allows you to send messages to and get answers from the Qlik engine.

Qlik Management Console (QMC)

The Qlik Management Console (QMC) is a web-based application for configuring and administrating your Qlik Sense site. The QMC always connects to the central Qlik Sense node where all system data is stored and with which all local nodes synchronize. Even if you have a multi-node, geographically distributed Qlik Sense installation, the QMC enables you to perform the following from one location:

- Manage licenses
- Manage tokens and access types
- Configure nodes
- Manage data connections
- Manage content security (by security rules)
- Manage tasks and triggers
- Synchronize content
- Synchronize users

Qlik Sense APIs and SDKs

Qlik® Analytics Platform provides a range of APIs and SDKs that are built on open and standard web technologies.

The Qlik Sense APIs and SDKs include:

APIs and SDKs	Description
Client side APIs	Use the client side APIs to build visualization extensions and mashups. You can make use of them when embedding Qlik Sense in web applications and when extending Qlik Sense with custom visualization extensions. • Qlik Engine API • Backend API • Extension API • Capability APIs • Single Integration API
Server side APIs	Use the server side REST APIs to manage data and configure information for your site. You can also use them to manage site authentication, session handling and load balancing. They also provide functionality for importing users and groups from external sources. • Qlik Sense Proxy Service API • Qlik Sense Repository Service API • Qlik Sense User Directory Connector API
QVX SDK	Use the Qlik QVX SDK to build customized connectors, used to retrieve data from data sources not supported by a generic Qlik Sense installation.
.NET SDK reference	The Qlik Engine API Explorer is a tool that allows you to send messages to and get answers from the Qlik engine.

Qlik Indexing (QIX) Engine

The Qlik® Analytics Platform provides direct access to Qlik Indexing (QIX) Engine. The QIX data indexing engine is the second generation of the proven and patented engine technology that has powered Qlik products for the last decade. It provides associative data indexing and dynamic calculations that empower people to naturally explore data, allowing them to see the whole story. Associative data indexing exposes relationships in complex, multi-source data sets that would otherwise be hidden in hierarchical or query-based approaches.

Qlik Sense Supporting Services

The Qlik Sense services, which run on the Microsoft Windows operating system, can be deployed in different ways on a node to suit different deployment purposes.

The Qlik Sense services include:

Services	Description
Qlik Sense Repository Service (QRS)	QRS manages persistence and synchronization of apps and licensing, security, and service configuration data. The QRS is needed by all other Qlik Sense services to run and serve apps. It attaches to a repository database and manages the repository database synchronization in multi-node sites. In addition, the QRS stores the app structures and the paths to the binary files.
Qlik Sense Proxy Service (QPS)	The Qlik Sense Proxy Service (QPS) manages site authentication, session handling, and load balancing.
Qlik Sense Scheduler Service (QSS)	QSS manages the scheduled reloads of apps as well as other types of reload triggering based on task events.
Qlik Sense Engine Service (QES)	QES is the application service, which handles all application calculations and logic.
Qlik Sense Printing Service (QPR)	Printing Service (QPR) manages export in Qlik Sense.
Qlik Sense Service Dispatcher (QSD)	QSD is a service controller that is used to launch and manage the other Qlik Sense services: - Chart Sharing Service: The Chart Sharing Service is used to share charts between Qlik Sense users. - Data Profiling Service: The Data Profiling Service is used to access and modify the application load model. - Migration Service: The Migration Service ensures that your apps can be used in the currently installed version of Qlik Sense.

Deployment

This section describes the requirements and assumptions for deploying the Qlik® Analytics Platform.

Qlik® Analytics Platform Licensing

The Qlik® Analytics Platform is licensed on capacity (CPU cores) in the deployment and there is no cap on the numbers of users.

Distribution of Engine Cores

By default, the engine cores are evenly distributed on the nodes within the site. If the number of cores available via the license is uneven in relation to the number of nodes in the site, the extra cores are distributed to the Central node.

- **Example: Four cores distributed on two nodes**
  The default distribution of four cores on two nodes is two cores on the Central node and two cores on the Rim node.

- **Example: Eight cores distributed on three nodes**
  The default distribution of eight cores on three nodes is two cores on Rim node A, two cores on Rim node B and four cores on the Central node.

Performance Benchmark

Applications do vary in size and complexity, Qlik utilizes a testing methodology called the Qlik Capacity Benchmark to provide a comprehensive set of data with which customers can judge scalability and plan for deployments.

This series of tests is conducted by varying data volumes, users, and applications in a given environment and recording the results. This exhaustive set of permutations yields a matrix of CPU utilization, RAM utilization, and response times. This approach is different than many other scalability tests. Not only are metrics reported when a server is saturated, but also when the server is only partially utilized.

Development Skillsets

For building visualization extensions and mashups with Qlik® Analytics Platform, developers should possess experience in Qlik Sense app development along with web development experience.

The following assumptions apply:
- The user has good knowledge of the JavaScript programming language.
- The user has good knowledge of the Hyper Text Markup Language (HTML).
- The user has good knowledge of Cascading Style Sheets (CSS).
- The user has some knowledge, not a must, of RequireJS.

Open Platform for Developers

Qlik Branch is an open source community for developers to accelerate innovation to bring the best ideas to market. Rooted in open source philosophy, all projects are freely distributed and modified, allowing faster collaboration and innovation.

Non-developers will be able to use Qlik Branch as a great resource for finding custom solutions for their applications. Furthermore, if the custom solution cannot be found on Qlik Branch, a developer could be found to build it. For developers, Qlik Branch is a place to innovate and take advantage of the capabilities and extensibility of the APIs and Qlik platform. Sharing their projects on Qlik Branch makes their projects more accessible for use and collaboration. Our latest addition, Qlik Playground is built for developers by developers and gives you one-of-a-kind access to Qlik's Engine and APIs. Qlik Playground is a free programming environment that allows you to use, explore, and quickly test your most complex and innovative data driven application ideas using Qlik technology.

Summary

The Qlik® Analytics Platform is designed to accommodate the need for embedded analytics, anywhere. By directly accessing the same market leading associative in-memory engine (the QIX Engine) that is used by all Qlik analytics products, web and application developers can gain the same benefits as end users, but with much greater flexibility. This is accomplished through a series of modern, open and standard APIs such as the Mashup API, Extensions API, Engine API and backend management APIs.

The Qlik® Analytics Platform also offers a single governance framework to allow for common security, manageability, and reusability. Our approach covers a wide spectrum of analytics use cases, giving you the ability to extend the Qlik experience into any application, with any type of visualization, all done within a common governance and security framework.

Additional Resources

For more information about Qlik® Sense Architecture, check out White Paper – Qlik® Sense Architecture Overview

For more information about Qlik® Sense Security, check out White Paper – Qlik® Sense Security Overview

To learn more about Qlik's Associative Model, check out White Paper – Qlik's Associative Model

Qlik® Sense Developers help site – help.qlik.com

About Qlik®

Qlik is a leader in visual analytics. Its portfolio of products meets customers' growing needs from reporting and self-service visual analysis to guided, embedded and custom analytics. Approximately 37,000 customers rely on Qlik solutions to gain meaning out of information from varied sources, exploring the hidden relationships within data that lead to insights that ignite good ideas. Headquartered in Radnor, Pennsylvania, Qlik has offices around the world with more than 1700 partners covering more than 100 countries.