# MODERN ENTERPRISE REPORT MANAGEMENT WITH THE TELERIK REPORT SERVER

By Richard Zaslaw, Senior Sales Engineer

Business Intelligence (BI) is integral to successfully managing the modern Enterprise. It provides an in-depth understanding of the state of the business by enabling you to view and monitor key indicators. It can also be used to forecast significant events that may impact business, or to crystalize business trends for informed decision making. Those informed decisions are essential to implementing strategies to adapt quickly to a changing environment.

Traditional reporting solutions differ from BI platforms because most are geared toward exporting and printing static reports based on historical data that captures what has occurred. By contrast, BI platforms focus on allowing users to interact with live data, slicing, dicing and massaging the data for their own unique purposes, such as discovering the why behind the data.

However, despite the benefits, a full-featured BI platform can be extremely costly and complex to integrate, requiring extensive hardware and IT resources to set up and maintain, as well as a steep learning curve for administrators and end users. A more economical alternative is using a Line of Business (LOB) reporting solution, which integrates more easily into existing applications and processes. Many of these offer comparable capabilities, such as secure access to data and the ability to manipulate it using an intuitive ad-hoc report designer. This enables you to create user-defined reports which you can view locally and store securely for reuse, or export and share in an automated fashion. Ad hoc reporting reaches beyond the static pre-defined data snapshots that traditional canned reporting provides, enabling an interactive end-user experience.
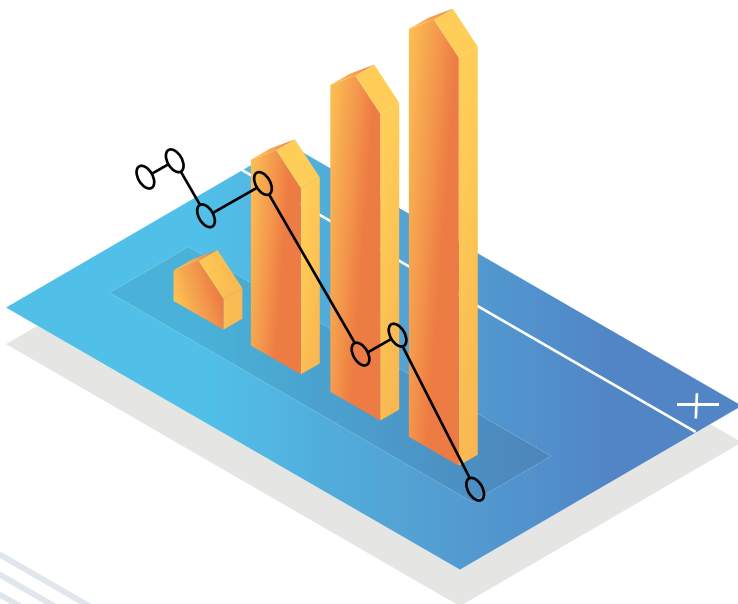
Here are key requirements to consider when evaluating a reporting framework:

- Simplifies installation and configuration to maximize in-house IT resources
- Enables ad-hoc report creation and deployment with minimal training
- Provides reports in commonly requested formats such as Excel, PDF and Word
- Enables flexible and secure integration with Enterprise data
- Enables secure authentication of users, including integration with existing federated services
- Provides finely tuned, role-based access to features and functions of the reporting process
- Achieves optimal performance with minimal server resource requirements
- Seamlessly integrates reports as part of Line of Business (LOB) desktop/web apps
- Enables responsive report viewing to support access from varied desktop, tablet and phone screen sizes
- Delivers subscription-based, scheduled reporting to a targeted audience
- Automatically updates reports when critical underlying data changes are detected
- Scales easily to meet business demands

Telerik Report Server: Designed for the Enterprise

The Telerik® Report Server by Progress is designed from the ground up to meet the needs of the Enterprise and to satisfy all of these key requirements. It is a true Line of Business (LOB) Reporting Solution, with a minimal footprint and full set of features and functionality. It also enables easy configuration and provides an economical licensing model.

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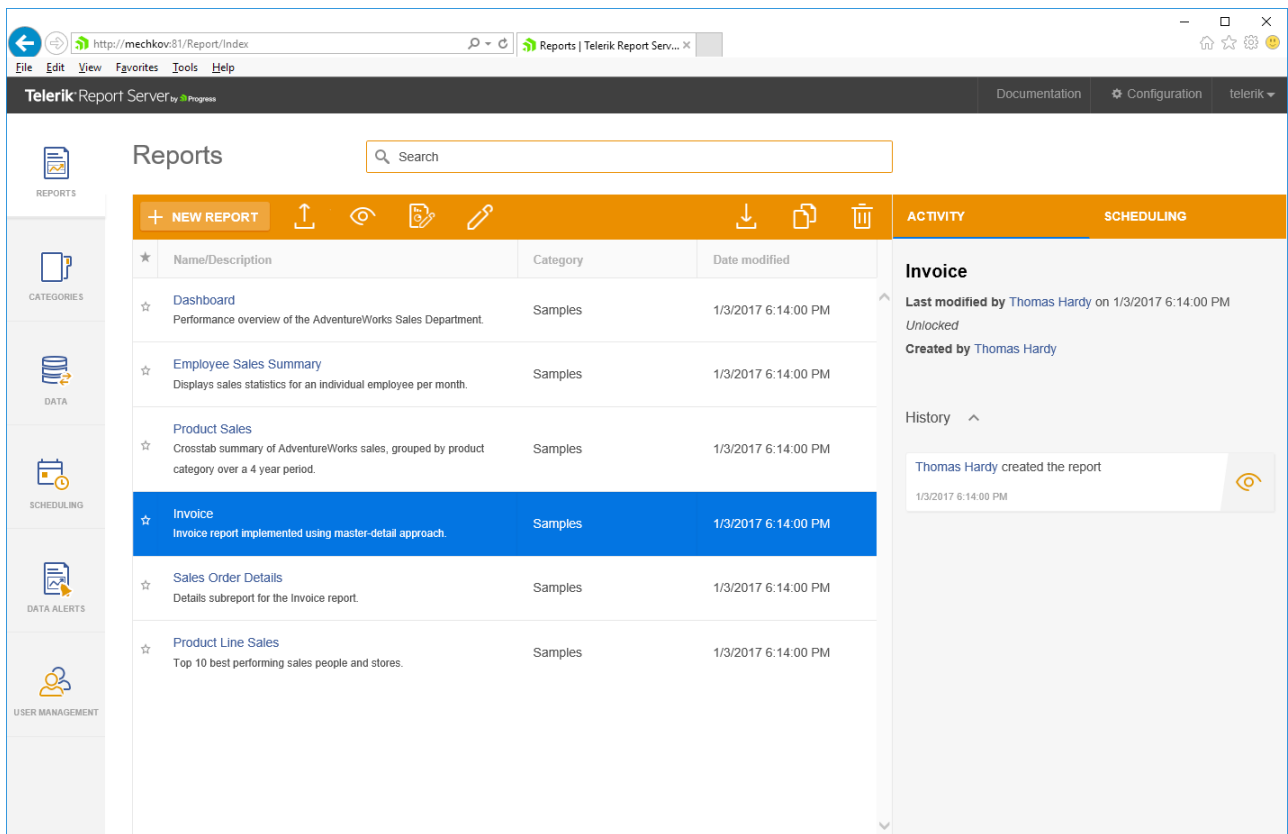
Report Server is a lightweight, server-based, Windows web apps delivered on-premises or in the cloud. It provides comprehensive reports management, including well-organized, centralized report storage, previewing and scheduling services, all locked down with extensive user management features.

Report Server is easily installed using a Windows MSI installer that automatically creates a separate website with its own application pool, running under the LocalSystem identity in Internet Information Services (IIS 7+). This server must have .NET 4.5.1 or newer installed. Report Server simply runs on an open, configurable HTTP port, such as 80 or 83. At the initial startup, you just designate a Server

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Administrator and configure report server storage as local file system, SQL Server or Redis. You can specify an existing SMTP Mail Server, and take advantage of built-in customizable mail templates. These features enable you to configure the scheduling and data alert service that send reports and updates.

User Authentication and Management
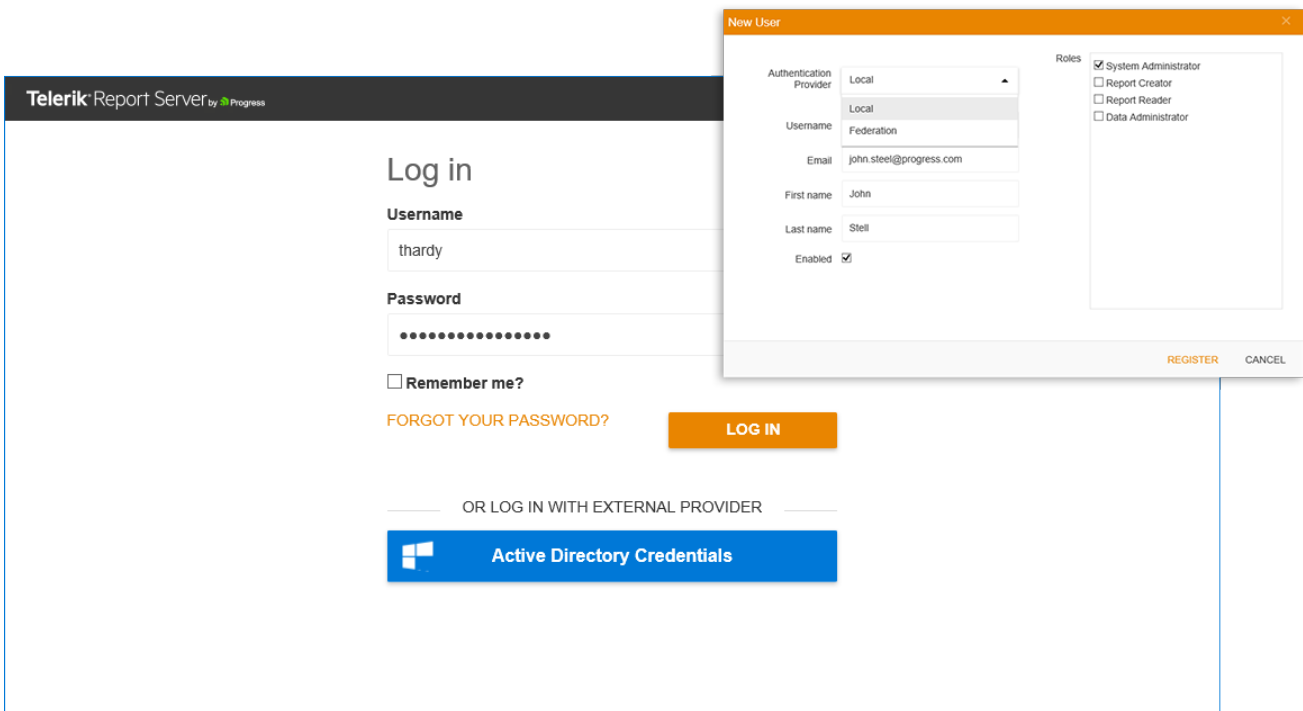
The user authentication schema for the Report Server is flexible. By default, it's configured to use standard, forms-based authentication and local accounts. Alternatively, an enterprise administrator can configure authentication using the Web Services Federation (WS-Federation) specification and integrate Active Directory for Windows Domain or Azure AD. In addition, a Guest user account is available. This is a special built-in user created upon initial setup. The Guest account is used for read-only connections to Report Server, using the reports API or by sharing a link to a report. This enables reports to be served as part of an external desktop, web or mobile app.

An extensive user management feature set enables granular control over direct access to Report Server tabs/views and configurable features, as well as access to report categories and individual reports. Designated server administrators can easily add or remove users, and manage roles and permissions. Four built-in user roles—System Administrator, Data Administrator, Report Creator and Report Reader—are fully editable. You can create custom roles and delete almost all existing roles.

You can also grant permissions as part of an assigned role or assign individual permissions or customize permissions. Permission consists of three key aspects: 1) Access—Read, Modify, Delete, or Create; 2) Scope—what features can be accessed (all reports, reports in a specific category; or single report) and 3) Target–based on scope (the report that is the target of single report scope).

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Flexible Report Creation

Report Server enables you to create/add new, view/edit and version existing reports in a user-friendly way. With its integrated desktop-based Report Designer, it's perfect for authoring and deploying professionally styled reports for all business needs. You can design, preview locally and publish feature-rich, interactive crosstab, dashboard and sales reports, invoices, product tags and catalogs, as well as free-form, ad-hoc reports, to a designated server. Report definitions are created in a proprietary XML format (.trdx) or with applied zip compression (.trdp). Reports can include rich data visualization, such as charts, maps and choropleths.

You can also take advantage of rich, CSS-like styling options, Excel-like conditional formatting, and drill-down and drill-through implementations. The design surface, with its drag and drop capability for adding report items, integrated rulers and snap-to-position grid feature, is highly configurable to ensure pixel-perfect report rendering in nine viewer-supported export formats (Excel, PDF, Word and more), as well as local report printing through the browser's PDF plugin.

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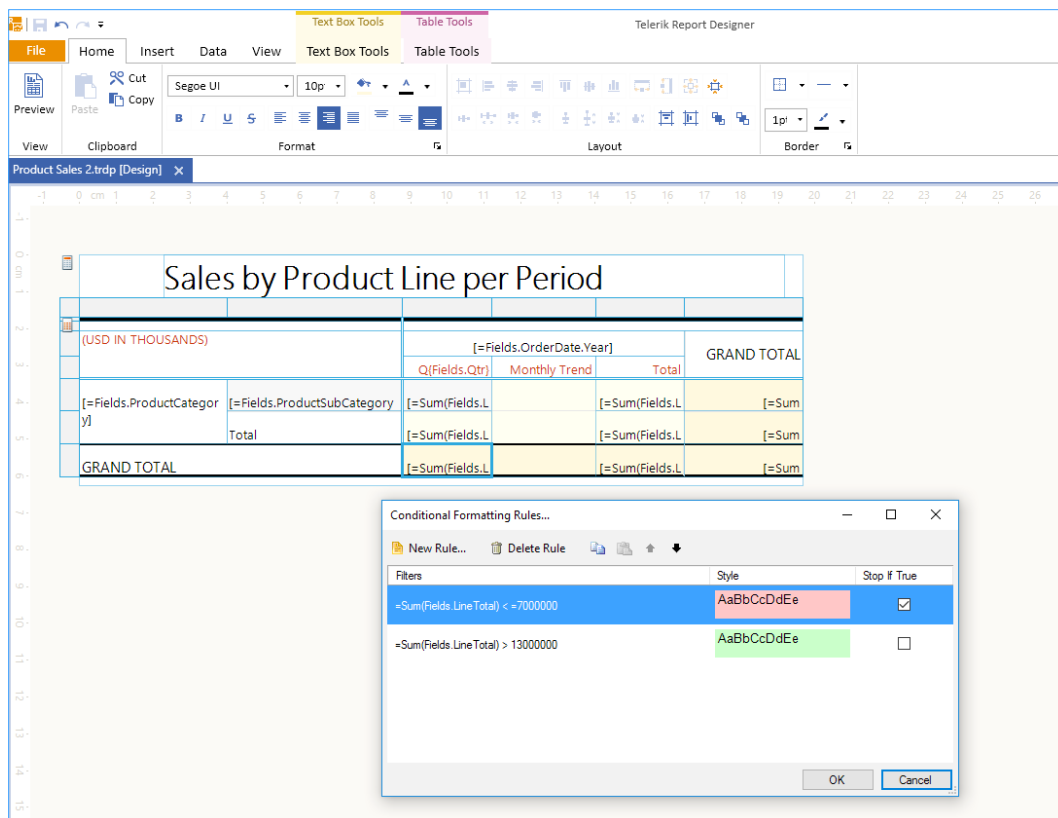
Report Server offers extensive support for binding reports to a wide variety of enterprise data sources: Microsoft SQL Server, MySQL, Oracle, OLE DB or ODBC databases, inline CSV, ADO.NET and OLAP cubes using Microsoft Analysis Services. Simply define a new data connection with a unique name, description, data provider and connection string. Access to read/write/modify connection strings require granted permissions to the Data Connections View of the Report Server. You can grant required permissions by assigning the user to a role exposing this functionality, or by providing customized individual permissions. You can also create and store reports in the server to take advantage of named data sources and accomplish binding.

Telerik Reporting Engine

Telerik Report Server leverages the built-in Telerik Reporting Engine to generate reports. This intelligent Telerik OLAP data engine utilizes server resources to process the report data. It then renders the report in the client. This results in optimized CPU loads and a decreased memory footprint on the server, with near-instant data access on the client. Report Server also features a built-in caching functionality to ensure optimal performance, memory consumption and fast rendering in the case of multiple requests for the same report requested with the same parameters and export format. It fulfills subsequent requests for the report using a cached version held in cache storage.

The Report Server enables timely access to key reports using three different approaches:

1. Direct report viewing by licensed, authenticated users logged in to the Report Server web application

2. Scheduled delivery of a report sent in a requested export format as an email attachment to a list of subscribers on a one-time or recurring basis

3. External report viewing from within an LOB desktop or web application using embedded Report Viewers (may require additional Telerik Reporting developer licensing)

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Enterprise users granted Report Server Client Access License (CAL) and assigned proper permissions to log into the Report Server web application interface can access a category and the report(s) stored within by clicking on the report to execute it. They can then view it in the browser using the integrated HTML5 Report Viewer. With an elevated "Report Creator" role, they have the option to pull the report down to the desktop using the integrated Report Designer, and customize the report template's layout. Then, they can preview the modified version locally in the designer, and push it back up to the server as a revision to share with others.
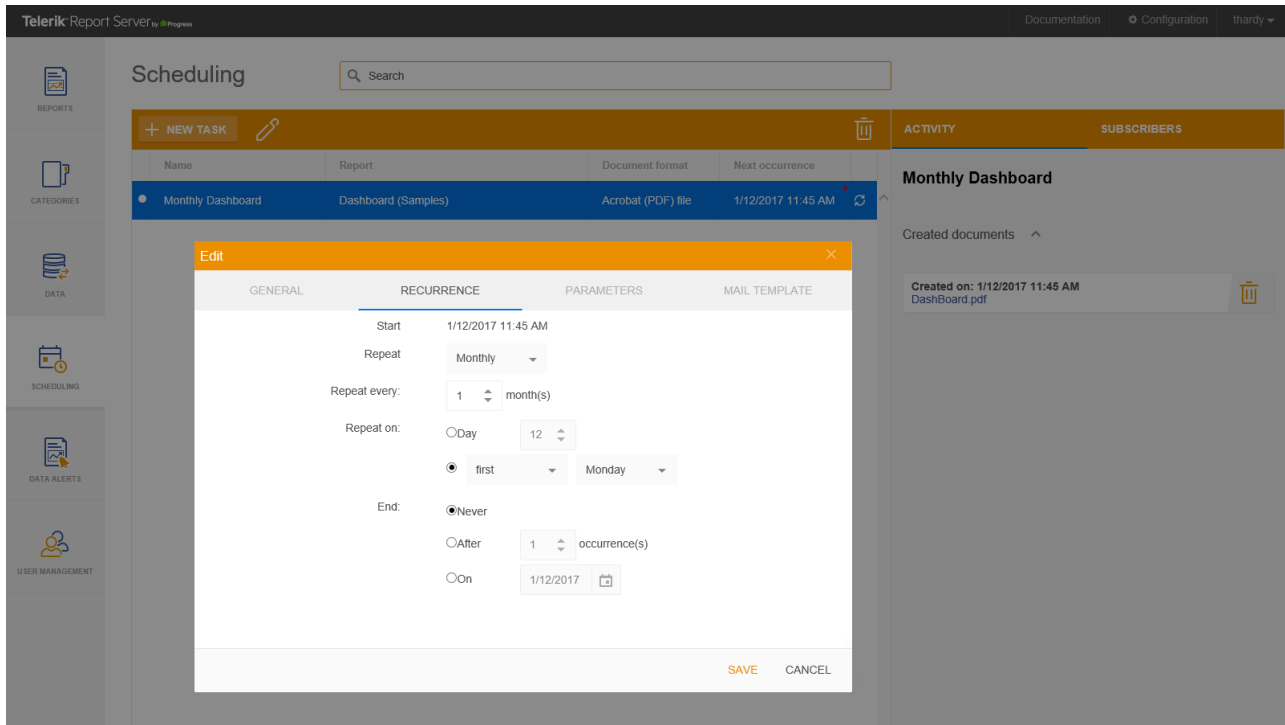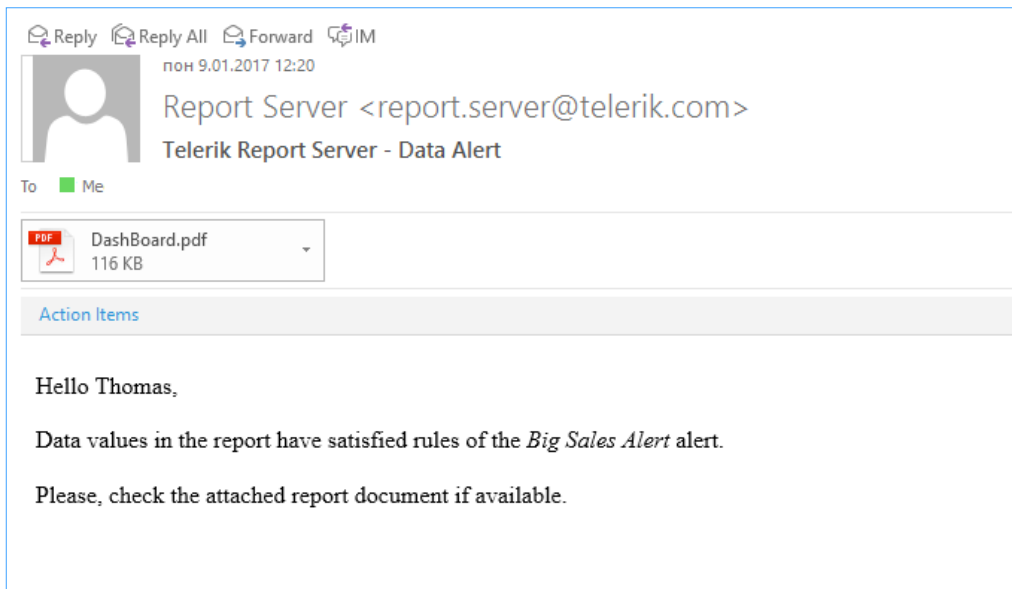
Administrators with proper permissions to access and work with the Scheduling view of the server can create a new task for a stored report. This tab provides wizards to facilitate creating, modifying and deleting scheduled tasks. A scheduled task specifies when a specific report should be rendered and in what document format (Excel, PDF or Word). The generated documents are stored in Report Server and subsequently sent as email attachments to a list of subscribers. You can run scheduled tasks once or on a recurrent basis—daily, weekly, monthly or yearly. The recurrence rule enables you to set intervals and range for how often a report is executed. In addition, the Activity view area of the Scheduling tab provides details and a link to the document that's created, which you can then download to preview or delete. It also displays insights on the success of the task and/or any associated errors.

Controlled Access
to Reports

Report Server can also act as a repository to provide controlled, universal access to reports by integrating with a collection of platform-specific, embeddable Report Viewers (ASP.NET Web Forms, ASP.NET MVC, ASP. NET Core, HTML5, Windows Forms and WPF). This enables report viewing, exporting or printing from within existing Enterprise LOB desktop applications, as well as intranet and Internet web applications. The majority of the Report Viewers support themes and skinning to better integrate with the styling of these applications. You can employ predefined themes or create new ones. Report Viewer APIs are exposed, so you can create customized toolbars, if required.

There is a configurable "Guest User" account which can be used to provide free, external report viewing by means of a read-only connection to Report Server, either using the REST API or by sharing a link to a specific report. Guests can also use this account to access reports from the embedded Report Viewer controls. In addition, you can configure Report Viewer to log a desktop or web application user into Report Server automatically. Each person using the external application can be mapped to a corresponding user in Report Server with appropriate permissions for accessing specific reports. The authorized user can then act as the guest user by providing credentials when rendering the page or displaying the form/window with the embedded Report Viewer. This authentication mechanism helps limit external access to reports.

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Ideal for BYOD Environments

Report Server provides a perfect solution for serving reports in the corporate BYOD world. You can access reports conveniently from a web browser running on a desktop, tablet or phone using the HTML5 Report Viewer. The Viewer features touch support and responsive design; it takes into account the screen width of the viewing device and automatically adjusts the layout of its toolbar, parameters area visibility and interactive features to mobile mode for smaller screens. The horizontal toolbar converts to a drawer widget that slides in from top-left. You can hide or expose the parameters area as needed to maximize the report viewing area. All of this, combined with the Viewer's internal content scaling ability, minimize scrolling.

Another key feature is "smart delivery," which enables timely email-based updates for managers and decision makers when critical underlying data changes occur in the reports to which they are subscribed. A data alert runs at scheduled intervals, checking that specific data conditions are satisfied.

Rules define conditions that trigger the alerts. When you select a data item embedded within a table or crosstab in the report, conditional rules handle the way in which the specific value is compared against the metrics you specify. Supported comparisons include "is," "is not," "is greater than," "is greater than or equal to," "is less than," "is less than or equal to," "in," "like" and "not like." If the rule's data conditions are satisfied, Report Server generates a fresh report document in a predefined rendering option (Excel, PDF, Word, etc.) and sends it to the alert's subscribers as an email attachment.

A data alert implements a recurrence rule that specifies whether it runs once or on a recurrent basis (daily, weekly, monthly or yearly). You can define and format for the email template that accompanies the report as desired.

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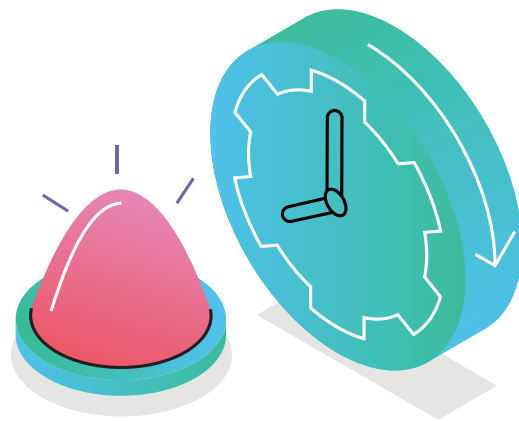
API Ready

ScheduledTask

Endpoint for managing scheduled tasks.

API	Description
GET api/reportserver/scheduledtasks	Returns a collection of all scheduled tasks.
GET api/reportserver/scheduledtasks/{scheduledTaskId}	Returns the scheduled task by the specified ID.
POST api/reportserver/scheduledtasks	Creates a new scheduled task.
PUT api/reportserver/scheduledtasks	Updates a scheduled task.
DELETE api/reportserver/scheduledtasks/{scheduledTaskId}	Deletes the scheduled task by the specified ID.

Report

Endpoint for managing reports.

API	Description
GET api/reportserver/reports	Gets a collection of all report infos.
GET api/reportserver/reports/{reportId}	Gets the report info for the report with the specified ID

Report Server Application Programming Interface (API) is exposed, enabling you to use its functionality from within your own applications. The API is implemented as a RESTful Web API service through which the server can be managed using simple HTTP requests. The API allows you to control (Create, Read, Update, Delete (CRUD)) Report Server resources, such as Reports, Categories and Data Connections from within the client application, as well as to schedule tasks and data alerts. You can also change the Report Server settings remotely through the dedicated API.

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Conclusion

With all of its built-in features, Report Server is truly a comprehensive Line of Business (LOB) reporting solution that can meet the vast majority of a modern enterprise's BI needs, while minimizing integration requirements and protecting the bottom line. It provides a full framework for enabling enterprise developers and/or business users to create, publish, version and manage access to feature-rich, fully formatted interactive reports for a targeted audience, in a wide variety of requested formats.

The extensive and highly configurable security features control server authentication and provide fine-tuned role-based permissions to limit access to features in Report Server such as data source implementation, report creation and sharing. The intuitive integrated Report Designer enables richly styled, template-based and ad-hoc report creation, editing and publishing. Finally, Report scheduling and smart data alerts enable immediate and timely access to reports that can help to crystalize data insights to facilitate informed decision-making and help enterprises implement strategies to ensure success.

A customer-centric, vibrant roadmap will continue to deliver highly-requested, enterprise features that enable Report Server to meet changing demands of the modern enterprise.

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