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Report and Dashboard Server

Report and Dashboard Server

The Report and Dashboard Server is a turnkey solution for design, generation, management and distribution of documents (reports and dashboards).

The product documentation includes the following sections.

- Installation

Learn how to integrate the Report and Dashboard Server into an existing business environment and deploy the Report Designer on the client side.

- Product Information

Learn about the system and licensing requirements of the Report and Dashboard Server.

- Administrative Panel

Learn about the web user interface of the Report and Dashboard Server's front-end.

- Creating Reports

Learn how to create and modify reports using the desktop and web Report Designer.

- Creating Dashboards

Learn how to create and modify dashboards using the Web Dashboard Designer.

- Configuration and API

Learn about the Report and Dashboard Server application programming interface (API) and configuration options.

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Installation

Report and Dashboard Server > Installation

The topics in this section detail the steps required to install the Report and Dashboard Server, Worker Service and the End-User Report Designer.

- Report and Dashboard Server Installation
- Worker Installation
- End-User Report Designer Installation

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Report and Dashboard Server Installation

Report and Dashboard Server > Installation > Report and Dashboard Server Installation

This topic details the steps required to install the Report and Dashboard Server.

To learn about the system requirements needed to deploy the Report and Dashboard Server in your business environment, see System Requirements.

After you run the Report and Dashboard Server Installer, select **Trial Installation** or **Registered Installation** to begin the installation process.

Click **Accept** on the second page of the Installer after you choose the destination path for the Report and Dashboard Server and read the license agreement.

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The next page of the Installer provides you with the following two options: **Website, Task Scheduler Service, Worker Service** and **Worker Service Only**.

The Report and Dashboard Server package includes the client and server parts.

- The *client part* includes the Report Designer.
- The *server part* includes the Website, Scheduler service and Worker service.
  The Website provides an in-browser user interface for administrating the Report and Dashboard Server; the Scheduler maintains the generation of reports based on a schedule; the Worker actually generates the reports.

By default, the package installs both the Scheduler and the Worker. However, you may choose to install additional Worker services on different machines (see Worker Installation).

On the next page, specify the name for the Report and Dashboard Server Website, and assign a free port to it.

On the **SQL Server Connection** page, specify which server the database will be deployed on and how to connect to this server.

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You should also define a user that can administrate the SQL Server, because these connection settings will be used during installation.

For the Report and Dashboard Server to use the same user credentials to access data, enable the corresponding check box (only available if the "SQL Server Authentication" is enabled).

Alternatively, you can specify other credentials for accessing data on the next page.

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To open the administration module in your Web browser, click **Finish** after installation is complete.

If the HTTP Activation is not enabled on the computer, the following message is displayed.

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When using the desktop report designer, this feature should be enabled for the report designer to be able to communicate with the Report and Dashboard Server.

See Also
Worker Installation
End-User Report Designer Installation

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Worker Installation

Report and Dashboard Server > Installation > Worker Installation

This topic describes the steps required to install the Report and Dashboard Server Worker. You can install Worker instances on additional machines to distribute the report generation workload among multiple server instances (to provide load balancing).

To install the Report and Dashboard Server Worker on a machine, run the Report and Dashboard Server Installer and choose the **Worker Only** option on the **Choose the installation package** page.

On the next page, specify the Forms authentication data that is used on your main Report and Dashboard Server instance. The main Report and Dashboard Server instance uses auto-generated validation and decryption keys by default. To provide these keys for the Worker, generate the keys on the main Report and Dashboard Server machine and specify them for the Worker on this installation page. Use the **Machine Key** section in the Report and Dashboard Server machine's IIS Manager to generate keys.

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Next, specify the Report and Dashboard Server and the service database's name. For SQL server authentication, specify the credentials that the Installer can use to modify the database. To allow the Worker to access the database with the same credentials, enable the option at the bottom of the page.

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Finally, specify the Worker's credentials to connect to the service database. Note that you can skip this step, if you specified the only credentials for all operations on the previous page.

See Also
Report and Dashboard Server Installation
End-User Report Designer Installation

End-User Report Designer Installation

Report and Dashboard Server > Installation > End-User Report Designer Installation

This topic details the steps required to install the Report and Dashboard Server End-User Report Designer.

After you run the End-User Report Designer Installer, click **Start Installation** to begin the installation process.

On the second page of the Installer, after you choose the destination path for the Report and Dashboard Server and read the license agreement, click **Accept and Install**.

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Click **Finish** after the installation is complete.

See Also

Report and Dashboard Server Installation
Worker Installation

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Product Information

Report and Dashboard Server > Product Information

The topics in this section introduce the fundamental concepts behind the DevExpress Report and Dashboard Server.

- System Requirements
- Licensing and Distribution

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System Requirements

Report and Dashboard Server > Product Information > System Requirements

This document provides the system requirements for deploying Report and Dashboard Server in your business environment.

The DevExpress Report and Dashboard Server supports the Windows Server (2008 R2, 2012 and 2012 R2), Windows 7, Windows 8 and Windows 10 operating systems. The following requirements are necessary to run the Report and Dashboard Server.

- **Microsoft SQL Server 2008**+

The Report and Dashboard Server uses SQL Server to manage reports, users, tasks, etc.
The Express edition of SQL Server is also supported.

- **IIS 7.0**+, **.NET 4.6**+

The Report and Dashboard Server administration site is run through Internet Information Services (IIS), and is built on .NET 4.6. If you installed IIS on Windows 7 or Windows Server 2008 R2 for the first time, you must register the .NET Framework ASP.NET installation with IIS using the ASP.NET IIS Registration Tool.

- **SMTP Mail Server**

This is used to send report distributions to those on your distribution lists, as well as for user management emails sent when creating new user accounts.

- **HTTP Activation**

HTTP Activation is required for the Report Designer to communicate with the Report and Dashboard Server.

- **HTTP Errors** and **Static Content**

These features enable IIS to respond to specific HTTP errors and configure settings related to processing requests for static files.

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- **Windows Authentication**

This is required at initial install since we add the current Windows user as the default administrator.
By default, the Report and Dashboard Server uses Windows authentication (although this can be changed).

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- **IP Security**

IP Security is required to restrict Worker endpoint to localhost only.

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Licensing and Distribution

Report and Dashboard Server > Product Information > Licensing and Distribution

The DevExpress Report and Dashboard Server subscription includes **fifteen** Client Access Licenses.

This subscription is targeted to a single developer and includes unlimited product updates during the term of the subscription.

Additional Client Access Licenses can be purchased in bundles of **five**, and do not require renewals.

For pricing information, refer to the following webpage: Report and Dashboard Server Pricing.

For terms and conditions on the DevExpress Report and Dashboard Server and End-User Report Designer distribution, see the product's License Agreement.

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Administrative Panel

Report and Dashboard Server > Administrative Panel

The topics in this section describe the main features of the administrative panel of the Report and Dashboard Server.

- Manage Server Settings
- Manage User Accounts and Grant Security Permissions
- Manage Data Models and Connect to Data
- Manage Documents and their Categories
- Schedule a Document and Select Subscribers

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Manage Server Settings

Report and Dashboard Server > Administrative Panel > Manage Server Settings

This topic describes how to customize the general settings of the **Report and Dashboard Server**.

To manage the Report and Dashboard Server settings, click the "gear" icon that is located in the top left corner of the main toolbar.

The following Report and Dashboard Server settings are available.

- General
- Email Settings
- Email Templates
- Self Sign-Up
- OpenID Connect
- WS-Federation
- CORS Settings
- Modern Interface
- License Status

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General

Report and Dashboard Server > Administrative Panel > Manage Server Settings > General

To customize the settings in this category, click the "pencil" button next to its title.

Use the following options to customize the general Report and Dashboard Server settings:

Option	Description
Site URL	Specifies the URL that is used to access the server from client machines.
Authentication	Specifies the user authentication types available in the Report and Dashboard Server (**Forms**, **Windows** or **Mixed Mode**).
Culture	Specifies the culture settings, which include formatting for dates, time and numbers.

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Email Settings

Report and Dashboard Server > Administrative Panel > Manage Server Settings > Email Settings

Use the following options to customize the Report and Dashboard Server's email options:

Option	Description
SMTP server	Specifies the SMTP server address.
Port	Specifies the port that is assigned to the SMTP Server.
SSL	Specifies whether or not to encrypt the connections to the SMTP server by applying the Secure Sockets Layer protocol.
Account name	Specifies the account name to log in to the SMTP server.
Sender email	Specifies the mailer agent's email address.
Sender name	Specifies the mailer agent's display name as it will appear in emails.
Email format	Assigns HTML or plain text format to the Report and Dashboard Server emails.

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Email Templates

Report and Dashboard Server > Administrative Panel > Manage Server Settings > Email Templates

To customize the settings in this category, click the "pencil" button beside its title.

In this category, you can customize the text of the email messages that are sent on different occasions by the Report and Dashboard Server.

The following email subjects are listed.

- Activate Account
- Reset Password
- Scheduled Document Error
- Scheduled Document Format
- Scheduled Document Attachment Format
- Message Footer

To customize an email template, click its subject.

The Message Parameters editor lists the parameters available for each message template. In the message body, a parameter is enclosed in hash signs (e.g., #UserName#).

The following is a complete list of supported parameters:

- #ErrorMessage#
- #Link#

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- #LoginName#
- #DocumentCategory#
- #DocumentName#
- #DocumentParameters#
- #Task#
- #TaskOptions#
- #UserName#

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Self Sign-Up

Report and Dashboard Server > Administrative Panel > Manage Server Settings > Self Sign-Up

This category provides the following settings to enable self sign-up for Report and Dashboard Server users when using Windows or another external authentication provider.

- **Enabled**

Enables self sign-up for Report and Dashboard Server users. This removes the need for the Report and Dashboard Server admin to manually create accounts for new users. The account is automatically created when a user first logs in.

- **User Group**

Specifies the group to which a user is added on a first sign up by default.

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OpenID Connect

Report and Dashboard Server > Administrative Panel > Manage Server Settings > OpenID Connect

Use the settings in this section to enable authentication using OpenID Connect in the Report and Dashboard Server.

For example, the following steps describe how to register your Report and Dashboard Server application in Azure Active Directory:

- Enter the Azure portal and switch to the **Azure Active Directory** section.

- Switch to the **App Registration** section...

... and click **New application registration**.

- Specify the application name, type and sign-on URL.

On the Report and Dashboard Server's Administrative Panel you can use the Server Settings to copy the site URL in the **Site URL** field.

- Copy the **Application ID** field's content and switch to the Report and Dashboard Server administrative panel's **Server Settings** screen.

Click the edit button to edit the **OpenID Connect** settings, set the **Enabled** property to **Yes** and paste the copied value in the **Application ID** field.

- Switch back to **Azure Active Directory**, click **Properties** and copy the **Directory ID** field's content to the clipboard.

Switch back to the Report and Dashboard Server administrative panel's **Server Settings** screen and click the edit button to edit the **OpenID Connect** settings. Paste the copied value in the **Authority** field and add the "**https://login.microsoftonline.com/**" prefix to it.

You can display a custom **Caption** on the Report and Dashboard Server login screen for the **OpenID Connect** option.

- Click **Update Settings** and restart the web application in IIS.

Log out from the Report and Dashboard Server to see the OpenID Connect option on the login screen.

LOG IN TO YOUR SERVER ACCOUNT
Enter a login...
Enter a password...
Remember Me
Log In
Forgot Password?
or
LOG IN WITH ANOTHER ACCOUNT
Windows
OpenID Connect

WS-Federation

Report and Dashboard Server > Administrative Panel > Manage Server Settings > WS-Federation

Use the settings in this section to enable authentication using WS-Federation in the Report and Dashboard Server.

For example, the following steps describe how to register your Report and Dashboard Server application in Azure Active Directory:

- Enter the Azure portal and switch to the **Azure Active Directory** section.

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- Switch to the **App Registration** section...

... and click **New application registration**.

- Specify the application name, type and sign-on URL.

On the Report and Dashboard Server's Administrative Panel you can use the Server Settings to copy the sign-on URL in the **Site URL** field.

- Back in the **App Registration** section, switch to **Endpoints**.

- Copy the **Federation Metadata Document** field's content to the clipboard.

- Switch back to the Report and Dashboard Server administrative panel's **Server Settings** screen and click the edit button to edit the **WS-Federation** settings. Paste the copied value in the **Metadata** field.

- Switch back to **Azure Active Directory** and locate the Report and Dashboard Server application in the **App registrations** section. Click **Settings** to access the app's **Properties**.

- Copy the **App ID URI** field's content to the clipboard.

- Switch back to the Report and Dashboard Server administrative panel's **Server Settings** screen and paste the copied value in the **App ID URI** field.

You can display a custom **Caption** on the Report and Dashboard Server login screen for the **WS-Federation** option. Click **Update Settings** and restart the web application in IIS.

Log out from the Report and Dashboard Server to see the WS-Federation option on the login screen.

CORS Settings

Report and Dashboard Server > Administrative Panel > Manage Server Settings > CORS Settings

This category allows you to enable Cross-Origin Resource Sharing (CORS) for the Report and Dashboard Server.

Note that you need to restart the Server after changing this option.

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Modern Interface

Report and Dashboard Server > Administrative Panel > Manage Server Settings > Modern Interface

Use the option in this category to change the visibility of a link that opens a new modern Report and Dashboard Server interface (available as a Community Technology Preview).

The administrative panel provides the **Try the new design (Preview)** button if you enabled this setting.

Click this button to go to the new Report and Dashboard Server interface, which offers the redesigned administrative panel.

The new administrative panel also supports localization, which you can specify in the Server Settings window.

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Administrative Panel Limitations

The following functionality is not supported in comparison with the classic Report and Dashboard Server version:

- There is no screen with user profile settings.
- There are only individual screens for selected tables/views, stored procedures and custom queries (there is no screen reflecting the entire data model structure including all these types).
- The following functionality is not yet implemented for scheduling:
  - Billing Statements
  - Editing existing tasks
  - Lookup parameters
  - Internal subscribers
  - Displaying generated documents (the classic panel's UI is currently used for this)
- The search engine allows you to only find all values containing an entered string against a predefined set of appropriate fields (there is no capability to search against a specific field and match the whole word during the search).
- In the Server Settings window, there is no capability to reset e-mail templates.

Localization Limitations

Consider the following limitations relating to the Report and Dashboard Server localization:

- Server-side error messages are not localized
- The Report Designer, Dashboard Designer and Query Builder are not localized;
- The Login, Activation and Password Reset screens are not localized.

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License Status

Report and Dashboard Server > Administrative Panel > Manage Server Settings > License Status

This category displays the following read-only settings.

- **Current Version**

Displays the Report and Dashboard Server version number.

- **Available CAL**

Displays the number of end-user accounts that can be created before reaching the current limit.

- **Total CAL**

Displays the total number of available end-user accounts.

- **License Status**

Specifies the current status of the Report and Dashboard Server license.

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Manage User Accounts and Grant Security Permissions

Report and Dashboard Server > Administrative Panel > Manage User Accounts and Grant Security Permissions

This topic describes how to create and maintain individual user accounts and user groups on the DevExpress Report and Dashboard Server, and provides information on its user authorization mechanism.

This topic includes the following sections.

- Manage User Groups
- Manage User Accounts
- Assign Security Permissions

Manage User Groups

The following user groups are created by default. You are free to customize or delete these groups (with the exception of the System Administrators group), as well as create custom groups.

The following table describes these groups in greater detail.

User Group Name	Description
System Administrators	Have all possible permissions, including the permission to manage user accounts. This is the only group that you cannot delete or rename.
Data Administrators	Have permission to manage the Data Models available to the Document Creators, as well as all other permissions attached to the other two groups (Document Creators and Document Viewers).
Document Creators	Can create, manage, view, and distribute documents (reports and dashboards).
Document Viewers	Have permission to view any document in any category. This permission is assigned to the Guest account that is created in the Report and Dashboard Server by default.

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Manage User Accounts

Only users that belong to the System Administrators group are allowed to create new user accounts on the Report and Dashboard Server.

The total number of available user accounts depends on the type of the Report and Dashboard Server subscription. For more information on this, see Licensing and Distribution.

To manage user accounts on the Server, switch to the **User Accounts** screen.

To be able to register new users, make sure that you properly specified the SMTP server that will send out notifications when an account is being created. To learn more, see Manage Server Settings.

To add a new user, click **Add Account**.

Specify the user's display name and real name, as well as the email address that will be used to send notifications from the Report and Dashboard Server.

Next, associate the user with an appropriate User Group and specify the authentication type of the created account.

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The Report and Dashboard Server supports the following two types of user accounts and their corresponding authentication modes.

Icon	User Account Type	Authentication Type	Description
	Server	Forms	Server accounts use the Server authentication. To activate a user, the specified email address needs to be verified. After adding this account, the Server sends an email to the specified address with a custom link requesting that they create a new password. During the time between when the request is sent and when the new user creates a password, the user is assigned a **Pending** status.
	Domain	Windows	Users with the Domain accounts use the Windows Authentication that is provided by your Windows environment.

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			To become active, the domain account should only be registered on the Report and Dashboard Server.

The following image illustrates the Report and Dashboard Server login screen.

See the following sections in this documentation to learn how to enable self sign-up for new Report and Dashboard Server users, as well as support WS-Federation and OpenID Connect authentication:

- Self Sign-Up
- WS-Federation
- OpenID Connect

To modify an existing user account, switch to the **User Accounts** category and click the **Update** button (the "pencil" icon) on its tile.

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For example, to suspend a user accounts without deleting its user credentials, disable the **Active** option and click **Update Account**.

Assign Security Permissions

The user authorization model provided by the Report and Dashboard Server allows you to selectively attach security permissions to individual users, or to entire user groups.

A security permission is determined by the following properties:

- **Access Mode** ("Read", "Read, Modify", "Read, Modify, Delete", "Create")
- **Entity Class** ("All Documents", "Documents in Category", "Specific Document", "All Data Models", "Specific Data Model", "All Scheduled Jobs", "Specific Scheduled Job")
- **Scope**

A newly created user has no permissions until they are assigned explicitly. A user's effective permissions are those assigned to him/her individually, as well as those assigned to the group to which the user belongs.

- **User Permissions**

By default, all access is denied for a user until the system administrator explicitly grants appropriate permissions either for the user, or for the group to which he or she belongs.

To edit the permissions attached to a user, click the **Permissions** button (the "gear" icon) in the user account's tile.

In the invoked page, you can view the list of permissions assigned to a user account. On this page, you can delete existing permissions and add new ones.

To attach a new permission, click **Add Permission**.

Specify the Access Mode and the Entity Class of the new permission.

Depending on the selected Entity Class, it may also be necessary to specify its Scope.

Click **Submit** to view the created permission in the list of user permissions.

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Individual permissions have a priority over group permissions.

- **Group Permissions**

To access the user list of a specific group, click the **View** button (the "eye" icon) in the group's tile.

On the opened screen, you can assess and modify the group permissions, by clicking the **Permissions** button.

To attach a new permission, click the **Add Permission** button.

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Specify the Access Mode and the Entity Class of the new permission. Depending on the selected Entity Class, it may also be necessary to specify its Scope.

Click **Submit** to view the created permission in the list of user permissions.

The Report and Dashboard Server provides a particular set of functions that enable you to access information about a current user. Using these functions, you can make a data model return specific subsets of data to different users. This restricts access to sensitive information in your database, and users cannot access and modify these functions unless they have the required permissions. To learn more, see the User-Specific Functions section of this documentation.

Manage Data Models and Connect to Data

Report and Dashboard Server > Administrative Panel > Manage Data Models and Connect to Data

This topic introduces the concept of data models, and explains the process of data model management on the DevExpress Report and Dashboard Server.

The topic includes the following sections.

- Introduction to Data Models
- Data Model Security
- Manage Data Models
- Edit Queries
- Edit Procedures
- Edit Tables/Views
- User-Specific Functions

Introduction to Data Models

To meet your enterprise data management requirements, Report and Dashboard Server abstracts the report presentation layer from the data layer. To create reports based on your data, you first need to define a data model that gains access to your data provider (in read-only mode) and selectively obtains the specified tables and/or views from it. Once modeled, a data model can be used to supply data to any number of documents (reports and dashboards).

The Report and Dashboard Server can create a data model based on any of the following data providers.

- Advantage Database Server
- Amazon Redshift
- Firebird
- Google BigQuery
- IBM DB2
- Microsoft Access 2007
- Microsoft Access 97
- Microsoft SQL Server
- Microsoft SQL Server Compact
- MySQL
- Oracle Database (legacy provider, x86 only)
- Oracle Database (ODP Managed)
- Oracle Database (ODP)
- Pervasive PSQL
- PostgreSQL
- SQL Anywhere
- SQLile
- Sybase ASE
- Teradata
- VistaDB
- VistaDB5
- XML file

To learn about constructing an appropriate connection string to any of the supported data providers, refer to the following article online: How to create a correct connection string for XPO providers.

To access, customize or manage a data model, a user must be granted the appropriate permissions.

Data Model Security

When creating data models in Report and Dashboard Server, please consider the following best practices.

- When connecting to Microsoft SQL Server, using Windows Authentication is preferred.

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- Restrict access to the Report and Dashboard Server database and backups, because data models created via the DevExpress Report and Dashboard Server will not be encrypted. Information will be stored in clear text.

Manage Data Models

To manage data models, switch to the **Data Models** screen.

To create a data model, click **Add Data Model**.

Define the data model's name and description, select the data provider and specify its connection string.

For the most popular data providers (MS SQL, MySQL, Oracle, PostgreSQL and SyBase ASE), there are custom web forms to construct connection strings.

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If required, you can enter the entire connection string into the **Additional Parameters** form without specifying the rest of the connection options.

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Note that the Report and Dashboard Server back-end runs under the **Network Service** account. If a Data Model connects to the database server using Windows Authentication, make sure that the Network Service account has permissions to access the database. For example, to learn how to provide the required privileges for Network Service when using a **Microsoft SQL Server** database, see the following MSDN topic: How To: Use the Network Service Account to Access Resources in ASP.NET.

Next, you will see a grid reflecting the structure of the data model and providing the Edit Queries, Edit Procedures and Edit Tables/Views options.

Edit Queries

To create a new query, click **Add Query**.

This will open the Query Builder where you can select which tables and/or views to include into the query and customize the query options.

To select a table or view, drag it from the "Available tables and views" section and drop it onto the design surface. After selecting a table, you can specify which columns it should contain.

Clicking a specific column will display its options in the "Selection properties" section.

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Using these options, you can group a data table by a specific column or apply an aggregate function to the column data.

Note
An aggregate function and/or grouping must be applied to either all selected columns or to none of them.

Multiple tables are automatically assigned a data relation if they share a common key column. To create a custom relation, drag a field from one table to a related field in another table.

Clicking a data relation will display its options in the "Selection properties" section. Using these options you can select the join type (Inner or Left Outer) and apply a comparison operator (e.g., "Equals to" or "Is greater than").

To specify the query name and apply a filter criteria, click the design surface.

Use the **Filter Editor** to specify the required criteria.

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You can filter data records against static values, values of other fields, parameters and functions.

To save the changes and quit the Query Builder, click **Save**.

Edit Procedures

To include a stored procedure into a data model, click **Add Procedures**.

In the invoked menu, select a procedure and click the plus sign.

This will display a message informing you that the added procedure must be executed.

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Click **Yes** to execute the stored procedure and add it to the data model.

Edit Tables/Views

On the Data Model's Schema screen, you can search for a specific table or view and include it into a data model. You can also select which columns a table or view should contain.

User-Specific Functions

The Report and Dashboard Server provides a particular set of functions that enable you to access information about a current user.

Using these functions, you can make a data model return specific subsets of data to different users. This restricts access to sensitive information in your database, and users cannot access and modify these functions unless they have the required permissions.

However, non-privileged users are still able to use these functions at the document level (to further filter the data available to them).

The following user-specific functions are supported:

- **UserName()**

Returns the name of the current Report and Dashboard Server user.

- **UserEmail()**

Returns the email of the current Report and Dashboard Server user.

- **IsMemberOf(*userGroupName*)**

Returns **true** if the current user belongs to a group defined by the *userGroupName* parameter.

You can use these functions at the following levels:

- Data Model

Applying a user-specific function to a data model query's filter string enables you to define the users to which the query data becomes available.

For example, adding the following criteria to a query filter string displays only orders shipped to a country corresponding to a user's group:

For this function to take effect, there must be user groups created in Report and Dashboard Server for each of the countries listed in the **[ShipCountry]** data column (a column name must be enclosed in square brackets in the filter string).

As a result, a document created by users from the **USA** group does not display orders shipped to other countries.

Only users that have permissions to customize a data model can modify its filter string, and these criteria are not visible in queries created for specific documents.

- Document

Report and Dashboard Server users can apply these functions at the document level (for example, to filter query data or individual dashboard items, in expressions of calculated fields and conditions of formatting rules).

To apply a user-specific function to a report's query, do the following:

1. Select a query and click its **Edit Query** button.

2. In the filter string editor, create new criteria and select **Function** as a value supplier.

3. Select a user function to use in the filter criteria.

To apply a user-specific function to a dashboard's query, do the following:

4. Select a query and click its **Edit Query** button.

5. In the filter string editor, create new criteria and select **Function** as a value supplier.

6. Select a user function to use in the filter criteria.

See Also
Manage Documents and their Categories

Manage Documents and their Categories

Report and Dashboard Server > Administrative Panel > Manage Documents and their Categories

This topic details the process of managing documents (reports and dashboards) on the DevExpress Report and Dashboard Server.

- Manage Categories
- Manage Documents

Manage Categories

Report and Dashboard Server documents can be classified into different categories.

To access, customize or manage a specific category, a user must be granted the appropriate permissions.

To manage document categories, switch to the **Categories** screen.

To create a new category, click **Add Category**.

Then specify the category name and click the **Add Category** button.

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After this step, you can add reports and dashboards to the newly created category by clicking the **Show Documents** button on the category tile.

Manage Documents

To access, customize or manage a document, a user must be granted the appropriate permissions.

To create a new document, switch to the **Documents** screen.

- To invoke the Report Designer, click the **Add Report** button.

- To invoke the Dashboard Designer, click the **Add Dashboard** button.

After the created document appears on the **Documents** screen, you can schedule its execution according to your preferences by clicking the **Preview** button (the "eye" icon) on the document's tile.

See Also
Create and Customize Reports
Schedule a Document and Select Subscribers

Schedule a Document and Select Subscribers

Report and Dashboard Server > Administrative Panel > Schedule a Document and Select Subscribers

This topic describes how you can schedule a document generation task and configure its settings.

To manage the document scheduler, switch to the **Scheduling** screen.

To schedule a new document generation task, click **Add Task**.

In the invoked screen, specify the task's options.

- General Settings
- Parameters Binding
- Document Parameters
- Internal Subscribers
- External Subscribers
- Export To Shared Folder
- Manage the Created Task

General Settings

Option	Description
Task Mode	The following two task modes are supported. • **Document** The task generates a single document (report or dashboard) that does not vary depending on who will receive it. • **Billing Statement**

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	The task generates a set of uniform documents that are tailored to specific recipients. The content of each document can be personalized using report or dashboard parameters. To create a billing statement, you will also need to specify a data field listing recipient emails. So, the Report and Dashboard Server must contain a data model that provides access to such a field. This is described in the following section of this topic: Parameters Binding.
Name	Specifies the unique name for the task.
Document	Specifies the document to be generated by the task.
Send by Email	Specifies how documents should be delivered by email. The available options depend on the document type.

Document	Delivery Options
Report	• **A URL to preview the report** Each email contains a URL, specifying the address of a web page that displays a report. • **An attached PDF** Each email contains a report attached as a PDF file. • **An attached Excel workbook.** Each email contains a report attached as an XLSX file. • **Embedded HTML** Each email has a report embedded into its body as inline HTML content.
Dashboard	• **A URL to view the dashboard** Each email contains a URL, specifying the address of a web page that displays a dashboard. • **An attached PDF** Each email contains a dashboard attached as a PDF file. • **An attached Excel workbook.** Each email contains a dashboard attached as an XLSX file.

Email Recipients	Specifies whether recipients should receive individual emails, or a common email with all recipients listed in the "To" section. This option is only available if the **Task Mode** is set to **Document**.
Emailing a Blank Document	Specifies whether or not to send blank documents by email, should they be created based on their underlying data.
Start Date	Specifies the date and time at which the task should run.
Store Documents for ... day(s)	Specifies for how many days to store created documents on the server. A zero value indicates unlimited document storage time.
Enabled	Specifies whether or not the task is allowed to run automatically.
Recurrence	Specifies the recurrence options of the task.

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Click **Add Task** to schedule the task and proceed to specifying its other settings.

Parameters Binding

This section is available in the following cases.

- When the **Task Mode** is set to **Billing Statement**.
- When the **Task Mode** is set to **Document** and the document contains visible parameters.

In this section, you are required to specify a data model that contains a data member (query, table or view) storing recipient emails.

Optionally, you can also specify a data field containing recipient names. These names will appear in the headers of created emails.

Document Parameters

This section is available only when a scheduled billing statement or document contains parameters. In this section, you can specify parameter values (multi-value and cascading parameters are supported).

A parameter value can be supplied from one of the following sources.

- **Static**

A parameter value is specified manually.

- **Bound**

A parameter value is supplied from a specified data source.

This option is only available when the **Task Mode** is set to **Billing Statement**.

- **Calculated**

A date-time parameter value is calculated at the time of running the scheduled task and corresponds to the selected point in time.

The following calculated values are supported.

Task	Day	Week
• Start of the previous task • End of the previous task	• Start of the previous day • End of the previous day • Start of the current day • End of the current day • Start of the next day • End of the next day	• Start of the previous week • End of the previous week • Start of the current week • End of the current week • Start of the next week • End of the next week
Month	**Quarter**	**Year**
• Start of the previous month • End of the previous month • Start of the current month • End of the current month • Start of the next month • End of the next month	• Start of the previous quarter • End of the previous quarter • Start of the current quarter • End of the current quarter • Start of the next quarter • End of the next quarter	• Start of the previous year • End of the previous year • Start of the current year • End of the current year • Start of the next year • End of the next year

Internal Subscribers

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This section is available only when the **Task Mode** is set to **Document**.

You can specify which of the registered Report and Dashboard Server users should receive emails by the scheduled task.

For internal subscribers to be able to receive these emails and access the created documents, they must be granted at least the minimum (read-only) permission to access this scheduled task.

External Subscribers

This category is available only when the **Task Mode** is set to **Document**.

In addition to registered Report and Dashboard Server users, you can specify any number of external subscribers to each scheduler task. The subscribers can be delimited by any of the following symbols: comma (,), semicolon (;), carriage return (\r), or new line (\n).

Export To Shared Folder

This category is available only when the **Task Mode** is set to **Document**.

You can export documents to various document formats and share these documents by placing them to a local or remote folder. To do this, specify paths to the resulting files separated by a comma. If a file with the specified name already exists, it will be overridden by a scheduled task.

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A document's file format will correspond to the specified file extension. The supported extensions depend on the document type:

Report	Dashboard
• "csv" • "docx" • "html" • "mht" • "pdf" • "rtf" • "txt" • "xls" • "xlsx"	• "pdf" • "png" • "xlsx"

When specifying the folder and/or file names, you can use the following placeholders.

- #Year#, transformed into **4** digits specifying the current year
- #Month#, transformed into **2** digits specifying the current month
- #Day#, transformed into **2** digits specifying the current day
- #Hour#, transformed into **2** digits specifying the current hour (in 24 hour format)
- #Minute#, transformed into **2** digits specifying the current minute

Manage the Created Task

After you click **Save**, the new task appears in the **Scheduling** screen.

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To manage the created task, use the following buttons.

	Show Generated Documents Lists all documents generated by a task.
	Update Enables you to customize any of the task's options described earlier in this document.
	Delete Deletes the task from the Report and Dashboard Server along with all documents generated by this task.

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Creating Reports

Report and Dashboard Server > Creating Reports

The topics in this section describe how to create and modify reports using the web and desktop Report Designer versions, which are shipped with the Report and Dashboard Server installation.

This documentation section contains the following topics.

Web Report Designer

- Create and Customize Reports
- Bind a Report to Data
- Construct the Report Layout
- Calculate Custom Values
- Specify Data Formatting
- Customize the Report Appearance
- Apply Conditional Formatting
- Sort and Group Report Data
- Calculate a Summary
- Add Additional Information
- Add Parameters and Filter Data
- Provide Navigation to the Report
- Provide Interactivity to the Report

Desktop Report Designer

- Create and Customize Reports
- Use the Report Wizard to Create a Report
- Use Parameters

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Web Report Designer

Create and Customize Reports

Report and Dashboard Server > Creating Reports > Create and Customize Reports

This tutorial describes how to manage reports in the Report and Dashboard Server and consists of the following sections:

- Create a New Report
- Save the Created Report
- Edit an Existing Report
- Export and Import a Report
- Use the Revision History

Create a New Report

Switch to the **Documents** screen where you can access and manage documents.

Click the **Add Report** button to create an empty report.

This opens the Web Report Designer which allows you to bind a report to data, add various report controls, perform data shaping operations, etc. This documentation section includes other tutorials describing how to construct reports.

Save the Created Report

After creating the report in the Web Report Designer, you can upload it to the server. Click the **Menu** button and select **Save**.

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In the invoked dialog, specify the document name, select an existing category or create a new one, and type the revision comment.

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The new report becomes available on the **Documents** screen.

Edit an Existing Report

Click the **Design** button on the report tile to edit this report in the Designer.

After you make changes to this document, you can save the revision by clicking the **Save** button in the menu. In the invoked dialog, specify the revision comment and click **OK** to upload it to the server.

Export and Import a Report

Switch to the **Documents** screen and click the document caption to show the screen with the document details.

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Click the **Export** button to export the report layout and download the resulting file, which has the **REPX** extension.

You can also export the report layout by selecting **Export to REPX** in the Designer's **Menu**.

To import the report layout, click **Import from REPX** in the Designer's **Menu**. Use the **Click to select file** button and, in the invoked **Import Report** dialog, locate the file with the **REPX** extension. Alternatively, you can drop the file onto the invoked dialog. Then, click the **Import** button to open the layout in the Designer.

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Use the Revision History

On the document details screen, click the **Revision History** button to view all report revisions.

Click the **Rollback** button to roll back to a specific document version.

Click **Yes** in the invoked dialog to confirm the operation.

See Also
Bind a Report to Data

Bind a Report to Data

Report and Dashboard Server > Creating Reports > Bind a Report to Data

This tutorial demonstrates how to bind a report to a hierarchical data source and specify a master-detail relationship between data source queries.

This topic consists of the following sections:

- Create a Data Model and Report
- Bind the Report to Data
- View the Result

Create a Data Model and Report

Before creating data-aware reports, you first need to define data models that obtain the necessary data from your data providers. For this tutorial, prepare the **Northwind** data model providing the **Orders** and **Customers** tables as well as the **Order Details** view.

Open an existing report or create a new one as described in the Create and Customize Reports document to get started with this tutorial.

Bind the Report to Data

To obtain a report's dynamic data from an external data source, do the following:

1. Click the main menu button and select **Add SQL Data Source** to create a new data source.

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2. On the first page of the invoked **SQL Data Source Wizard**, select an available data model and click **Next** to proceed.

3. On the next page, you can choose which tables, views and/or stored procedures to add to the data source.

Select the **Order Details** view. Create a custom query by clicking the plus button for the **Queries** category to display information from two different tables at the same hierarchical level.

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In the invoked **Query Builder**, add the **Orders** and **Customers** data tables to a query and join them based on a key column.

Give the **Orders** name to the created query and click **OK** to close the **Query Builder**.
Click **Next** on the wizard page to proceed.

4. The next wizard page allows you to configure parameters for a custom query. Click **Next** to skip this step.

5. On the following wizard page, define master-detail relationships between queries by specifying their corresponding key fields. Click the plus button next to the master query, choose the detail query to add a new relationship and specify the relationship condition as shown in the following image:

6. Click **Finish** to complete the wizard.

View the Result

The **Field List** displays the hierarchy of the data source after a report has been connected to data.

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A report's **Data Source** and **Data Member** properties specify the report's data binding.

See Also
Construct the Report Layout

Construct the Report Layout

Report and Dashboard Server > Creating Reports > Construct the Report Layout

This tutorial details the process of constructing a master-detail report to display information from a data source created in the previous tutorial. It describes how to change page layout settings, provide static and dynamic content to the report and customize the report layout by positioning and aligning report elements.

This topic consists of the following steps:

- Prepare the Report Layout
- Construct the Master Report
- Construct the Detail Report
- View the Result

Prepare the Report Layout

After creating a new report, its layout is divided into three default bands (**TopMargin**, **Detail** and **BottomMargin**) that provide space for placing different report controls on them.

- The top and bottom margins repeat on each document page.
- The Detail band is printed as many times as there are records in the report data source.

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Go to the **Properties** panel and use the **Measure Units** property under the **Actions** category to choose a system of measurement assigned to a report. This property affects report and report elements' unit-related options (such as location, size, etc.)

Move sliders on the horizontal and vertical rulers in the report surface to modify page margins.

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Alternatively, you can expand the **Page Settings** category in the **Properties** panel and explicitly specify the **Margins** option.

In this category, you can also select a predefined paper size or define a custom one, enable the **Landscape** page orientation and print a report on a roll paper.

Construct the Master Report

This section describes how to add data-aware controls to the report, provide static content as well as construct the report layout by positioning and aligning report elements.

Add Dynamic Content

Select the required item in the **Field List** and drag-and-drop it onto the Detail band to create a new data-aware report control.

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The control is marked with the database icon meaning that it is bound to the data field whose name it displays.

Another way to create a new report control is to drag the corresponding item from the **Toolbox** and drop it onto the band.

Select an added report control and, in the **Properties** panel, click the **Expression** property's ellipsis button. In the invoked **Expression Editor**, bind this control to the required data field.

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Add other data fields to the report using one of the described approaches.

Add Static Content

Drop **Label** controls from the **Toolbox** onto the band and double-click them to enter the required text to display static headers for specific data fields.

Use the **Line** control to separate data.

Use Mail Merge

You can also use the Mail Merge feature to embed data fields into a static text. Add the Label to the report and insert a data field name with square brackets into the control's text.

Position and Align Report Elements

The report surface is lined up by the snap grid, which makes it easier to align report elements to each other. The **Snap Grid Size** property specifies the snap grid's dimensions.

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You can move a report control by dragging it to a new location or by using ARROW keys. When a control is being moved, special guide lines appear indicating its position and size relative to other report controls.

Resize a report control by selecting it and dragging the rectangle drawn on its edges or corner.

You can also select multiple report controls while holding down the CTRL key, and then, move and resize them as individual controls.

The **Actions** category in the **Properties** panel provides special buttons that allow you to align the selected control or multiple selected controls (for example, align and resize to the snap grid).

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Perform the steps described above to get the following master report layout:

Construct the Detail Report

This section describes how to create a detail report band and construct its layout to display data in a tabular form.

Add a Detail Report Band

1. Select a report and switch to the **Properties** panel. Expand the **Actions** category and click **Insert Detail Report Band**.

2. Specify the **Data Source** option and set the **Data Member** property to the name of the master-detail relationship for the added band.

Note that a report can contain any number of detail reports (with each detail report containing any number of nested detail reports), which makes it possible to publish complex hierarchical data.

Construct the Report Layout

1. Click the required data fields in the **Field List** while holding down the **CTRL** key and drop them onto the **Detail** band of the detail report to display dynamic content in a tabular form. This creates a table with cells bound to the corresponding data fields.

You should get fields under the category corresponding to the master-detail relationship to generate the detail report's data.

2. Add the Group Header to the detail report by selecting the report and clicking **Insert Group Header Band** in the **Properties** panel.

3. Drop the **Table** control from the **Toolbox** onto the added band.

4. Double-click table cells and enter the required text.

5. Enable the **Keep Together with Detail Reports** option of the master report's Detail band to always print master and detail report content on the same page.

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View the Result

Click the **Preview** toolbar button to see the resulting report.

Maria Anders	ORDER #	10643
Alfreds Futterkiste	FREIGHT	29.4600
Obere Str. 57		
Berlin	ORDER DATE	8/25/2016 12:00:00 AM
Germany	REQUIRED DATE	9/22/2016 12:00:00 AM
	SHIPPED DATE	9/2/2016 12:00:00 AM

QTY	PRODUCT	PRICE	DISCOUNT
15	Rössle Sauerkraut	45.6000	0.25
21	Chartreuse verte	18.0000	0.25
2	Spegesild	12.0000	0.25

See Also
Calculate Custom Values

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Calculate Custom Values

Report and Dashboard Server > Creating Reports > Calculate Custom Values

This tutorial demonstrates how to calculate custom values using a predefined expression with fields from the bound data source. You can use the data fields containing information about price, quantity, and discount to evaluate an extended price as well. This document shows two ways to accomplish this task: by specifying a control's expression binding and by creating a calculated field.

This topic consists of the following sections:

- Specify an Expression Binding
- Use a Calculated Field
- View the Result

Specify an Expression Binding

Do the following to specify a custom expression with data source fields for the control's **Text** property:

1. Select the rightmost table cell in the detail report's Detail band. Switch to the **Properties** panel and click the **Insert Column to Right** button in the **Actions** category.

2. Select the created table cell, and in the **Properties** panel, click the **Expression** property's ellipsis button. The invoked **Expression Editor** allows you to visually construct an expression using the predefined functions, logical and arithmetical operators, and the fields of a data source to which a report is bound.

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Use the field name in **[**square brackets**]** to insert a data field into the expression's text. Date-time constants should be wrapped in **#**hashtags**#**. Use apostrophes to denote 'strings'. For instance, *Iif([OrderDate] > #1/1/2017#, [OrderDate] , 'Earlier than 1/1/2017')* .

3. In the same way, add a new cell to the table located in the Group Header band, double-click this cell and enter the static caption for the calculated field.

Use a Calculated Field

If you want to use the calculated values in other calculations or group and sort report data against these values, you can create a calculated field at the data source level and then use it as an ordinary data field.

Do the following to create a calculated field:

1. Switch to the Field List, select a node corresponding to a master-detail relationship and click the **Add calculated field** button.

2. Select the calculated field and click the **Edit** button to customize its settings. Specify the field name and make sure to change the **Field Type** property to an appropriate value.

3. Click the **Expression** property's ellipsis button to specify an expression for evaluating a calculated field's values.

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A calculated field's expression can evaluate the values of other calculated fields if you avoid circular references.

4. Use the calculated field as an ordinary field for binding report controls. Drop this field from the **Field List** onto the target table cell.

You can also filter, sort and group your report against calculated fields.

View the Result

Click the **Preview** toolbar button to see the resulting report.

Maria Anders	ORDER #	10643
Alfreds Futterkiste	FREIGHT	29.4600
Obere Str. 57		
Berlin	ORDER DATE	8/25/2016 12:00:00 AM
Germany	REQUIRED DATE	9/22/2016 12:00:00 AM
	SHIPPED DATE	9/2/2016 12:00:00 AM

QTY	PRODUCT	PRICE	DISCOUNT	EXTENDED PRICE
15	Rössle Sauerkraut	45.6000	0.25	513
21	Chartreuse verte	18.0000	0.25	283.5
2	Spegesild	12.0000	0.25	18

See Also
Specify Data Formatting

Specify Data Formatting

Report and Dashboard Server > Creating Reports > Specify Data Formatting

This tutorial demonstrates how to specify value formatting for report elements. In particular, it shows how to format numeric values as a currency, apply a percent format and display date/time values in one of the standard forms.

This topic consists of the following sections:

- Format Numeric Values
- Format Date-Time Values
- View the Result

Format Numeric Values

Locate a control bound to a price field (**Unit Price**, **Extended Price** or another one) and switch to the **Properties** panel. Expand the **Actions** category and click the **Text Format String** property's ellipsis button.

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The invoked **FormatString Editor** contains numerous built-in formatting presets grouped by categories. Switch to the **Currency** category and select a required format pattern to display field values as currency amounts. The editor allows you to see the preview of the selected format in the **Preview** section.

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You can manually create a format if it does not exist in the list by entering the format string in the dedicated editor and clicking **Add**.

Select a control bound to a field, whose values should be displayed as percents (the **Discount** field in this example), and invoke the **FormatString Editor** for it. Choose a format item under the **Percent** category to apply percent format to this control. In this case, field values are multiplied by 100 and displayed with a percent symbol.

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Format Date-Time Values

Select a date-time field (**OrderDate**, **RequiredDate** or **ShippedDate**), invoke the **FormatString Editor** and choose one of the standard formats in the **DateTime** category. For instance, display the date string as the full name of the month followed by the number of the day and a four digit year.

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View the Result

Click the **Preview** toolbar button to see the result.

Maria Anders	ORDER #	10643
Alfreds Futterkiste	FREIGHT	$29.46
Obere Str. 57		
Berlin	ORDER DATE	August 25, 2016
Germany	REQUIRED DATE	September 22, 2016
	SHIPPED DATE	September 2, 2016

QTY	PRODUCT	PRICE	DISCOUNT	EXTENDED PRICE
15	Rössle Sauerkraut	$45.60	25.00%	$513.00
21	Chartreuse verte	$18.00	25.00%	$283.50
2	Spegesild	$12.00	25.00%	$18.00

See Also
Customize the Report Appearance

Customize the Report Appearance

Report and Dashboard Server > Creating Reports > Customize the Report Appearance

This tutorial demonstrates how to customize the appearance settings of a report and its elements, create global report styles and alternate data records using odd and even styles.

This topic consists of the following sections:

- Change Appearance Properties
- Create Report Styles
- Specify the Style Priority
- Use Odd and Even Styles
- View the Result

Change Appearance Properties

A report and each of its elements (bands and controls) have a complete set of appearance options (such as **Background Color**, **Borders**, **Font**, **Foreground Color**, **Text Alignment**, etc.). These properties are not specified by default, meaning that their real values are obtained from a control's (or band's) parent, which is the report itself.

A report's font settings are distributed to all its child elements. Similarly, the appearance of a band is translated to the controls it contains.

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You can adjust the control appearance independently from its parent.

You can also change the appearance settings for multiple controls simultaneously. Select the required controls while holding down the CTRL key and change their **Text Alignment** option.

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Click the **Advanced Options** button for a required option in the **Properties** panel and click **Reset** if you need to reset a value assigned to a control's appearance. As a result, the corresponding properties of the control's parent determine its appearance.

Create Report Styles

You can create global styles in a report, and assign them to individual elements.

Go to the **Report Explorer**, select the **Styles** node and click the plus button to add a new style.

Select the created style and click the **Properties** button.

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This switches to the **Properties** panel, where you can adjust the required appearance (for instance, change the **Foreground Color**).

Drag a style from the **Report Explorer** onto a report control to apply this style.

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Alternatively, select a report control and use the **Properties** panel. Invoke the drop-down list for the **Style** property and choose an existing report style.

Specify the Style Priority

A style defines the same appearance properties as a control's (or band's) appearance properties. When you assign both styles and individual appearance settings to an element, you can decide which of the properties to use.

A style's appearance property has a higher priority than an element's appearance property by default. The **Advanced Options** button for this appearance property is highlighted in blue. Click this button and select **Style Priority** to assign a higher priority to an element's appearance property. This highlights the **Advanced Options** button in white.

Use Odd and Even Styles

To assign different style settings to alternating table rows in the detail report, do the following:

1. Select a table in the Detail band of the detail report and expand the **Styles** category in the **Properties** panel. Invoke the drop-down list for the **Even Style** property and click **Create a New Style**.

2. Expand the **Even Style** option and adjust the required options of the newly created style (for example, specify the **Background Color**).

3. If necessary, perform the same steps to create and assign an odd style.

View the Result

Click the **Preview** toolbar button to see the result.

Maria Anders
Alfreds Futterkiste
Obere Str. 57
Berlin
Germany

ORDER # 10643
FREIGHT $29.46

ORDER DATE August 25, 2016
REQUIRED DATE September 22, 2016
SHIPPED DATE September 2, 2016

QTY	PRODUCT	PRICE	DISCOUNT	EXTENDED PRICE
15	Rössle Sauerkraut	$45.60	25.00%	$513.00
21	Chartreuse verte	$18.00	25.00%	$283.50
2	Spegesild	$12.00	25.00%	$18.00

See Also
Apply Conditional Formatting

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Apply Conditional Formatting

Report and Dashboard Server > Creating Reports > Apply Conditional Formatting

This tutorial describes how to change a report element's appearance based on a logical condition, for example, make a label's text bold if its value exceeds a specific threshold.

Do the following to accomplish this task:

1. Switch to the **Report Explorer**, select the **Styles** node and click the plus button to add a new style as in the previous tutorial.

2. Select the created style, go to the **Properties** panel and specify the appearance (for instance, make the font bold).

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3. Select the table cell bound to the **Discount** data field, open the **Expressions** tab and click the **StyleName** property's ellipsis button.

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4. In the invoked **Expression Editor**, specify the logical condition for switching to the created style. For instance, use the following expression to apply this style if the **Discount** field value is greater than **0**:

iif([Discount] > 0, 'xrControlStyle3', ?)

5. You can also apply conditional formatting to individual appearance settings in the **Expressions** tab (the foreground and background colors, font options, etc.). The **Expression Editor** provides the **Values** section containing relevant values that can help you to construct a valid expression for specific properties.

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Click the **Preview** toolbar button to see the resulting document.

Christina Berglund
Berglunds snabbköp
Berguvsvägen 8
Luleå
Sweden

ORDER #	10572
FREIGHT	$116.43
ORDER DATE	June 18, 2016
REQUIRED DATE	July 16, 2016
SHIPPED DATE	June 25, 2016

QTY	PRODUCT	PRICE	DISCOUNT	EXTENDED PRICE
12	Pavlova	$17.45	10.00%	$188.46
10	Mascarpone Fabioli	$32.00	10.00%	$288.00
50	Boston Crab Meat	$18.40	0.00%	$920.00
15	Rhönbräu Klosterbier	$7.75	10.00%	$104.62

See Also
Sort and Group Report Data

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Sort and Group Report Data

Report and Dashboard Server > Creating Reports > Sort and Group Report Data

This tutorial describes how to sort and group data in a report created in previous tutorials as well as what options affect grouping behavior.

Christina Berglund
Berglunds snabbköp
Berguvsvägen 8
Luleå
Sweden

ORDER #	10572
FREIGHT	$116.43
ORDER DATE	June 18, 2016
REQUIRED DATE	July 16, 2016
SHIPPED DATE	June 25, 2016

QTY	PRODUCT	PRICE	EXTENDED PRICE
Discount:	**0.00%**		
50	Boston Crab Meat	$18.40	$920.00
Discount:	**10.00%**		
10	Mascarpone Fabioli	$32.00	$288.00
12	Pavlova	$17.45	$188.46
15	Rhönbräu Klosterbier	$7.75	$104.62

This topic consist of the following sections:

- Sort Report Data
- Group Report Data
- Specify Grouping Options
- View the Result

Sort Report Data

Select the detail report's Detail band and expand the **Actions** category in the **Properties** panel. In the **Sort Fields** section, click the plus button to create a new sorting field.

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In the **Sort By** drop-down list, choose a data member across which the detail report should be sorted.

Click the corresponding arrow button to manage the sorting order for this criterion. The ↑ and ↓ icons indicate the ascending and descending sorting order, respectively. Click this button until it is marked with the icon to disable sorting.

You can define the priority for multiple sorting criteria using the ^ and ˅ buttons.

Group Report Data

To split data into groups based on identical values in the **Discount** data field, do the following:

1. Switch to the **Properties** panel and add a Group Header band to the detail report by clicking the corresponding button in the **Actions** category. This band is displayed at the beginning of every group.

You can also accompany each Group Header by a Group Footer band, for instance, to display summary values.

2. Select the created Group Header, and in the **Actions** category, click the plus button for the **Group Fields** property.

3. Set the **Group By** property to a data member across which the report should be grouped.

4. Use the corresponding arrow button in the same way as for the sorting items to manage the sorting order of the group's items.

You can also add multiple data fields to this collection to group report data by the distinct combinations of these group field values.

5. Move the **Discount** data field specified as the grouping criterion from the Detail band to the Group Header band.

Specify Grouping Options

You can provide nested grouping for report data by creating multiple Group Header bands and specifying different group fields for them. In this scenario, a band's **Level** property determines the nesting level. Changing this property for the Group Header created in the previous section changes another Group Header automatically.

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The **Level** property also allows you to associate a Group Header with the corresponding Group Footer.

The **Group Union** property specifies whether group rows are printed on different pages or the entire group should be printed on a single page. The **Keep Together** property, in turn, determines whether the contents of the group band can be split horizontally across pages.

Use the **Repeat Every Page** option to define whether a group band should be shown only on the first page that the group appears or on every page.

View the Result

Click the **Preview** toolbar button to see the result. The detail report data has become sorted by product names and grouped based on the grouping criteria value.

Christina Berglund	ORDER #	10572
Berglunds snabbköp	FREIGHT	$116.43
Berguvsvägen 8		
Luleå	ORDER DATE	June 18, 2016
Sweden	REQUIRED DATE	July 16, 2016
	SHIPPED DATE	June 25, 2016

QTY	PRODUCT	PRICE	EXTENDED PRICE
Discount:	**0.00%**		
50	Boston Crab Meat	$18.40	$920.00
Discount:	**10.00%**		
10	Mascarpone Fabioli	$32.00	$288.00
12	Pavlova	$17.45	$188.46
15	Rhönbräu Klosterbier	$7.75	$104.62

See Also
Calculate a Summary

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Calculate a Summary

Report and Dashboard Server > Creating Reports > Calculate a Summary

This tutorial demonstrates how to obtain a total price within each detail report by calculating a summary for a data-bound label control using a built-in function.

Do the following to accomplish this task:

1. Select the detail report and add a Group Footer by switching to the **Properties** panel and clicking the **Insert Group Footer Band** button in the **Actions** category. This allows you to display a summary at the bottom of each detail report

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Ensure that the Group Footer band is correctly associated with an appropriate Group Header band using the **Level** property. For this tutorial, the Group Footer's **Level** property should be set to **1** (as specified in the previous tutorial).

2. Drop the Label control from the **Toolbox** onto the created Group Footer.

3. Select the newly created label and expand the **Actions** category in the **Properties** panel. In the **Summary** section, set the **Running** property to a value that specifies the range for which to calculate a summary (the entire report, a specific report group or document page). Then, click the **Expression** property's ellipsis button, and in the invoked **Expression Editor**, select the required summary in the **Functions** | **Summary** section.

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The **Format String** property allows you to apply formatting to the summary result. For instance, use the **Total: {0:c2}** string to format a summary value as a currency and add a custom text before this value.

You can also use the **Ignore NULL values** option to specify whether to consider null (empty) data source records when calculating the total. This property is aimed at functions like **sumCount** or **sumAverage** because the number of elements counted depends on the property value.

4. Specify the summary label's appearance settings (for instance, make the font bold). Use the **Line** controls to separate the field captions and summary value from the detail data.

Click the **Preview** toolbar button to view the result.

Christina Berglund
Berglunds snabbköp
Berguvsvägen 8
Luleå
Sweden

ORDER #	10572
FREIGHT	$116.43
ORDER DATE	June 18, 2016
REQUIRED DATE	July 16, 2016
SHIPPED DATE	June 25, 2016

QTY	PRODUCT	PRICE	EXTENDED PRICE
Discount: 0.00%			
50	Boston Crab Meat	$18.40	$920.00
Discount: 10.00%			
10	Mascarpone Fabioli	$32.00	$288.00
12	Pavlova	$17.45	$188.46
15	Rhönbräu Klosterbier	$7.75	$104.62

Total: $1,501.08

See Also
Add Additional Information

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Add Additional Information

Report and Dashboard Server > Creating Reports > Add Additional Information

This tutorial demonstrates how to provide additional information to the report created in previous tutorials. In particular, it shows how to add the report name, company logo, page numbers, and current date.

INVOICE

Christina Berglund
Berglunds snabbköp
Berguvsvägen 8
Luleå
Sweden

ORDER #	10572
FREIGHT	$116.43
ORDER DATE	June 18, 2016
REQUIRED DATE	July 16, 2016
SHIPPED DATE	June 25, 2016

QTY	PRODUCT	PRICE	EXTENDED PRICE
Discount: 0.00%			
50	Boston Crab Meat	$18.40	$920.00
Discount: 10.00%			
10	Mascarpone Fabioli	$32.00	$288.00
12	Pavlova	$17.45	$188.46
15	Rhönbräu Klosterbier	$7.75	$104.62

Total: $1,501.08

June 5, 2017

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This topic consists of the following sections:

- Add Appropriate Report Bands
- Add the Report Name
- Add the Picture Box
- Add Page Numbers
- Add System Date
- View the Result

Add Appropriate Report Bands

Auxiliary information is displayed within Page Margin bands, Page Header/Footer (located at the top/bottom of a page) or Report Header/Footer bands (located at the beginning/end of a report).

After creating a report, it contains the Top Margin and Bottom Margin bands by default. Use the dedicated buttons in the **Actions** category of the **Properties** panel to add other required bands to a report. For this tutorial, insert the Page Header and Footer to the master report.

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Add the Report Name

Drop the **Label** control from the **Toolbox** onto the Page Header band to display the report name on every page. Add the Label to the Report Header band if you want to display the report name only once.

Double-click the created Label to type the required text and specify the desired appearance settings.

Add the Picture Box

To display a company logo at the bottom of the report, do the following:

1. Drop the **Picture Box** control from the **Toolbox** onto the Bottom Margin band.

2. Locate and resize the created control as required.
3. Select the control, go to the **Properties** panel and expand the **Actions** category. Click the ellipsis button for the **Image** property, and in the invoked **Open** dialog, select an image to display.

4. Set the control's **Sizing** property to **Zoom Image** to proportionally resize the image, so that it fits the control.

Add Page Numbers

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To insert page numbers to your report, do the following:

1. Drop the **Page Info** control from the **Toolbox** onto the Page Footer band.

2. Select the created control, switch to the **Properties** panel and expand the **Actions** category. Use the **Page Information** property to choose one of the following formats for displaying page numbers:
   - **Page Number** - displays the current page number only.
   - **'Current of Total' Page Numbers** - displays the current page number with total pages.
   - **Page Number (Roman, Lowercase)** - displays the current page number in lowercase Roman letters.
   - **Page Number (Roman, Uppercase)** - displays the current page number in uppercase Roman letters.
   - **Page Count** - displays the total number of pages.

3. Change the display format of page numbers using the **Format** property, for instance, set this property to *Page {0} of {1}*.

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4. Expand the **Behavior** category and set the **Running Band** property to the Group Header band located in the detail report and displayed field captions. This allows you to display page numbers for detail reports.

Add System Date

The **Page Info** control also allows you to display system date and time or user name.

To display current date in you report, do the following:

1. Drop one more **Page Info** control from the **Toolbox** onto the Page Footer.
2. Select the created control, switch to the **Properties** panel and expand the **Actions** category. In the drop-down list for the **Page Information** property, select **Current Date and Time**.

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3. Click the ellipsis button for the **Format** property, and in the invoked **Format String Editor**, specify a date format (for example, **MMMM d, yyyy**).

View the Result

Click the **Preview** toolbar button to see the resulting document.

INVOICE

Christina Berglund
Berglunds snabbköp
Berguvsvägen 8
Luleå
Sweden

ORDER #	10572
FREIGHT	$116.43
ORDER DATE	June 18, 2016
REQUIRED DATE	July 16, 2016
SHIPPED DATE	June 25, 2016

QTY	PRODUCT	PRICE	EXTENDED PRICE
Discount: 0.00%			
50	Boston Crab Meat	$18.40	$920.00
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Total: $1,501.08

June 5, 2017

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DevExpress

See Also
Add Parameters and Filter Data

Add Parameters and Filter Data

Report and Dashboard Server > Creating Reports > Add Parameters and Filter Data

This tutorial demonstrates how to add parameters to a report, provide them with default values, create multi-value and cascading parameters (i.e., filter parameter values based on the current value of another parameter). The created parameters are used to filter data at the data source level. The last document section describes other uses of report parameters not related to filtering data.

This tutorial consists of the following sections:

- Create a Data Source
- Add a Report Parameter
- Create a Multi-Value Parameter
- Create Cascading Parameters
- User-Specific Functions
- Other Uses of Report Parameters

Create a Data Source

In the previous tutorials, you bound a report to a data source and constructed the report layout with data fields from this data source. This tutorial demonstrates how to filter data at the level of this data source.

You need to add another data source containing the same queries to provide values for report parameters.

Add a Report Parameter

A report parameter stores one or more values that can be modified in Print Preview and passed to a report before its creation.

The following steps illustrate how to make a report display data corresponding to a specific order selected in Print Preview:

1. Select the **Parameters** node in the **Field List** panel and click the plus button to create a new report parameter.

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2. Click the **Edit** button for the created parameter to expand the property list. Specify the parameter's **Name** (by which it can be referred to in the filter expression) and **Description** (to display in Print Preview).

Set the **Type** property corresponding to the type of a data field against which this parameter should be compared in the filter expression.

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Set the **Look-Up Settings Type** property to **Dynamic List** to supply parameter values from a dedicated data source. This enables the following look-up settings:

- **Filter String** (optional)

Enables you to filter the list of parameter values (e.g., to create cascading parameters that are described further down in this tutorial).

- **Data Source**

Specifies the data source to which the parameter is bound.

- **Data Member**

Specifies the name of a data column storing the parameter values.

- **Display Member** (optional)

Specifies the name of a data field providing parameter value descriptions displayed in Print Preview.

- **Value Member**

Specifies the name of a data field providing the parameter values.

3. Access a data source providing data for a report and click the **Edit query** button for the query that you want to filter (**Orders** query for this step).

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4. In the invoked **Data Source Wizard** page, click the **Run Query Builder** button.

5. In the **Query Builder**, switch to the **Query Properties** section and click the ellipsis button for the **Filter** property.

In the invoked **Filter Editor**, construct an expression in which the **OrderID** data field is compared to a query parameter value. Expand the drop-down menu for a value placeholder and select **Parameter**.

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This converts the value placeholder into a parameter placeholder. Click this placeholder and select **Create new parameter**.

In the dedicated editor, specify the query parameter name.

Click **Save** to save the filter condition and close the editor.

Click **OK** in the **Query Builder**, and then, click **Next** on the wizard page to proceed.

6. On the following wizard page, map the created query parameter to the report parameter. Expand the drop-down list for the parameter's **Type** property and select **Expression**. Then, click the ellipsis button for the **Value** property and specify the report parameter in the invoked **Expression Editor**.

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Switch to Print Preview by clicking the **Preview** button in the main toolbar. Select a required order in the parameter's lookup editor. Click the **Submit** button to pass the corresponding value to the filter expression and generate the document.

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Create a Multi-Value Parameter

Do the following to enable a report parameter to accept multiple values at once and filter the report against these values:

1. Go to the **Field List** and enable the parameter's **MultiValue** option.

2. Once again, run the **Query Builder** for the **Orders** query and invoke the **Filter Editor**. Customize the filter expression so that the **OrderID** data field is compared to all of the parameter values.

Switch to Print Preview and select one or more values in the parameter's lookup editor. Click **Submit** to pass the corresponding values to the report and generate the document.

Create Cascading Parameters

The following steps describe how to create a new parameter and filter its values depending on the values selected for another parameter:

1. Click the plus button for the **Parameters** node in the **Report Explorer** to create a new parameter.
2. Specify the parameter's name, description and other options as you did before. Ensure that you correctly provide look-up settings (for this tutorial, set the **Data Member** property to the detail query and assign the **Value Member** and **Display Member** properties to the same **ProductName** data field).

3. Click the ellipsis button for the parameter's **Filter String** property to filter the list of available products according to the selected order. In the invoked editor, construct an expression in which the **OrderID** data field is compared with another parameter value.

4. Click the **Edit query** button for the detail query to filter data in the detail report.

5. Run the **Query Builder** and invoke the **Filter Editor**. Create a new query parameter as described above and specify a filter expression to compare the **Product Name** field with this parameter.

Close the editor and complete the **Query Builder**.

6. On the next wizard page, map the query parameter to the corresponding report parameter.

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Switch to Print Preview and select the required orders and products. Click **Submit** to generate the document.

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User-Specific Functions

The Report and Dashboard Server provides a particular set of functions that enable you to access information about a current user. Using these functions, you can make a data model return specific subsets of data to different users. This restricts access to sensitive information in your database, and users cannot access and modify these functions unless they have the required permissions.

However, non-privileged users are still able to use these functions at the document level (to further filter the data available to them).

To learn more on this, see the "User-Specific Functions" section in the Manage Data Models and Connect to Data document.

Other Uses of Report Parameters

Besides filtering report data, you can use report parameters to accomplish the following tasks:

- **Data Binding**

You can bind a report control to a parameter and display its value in the report by dropping the parameter from the **Field List** onto the required band. This creates a **Label** control bound to the parameter as with an ordinary data field.

- **Calculated Fields**

Parameters can participate in constructing expressions for calculated fields as well as standard data fields. The only difference is that a parameter is inserted into the expression text using the **Parameters.** prefix before its name.

See the Schedule a Document and Select Subscribers document to learn how to pass report parameters to a scheduled report.

See Also
Provide Navigation to the Report
Schedule a Document and Select Subscribers

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Provide Navigation to the Report

Report and Dashboard Server > Creating Reports > Provide Navigation to the Report

This tutorial illustrates how to simplify navigation in a master-detail report created in previous tutorials by adding bookmarks and a table of contents.

- Specify Bookmarks
- Add a Table of Contents

Specify Bookmarks

You can assign bookmarks to a report control and the report itself. In Print Preview, the document map lists these bookmarks which allow you to navigate to a specific entry in a document.

Perform the following steps to provide bookmarks to a master-detail report:

1. Select the master report and switch to the **Properties** panel. Expand the **Navigation** section and set the **Bookmark** property (for example, to **Invoices**) to define the text for the document map's root bookmark.

The root bookmark displays the report name if you do not specify this property.

2. Select the control bound to the **OrderID** field in the master report's detail band and switch to the **Expressions** tab. Click the **Bookmark** property's ellipsis button, and in the invoked **Expression Editor**, select the **OrderID** data field. You can also format the bookmark text using the **FormatString** function.

For instance, specify the following expression: *FormatString('Order: {0}', [OrderID])*.

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3. Select the table in the detail report's Detail band and bind its **Bookmark** property to the **ProductName** field (that belongs to the master-detail relationship).

4. Switch to the **Properties** tab, expand the **Navigation** category and set this table's **Parent Bookmark** property to the label placed in the master report. This arranges bookmarks into a parent-child structure reflecting the report elements' hierarchy in the Document Map.

Switch to Print Preview to view the result. Click an item in the document map tree to show the corresponding document page and highlight the element associated with the bookmark.

Add a Table of Contents

Do the following to add a table of contents listing bookmarks assigned to report elements along with their corresponding page numbers:

1. Drop the **Table of Contents** control from the **Toolbox** onto the master report's Report Header band. This band is created automatically if the report does not contain it.

2. Double-click the table of contents' title and specify its text.

3. Switch to the **Properties Panel**, expand the **Behavior** category and use settings in the **Level Title** section to customize the title appearance.

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4. Adjust the options in the **Level Default** section to specify all other levels' appearance.

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5. Add a corresponding item to the **Levels** collection if you need to customize a level individually. After creating a new level, you can access and customize its properties.

You can view the result by switching to Print Preview. The document begins with a table of contents generated based on the bookmarks' hierarchy.

See Also
Provide Interactivity to the Report

Provide Interactivity to the Report

Report and Dashboard Server > Creating Reports > Provide Interactivity to the Report

This tutorial demonstrates how to enable sorting report data in Print Preview and provide the drill-down functionality that allows collapsing and expanding specific document sections.

This topic consists of the following sections:

- Enable Data Sorting in Print Preview
- Create a Drill-Down Report

Enable Data Sorting in Print Preview

Do the following to enable sorting report data in Print Preview:

1. Select the table cell displaying the **Product** caption in the detail report's Group Header band.
2. Switch to the **Properties** panel and expand the **Behavior** category. In the **Interactive Sorting** section, set the **Target Band** property to the detail report's Detail band.

3. The band's **Sort Fields** collection contains the **Product Name** field against which the detail report was sorted in the previous tutorial. Add the required field to this collection, if it is empty.
4. The arrow next to the **Sort By** property indicates the default sorting direction in Print Preview. Click this arrow until it displays the icon if you do not require default sorting.
5. Set the table cell's **Field Name** property to the **ProductName** field.

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Click the **Preview** toolbar button to see the result. When a mouse pointer hovers over the **Product** caption, it changes to a hand, indicating the sorting capability. The arrow at the element's right edge indicates the sorting order.

Create a Drill-Down Report

This section describes how to add a drill-down functionality to your report, hide the detail data in a document and access this data by clicking a link in the document.

1. Drop the **Label** control from the **Toolbox** onto the master report's Detail band to create a link for toggling the detail report's visibility state.

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2. Double-click the added label and type **Show/Hide Details**.

3. Switch to the **Properties** panel, expand the **Appearance** category and apply the required formatting (for example, the blue color and underlined text) for this label to resemble link.

4. Select the Detail Report band, and in the **Properties** panel, expand the drop-down list for the **Drill-Down Control** property.

The list displays all report controls available on the report band that is one level above the current band in the hierarchy. Select a previously added label from the drop-down list. Clicking this label expands and collapses the detail report in Print Preview.

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You can also use the **Drill-Down Expanded** property, which is enabled by default, to specify whether the band is initially expanded.

Switch to Print Preview to see the resulting document.

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INVOICE

Christina Berglund
Berglunds snabbköp
Berguvsvägen 8
Luleå
Sweden

ORDER # 10444

Show/Hide Details

June 9, 2017

INVOICE

Christina Berglund
Berglunds snabbköp
Berguvsvägen 8
Luleå
Sweden

ORDER #	10572
FREIGHT	$116.43
ORDER DATE	June 18, 2016
REQUIRED DATE	July 16, 2016
SHIPPED DATE	June 25, 2016

Show/Hide Details

QTY	PRODUCT	PRICE	EXTENDED PRICE
Discount: 0.00%			
50	Boston Crab Meat	$18.40	$920.00
Discount: 10.00%			
10	Mascarpone Fabioli	$32.00	$288.00
12	Pavlova	$17.45	$188.46
15	Rhönbräu Klosterbier	$7.75	$104.62

Total: $1,501.08

June 9, 2017

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DevExpress

Windows Forms Report Designer

Create and Customize Reports

Report and Dashboard Server > Creating Reports > Create and Customize Reports

This topic explains how to use the DevExpress Report and Dashboard Server's version matching system, which allows you to maintain various versions of the same report. It details the process of obtaining existing reports from the Report and Dashboard Server storage, illustrates the specifics of creating new reports using the Report Designer, and explains how to upload your local report to the Report and Dashboard Server storage.

This topic includes the following sections:

- Log In to the Report and Dashboard Server
- Create a New Report
- Open an Existing Report
- Upload a New Report to the Server
- Save Changes Made to a Report

Log In to the Report and Dashboard Server

If you are not logged on to the server (e.g., you are running the **Report and Dashboard Server End-User Report Designer** for the first time), the **Login** dialog will be invoked when you try to create or open a report.

In the **Login** dialog, you will need to specify the server address and authentication method. If you are using **Report and Dashboard Server** authentication, you additionally need to specify your login information.

Tip
Clicking the **New Report** or **Open Report** button while holding the SHIFT key while one or more reports are being edited in the Designer will display a prompt to close the current connection and run the **Login** dialog once again.

Create a New Report

You can create a new report using the **Report Wizard**. To invoke the **Report Wizard**, click the **New Report...** button in the **Report** tab of the ribbon toolbar.

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To learn how to use the **Report Wizard** to create a report, see the Use the Report Wizard to Create a Report topic.

Open an Existing Report

To open an existing report, click the **Open Report** button in the **Report** section of the ribbon toolbar.

In the invoked window, select a category and a report within the category, and click **Open**.

To open an older version of the report, click the drop-down arrow in the **Open** button and select **Open Revision**.

This will invoke the **Open Revision** dialog, which lists all report revisions. Select the required revision and click **Open**.

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Upload a New Report to the Server

To upload a new report to the server, click the **Upload Report** button in the **Report** section of the ribbon toolbar.

In the invoked window, select the category to which you want to save the report, or create a new category by clicking the **New Category** icon in the dialog's toolbar.

Specify the name, description and revision comment for your report.

Click **Save** to upload the report to the server's storage.

Save Changes Made to a Report

After you have made changes to an existing report, you have two options:

- save the report;
- check the report in.

Saving creates a local copy of the report, allowing you to close the report and finalize the revision later. Additionally, it locks the report. This means that the report will not be editable by other users until the check in or rollback.

Checking in uploads a new revision to the server and unlocks the report, if it was previously locked.

To save the report, click **Save Report** in the ribbon toolbar.

To check in the revision, click **Check In Report** in the ribbon toolbar.

To undo all changes made for the current revision, click the drop-down arrow in the **Check In Report** button and select **Undo Check Out** in the invoked menu.

See Also
Use the Report Wizard to Create a Report

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Use the Report Wizard to Create a Report

Report and Dashboard Server > Creating Reports > Use the Report Wizard to Create a Report

This topic describes how to invoke and use the Report Wizard, which provides a fast and convenient way to create reports in the Report Designer.

To invoke the Wizard, click the **New Report...** button in the **Report** tab of the ribbon toolbar.

The Wizard will prompt you to do one of the following:

- Create an Empty Report
- Create a Databound Report
- Create a Label Report
- Create a Report Copy

Create an Empty Report

To create an empty report, select **Empty Report** in the first page of the Report Wizard and click **Finish**.

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The report created will have no data bindings, and will only contain a Detail Band.

To provide data to your report, do the following:

1. Click the smart tag of the report, and in the invoked actions list, expand the **Data Source** drop-down list and click **Add New DataSource**.

2. On the first page of the invoked **Data Source Wizard**, select the data source to use in your report from the list of available items.

3. On the next page, select tables or views from your database. If you choose multiple tables (e.g., to create a master-detail report), the **Report Designer** creates a data relationship between them (if possible).

4. Click **Finish** to exit the **Data Source Wizard**.

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Create a Databound Report

1. To create a data-bound report, select **Databound Report** on the first page of the Report Wizard and click **Finish**.

2. On the second page, select the data source to which you want to connect your report from the list of available items, and click **Next**.

3. On the next page, select the Table or View you wish to use in the report from the list of available items, and click **Next**.

4. On the next page, select fields to be displayed in the report. The list on the left shows all available fields. To select the required item, click the item, and then click the right arrow (>) button.

Note that steps 5 through 10 below are optional. If you click **Finish** before reaching the last page of the Report Wizard, all settings that are not specified will be set to their default values.

5. The next page allows you to add grouping to the report. To add a grouping level, select the field that you wish to use as the grouping criteria, and click the right arrow button.

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To add a field to an existing grouping level, select the field from the list of available items, select the grouping level from the list on the right, and click the arrow with the plus sign.

6. On the next page, you can specify a summary function to be calculated for any numeric data field in the report.

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7. On the next page, you can select the layout of the report.

8. Next, you can specify a style for the report.

9. On the last page, specify the report's title and click **Finish** to exit the wizard.

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10. After the Report Wizard is closed, the report will be generated with the specified settings. Click the **Print Preview** tab in the ribbon menu to view the result.

Products by category

Category Name Beverages

Product Name	Quantity Per Unit	Units In Stock
Chai	10 boxes x 20 bags	39
Chang	24 - 12 oz bottles	17
Sasquatch Ale	24 - 12 oz bottles	111
Steeleye Stout	24 - 12 oz bottles	20
Côte de Blaye	12 - 75 cl bottles	17
Chartreuse verte	750 cc per bottle	69
Ipoh Coffee	16 - 500 g tins	17
Laughing Lumberjack Lager	24 - 12 oz bottles	52
Outback Lager	24 - 355 ml bottles	15
Rhönbräu Klosterbier	24 - 0.5 l bottles	125
Lakkalikööri	500 ml	57
Min		15

Category Name Condiments

Create a Label Report

1. To create a label report, select **Label Report** on the first page of the Report Wizard and click **Next**.

2. On the second page, choose the supplier from the **Label Products** combo box, and the specific product from the **Product Number** list. The label information on the right will be updated for the currently selected product. Click **Next** to proceed to the next step.

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3. On the next page, you can adjust settings that were automatically specified in the previous step. Click **Finish** to exit the Report Wizard.

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4. After the Report Wizard is closed, the report layout will be generated according to the type of label paper specified.

5. To create the layout of the label report, drag-and-drop the controls onto the available area of the report detail band.

6. The label report is now ready. Click the **Print Preview** tab in the ribbon menu to view the result.

Create a Report Copy

1. To create a copy of an existing report, select **Report Copy** on the first page of the Report Wizard and click **Next**.

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2. On the second page, select the report that you wish to copy, and click **Next**.

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3. On the next page, specify the name, category, description and revision comment for the copy, and click **Finish** to exit the Report Wizard.

After this step, a copy of the report will be created and opened in the designer.

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Use Parameters

Report and Dashboard Server > Creating Reports > Use Parameters

This tutorial demonstrates how to add parameters to a report, provide them with default values, create multi-value and cascading parameters (filter parameter values based on another parameter's current value). The created parameters are used to filter data at the data source level. The last document section describes other report parameter uses not related to filtering data.

This topic consists of the following sections:

- Prepare a Report
- Add a Report Parameter
- Create a Multi-Value Parameter
- Create Cascading Parameters
- Other Uses of Report Parameters

Prepare a Report

Open an existing report or create a new one as described in the Create and Customize Reports document.

Bind a report to the required data source and prepare the report layout containing data fields from this data source. Add one more data source to provide values for report parameters.

This tutorial uses a report that is bound to the **Northwind** database's **Products by Category** table (**Northwind1** data source) and grouped against the **CategoryName** data field. This document demonstrates how to filter data at this data source's level.

Report parameters obtain their values from another data source (**Northwind2**) containing the same table.

Add a Report Parameter

A report parameter stores values which can be modified in Print Preview and passed to a report before its creation.

The following steps illustrate how to make a report display data corresponding to a specific product category selected in Print Preview:

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1. Right-click the **Parameters** node in the **Field List** and select **Add Parameter** in the context menu to create a new report parameter that lists product categories.

2. In the invoked **Add New Parameter** dialog, specify the parameter's **Name** (for reference in the filter expression) and **Description** (to display in Print Preview).

Set the **Type** property corresponding to the type of a data field against which this parameter should be compared in the filter expression.

Enable the **Supports the collection of standard values** option to supply parameter values from a data source. This enables the following options on the **Dynamic values** tab:

- **Data Source**

Specifies the data source to which the parameter is bound.

- **Data Member**

Specifies the name of a data column storing the parameter values.

- **Value Member**

Specifies the name of a data field providing the parameter values.

- **Display Member** (optional)

Specifies the name of a data field providing parameter value descriptions displayed in Print Preview.

- **Filter String** (optional)

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Enables you to filter the list of parameter values (for example, to create cascading parameters that are described further down in this tutorial).

3. In the **Report Explorer**, select a data source providing data for a report (**Northwind1** in this example). Switch to the **Property Grid**, access the query you want to filter and click the **Filter String** property's ellipsis button.

4. In the invoked **Filter Editor**, construct an expression in which the **CategoryName** data field is compared to the created parameter value. You can access the parameter by clicking the icon on the right until it turns into a question mark.

Switch to the **Print Preview** tab and select a required category in the parameter's lookup editor. Click **Submit** to pass the corresponding value to the filter expression and generate the document.

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Create a Multi-Value Parameter

Do the following to enable a report parameter to accept multiple values at once and filter the report against these values:

1. Switch to the **Field List** and right-click the previously created parameter. Select **Edit Parameters** in the invoked context menu.

2. Set the parameter's **Multi-Value** property to **Yes** in the **Parameter Collection Editor**.

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3. Once again, access the dedicated data source in the **Properties** window and invoke the **Filter Editor**. Customize the expression so that the **CategoryName** data field is compared to all parameter values.

Switch to Print Preview and select one or more categories in the parameter's lookup editor. Clicking **Submit** passes the corresponding values to the report and generates the document.

Create Cascading Parameters

The following steps describe how to filter the list of parameter values depending on the values selected for another parameter:

1. Add a new parameter that lists available products using the **Field List**.

2. In the invoked **Add New Parameter** dialog, specify the parameter's settings and click the ellipsis button for its **Filter String** property to filter the list of available products according to the selected category.

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3. Construct a filter expression in which the **CategoryName** data field is compared to another parameter value.

4. Invoke the **Filter Editor** for the dedicated data source. Update the filter expression to compare the **CategoryName** and **ProductName** data fields with the **Category** and **Product** parameters, respectively.

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Switch to Print Preview and select the required categories and products. Click **Submit** to generate the document.

Other Uses of Report Parameters

Besides filtering report data, you can use report parameters to solve the following tasks:

- **Data Binding**

You can bind a report control to a parameter and display its value in the report by dragging the parameter from the **Field List** onto the required band. This creates a **Label** control bound to the parameter as with an ordinary data field.

- **Calculated Fields and Conditional Formatting**

Parameters can participate in constructing expressions for calculated fields and formatting rules as standard data fields. The only difference is that a parameter is inserted into the expression text using the **Parameters.** prefix before its name.

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See the Schedule a Document and Select Subscribers topic to learn how to pass report parameters to a scheduled report.

See Also
Schedule a Document and Select Subscribers
Create and Customize Reports

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Creating Dashboards

Report and Dashboard Server > Creating Dashboards

The following topics in this section describe how to create and customize dashboards using the Web Dashboard Designer shipped with the Report and Dashboard Server installation:

- Create and Customize Dashboards
- Bind a Dashboard to Data
- Add Dashboard Items and Perform Basic Data Shaping
- Customize the Dashboard Appearance
- Provide Interactivity to the Dashboard
- Create a Calculated Field
- Add Filter Elements
- Customize the Dashboard Layout
- Add a Dashboard Parameter and Filter Data
- Export the Dashboard and Its Items

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Create and Customize Dashboards

Report and Dashboard Server > Creating Dashboards > Create and Customize Dashboards

This tutorial describes how to manage dashboards in the Report and Dashboard Server and consists of the following sections:

- Create a New Dashboard
- Save the Created Dashboard
- Edit an Existing Dashboard
- Export and Import a Dashboard
- Use the Revision History

Create a New Dashboard

Switch to the **Documents** screen, where you can access and manage documents.

Click the **Add Dashboard** button to create an empty dashboard.

This opens the Web Dashboard Designer which allows you to bind a dashboard to data, add various dashboard items, perform data shaping operations, etc. This documentation section includes tutorials describing the process of constructing dashboards.

Save the Created Dashboard

After creating the required dashboard in the Web Dashboard Designer, you can upload it to the server. Click the **Dashboard Menu** button and select **Save**.

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In the invoked dialog, specify the document name, select an existing category or create a new one, and type the revision comment.

The new dashboard becomes available on the **Documents** screen.

Edit an Existing Dashboard

Click the **Design** button on the dashboard tile to edit this dashboard in the Designer.

After you make changes to this document, you can save the revision by clicking the **Save** button in the menu. In the invoked dialog, specify the revision comment and click **OK** to upload it to the server.

Export and Import a Dashboard

Switch to the **Documents** screen and click the document caption to show the screen with the document details.

Click the **Export** button to export the dashboard layout to XML and download the resulting file.

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You can also export the dashboard layout by selecting **Export to XML** in the **Dashboard Menu**.

To import the dashboard layout, click **Import from XML** in the **Dashboard Menu**. Use the **Click to select file** button and, in the invoked dialog, locate the file with the **XML** extension containing the required dashboard. Alternatively, you can drop the file onto the **Import from XML** screen. Then, click the **Import** button to open the layout in the Designer.

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Use the Revision History

On the document details screen, click the **Revision History** button to view all dashboard revisions.

Click the **Rollback** button to roll back to a specific document version.

Click **Yes** in the invoked dialog to confirm the operation.

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See Also
Bind a Dashboard to Data

Bind a Dashboard to Data

Report and Dashboard Server > Creating Dashboards > Bind a Dashboard to Data

This tutorial demonstrates how to bind a dashboard to a data source and consists of the following sections:

- Create a Data Model and Dashboard
- Bind the Dashboard to Data
- View the Result

Create a Data Model and Dashboard

Before creating dashboards, you need to define data models that obtain the necessary data from your data providers. For this tutorial, prepare the **Northwind** data model providing the **SalesPerson** table.

Open an existing dashboard or create a new one as described in the Create and Customize Dashboards document to get started.

Bind the Dashboard to Data

Do the following to obtain a dashboard's dynamic data from an external data source:

1. Click the main menu button and select **Data Sources**.

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2. In the **Used Data Sources** section, click **Add** to create a new data source.

3. On the first page of the invoked **Dashboard Data Source Wizard**, select an available data model and click **Next**.

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4. On the next page, you can choose which tables, views and/or stored procedures to add to the data source. Select the **SalesPerson** table for this tutorial.

You can also create a custom query by clicking the plus button in the **Queries** category. The invoked Query Builder allows you to join multiple tables as well as perform various data shaping operations.

Click **Finish** to complete the wizard.

View the Result

The **Data Sources** screen now contains the added data source and displays available data fields.

You can add a new query or calculated field to the data source if required.

See Also
Add Dashboard Items and Perform Basic Data Shaping

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Add Dashboard Items and Perform Basic Data Shaping

Report and Dashboard Server > Creating Dashboards > Add Dashboard Items and Perform Basic Data Shaping

After creating a dashboard and providing data to it, add dashboard items to display visual and textual information in a dashboard.

Refer to the Designing Dashboard Items document for a complete list of available dashboard items.

This tutorial consists of the following steps:

- Add a Grid
- Add a Chart
- Add a Pie
- Add Cards
- View the Result

Add a Grid

Click the **Grid** button in the **Toolbox** or drag and drop this item onto the dashboard surface.

This creates a new configurable **Grid** dashboard item.

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Select the item and open its **Bindings** menu to see the data source to which this item is bound and empty placeholders for providing data.

Click **Add Column** and choose the **CategoryName** data field in the invoked list.

Add one more column and select the **ExtendedPrice** field.

In this example, the first column is a dimension and the second column as a measure. Both these values can be of any type - string, date-time or numeric.

- The *dimension* is used to provide discrete categorical information. The dashboard does not summarize the dimension values, but groups identical values. You can perform grouping, sorting, or display the top values for the dimension values.
- The *measure* is used to summarize data against grouped dimension values. The dashboard calculates an appropriate summary function against measure values. You can also customize the data format settings that affect how summary values are displayed.

The dashboard calculates **Sum** for numeric measures by default. You can select the required summary function in the **Summary Type** drop-down list.

Expand the **Format** section and apply required currency formatting to this column.

Select the **CategoryName** column, expand the **Options** section and specify the desired caption.

Open the **Data Shaping** section and select the **ExtendedPrice** column in the **Sort By** drop-down list to sort grid data against summary values calculated for the selected measure. You can choose the ascending or descending sort order.

Add a Chart

Click the **Chart** button in the **Toolbox** to add a new chart item to the dashboard.

Open the chart's **Bindings** menu, click the **Add Values** placeholder and select the **ExtendedPrice** field.

Click **Add Argument** and select the **OrderDate** data field. The **Group Interval** property is set to **Year** by default. The chart now displays extended price values for each year.

Add one more **OrderDate** argument and set its **Group Interval** option to **Quarter** to display data hierarchically.

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Add a Pie

Click the **Pies** button in the **Toolbox** to add a **Pie** item that shows each value's contribution to a total.

In the **Bindings** menu, specify the **ExtendedPrice** data field for values and the **SalesPerson** field for arguments of this pie.

Add Cards

Add the **Card** dashboard item by clicking the corresponding button in the **Toolbox**.

Invoke the **Bindings** menu, click **Add Card** and select the **ExtendedPrice** data field for calculating values displayed within cards. Click **Add Series** and select the **Country** field used to label cards. Then, click **Add Sparkline** and choose the **OrderDate** field to visualize the variation of card values over time.

View the Result

The following image demonstrates the resulting dashboard:

See Also

[Customize the Dashboard Appearance]

Customize the Dashboard Appearance

Report and Dashboard Server > Creating Dashboards > Customize the Dashboard Appearance

This tutorial demonstrates how to manage the coloring of chart series points and apply formatting to grid cells whose values meet specific conditions.

This topic consists of the following sections:

- Manage the Coloring
- Apply Conditional Formatting

Manage the Coloring

Select a chart item, invoke its **Options** menu and expand the **Coloring** section. Here you can specify the coloring mode for all measures and dimensions. Select **On** for the **OrderDate** argument to color years by different hues.

Open the **Color Scheme** section to customize colors of a specific palette.

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The dashboard provides two ways of coloring dashboard item elements:

- A global color scheme provides consistent colors for identical values across the dashboard.
- A local color scheme provides an independent set of colors for each dashboard item.

You can edit the color scheme by clicking the **Edit** button for the color you want to change. In the invoked color picker, select any color using the RGB model and click **Confirm**.

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This applies a new color scheme to the dashboard item.

You can manage the coloring of pie segments in the same way.

An alternative way to customize color palettes is to click the **Dashboard Menu** button and select **Color Scheme**.

The appeared **Color Scheme** page allows you to edit and add new colors in the selected scheme.

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Apply Conditional Formatting

Select the **Grid** dashboard item and open its **Bindings** menu. Click the **ExtendedPrice** column, go to the **Conditional Formatting** section and click the plus button to add a new format rule.

Use the **Apply to** combo box to specify the data item to apply conditional formatting (the same **ExtendedPrice** column in this case) and select the **Color Range Bar** condition type from the list.

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This opens the format rule's menu that depends on the format rule condition and a dashboard item's type. Here select the required bar range and color set.

The extended price values are visualized using bars in the specified color scheme.

Grid 1

Category	ExtendedPrice (Sum)
Beverages	$267.87K
Dairy Products	$234.51K
Confections	$167.36K
Meat/Poultry	$163.02K
Seafood	$131.26K
Condiments	$106.05K
Produce	$99.98K
Grains/Cereals	$95.74K

Once again, select the **ExtendedPrice** column and add a new format rule. Choose the **Category** column in the **Apply to** combo box and select the **Top/Bottom** -> **Top N** condition type.

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The **Style** section allows you to choose the predefined background color or font in the **Appearance** tab or the predefined icon in the **Icons** tab. Select the filled star icon for this rule and set the **Count** option to **3**.

The grid displays star icons in the **Category** cells corresponding to three topmost extended price values.

Grid 1

Category	ExtendedPrice (Sum)
Beverages	$267.87K
Dairy Products	$234.51K
Confections	$167.36K
Meat/Poultry	$163.02K
Seafood	$131.26K
Condiments	$106.05K
Produce	$99.98K
Grains/Cereals	$95.74K

See Also
Provide Interactivity to the Dashboard

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Provide Interactivity to the Dashboard

Report and Dashboard Server > Creating Dashboards > Provide Interactivity to the Dashboard

This tutorial describes how to provide the drill-down functionality to a **Grid** dashboard item and use this item as a filter for other dashboard items.

This topic consists of the following sections:

- Enable Drill-Down
- Use Master Filtering

Enable Drill-Down

The drill-down functionality allows users to change the detail level of data displayed in a dashboard item.

The grid item supports drill-down for rows and requires several dimension columns to be arranged from the least detailed to the most detailed.

Invoke the grid's **Bindings** menu, click **Add Column** and select the **ProductName** data field. Move this column to the second position using drag and drop.

Go to the grid's **Interactivity** menu and enable the **Drill Down** option.

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You can now click a grid row to display detail data.

Click the **Drill Up** button in the item caption to return to the previous detail level.

Use Master Filtering

Invoke the grid item's **Interactivity** menu and use the **Master Filter Mode** option to make the grid act as a filter for other dashboard items. Choose the **Multiple** mode for this tutorial.

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Click a grid row to make other dashboard items display only data related to the selected record. The following image demonstrates how this affects the chart item.

Use the **Milti-Select** button in the grid caption to allow selecting multiple rows.

Click the **Clear Master Filter** button to reset filtering.

You can prevent a specific dashboard item from being filtered by enabling its **Ignore Master Filters** option.

See Also

Create a Calculated Field

Create a Calculated Field

Report and Dashboard Server > Creating Dashboards > Create a Calculated Field

This tutorial demonstrates how to create a field that is not stored in the bound data source and is calculated using a pre-defined expression. For example, you can use data fields containing information about a price and quantity to evaluate a total price as well.

This topic consists of the following sections:

- Create a Calculated Field
- Use the Calculated Field

Create a Calculated Field

Do the following to create a calculated field:

1. Click the menu button and select **Data Sources**.

2. Select a required data source, select a query and click the **Add Calculated Field** button.

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3. In the invoked **Create Calculated Field** dialog, specify the field **Name** and make sure to change the **Field Type** option to an appropriate value. Then, specify an expression for evaluating values of a calculated field.

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This dialog allows you to visually construct a required expression using the predefined functions, logical and arithmetical operators and fields of a data source to which a dashboard is bound.

Use the field name in **[**square brackets**]** to insert a data field into the expression's text. Date-time constants should be wrapped in hashtags (**#**). Use apostrophes (**'**) to denote strings.

A calculated field's expression can evaluate values of other calculated fields if you make sure to avoid circular references.

4. Click **Save** to create a calculated field and display it in the data source structure with the **f** glyph.

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Use the Calculated Field

You can use the calculated field as an ordinary field for binding dashboard items.

Open the grid item's **Bindings** menu, click the **Add Column** placeholder and select the created calculated field.

Apply a currency format to this column and perform required data shaping operations. See Add Dashboard Items and Perform Basic Data Shaping to learn more.

See Also
Add Filter Elements

Add Filter Elements

Report and Dashboard Server > Creating Dashboards > Add Filter Elements

This tutorial illustrates how to use special filter elements to apply filtering to dashboard items.

This topic consists of the following sections:

- Use Filter Elements
- Add a Range Filter

Use Filter Elements

You can filter dashboard items using the following elements under the **Filter** toolbox section:

- The **Combo Box** item allows you to select one or more values from the drop-down list.
- The **List Box** item allows you to select one or more values from the list.
- The **Tree View** item displays values in a hierarchical way and allows you to expand/collapse nodes.

Drag and drop the **List Box** item from the toolbox onto the dashboard surface.

Select the added item and invoke its **Bindings** menu. Here click the **Add Dimension** placeholder and select the **Country** data field to provide filter values.

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The list box displays check boxes by default, which allows you to select multiple values at a time. Invoke the item's **Options** menu and set the **Type** property to **Radio** to enable selecting only a single value in the radio group.

You can also disable the **Show 'All' Value** option to hide the **All** item that is intended to select/deselect all items in the list box.

The **Ignore Master Filters** option should be disabled for items to be affected by the filter elements.

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Select a country in the list box to filter other dashboard items based on this value as demonstrated below for the grid item.

Add a Range Filter

Add the **Range Filter** item from the toolbox to the bottom of the dashboard. This item displays a chart with selection thumbs that allow you to filter values located along the argument axis.

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Invoke the item's **Bindings** menu and provide the following data:

- Click **Add Value** and select the **ExtendedPrice** data field to calculate the Y-coordinates of data points. The Range Filter supports various **Line**, **Area** and **Bar** series types available in the **Type** menu section. Leave the **Line** type for this tutorial.
- Click **Set Argument** and select the **OrderDate** data field. This field provides values displayed along the Range Filter's horizontal axis. Set the **Group Interval** option to **Month-Year**.
- Click **Add Series** and select the **Country** data field to use it for creating chart series.

Move the Range Filter's selection thumbs to apply filtering to other dashboard items.

See Also
Customize the Dashboard Layout

Customize the Dashboard Layout

Report and Dashboard Server > Creating Dashboards > Customize the Dashboard Layout

This tutorial describes how to arrange and resize dashboard items, organize them into groups, customize item captions and change the dashboard title.

This topic consists of the following sections:

- Resize Dashboard Items
- Move Dashboard Items
- Combine Items into a Group
- Customize Item Captions
- Customize the Dashboard Title
- View the Result

Resize Dashboard Items

You can resize dashboard items by dragging their edges. The resizing indicator (⟺ or ⇕) appears in the area allowing you to resize items.

Click and drag the cursor until you get the desired size and release the left mouse button.

Move Dashboard Items

You can re-arrange dashboard items using drag-and-drop operations. Select the item you want to move and click the **Move** button.

Drag the item to the required area and release the left mouse button when it is in position.

This moves the dashboard item to a new position.

Combine Items into a Group

The Dashboard allows you to combine items into groups. Use the **Group** toolbox button to add a new group.

You can create dashboard items using the buttons in the group or move the existing items using drag and drop. Move the list box filter and grid item to the created group.

The list box filter element contained within the group now filters only the grid dashboard item from this group.

Use the group's **Interactivity** menu to manage interaction between dashboard items within and outside the group.

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Enable the **Master Filter** option to filter external dashboard items using master filter items contained within the group. The **Ignore Master Filters** option allows you to isolate dashboard items contained within the group from being filtered using external master filter items.

Customize Item Captions

Each dashboard item displays a caption at the top and provides the static text along with command buttons.

Invoke the item's **Options** menu and use the **Caption** property to specify a custom caption text.

You can also hide the item caption by disabling the **Show Caption** option.

Customize the Dashboard Title

The Dashboard title is at the top of the dashboard surface and can contain text and image content.

Click the menu button and open the **Title** page to change the title settings.

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This allows you to specify:

- **Text** - The dashboard title text.
- **Visible** - Indicates whether the dashboard title is visible.
- **Alignment** - The dashboard title's alignment.
- **Include Master Filter** - Specifies whether to show the master filter items' state in the dashboard title.
- **Image** - Allows you to specify the image displayed within the dashboard title.

View the Result

The following image demonstrates the resulting dashboard layout:

See Also
[Add a Dashboard Parameter and Filter Data]

Add a Dashboard Parameter and Filter Data

Report and Dashboard Server > Creating Dashboards > Add a Dashboard Parameter and Filter Data

This tutorial demonstrates how to add a parameter to a dashboard, provide this parameter with default values and allow it to accept multiple values at once. The created parameter is used to filter data at dashboard and data source level.

This topic consists of the following sections:

- Create a Data Source
- Add a Dashboard Parameter
- Filter a Dashboard Item
- Filter a SQL Query
- Create a Multi-Value Parameter
- User-Specific Functions

Create a Data Source

In the previous tutorials, you bound a dashboard to a data source and created dashboard items using data fields from this data source.

You need to add another data source containing the same query to provide values for dashboard parameters.

Add a Dashboard Parameter

Do the following to add a new parameter to the dashboard:

1. Invoke the dashboard menu and select **Parameters**.

2. In the **Parameter List** section, click the **Add New Parameter** button.

3. Specify the parameter's **Name** (by which it can be referred to in the filter expression) and **Description** (to display in the **Dashboard Parameters** dialog).
4. Set the **Type** property to specify the type of data field against which this parameter should be compared in the filter expression.
5. Set the **Look-Up Settings** property to **Dynamic List** to supply parameter values from a dedicated data source. This enables the following look-up settings:
   - **Data Source**

Specifies the data source to which the parameter is bound.

   - **Data Member**

Specifies the name of the data member storing the parameter values.

- **Value Member**

Specifies the name of the data field providing the parameter values.

- **Display Member** (optional)

Specifies the name of the data field providing parameter value descriptions displayed in the **Dashboard Parameters** panel.

- **Sort By** and **Sort Order** (optional)

Allows you to specify the data member used to sort parameter values and the required sort order.

Filter a Dashboard Item

Perform the following steps to apply filtering to an individual dashboard item:

1. Select the **Pie** dashboard item and invoke its **Bindings** menu. Expand the **Data/Filtering** section and use the **Click to set Filter Criteria** button.

2. In the invoked **Filter Editor**, construct an expression in which the **SalesPerson** data field is compared to a parameter value. Expand the drop-down menu for a value placeholder and select **Parameter**.

This converts the value placeholder into a parameter placeholder. Click this placeholder and select the created dashboard parameter.

Click the **Dashboard Parameters** button in the dashboard title to invoke the **Dashboard Parameters** dialog. Select the required parameter value and click the **Submit** button to pass the corresponding value to the filter expression.

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Filter a SQL Query

Do the following to filter dashboard data at the data source level:

1. Access a data source providing data for a dashboard and click the **Edit** button for the query that you want to filter (the **SalesPerson** query in this example).

2. In the invoked **Dashboard Data Source Wizard** page, click the **Run Query Builder** button.

3. In the **Query Builder**, switch to the **Query Properties** section and click the ellipsis button for the **Filter** property.

In the invoked **Filter Editor**, construct an expression in which the **SalesPerson** data field is compared to a query parameter value. Expand the drop-down menu for a value placeholder and select **Parameter**. Then, click the converted placeholder and select **Create new parameter**.

In the dedicated editor, specify the query parameter name.

Click **Save** to save the filter condition and close the editor.

Click **OK** in the **Query Builder**, and then, click **Next** on the wizard page to proceed.

4. On the following wizard page, map the created query parameter to the dashboard parameter. Expand the drop-down list for the parameter's **Type** property and select **Expression**. Then, click the ellipsis button for the **Value** property and specify the dashboard parameter in the invoked **Expression Editor**.

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Click **Finish** to complete the wizard.

Select the parameter value in the **Dashboard Parameters** panel and click **Submit** to filter the dashboard.

Create a Multi-Value Parameter

Do the following to enable a dashboard parameter to accept multiple values at once and apply filtering against these values:

1. Open the **Parameters** page and enable the parameter's **Allow Multiselect** option.

2. Customize the filter expressions so that the **SalesPerson** data field is compared to all of the parameter values.

Open the **Dashboard Parameters** dialog and select one or more values in the parameter's look-up editor. Click **Submit** to pass the corresponding values to the filter expressions.

User-Specific Functions

The Report and Dashboard Server provides a particular set of functions that enable you to access information about a current user. You can use these functions to make a data model return specific subsets of data to different users. This restricts access to sensitive information in your database, and users cannot access and modify these functions unless they have the required permissions.

However, non-privileged users are still able to use these functions at the document level (to further filter the data available to them).

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See the **User-Specific Functions** section in the Manage Data Models and Connect to Data document for more information.

See Also
Export the Dashboard and Its Items

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Export the Dashboard and Its Items

Report and Dashboard Server > Creating Dashboards > Export the Dashboard and Its Items

This document illustrates how to export a dashboard or individual dashboard items to one of the supported formats and customize format-specific export options.

This topic consists of the following sections:

- Export the Dashboard
- Export Dashboard Items

Export the Dashboard

Click the **Export To** button in the dashboard title area to export a dashboard to a required format.

The following actions are available:

- **Export to PDF** - Invokes a dialog that allows you to export a dashboard to a PDF file with the following options:

- **File Name** - Specifies the exported PDF file's name.
- **Page Layout** - Specifies the page orientation used when exporting a dashboard. You can select between **Portrait**, **Landscape**, and **Auto**. In the **Auto** mode, the page orientation is automatically selected depending on the dashboard's horizontal and vertical sizes.
- **Size** - Specifies the standard paper size (for instance, **Letter** or **A4**).
- **Show Title** - Specifies whether to apply the dashboard title to the exported document title.

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- **Title** - Specifies the exported document's title.
- **Scale Mode** - Specifies the scaling mode when exporting a dashboard. This option is in effect when **Page Layout** is set to a different value than **Auto**.
- **Include | Filters** - Allows you to add master filter values to the exported document.
- **Include | Parameters** - Allows you to add parameter values to the exported document.
- **Position** - Specifies the master filter and parameter values' position in the exported document. You can select from **Below** and **Separate Page**.

- **Export to Image** - Invokes the corresponding dialog that allows you to export a dashboard to an image in a specific format. The following options are available:

- **File Name** - Specifies the exported Image file's name.
- **Show Title** - Specifies whether to apply the dashboard title to the exported document title.
- **Title** - Specifies the exported document's title.
- **Image Format** - Specifies the image format in which the dashboard is exported. The following formats are available: **PNG**, **JPEG**, and **GIF**.
- **Resolution (dpi)** - Specifies the resolution (in dpi) used to export a dashboard.
- **Include | Filters** - Allows you to add master filter values to the exported document.
- **Include | Parameters** - Allows you to add parameter values to the exported document.

- **Export to Excel** - Invokes the dialog that allows you to export dashboard's data to the Excel file. The following options are available:

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- **File Name** - Specifies the exported Image file's name.
- **Excel Format** - Specifies the Excel workbook format in which the dashboard's data is exported. You can select between **XLSX** and **XLS**.
- **Include | Filters** - Allows you to include master filter values to the exported document.
- **Include | Parameters** - Allows you to include parameter values to the exported document.
- **Position** - Specifies the master filter and parameter values' position in the exported document. You can select from **Below** and **Separate Sheet**.

Specify the required options in the dialog and click the **Export** button to export the dashboard. Click the **Reset** button to reset the changes to the default values.

Export Dashboard Items

You can export an individual dashboard item by clicking the **Export To** button in the item caption and selecting the required action.

The following **Export To** options invoke the corresponding dialog allowing you to specify the format-specific export options:

- **Export to PDF** - PDF-specific options and export an item to a PDF file.
- **Export to Image** - Image-specific options and export an item to an image in the selected format .
- **Export to Excel** - Export a dashboard item's data to the Excel workbook or CSV file with the specified options.

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Configuration and API

Report and Dashboard Server > Configuration and API

This section of the documentation provides information on the Report and Dashboard Server application programming interface (API) and available configuration settings.

The following documents are available in this section.

- Report and Dashboard Server Authentication
- Managing Scheduled Jobs
- Specifying Timeouts
- Switching to the HTTPS Protocol
- Scripting

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Report and Dashboard Server Authentication

Report and Dashboard Server > Configuration and API > Report and Dashboard Server Authentication

This document describes the application programming interface (API) that you can use to connect to a Report and Dashboard Server from a custom application under any platform. After the connection is established, the application can utilize the provided client-side API to communicate with a Report and Dashboard Server and perform various report managing and publishing operations.

To establish connection to a Report and Dashboard Server, use one of the following connection providers, depending on the required authentication method.

- **GuestConnectionProvider** - used to connect to a Report and Dashboard Server as a guest. This connection provider uses the special **Guest** account. Make sure that this account is activated on the server if you want your client application to use the guest authentication. For more information on managing user accounts, refer to the Manage User Accounts and Grant Security Permissions topic.
- **ServerUserConnectionProvider** - used to connect to a Report and Dashboard Server as a registered user, by providing the user name and password.
- **WindowsUserConnectionProvider** - used to connect to a Report and Dashboard Server as a registered user using the integrated Windows authentication.

All connection providers expose the following methods used to establish connection to a Report and Dashboard Server.

- **LoginAsync** - asynchronously login to a Report and Dashboard Server.
- **CreateClient** - initialize a report service client within the current login session, established by calling the **LoginAsync** method.
- **ConnectAsync** - asynchronously login to a Report and Dashboard Server and initialize a Report and Dashboard Server client within the current login session. This method combines the functionality of the **LoginAsync** and **CreateClient** methods.

As the result of executing the **CreateClient** and the **ConnectAsync** methods, a ReportServerClient is created, providing methods for client-server interaction with a Report and Dashboard Server.

The following code sample demonstrates how you can use the described API to login to a local Report and Dashboard Server as a guest user.

C#

```
using DevExpress.ReportServer.ServiceModel.Client;
using DevExpress.ReportServer.ServiceModel.ConnectionProviders;
using DevExpress.ReportServer.ServiceModel.DataContracts;
// ...
// Create a connection provider.
ConnectionProvider connection = new GuestConnectionProvider("http://127.0.0.1:83");
// Initialize a Report and Dashboard Server client.
IReportServerClient client = connection.ConnectAsync().Result;
// Place your code here to interact with the a report service using the created client.
```

Visual Basic

```
Imports DevExpress.ReportServer.ServiceModel.Client
Imports DevExpress.ReportServer.ServiceModel.ConnectionProviders
Imports DevExpress.ReportServer.ServiceModel.DataContracts
' ...
' Create a connection provider.
Private connection As ConnectionProvider = New GuestConnectionProvider("http://127.0.0.1:83")
' Initialize a Report and Dashboard Server client.
Private client As IReportServerClient = connection.ConnectAsync().Result
' Place your code here to interact with the a report service using the created client.
```

To learn more about different scenarios for using the Report and Dashboard Server API for authentication and client-server interaction with a server, see the following code examples online.

- How to connect to the Report and Dashboard Server from a Windows Forms application using Windows Authentication
- How to export a report from code in a console application

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Managing Scheduled Jobs

Report and Dashboard Server > Configuration and API > Managing Scheduled Jobs

The Report and Dashboard Server provides a public API that enables you to use custom applications for accessing and managing scheduled jobs.

This API corresponds to the following public namespaces.

- DevExpress.ReportServer.ServiceModel.ConnectionProviders
- DevExpress.ReportServer.ServiceModel.Client
- DevExpress.ReportServer.ServiceModel.DataContracts

For a code sample, see the following example online: How to manage scheduled jobs from a Windows Forms application.

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Specifying Timeouts

Report and Dashboard Server > Configuration and API > Specifying Timeouts

This document describes how to specify the timeout settings of the Report and Dashboard Server and End-User Report Designer.

The document consists of the following sections.

- Report and Dashboard Server Timeout
- Report Designer Timeout

Report and Dashboard Server Timeout

The default execution timeout for the Report and Dashboard Server is set to **120** seconds. To change this value, specify the **executionTimeout** option in the **web.config** file of the Report and Dashboard Server web part, located at the directory where you installed the Report and Dashboard Server ("C:\Program Files (x86)\DevExpress\Report Server\Web" by default). This value is measured in seconds.

Xml	

```
<httpRuntime requestValidationMode="2.0" executionTimeout="240"/>
```

To specify the idle timeout, in the Internet Information Services (IIS) Manager, switch to the **Application Pools** section and right-click the **DevExpress.ReportServer.WorkerAppPool** item. In the invoked menu, select the **Advanced Settings...** command.

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In the invoked **Advanced Settings** dialog, specify the **Idle Time-out (minutes)** property.

To learn more about using this option, refer to the following topic in the Windows documentation: Configure Idle Time-out Settings for an Application Pool.

Report Designer Timeout

To customize the timeout settings of a Report Designer, modify the **DevExpress.ReportDesigner.v18.1.exe.config** file located at the directory where you installed the Report Designer ("C:\Program Files (x86)\DevExpress\Report Server End-User Designer" by default). In this file, locate the following configurations.

- <binding name="ReportServerFacade_UserAuthentication" ...>
- <binding name="ReportServerFacade_UserAuthentication_SSL" ...>

In these configurations, specify the **receiveTimeout** option, as illustrated in the following example.

Xml

```
<binding name="ReportServerFacade_UserAuthentication"
    maxReceivedMessageSize="33554432"
    allowCookies="false"
    receiveTimeout="00:10:00">
<binding name="ReportServerFacade_UserAuthentication_SSL"
    maxReceivedMessageSize="33554432"
    allowCookies="false"
    receiveTimeout="00:10:00">
```

When these values are not specified, the default timeout is set to one minute.

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Switching to the HTTPS Protocol

Report and Dashboard Server > Configuration and API > Switching to the HTTPS Protocol

By default, the Report and Dashboard Server is configured to use HTTP (Hypertext Transfer Protocol). To switch the Report and Dashboard Server to operating over a more secure HTTPS protocol, do the following.

1. Open the Command Prompt with administrative permissions.

2. Navigate to the Report and Dashboard Server directory ("C:\Program Files (x86)\DevExpress\Report Server" by default) and switch to the "Tools" folder. In this folder, run the **ConfigureSecurityMode.exe** file with the corresponding options as follows.

```
ConfigureSecurityMode.exe -c ..\Web\web.config -s"
```

Upon command execution, the following message is displayed: "Mode switching has been successfully completed (Https)".

Scripting

Report and Dashboard Server > Configuration and API > Scripting

This document describes the most common scenarios of using report scripts.

The document consists of the following sections.

- Disable Security in Scripts
- Script Editor
- Enable Logging
- Access User Information
- Access Data Source Settings

Disable Security in Scripts

By default, you are not permitted to access the file system and fill the data source using report scripts. It is not recommended that you change this default behavior.

If, for any reason, you need to disable the security restrictions (e.g., to enable logging), set the **disableScriptSecurity** flag to **true** in the **Web.config** file located at the directory where you installed the Report and Dashboard Server ("C:\Program Files (x86)\DevExpress\Report Server\Web\Worker" by default).

Xml

```
<configuration>
<!-- □ -->
  <appSettings>
    <add key="disableScriptSecurity" value="true"/>
  </appSettings>
<!-- □ -->
</configuration>
```

Script Editor

Each report element has its own set of events that can be handled by the Script Editor. To handle an event of a report element, do the following.

1. Click the **Scripts** button ( ) located on the Report Designer's toolbar.
2. In the displayed Script Editor, specify a report control and one of events available for this cotnrol.

After the event is chosen, a code template is generated in the current scripting language.

3. To check for errors in the report's script, click the **Validate** button ( ).

If an error is found, the string containing this error is marked with the icon. When a mouse pointer hovers over this icon, the text of the error is displayed.

Enable Logging

When the scripting security is disabled, you can use NLog for debug tracing by specifying the corresponding **nlog** configuration in the **Web.config** file of the worker service located at the directory where you installed the Report and Dashboard Server ("C:\Program Files (x86)\DevExpress\Report Server\Web\Worker" by default).

Xml

```
<logger name="ScriptingNamespace.ScriptingReport" minLevel="Trace" writeTo="file" />
```

The following example illustrates how to use NLog in a script.

C#

```
static readonly NLog.Logger logger = NLog.LogManager.GetCurrentClassLogger();
private void Report_BeforePrint(object sender, System.Drawing.Printing.PrintEventArgs e) {
    logger.Info("This is a test.");
}
```

Visual Basic

```
Shared ReadOnly logger As NLog.Logger = NLog.LogManager.GetCurrentClassLogger()
Private Sub Report_BeforePrint(sender As Object, e As System.Drawing.Printing.PrintEventArgs)
    logger.Info("This is a test.")
End Sub
```

Access User Information

To access the information about a current user in report scripts, use the **ReportContext** functionality. The following code illustrates how to display the current user e-mail in a report.

C#

```
private void label1_BeforePrint(object sender, System.Drawing.Printing.PrintEventArgs e) {
    if(ReportContext.Current != null) {
        ((XRLabel)sender).Text = ReportContext.Current.UserEmail;
    }
}
```

Visual Basic

```
Private Sub label1_BeforePrint(ByVal sender As Object, _
ByVal e As System.Drawing.Printing.PrintEventArgs)
    If ReportContext.Current IsNot Nothing Then
        CType(sender, XRLabel).Text = ReportContext.Current.UserEmail
    End If
End Sub
```

The report context information is available only when a report is being viewed on a client. When a report is generated by the Scheduler, the **ReportContext.Current** property will return **null**.

Access Data Source Settings

The following code illustrates how to access a report's data source in scripts by handling the **DataSourceDemanded** event of the report.

C#

```
private void XtraReport_DataSourceDemanded(object sender, EventArgs e) {
    var report = sender as XtraReport;
    var dataSource = report.DataSource as
        DevExpress.ReportServer.Infrastructure.Data.ReportServerDataSource;
    dataSource.Filters["Products"] = "[CategoryID] = " + report.Parameters["CategoryId"].Value;
}
```

Visual Basic

```
Private Sub XtraReport_DataSourceDemanded(sender As Object, e As EventArgs)
    Dim report = TryCast(sender, XtraReport)
    Dim dataSource = TryCast(report.DataSource,
        DevExpress.ReportServer.Infrastructure.Data.ReportServerDataSource)
    dataSource.Filters("Products") = "[CategoryID] = " + report.Parameters("CategoryId").Value
End Sub
```

The following code illustrates how to access and customize parameters of a stored procedure in scripts.

C#

```
using System.Linq;
private void XtraReport_DataSourceDemanded(object sender, EventArgs e) {
    var report = sender as XtraReport;
    var dataSource = report.DataSource as
        DevExpress.ReportServer.Infrastructure.Data.ReportServerDataSource;
    var Beginning_Date = dataSource.Parameters["Sales by Year"].First(p =>
        p.Name.Equals("@Beginning_Date"));
    var Ending_Date = dataSource.Parameters["Sales by Year"].First(p =>
        p.Name.Equals("@Ending_Date"));
    if (report.Parameters[0].Value.ToString() == "Today") {
        var now = DateTime.Now;
        Beginning_Date.Value = new DateTime(now.Year, now.Month, now.Day);
        Ending_Date.Value = ((DateTime)Beginning_Date.Value).AddDays(1).AddTicks(-1);
    }
}
```

Visual Basic

```
Imports System.Linq
Private Sub XtraReport_DataSourceDemanded(sender As Object, e As EventArgs)
    Dim report = TryCast(sender, XtraReport)
    Dim dataSource = TryCast(report.DataSource,
        DevExpress.ReportServer.Infrastructure.Data.ReportServerDataSource)
    Dim Beginning_Date = dataSource.Parameters("Sales by Year").First(Function(p)
        p.Name.Equals("@Beginning_Date"))
    Dim Ending_Date = dataSource.Parameters("Sales by Year").First(Function(p)
        p.Name.Equals("@Ending_Date"))
    If report.Parameters(0).Value.ToString() = "Today" Then
        Dim now = DateTime.Now
        Beginning_Date.Value = New DateTime(now.Year, now.Month, now.Day)
        Ending_Date.Value = DirectCast(Beginning_Date.Value, DateTime).AddDays(1).AddTicks(-1)
    End If
End Sub
```

The following code illustrates how to access the settings of a multi-value data source parameter and select all available values in the **ParametersRequestBeforeShow** event handler.

C#

```
using System.Linq;
using DevExpress.XtraReports.Parameters;
using DevExpress.Data.Browsing;
using DevExpress.ReportServer.Infrastructure.Data;
private void XtraReport_ParametersRequestBeforeShow(object sender, ParametersRequestEventArgs e) {
    var report = sender as XtraReport;
    var parameter = report.Parameters["CategoryNames"];
    var paramSource = ((DynamicListLookUpSettings)parameter.LookUpSettings).DataSource
        as ReportServerDataSource;
    ((IListAdapter)paramSource).FillList(null);
    var dataContext = ((IServiceProvider)report).GetService(typeof(DataContext)) as DataContext;
    var values = LookUpHelper.GetLookUpValues(parameter.LookUpSettings, dataContext).Select(x =>
        (string)x.Value).ToArray();
    parameter.Value = values;
}
```

Visual Basic

```
Imports System.Linq
Imports DevExpress.XtraReports.Parameters
Imports DevExpress.Data.Browsing
Imports DevExpress.ReportServer.Infrastructure.Data
Private Sub XtraReport_ParametersRequestBeforeShow(sender As Object, e As ParametersRequestEventArgs)
    Dim report = TryCast(sender, XtraReport)
    Dim parameter = report.Parameters("CategoryNames")
    Dim paramSource = TryCast(DirectCast(parameter.LookUpSettings, DynamicListLookUpSettings).DataSource,
        ReportServerDataSource)
    DirectCast(paramSource, IListAdapter).FillList(Nothing)
    Dim dataContext = TryCast(DirectCast(report, IServiceProvider).GetService(GetType(DataContext)), Data
    Dim values = LookUpHelper.GetLookUpValues(parameter.LookUpSettings, dataContext).[Select]
        (Function(x) DirectCast(x.Value, String)).ToArray()
    parameter.Value = values
End Sub
```

See Also
How to use data sources in scripts when migrating to v17.1