Reporting

S130 Data Retrieval and Analysis

Training Guide

Acumatica
The Cloud ERP

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Acumatica ERP 2017 R2

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Software Version - 2017 R2

Introduction

This course introduces the functionality of the Acumatica ERP data retrieval tools such as Generic Inquiry and Report Designer. The course is based on a set of examples demonstrating data retrieval and processing to form data representations that can be viewed and printed.

The course is intended for advanced Acumatica ERP users who are familiar with the user interface and main principles of the system. Acumatica ERP application specialists and engineers might find the course useful as well.

On completing the course, you will have an understanding of how to use Acumatica ERP and Acumatica Report Designer to retrieve data and easily manage it.

How to Complete the Course

You will start learning how to use Acumatica ERP data retrieval tools with simple examples of the common functionality and then move to more advanced examples as you go through the course. To complete the course, we recommend that you do the lessons in the order they are provided, because some lessons use the results of the previous ones.

What Is in Each Part?

Each of the course parts is dedicated to a particular Acumatica ERP data retrieval tool or related procedure and consists of lessons you are to complete. Each part begins with an overview topic that explains the main concepts of the Acumatica ERP subject area that you are going to use in the lessons.

What Is in Each Lesson?

Each lesson consists of steps that outline the procedures you are completing and describe the related concepts you are learning.

How Should I Use Review Questions?

Review questions help you remember the key ideas of a lesson. Review questions are provided with an answer key. After you have completed a lesson, answer the review questions without looking at the correct answers. Then check your result with the answer key, and review the materials, if needed.

What Are the Documentation Resources?

All the links listed in the *Related Links* sections refer to the documentation available on the *https://help.acumatica.com/* website. These and other topics are also included in the Acumatica ERP instance, and you can find them under the **Help** menu.

Course Prerequisites

For this course, you should be familiar with the Acumatica ERP user interface and the main principles of the system. Knowledge of the Distribution and Account Receivable modules of Acumatica ERP is desirable but not necessary. This course is designed for use with Acumatica ERP 2017 R2 with the *SalesDemo* company instance. You also have to import the *S130* customization project.

To complete the course, deploy an instance of Acumatica ERP, complete the lessons from each part of the course in the order in which they are presented, and pass the assessment tests. That is, perform the following steps:

1. Download and install the latest version of Acumatica ERP 2017 R2, which is available on our Partner Portal *https://partners.acumatica.com/* (login required).
2. Create a company with the *SalesDemo* data on an instance of Acumatica ERP 2017 R2. To do that, perform one of the following steps:
   - Deploy a new Acumatica ERP 2017 R2 instance with the *SalesDemo* company.
   - Update an existing Acumatica ERP instance to 2017 R2, and then add the *SalesDemo* company to this instance.
3. Change the home page of your user account and the name of the *SalesDemo* company.
4. Import the *S130* customization project to the *SalesDemo* company.
5. Start with Part 1, and complete all the lessons of the part.
6. On Acumatica University, take Certification Test 1.
7. Continue with Part 2, and complete all the lessons of the part.
8. On Acumatica University, take Certification Test 2.
9. Complete Part 3, Part 4, Part 5, and Part 6.
10. On Acumatica University, take Certification Test 3.

How to Specify User Settings

To specify the settings of your user account, do the following:

1. Log in to the *SalesDemo* company of Acumatica ERP.
2. In the upper-right corner of the Acumatica ERP screen, in the info area, click your user name to open the user menu, as shown in the following screenshot, and select **User Profile**.
3. In the **Personal Settings** area of the **General Info** tab of the User Profile form (SM203010), which opens, clear the **Home Page** box, as shown in the screenshot below, to use the default home page for this user.

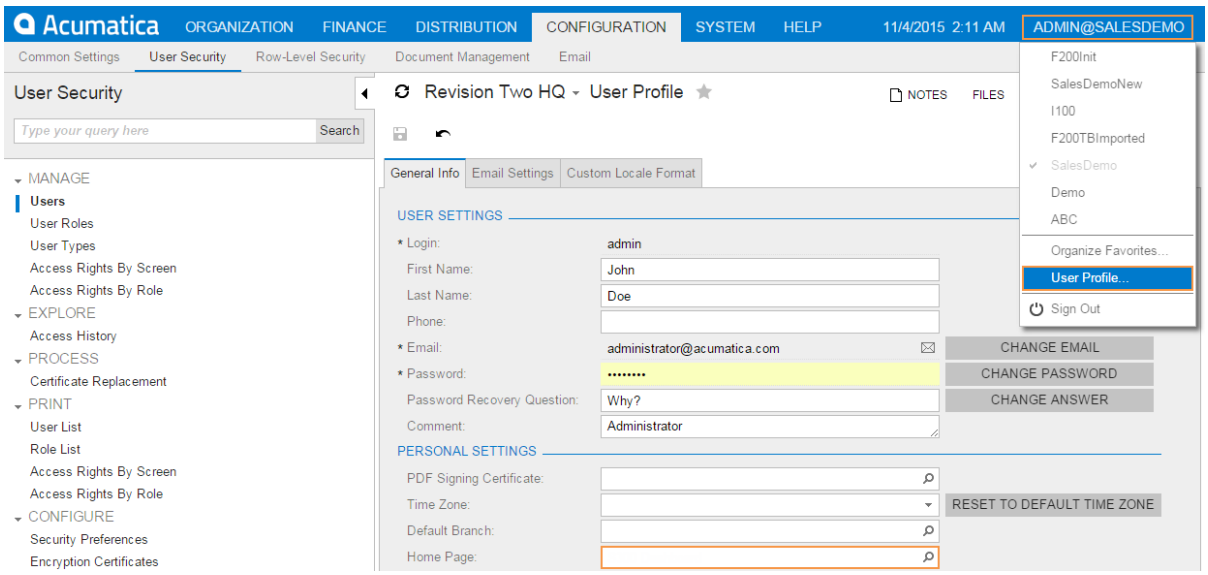


Figure: Specifying the default home page

4. Save your changes to your user account.

How to Change the Company Name

The company login name is the name you select when you log in to Acumatica ERP. For the *SalesDemo* company, you have specified the *SalesDemo* login name.

The company name, which can be the same as the company login name or can differ from it, is the name that is used in Acumatica ERP. This name is the topmost node in the site map. To change the company name of the *SalesDemo* company, do the following:

1. Log in to the *SalesDemo* company of Acumatica ERP.
2. On the Companies form (SM203520; System > Management > Manage), in the **Company ID** box, click the magnifier icon and select the company with the *SalesDemo* login name, as shown in the screenshot below.
3. In the **Company Name** box, type `Company`.
4. Save your changes to the company.

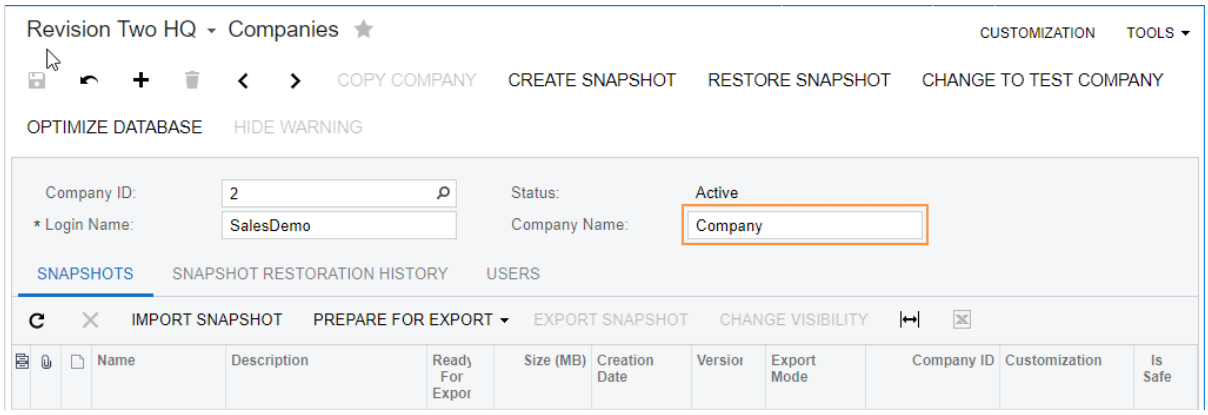


Figure: Specifying the company name

What Files Are Provided with the Course

The following files are provided with this course:

- `S130_InquiriesReportsDashboards_5_3.pdf`: This guide
- `S130.zip`: The *S130* customization project to be used in some lessons
- `S130_Files.zip`: Files, such as images, to be used in some lessons

How to Import a Customization Project

The list of files provided with the course includes the `S130.zip` file. This is the customization project, whose data you will use in the course lessons. To import this customization project, do the following:

1. On the Customization Projects form (SM204505; System > Customization > Manage), on the form toolbar, select **Import** > **Import New Project**.
2. In the **Open Package** dialog box, which appears, click the **Choose File** button, select the `S130.zip` file, and click **Upload**. The *S130* project appears in the list of customization projects.
3. Select the unlabeled check box for the *S130* project, as shown in the screenshot below, and click **Publish** on the form toolbar.

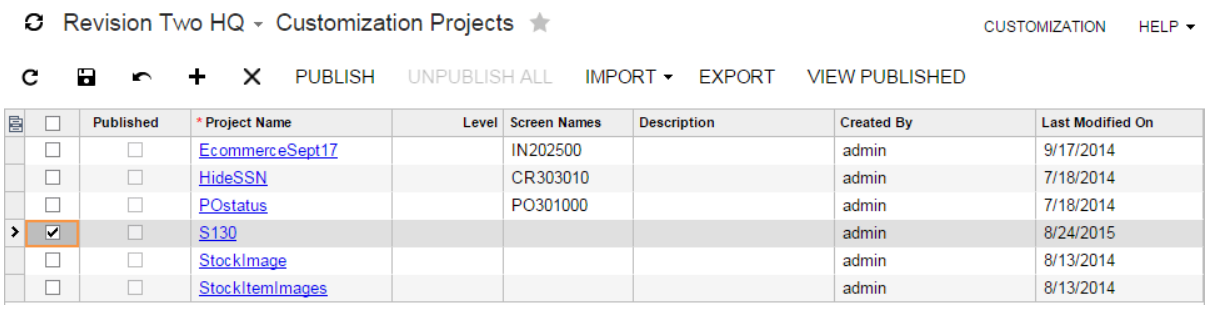


Figure: Selecting the customization project for publishing

4. In the **Compilation** dialog box, which appears, click the **Publish** button, as shown in the following screenshot.

Figure: Confirming a publishing

5. When the project is published and the notification `Website has been updated` appears at the bottom of the **Compilation** dialog box, close the dialog box.

6. On the Customization Projects form (SM204505), notice that the **Published** check box is selected for the *S130* project. This means that you have successfully imported and published the customization project.

The *S130* customization project contains the following:

- The *AR-Invoices* generic inquiry, developed on the Generic Inquiry form (SM208000; System > Customization > Manage)
- The Open Sales Orders by Customer (RD) report (SO615000; Distribution > Sales Orders > Reports > Audit)

Related Links

Updating Acumatica ERP Locally
Installing Acumatica ERP Locally
Customization Projects

Introduction to Acumatica ERP User Interface

Acumatica ERP now offers two user interfaces:

- *Modern*, introduced in 2017 R2, which is now used by default
- *Classic*, which is the user interface used in previous Acumatica ERP versions

The following sections describe the main aspects of working with Acumatica ERP user interface when you complete this training guide:

1. *Completing the Training in Modern UI*
2. *Configuring the Quick Menu for the Training*
3. *Completing the Training in Classic UI*
4. *Navigating to Forms: Tips*

1. Completing the Training in the Modern UI

For completing the training, we recommend that you use the modern user interface, which provides an enhanced new look and easy navigation in the system. The following sections provide an overview of the modern UI and explain how to navigate in the system during the completion of the training.

To Configure Workspaces in the Main Menu

In the modern UI, the links to forms and reports are organized in workspaces, each of which corresponds to a functional area in the system. The main menu displays menu items corresponding to these workspaces (such as **Finance** or **Banking**); you can click any menu item (see the screenshot below).

You can configure the list of workspaces displayed on the main menu panel by pinning and unpinning workspaces. Workspaces you can access that are unpinned from the panel are hidden under **More Items**.

To pin a workspace to the main menu panel, open the needed workspace, and, on the workspace title bar, click Pin (see the following screenshot).

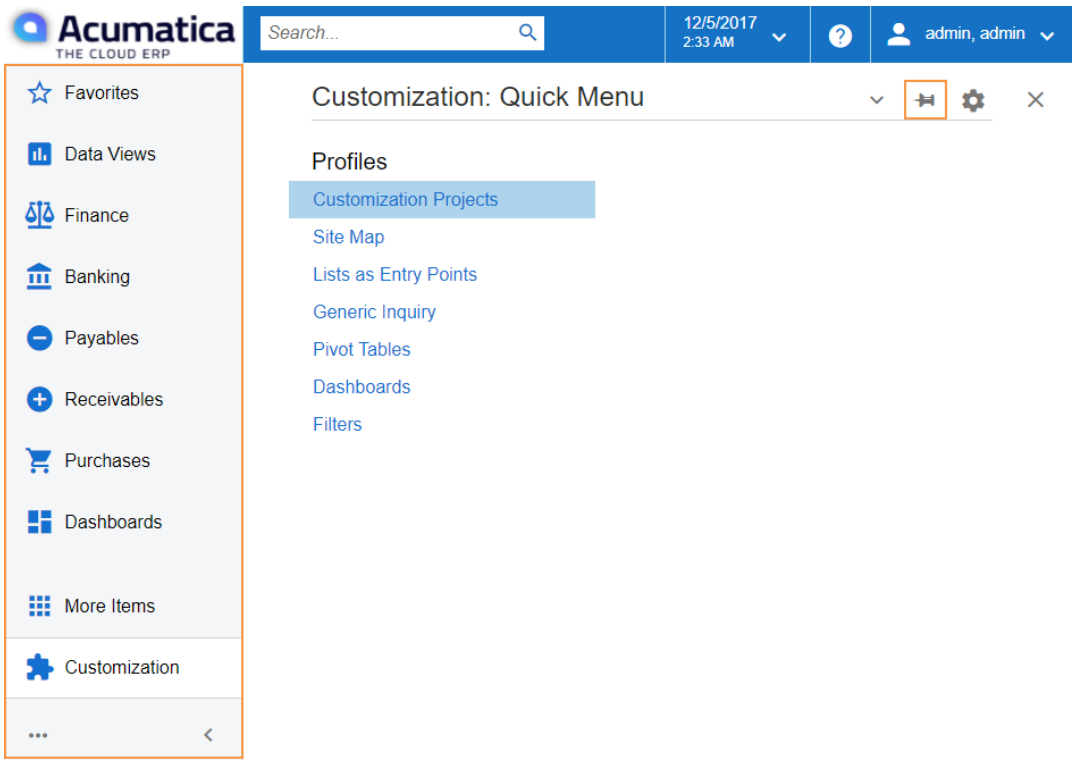


Figure: A workspace unpinned from the main menu

To unpin a workspace from the main menu, on the workspace title bar, click Unpin (see the following screenshot).

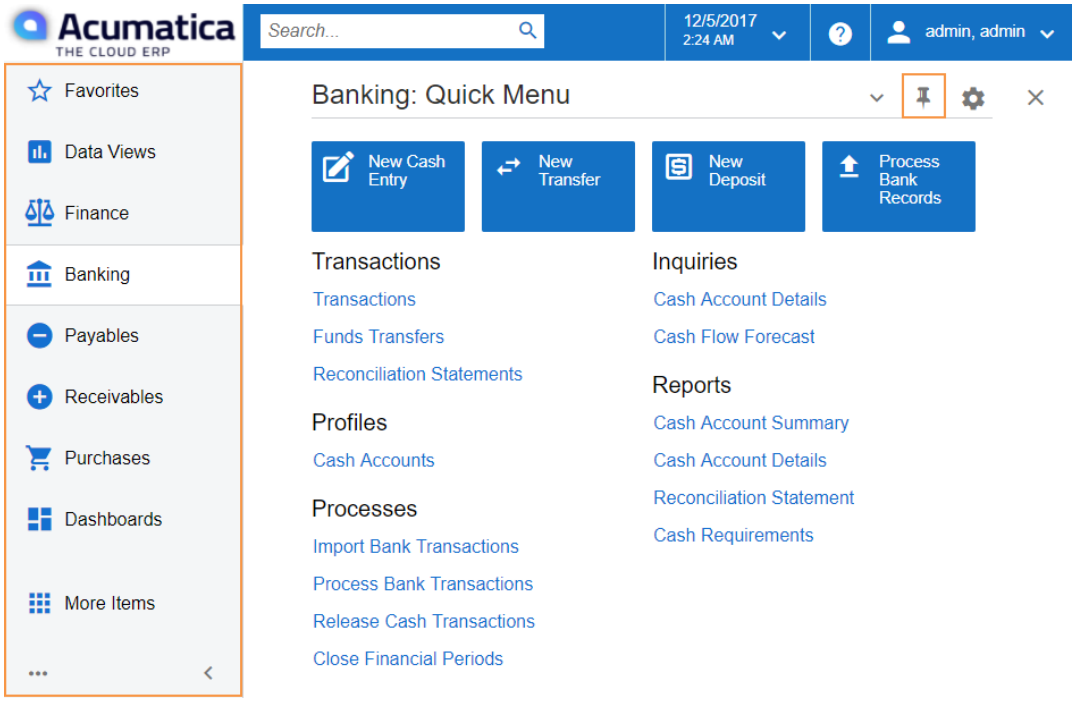


Figure: A workspace pinned to the main menu

To Navigate to a Form from a Quick Menu

Forms in the modern UI are grouped by workspaces, which are shown on the main menu on the left side of the screen. When you select a workspace, the system shows its Quick Menu, which has links to the most commonly used forms and reports of the workspace (see the screenshot below), listed under categories to further organize them. You can click a form name to navigate to it.

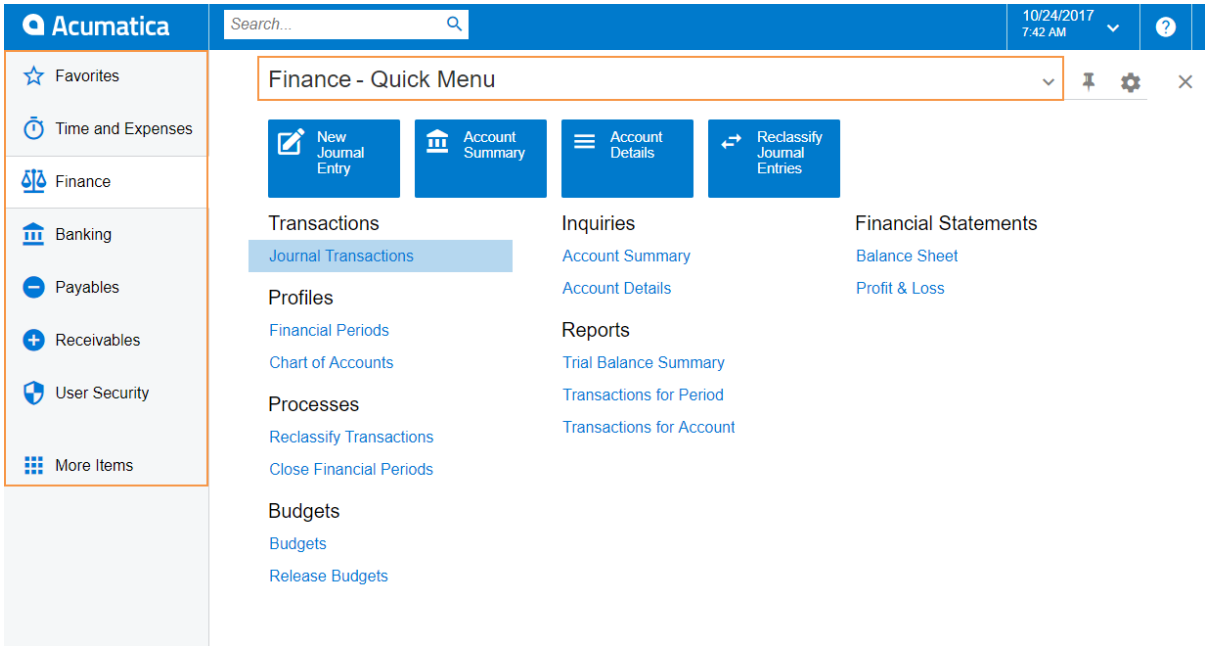


Figure: Navigating to a form from a Quick Menu

To View All Forms in a Workspace

To find any form of a workspace that is not shown on the Quick Menu, you can click the Quick Menu title bar to switch to **All Items** mode. In this mode, you can see the links to all forms that are included in the selected workspace (see the screenshot below).

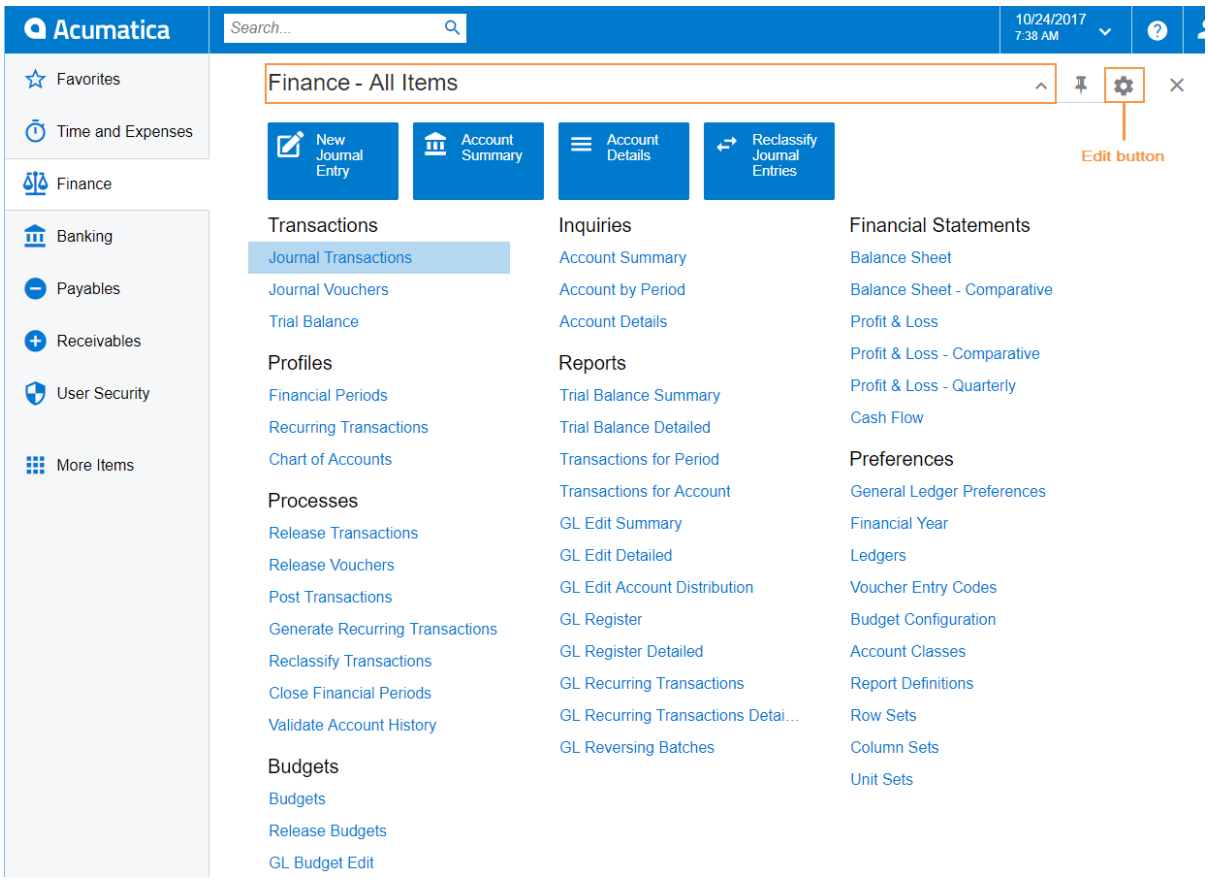


Figure: Displaying all items of the Finance workspace

To Add Forms to a Quick Menu

To add a form that currently is not shown on a Quick Menu of a particular workspace, open the needed workspace, and on the workspace title bar, click the **Edit** button (see the previous screenshot). In **Configuration** mode, select the check boxes next to the needed forms, and then click **Exit** to apply your changes and exit **Configuration** mode.

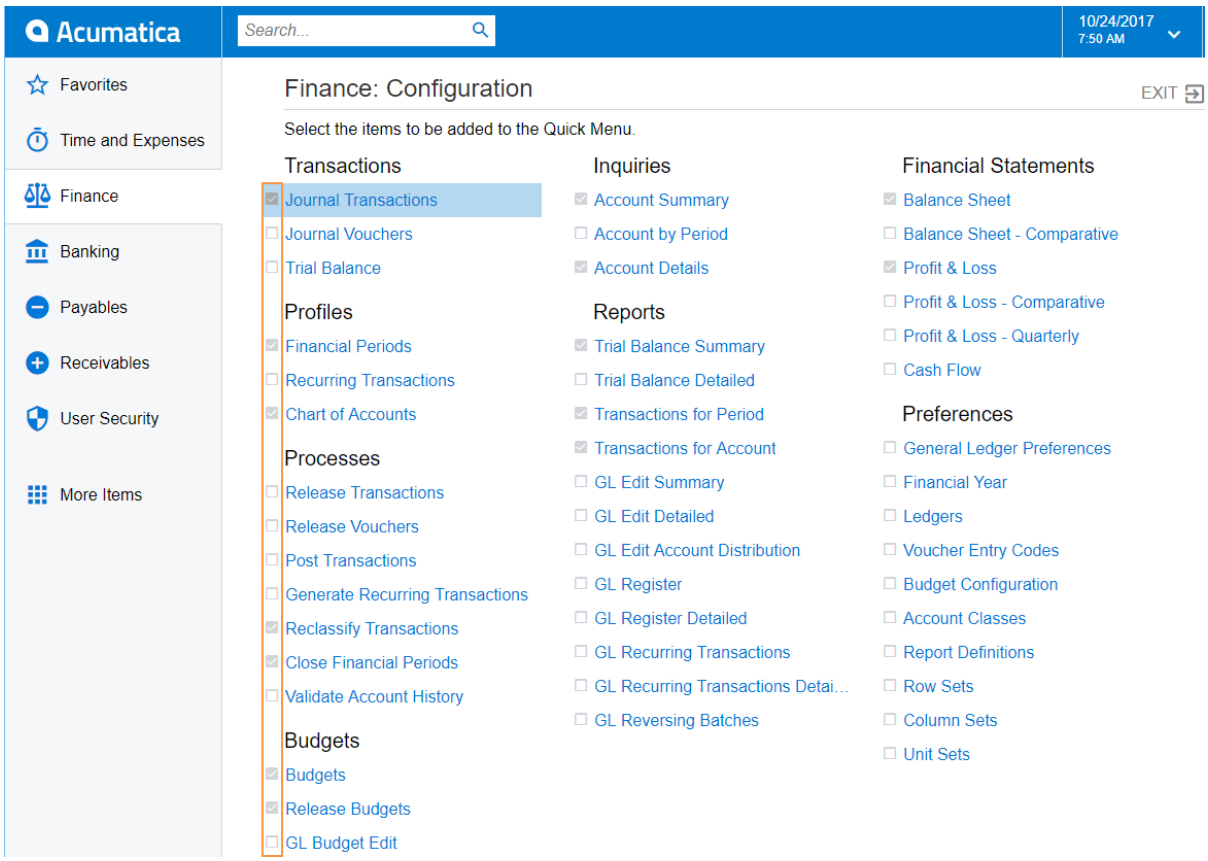


Figure: Adding forms to a Quick Menu

The full list of forms used during the completion of this training is provided below in this topic. We recommend that you be sure all these forms have been added to the applicable quick menus, to simplify navigation during the completion of the training.

To Review and Open Documents on Substitute Forms

Substitute forms provide a quick and easy way to review the list of records created on the applicable data entry forms. A substitute form is a generic inquiry that shows the summary information on the records entered on the particular entry form. Substitute forms are initially brought up instead of the corresponding entry forms when a user navigates to these forms in the Quick Menu.

For example, if you click **Journal Transactions** (under the **Transactions** category) on the Quick Menu of the **Finance** workspace, the system opens the Journal Transactions substitute form (GL3010PL), which shows the list of all transactions in the system (see the screenshot below). The substitute form may show tabs that filter the documents by their type or status.

To open the Journal Transactions entry form (GL301000) for entering a new batch of transactions from the Journal Transactions substitute form (GL3010PL), you need to click **Add New Record** button on the form toolbar.

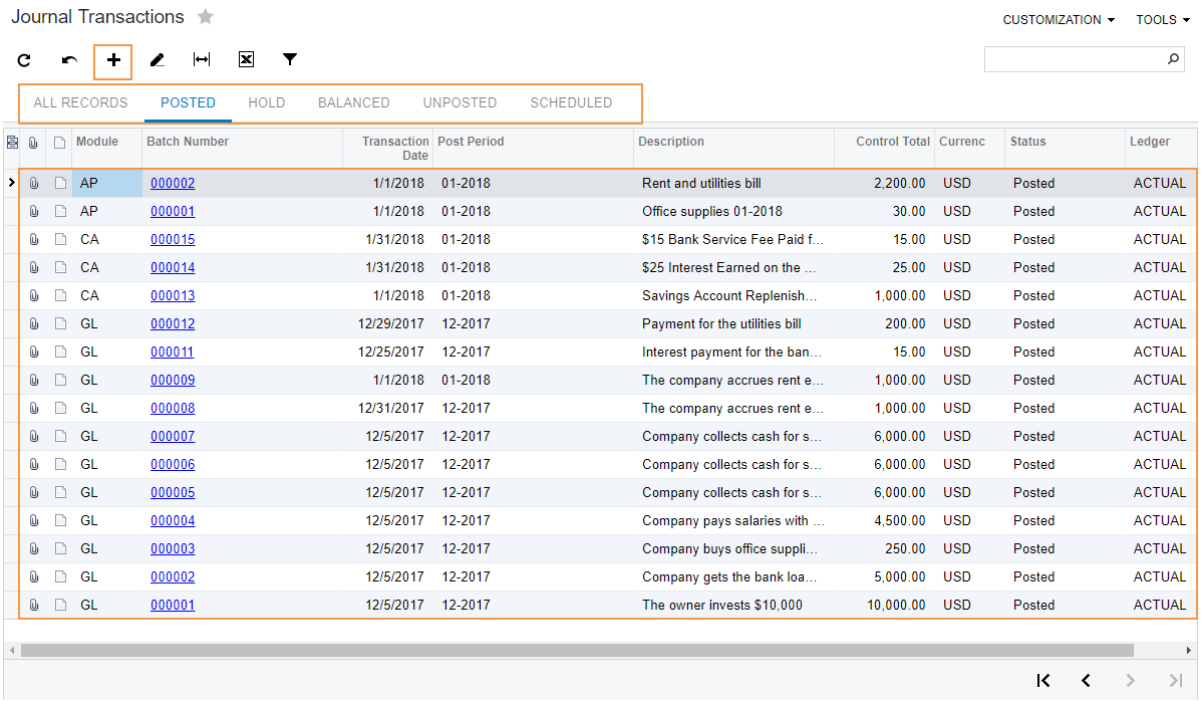


Figure: Viewing the Journal Transactions substitute form

If the training instructions ask you to open a particular document (such as a batch, an Accounts Payable bill, or an Accounts Receivable invoice), you can find this document on the appropriate substitute form and then click its reference number link to open this document on the data entry form. Alternatively, you can open the data entry form itself, select the module or document type (depending on the form), and in the **Reference Nbr.** box, click the selector icon and select the document by its reference number (see the screenshot below).

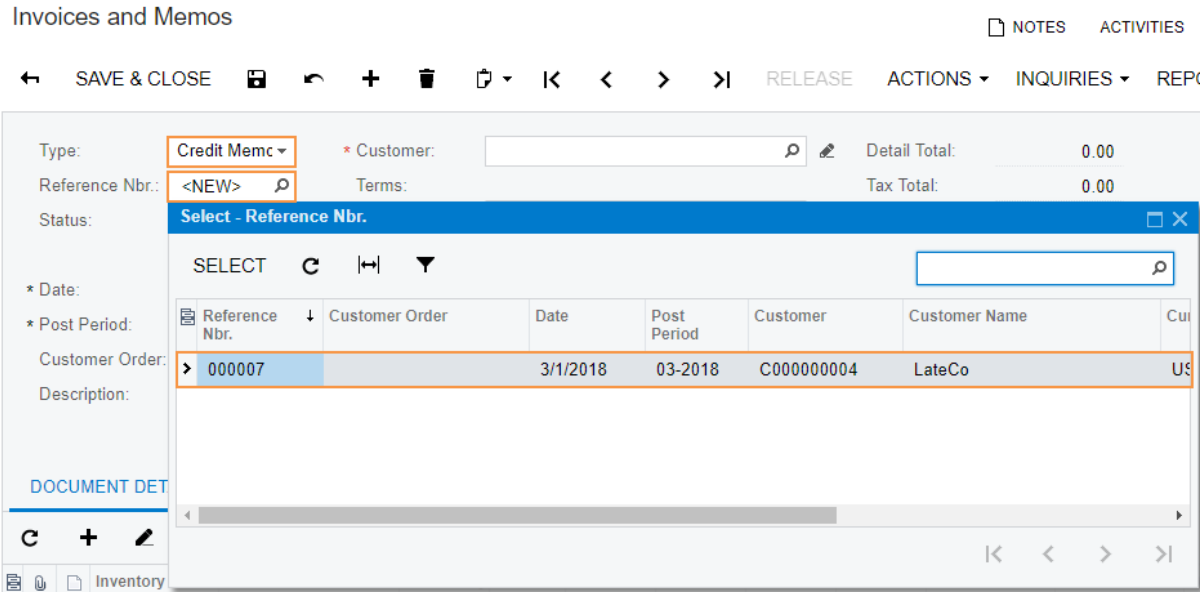


Figure: Opening a document by its reference number

Configuring the Quick Menu for the Training

Before you start to complete the training, make sure the needed workspaces (listed below) are pinned to the main menu and menu items (listed below along with the categories of the workspace they should

be listed under) are shown in the Quick Menus of the corresponding workspaces and add the forms that are not shown. This will help you access the forms quickly.

The following workspaces should be pinned to the main menu:

- Customization
- Sales Orders
- Receivables
- System Management
- User Security

You can temporarily unpin workspaces other than the workspaces listed above from the main menu for your convenience.

The following items should be included in the Quick Menu of the corresponding workspaces:

- **Customization** workspace
  - Inquiries > Source Code
  - Profiles > Customization Projects
  - Profiles > Dashboards
  - Profiles > Filters
  - Profiles > Generic Inquiry
  - Profiles > Pivot Tables
  - Profiles > Site Map
- **Sales Orders** workspace
  - Transactions > Sales Orders
- **Receivables** workspace
  - Profiles > Customers
  - Transactions > Invoices and Memos
  - Reports > Customer Summary
- **System Management** workspace
  - Localization > System Locales
  - Localization > Translation Dictionaries
  - System Preferences > Site Preferences
- **User Security** workspace
  - Access Rights > Access Rights by Screen
  - User Management > Users

3. Completing the Training in the Classic UI

The following sections provide a quick overview of the classic UI and explain how to navigate in the system during the completion of the training.

To Switch Back to the Classic UI

When you have created a new company and signed in to it, the modern user interface is enabled by default. If you need to switch back to the classic UI, do the following:

1. In the top right corner, click the name of the current user, and click **My Profile**, as shown in the following screenshot.

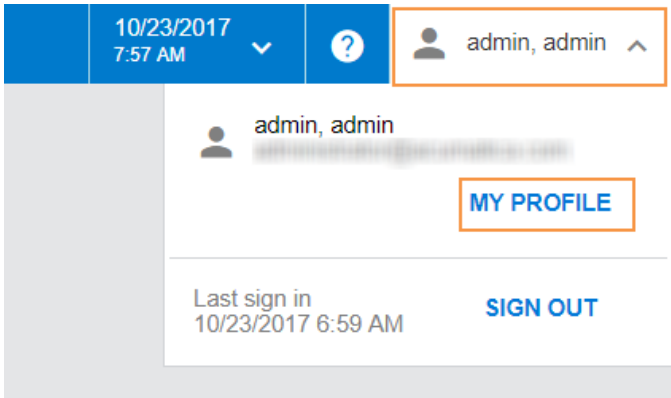


Figure: Opening the user profile

2. On the User Profile form (SM203010), which opens, select the **Show Classic UI by Default** check box, and save your changes.

To switch back to the modern UI, again click the name of the current user in the top right corner and click **Switch to Modern UI** in the menu (see the screenshot below).

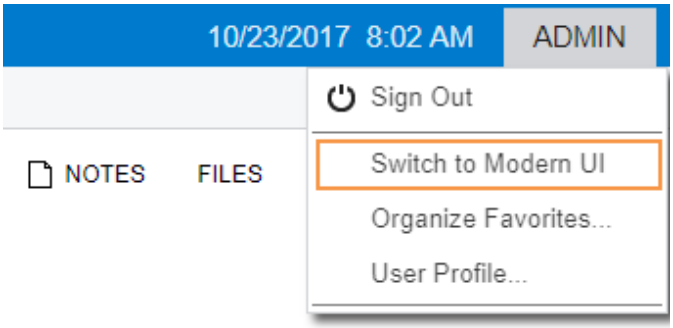


Figure: Switching to the modern UI

To Navigate to Forms in the Classic UI

To help learners to search for particular forms during the training completion in the classic UI, the paths to forms in this training guide are based on the classic UI. The main menu, at the top of the screen, shows suites and the modules of the selected suite. The navigation pane, located on the left side of the screen, shows the forms of the modules grouped by their functions. The path to a particular form is specified as follows in the training:

Form Title (Form ID; Suite > Module > Tab > Node)

For example, the form with the following path is shown in the screenshot below:

General Ledger Preferences form (GL102000; Finance > General Ledger > Configuration > Setup)

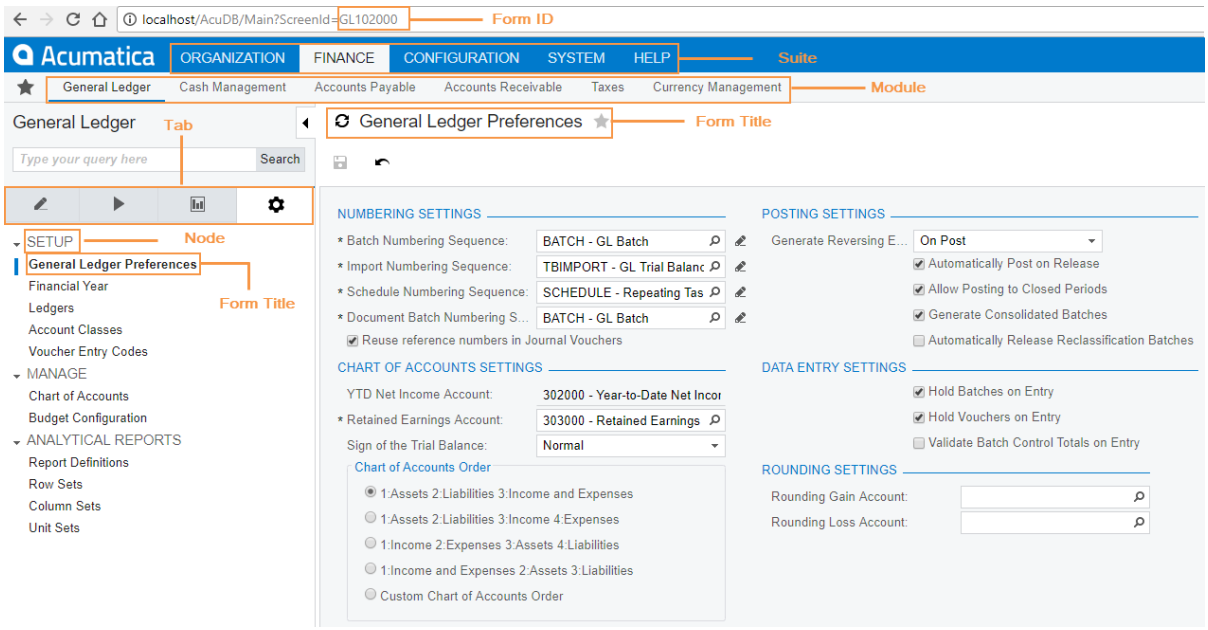


Figure: General Ledger Preferences form in the classic UI

4. Navigating to Forms: Tips

The following tips apply to the modern and classic user interfaces and will help you to quickly find and open any form.

How To Search for a Form by Its Title or ID

At any time, you can quickly search for a particular form by typing its title or ID in the Search box:

- In the modern UI, type the text in the Search box on the top of the screen (see the following screenshot). The system shows the search results in the Search window, which opens when you start typing the text in the Search box. Then on the **Menu Items** tab of the Search window, you click the link to open the needed form.

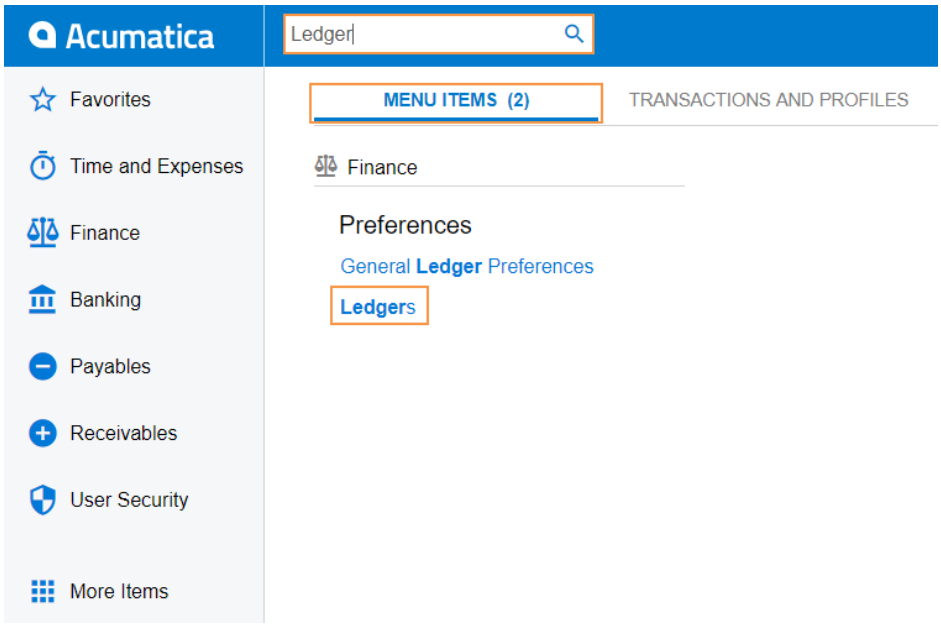


Figure: Searching for a form by title in the modern UI

- In the classic UI, type the text in the Search box at the top of the navigation pane (see the following screenshot). To navigate to the needed form, click it in the drop-down list with the search results.

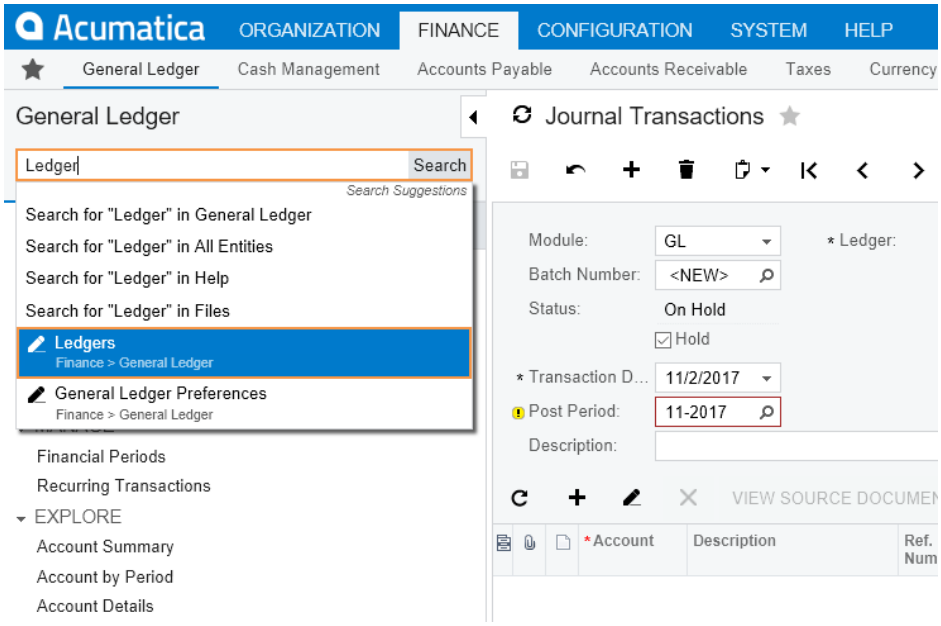


Figure: Searching for a form by its title in the classic UI

How To Navigate to Forms by Using the Form ID

In the training guide, each form is referred to by its ID. If you are not sure in which area a particular form is located, instead of searching for the form, you can simply open it by using its form ID. You can do this in both the modern UI and the classic UI as follows:

1. In the browser's address bar, change the form ID of the currently opened form to the form ID of the needed form (see the screenshot below).

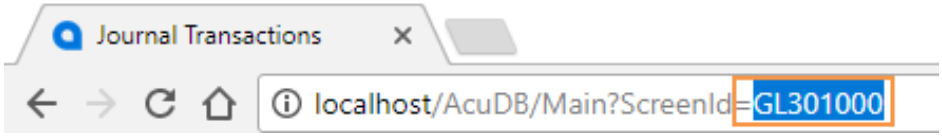


Figure: Entering the form ID

2. Press Enter. The system navigates to the form.

Acumatica ERP Reporting Tools

Using the following Acumatica ERP reporting tools you can modify existing reports and develop new ones, which can be delivered online, converted to PDF, or delivered via email:

- Generic inquiries
- Report Designer
- Dashboards
- Reusable filters
- Analytical reports

You can distribute generic inquiries, reports, shared reusable filters, analytical reports, and access rights to these objects as a part of a customization project. For more information on using customization projects, see the links in the Related Links section of the topic.

Generic Inquiries

The Generic Inquiry is an integrated Acumatica ERP tool that provides non programmers with an easy-to-use web-based interface they can use to create inquiries and add them to the system.

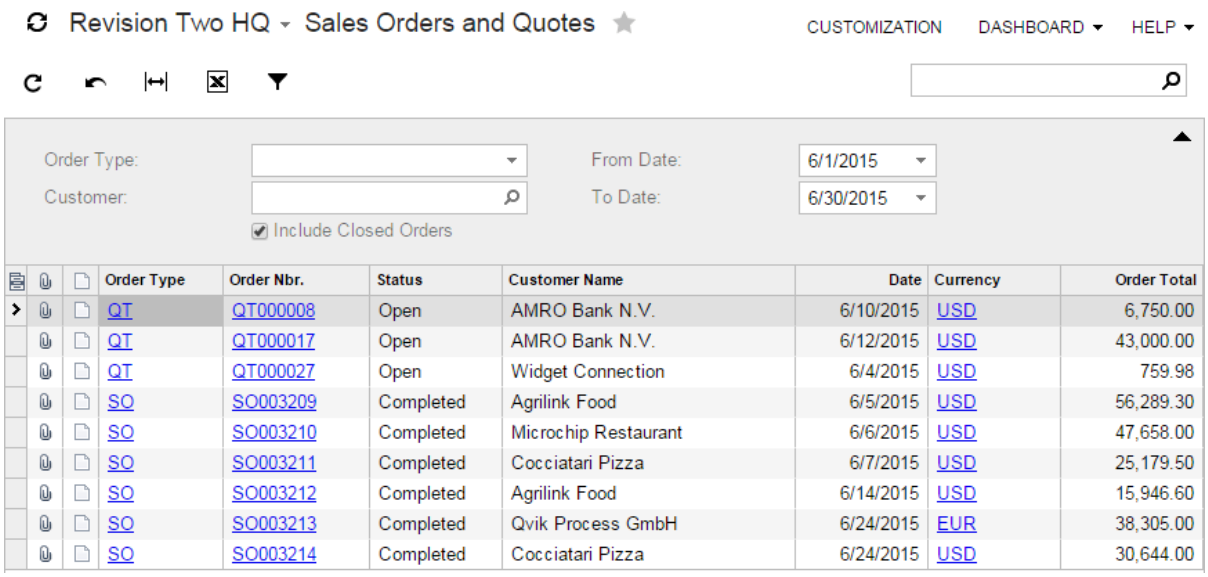


Figure: The example of an inquiry form

Report Designer

Acumatica Report Designer is a standalone application that you can use to create, edit, and save reports suitable for printing, such as customer statement form or invoice form. When the standard reports do not include needed data or when their layouts do not meet your needs, you can customize the report or design a new one. With the Report Designer, you can select data, calculate required values based on the selected data, customize reports layouts, group the selected data, create totals and subtotals.

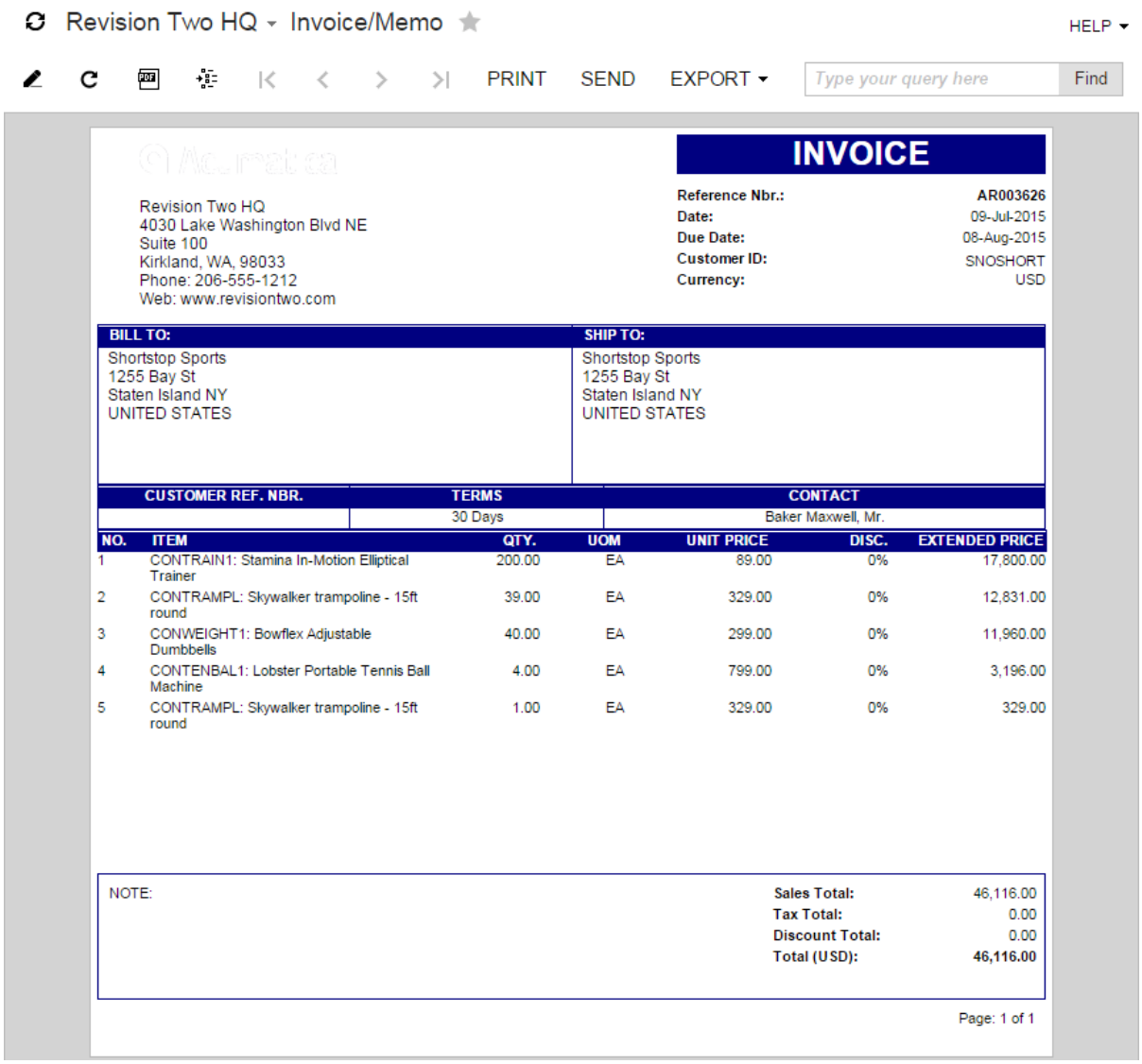


Figure: The example of an executed report

Dashboards

A dashboard is a collection of widgets that are displayed on a single page and are designed to give you needed information at a glance. With dashboards, you can act on real-time information that you have at your fingertips.

Dashboards may serve different purposes, and you can create dashboards that display information from various sources, including Acumatica ERP inquiry and processing forms, wiki articles, announcements, and event calendars. If the source is an Acumatica ERP form, its data can be displayed in various types of charts and tables, with the data filtered according to selection criteria. From the dashboard, you can click any widget to explore the information further.

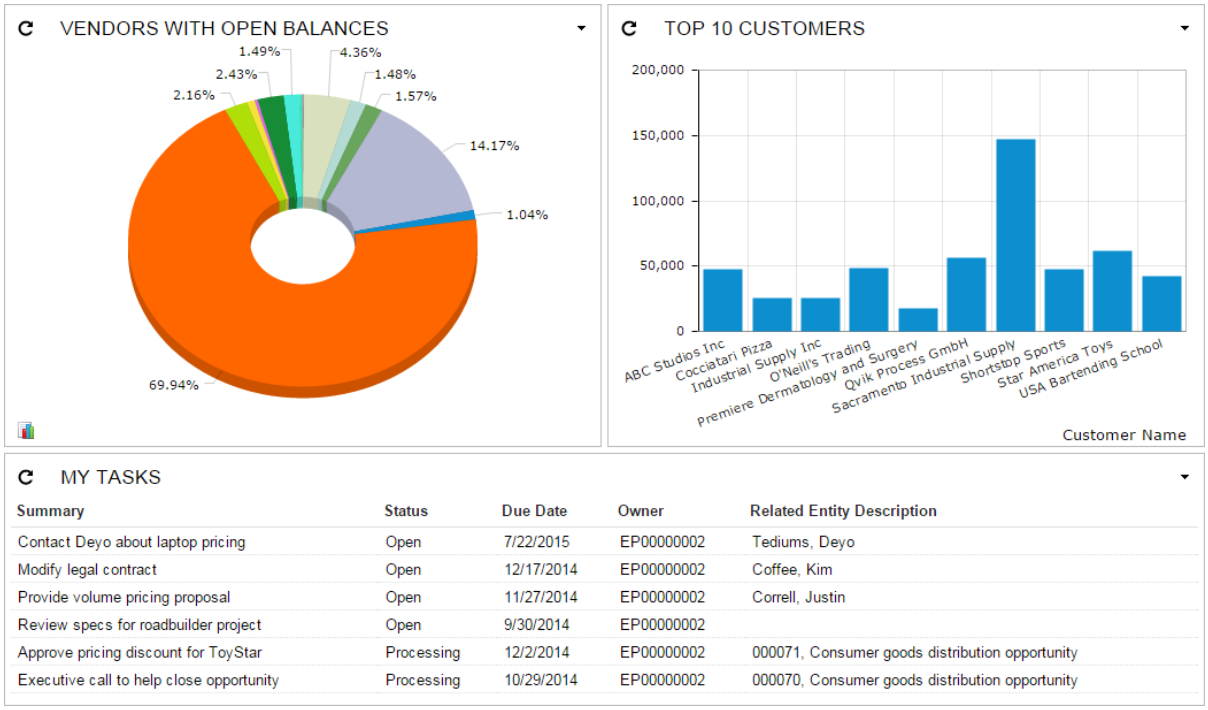


Figure: The example of dashboards

Reusable Filters

You can use reusable filters to create additional filtering conditions for Acumatica ERP list forms and inquiries easily and quickly.

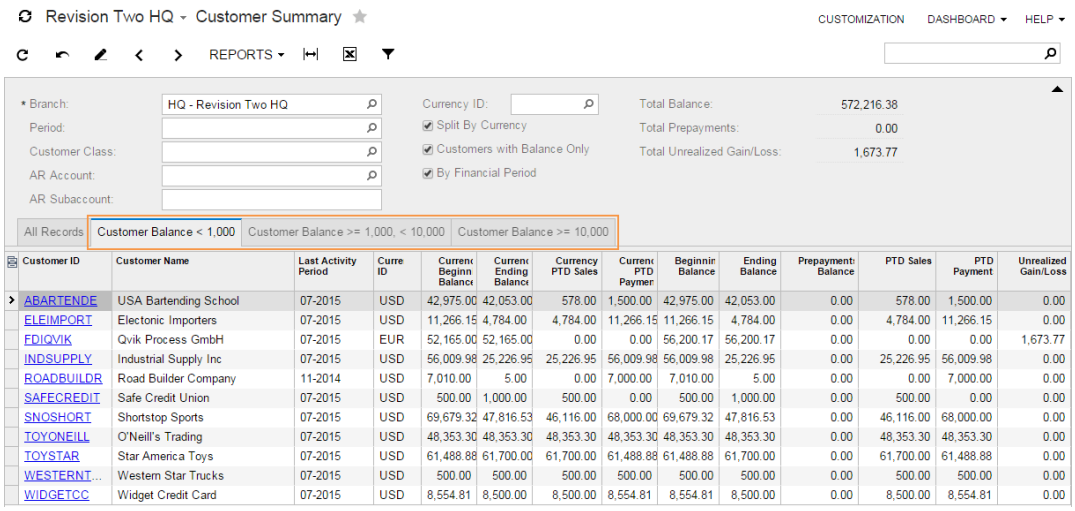


Figure: The example of reusable filters

Analytical Reports

The Analytical Report Manager is an integrated Acumatica ERP utility that provides an easy-to-use web-based interface that you can use to create financial reports based on the following data:

- General ledger data
- Project accounting data

The system includes sample reports, which use the predefined account classes, such as the following:

- Balance Sheet
- Statement of Cash Flows
- Profit and Loss

You can use the Analytical Report Manager to modify these reports and create more financial reports that you need.

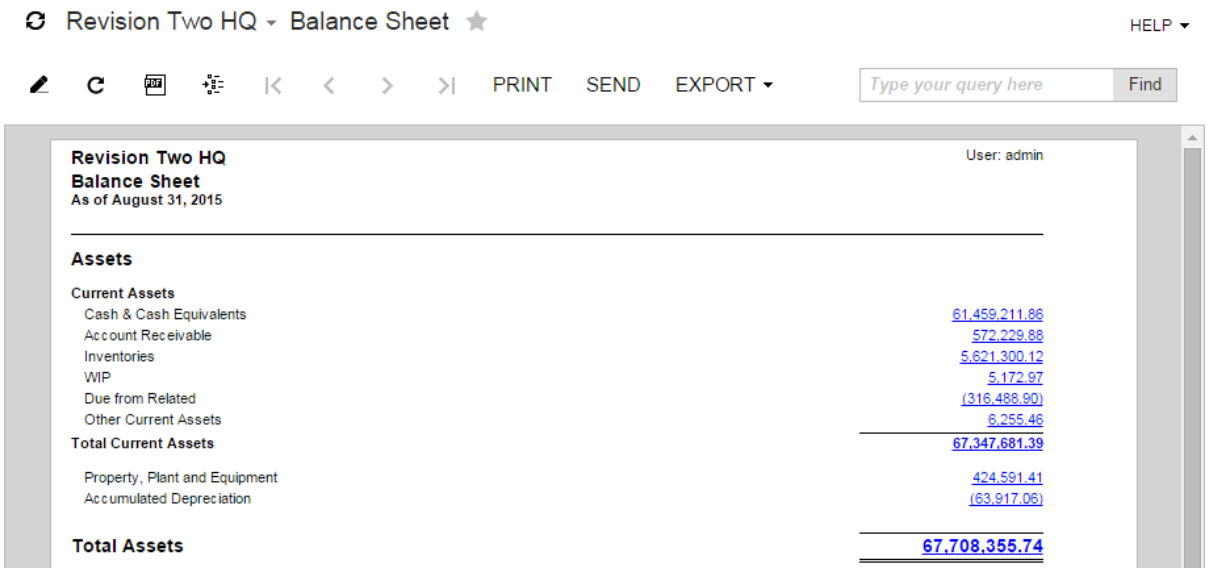


Figure: The example of an ARM report

The creation of analytical reports is outside of the scope of this course.

Related Links

Managing Customization Projects
Managing Generic Inquiries
Acumatica Report Designer Guide
Managing Shared Filters
Managing Analytical Reports
Overview of the User Security Configuration Process

Part 1: Generic Inquiries

In this part of the course, you will learn step by step how to create and configure a generic inquiry. In particular, you will learn to:

- Create, configure, and publish inquiries
- Replace entry forms with inquiries
- Expose inquiries by using OData

Data Access Overview

To design an inquiry, you need to have general knowledge of data access classes (DACs).

In Acumatica ERP, the data is stored in a database. However, users of Acumatica ERP do not access the database directly. Instead, they access the DACs, as shown in the illustration below.

Similarly, when building inquiries, you retrieve data from the data access classes rather than working with the database tables directly. In many cases, the data access classes directly correspond to the database tables; however, this is not necessarily the case for all the tables. The fields of the data classes correspond to the database columns, but this too is not necessarily the case for all the fields. For simplicity, we will use the terms *data access class*, *data class*, *class*, and *table* interchangeably. With all these terms, we mean the data access class but not the database table.

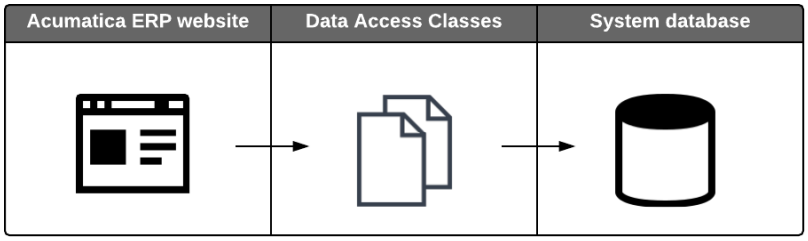


Figure: Data access workflow

Determining Which Data Access Classes to Use

You usually create an inquiry to get a certain result. Consequently, you know data which you originally have to use. Thus, you have to explore which classes you can use to access this data.

To find the underlying data access classes, you can explore the related forms. For example, suppose that you want to find the data field that holds the sales orders numbers. Thus, you have to open the Sales Orders form (SO301000; Distribution > Sales Orders > Work Area > Enter), click **Customization** > **Inspect Element** on the form title bar (item 1 in the screenshot below), and click the **Order Nbr.** element on the form (item 2). The **Element Properties** dialog-box opens. You are interested in two elements—that is, **Data Class** and **Data Field** (item 3), which correspond to the class and field you need (item 3).

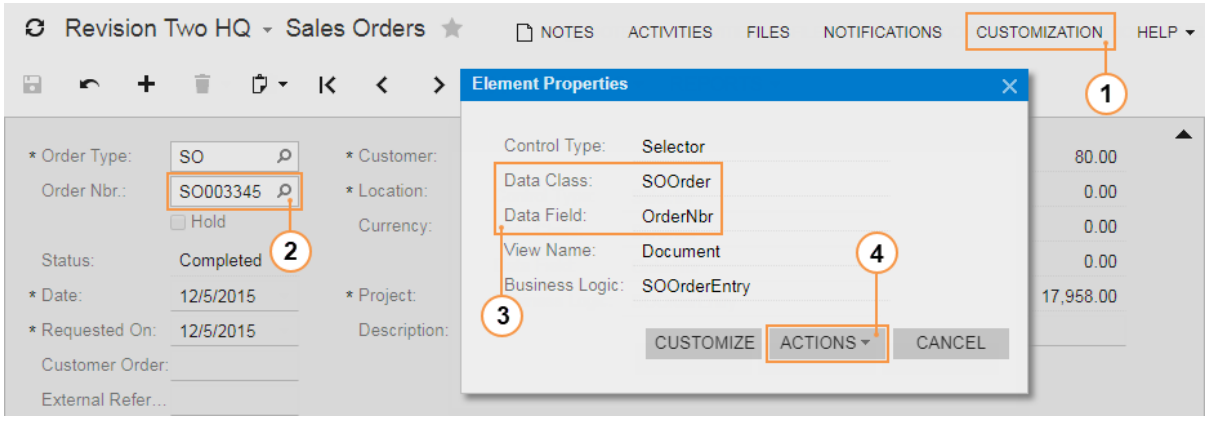


Figure: Inspecting an element to get its data access class

You can get more information on the Source Code form (SM204570) about the class you need in two ways:

- Open the Source Code form from the **Element Properties** dialog box by clicking **Actions** > **View Data Class Source** (item 4 in the screenshot above). The Source Code form opens in a pop-up window. The specified data class is shown on the **Data Access** tab (item 1 in the screenshot below).

- Open the Source Code form (SM204570; System > Customization > Explore) directly. In the **Table Name** box on the **Data Access** tab, select the data class you need.

Notice that the data class name in the **Element Properties** dialog box (item 3 in the screenshot above) differs from the data class name on the Source Code form (SM204570; item 1 in the screenshot below), although both names represent the same data class. *PX.Objects.SO.SOOrder* is the full name, and *SOOrder* is the shortened version shown in the **Element Properties** dialog box. The full name of any data access class consists of the namespace `PX.Objects.SO`, which includes the code of the module `SO`, and the class name, `SOOrder`.

All fields of a data access class are listed on the **Data Access** tab, as shown in the screenshot below.

To identify the key fields, you need to pay attention to the fields marked with the `IsKey` or `PXDBIdentity` attribute in the source code of the class. Fields that constitute the key of the data records are marked by the `IsKey` parameter in the type attribute. One field in a class may be marked with the `PXDBIdentity` attribute. This attribute designates the key of the data record, by which you have to join classes in queries. In such classes with the `PXDBIdentity` field, you can find other fields marked with the `IsKey` attribute, but these fields are used for the user-friendly identifiers in the user interface, and they do not constitute the actual key of the record. For more information on the attributes, see the online product documentation supplied with Acumatica ERP (Help > Acumatica Framework > API Reference > Attributes).

Master classes, such as *Customer* and *InventoryItem*, usually have two key fields—that is, one with the `IsKey` attribute, and another with `PXDBIdentity`. For example, the key fields of the *InventoryItem* class are *InventoryID*, which is marked with the `PXDBIdentity` attribute, and *InventoryCD*, which is marked with the `IsKey` attribute. For such classes, use the `PXDBIdentity` field to join classes in queries and the `IsKey` field in other cases, such as using for inquiry or report parameters. The `PXDBIdentity` field is more preferable to use for joining classes in queries than the `IsKey` field, because the `PXDBIdentity` field is also the identity column of the database table. This column is a part of the database index, thus the queries with the `PXDBIdentity` fields execute faster than the queries with the `IsKey` fields.

Document and transaction classes, such as *SOOrder*, *ARInvoices*, and *ARPayment*, usually have two or more key fields, which are marked with the `IsKey` attribute. For example, the key fields of the *ARInvoices* class are *RefNbr* and *DocType*. You can use these fields to join classes in queries.

On the **Data Access** tab of the Source Code form (SM204570), click `#region OrderNbr` to expand its attributes (item 2 in the screenshot below). Inside, you can find the string `IsKey = true`, which means that *OrderNbr* is included in the key of this class (item 3).

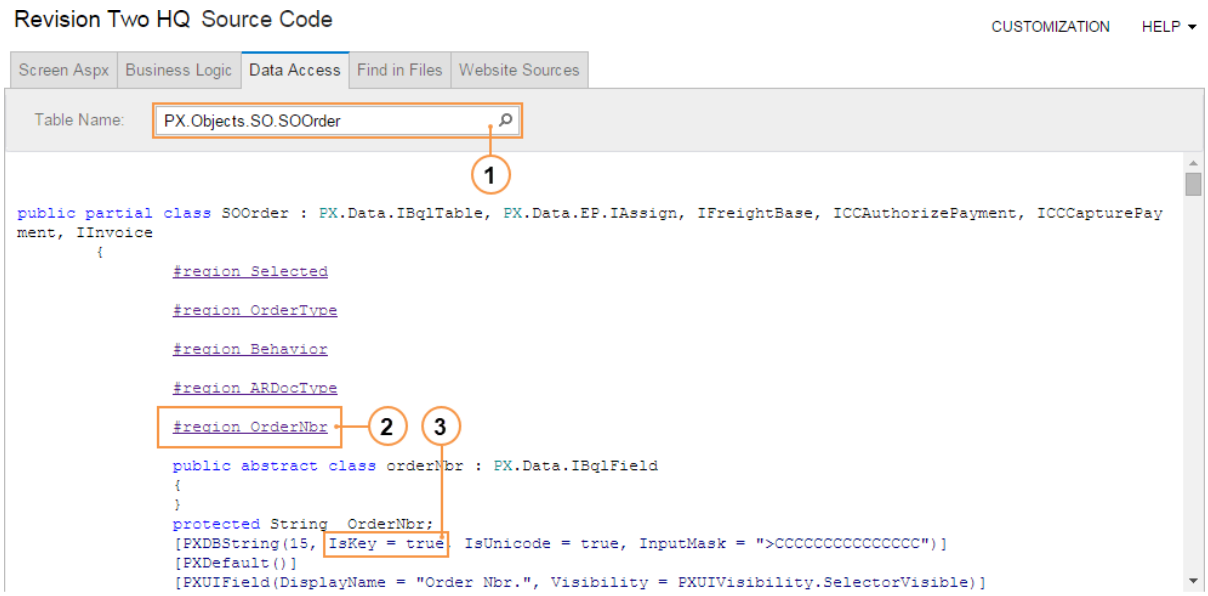


Figure: Exploring a data access class on the Source Code form

It is a bit more complicated to find the key fields of the *Customer* class than of the *SOOrder* class (item 1 in the screenshot below). *BAccountID* is the key field of the *Customer* class, but you cannot find the string `IsKey = true`, if you expand the `#region BAccountID` data field (item 2).

Figure: Exploring the Customer class on the Source Code form

Notice that the *Customer* class inherits the *Baccount* class (item 3 in the screenshot above). You can scroll the *Customer* class on the form and find its parent *BAccount* class further (item 1 in the screenshot below). If you expand the `#region BAccountID` data field (item 2) of the *BAccount* class, you can find the string `[PXDBIdentity()]` (item 3), which means that *Baccount* is the key field of the *BAccount* class and all classes that inherit the *BAccount* class. Thus, *BAccountID* is the key field of the *Customer* class.

Figure: Exploring the Customer class on the Source Code form

Similarly, you can explore any element you need for your inquiry. For the key fields of the class, you have to observe the data class and the database table. To reveal the relationships between the classes, inspect the fields of the main and related classes and review the structure of the corresponding database tables.

Some data access classes have virtual data fields, which values are not stored in the database as values of ordinary data fields. Similarly, an entire class can be virtual—that is, all the data fields of this class are virtual. For example, the Inventory Transaction Details form (IN404000) uses the *InventoryTranDetEnqResult* class, which is virtual, to show summary information about inventory transactions posted within a selected financial period. If you use a virtual data field in your inquiry or report, this data field returns no data.

Related Links

To Explore the C# Code of a DAC
Exploring the Source Code

Lesson 1: Creating a Generic Inquiry

In this lesson, you will create the Open Sales Orders by Customer inquiry, which lists sale orders that meet the following criteria:

- The type of the sales orders is *SO* (*Sales Order*).
- The status of the sales orders is *Open*. (Optionally, the user can include sales orders of other statuses in the inquiry results.)
- The dates of the sales orders fall within the date range that the user has to specify.
- The sales orders are filtered by the selected customer, if the user has specified one.
- The listed sales orders are sorted by date and customer name.

You will go through the whole process of creating this inquiry.

At the end of the lesson you will be suggested to do a practice exercise.

Lesson Objectives

In this lesson, you will learn how to do the following:

- Select the tables for the inquiry
- Specify the table relations
- Configure the inquiry parameters
- Specify the inquiry conditions
- Group the inquiry data
- Sort the inquiry data
- Configure the grid that displays the results of the inquiry
- Use calculated values for the result columns
- Preview and publish the inquiry

Step 1.1: Creating the Inquiry

You create an inquiry on the Generic Inquiry form (SM208000). Do the following:

1. Open the Generic Inquiry form (SM208000; System > Customization > Manage).
2. Create a new inquiry with the following settings:
   - **Inquiry Title**: `SO-OpenByCustomer`
   - **Arrange Parameters in**: `2`
3. Save the inquiry.

Inquiry Title is the inquiry name, which has to be unique among the generic inquiries.

Arrange Parameters in specifies the number of columns in which the inquiry parameters are arranged on the inquiry form.

At the next step you will select the tables to the inquiry you have created.

Step 1.2: Selecting the Tables for the Inquiry

To configure the inquiry you created, you will use the sales order class and the customer class. To find these classes and to reveal the relationships between them, do the following:

1. To discover the class that provides access to the sales order data, investigate the Sales Orders form (SO301000; Distribution > Sales Orders > Work Area > Enter).
2. To discover the class that provides access to the information about the customers the sales were made to, investigate the Customers form (AR303000; Finance > Accounts Receivable > Work Area > Manage). Notice that the **Customer ID** element corresponds to the *AcctCD* field. *AcctCD* is a user-friendly substitute for the *bAccountID* key field for the user interface, but *AcctCD* is not the identity key. In the database terminology, *AcctCD* is a natural key, and *bAccountID* is a surrogate key.
3. To find the key fields of the classes you discovered, observe them on the Source Code form (SM204570; System > Customization > Explore). On the **Table Name** box on the **Data Access** tab, select the data class you need.

   You can open the Source Code form with the appropriate data class while you are investigating the Sales Orders and Customers forms. To do that, in the **Element Properties** dialog box, click **Actions** > **View Data Class Source**.

You can discover that the *SOOrder* class provides access to the sales order data. The *Customer* class provides access to the customers. The *CustomerID* field of the *SOOrder* class is the reference to the customer record—that is, the *CustomerID* field is the foreign key to the *BAccountID* field in the *Customer* class, as shown in the following diagram.

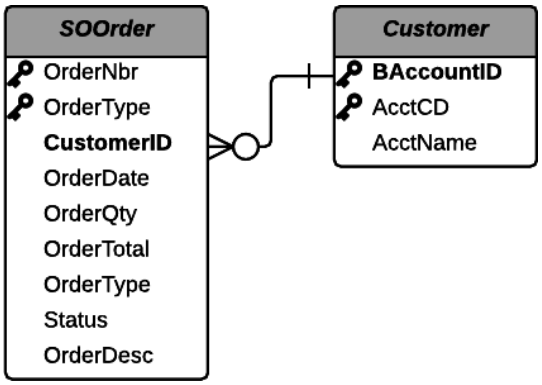


Figure: The classes and relationships between them

Selecting the Tables for the Inquiry

To add the classes shown in the diagram above to the inquiry, do the following:

1. On the Generic Inquiry form (SM208000; System > Customization > Manage), open the *SO-OpenByCustomer* inquiry.
2. On the **Tables** tab, add a row, select the cell in the **Table Name** column, and click the magnifier icon, as shown in the screenshot below.

   In the dialog box, which appears, you can select the needed class. On the **Most Used** tab, which opens by default, you can find the list of the most used classes, which have the non empty **Display Name** attribute. On the **All Records** tab, all the available classes are listed.
3. On the **Most Used** tab, filter the list of classes by `customer` and double click the row with the *PX.Objects.AR.Customer* class, to select the class.

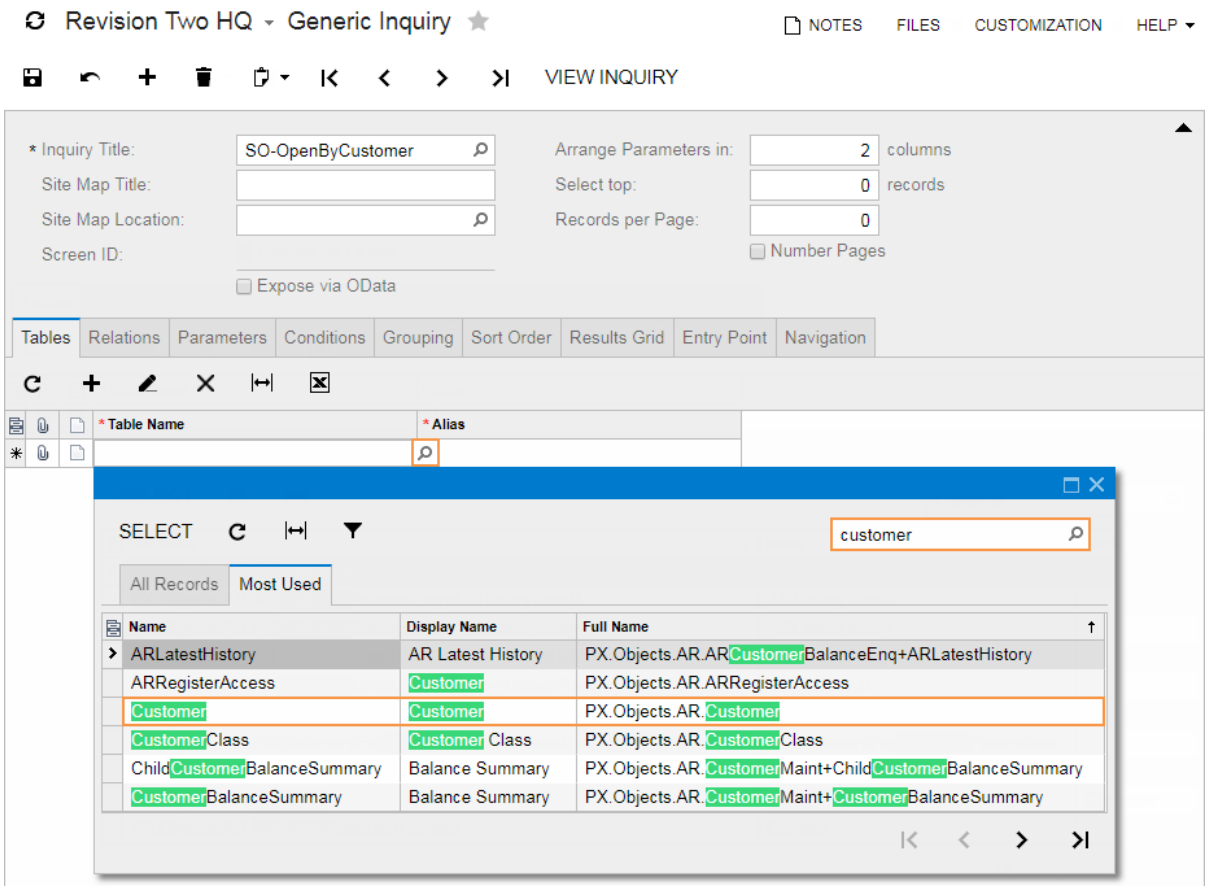


Figure: The Tables tab with the added classes

4. Add the next row, and select the *PX.Objects.SO.SOOrder* class in the **Table Name** column. You can look for the class you need straightly in the **Table Name** column, as shown in the screenshot below.

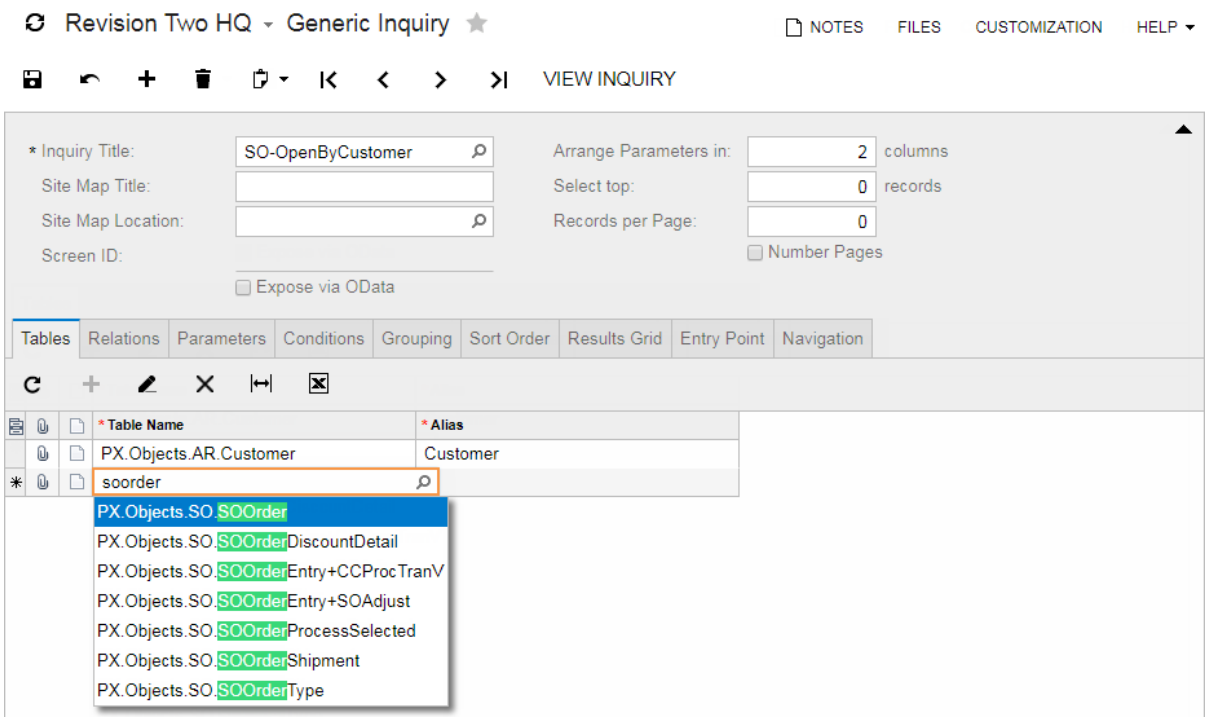


Figure: The Tables tab with the added classes

5. Save your changes to the inquiry.

PX.Objects.SO.SOOrder and *PX.Objects.AR.Customer* are the full names of the sales order class and the customer class, respectively.

Alias contains the class names that you will use to refer to the table while creating the inquiry. You can type **Alias** manually or leave it empty, as you did. If you leave **Alias** empty, the system fills it in automatically, when you select an other row or save the inquiry. Once you select an other row or save the inquiry, you cannot change **Alias**.

Related Links

Generic Inquiry (Tables Tab)

Step 1.3: Specifying the Table Relations

You have to specify the relationships between the classes you added so that the system can generate a query. In the **Table Relations** area of the **Relations** tab, you specify the relations between the pair of tables. In the **Data Field Links for Active Relations** area of this tab, for each pair of related tables, you specify the links between the columns of these two tables.

You can add two or more tables to your inquiry without having to join them. The most common case of using a table that is not joined with the others is to select some fields of this table as **Schema Field** of some inquiry result columns. For more information on configuring the results grid of an inquiry, see *Step 1.7: Configuring the Inquiry Results Grid* .

To specify the relations, do the following:

1. On the Generic Inquiry form (SM208000; System > Customization > Manage), open the *SO-OpenByCustomer* inquiry.
2. On the **Relations** tab, in the **Table Relations** area, add a row and specify the following settings, as shown in the screenshot below:
   - **Parent Table**: *SOOrder*
   - **Join Type**: *Inner*
   - **Child Table**: *Customer*
3. On the **Relations** tab, in the **Data Field Links For Active Relation** area, add a row and specify the following settings:
   - **Parent Field**: *CustomerID*
   - **Condition**: *Equals*
   - **Child Field**: *BAccountID*

   This links the classes selected in the **Table Relations** area by their identity keys.

   When you select data fields, you can look for the field you need by filtering the list of available fields, as shown in the screenshot below.
4. Save your changes to the inquiry.

You selected *SOOrder* as the parent table, because the required sales data is provided by the *SOOrder* class. The *Customer* class provides additional information, so you selected it as the child table.

An *Inner* join creates a result by combining the rows of the parent and child tables when there is at least one match in both tables. For an *Inner* join, the order of tables does not matter. You could select the *Customer* class as the parent table and the *SOOrder* class as the child table and get the same result.

A *Left* join returns all rows from the parent table combined with the child table, even if there are no matches in the child table. Therefore, the order of classes is important if you use a *Left* join.

Join types selected in the **Join Type** column work exactly the same as appropriate SQL JOIN statements.

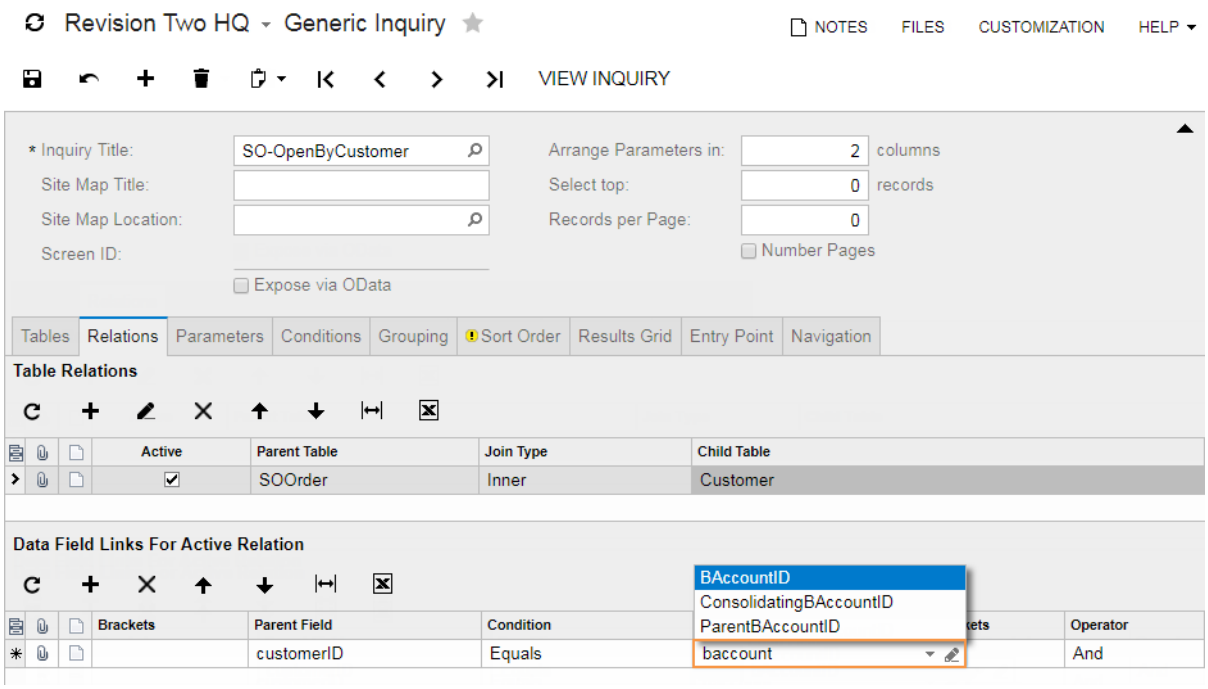


Figure: The Relations tab with the configured relationships between the classes

Related Links

Generic Inquiry (Relations Tab)

Step 1.4: Configuring the Inquiry Parameters

You also need to specify the inquiry parameters for the generic inquiry being designed. The inquiry parameters will be displayed on the inquiry form above the data, and the user will enter values for the parameters. For this inquiry, the user can enter the date range and, optionally, the customer. To configure these parameters, do the following (as shown in the screenshot below):

1. On the Generic Inquiry form (SM208000; System > Customization > Manage), open the *SO-OpenByCustomer* inquiry.
2. On the **Parameters** tab, add to the table the following lines, each of which represents an inquiry parameter:

Is Required	Name	Scheme Field	Display Name	From Schema	Default Value
Selected	`DateFrom`	*SOOrder.OrderDate*	`Date From`	Selected	*8/9/2015*
Selected	`DateTo`	*SOOrder.OrderDate*	`Date To`		`8/15/2015`
	`Customer`	*Customer.AcctCD*	`Customer`		
	`OrderStatus`	*<CheckBox>*	`Open Only`	Selected	Cleared

As the **Default Value** of the inquiry parameters with the date data type, you can specify an exact date or select one of the following date-relative parameters:

- *@WeekStart* and *@WeekEnd*: The start and the end of the current week
- *@MonthStart* and *@MonthEnd*: The start and the end of the current month
- *@PeriodStart* and *@PeriodEnd*: The start and the end of the current financial period
- *@QuarterStart* and *@QuarterEnd*: The start and the end of the current quarter
- *@YearStart* and *@YearEnd*: The start and the end of the current year
- *@Today*: The current day

For the list of available predefined parameters, see the link in the Related Links section of the topic.

If you leave the **Default Value** parameter empty, the Acumatica ERP business date will be shown in the **Date From** and **Date From** date boxes on the inquiry form.

To show an empty date box on an inquiry form, specify *NULL* as its default value.

3. Save your changes to the inquiry.

In the parameters area on the inquiry form, the parameters will be arranged in two columns, according to the value of **Arrange Parameters in**. In these columns, parameters are ordered top-to-bottom and left-to-right; and their order equals to the order on the **Parameters** tab.

Column Span specifies the number of columns in the parameters area on the inquiry form this parameter will span.

You can also change the size of the parameter element by specifying **Control Size** (*XXS*, *XS*, *S*, *SM*, *M*, *XM*, or *L*). For example, the default size of an date box is *S*, the default size of an lookup box is *M*.

If the **Is Required** check box is selected, the user must provide the parameter to view the inquiry data.

Default Value specifies the default parameter value. Based on the default values you have entered, the *SO-OpenByCustomer* inquiry shows open sales orders for the current week, and the inquiry shows orders with only the *Open* status.

Selecting the **From Schema** check box makes it possible to retrieve the list of values that exists for the field selected in **Schema Field**, and select one of these values as the default value.

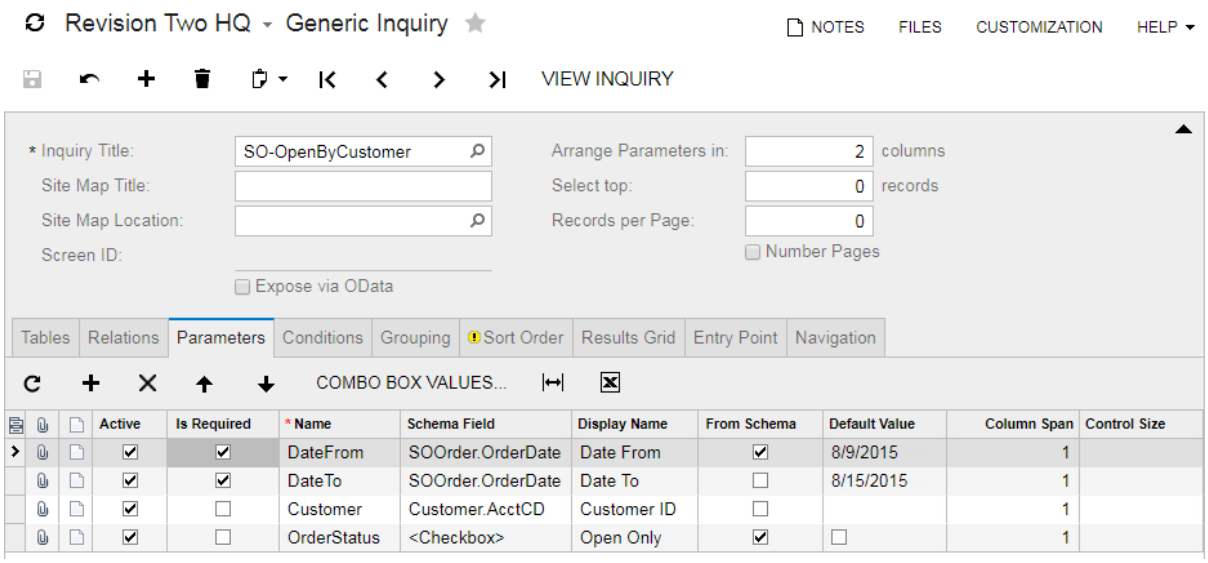


Figure: The Parameters tab with the specified inquiry parameters

A data field selected in the **Scheme Field** column specifies the type of a form element that is assigned for the parameter on the inquiry form and is used to select its value. Based on the data fields you selected in the column, the calendar dialog box opens, when the user selects values of the **Date From** or **Date To** parameters. For the **Customer** parameter, the lookup table opens. For more information on form elements, see the links in the Related Links section of this topic.

In the **Schema Field** column, you can select any field of the classes selected on the **Tables** tab, and two following system fields:

- *<CheckBox>*: This system schema field indicates that on the inquiry form, the parameter is shown as a check box. If the user selects the check box, the value of the parameter becomes *True*. If the user clears the check box, the value of the parameter equals *False*.
- *<ComboBox>*: This system schema field indicates that the parameter is shown as a combo box. When you define a parameter that is a combo box, you have to specify the list of available combo box options by selecting the parameter on the **Parameters** tab and clicking **Combo Box Values** on the table toolbar, the **Combo Box Values** dialog box appears (see the screenshot below). In the **Value** column, you define the list of options that the user can see in the combo box on the inquiry form. In the **Label** column, you define the list of values that are assigned to the parameter if the user selects the corresponding option of the **Value** column.

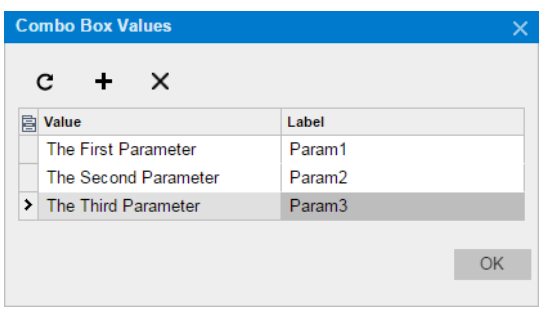


Figure: The list of <ComboBox> values

Related Links

Generic Inquiry (Parameters Tab)
Parameters (Predefined Parameters > Date-relative Parameters)
Form Elements

Step 1.5: Specifying the Inquiry Conditions

For the generic inquiry being designed, you also need to specify the inquiry conditions, which determine the data to be retrieved. The inquiry parameters are usually used in the inquiry conditions, where they must be specified in square brackets, as with `[Customer]`.

The inquiry is designed to show sales orders with the *Open* status by default. However, based on the *OrderStatus* parameter configured for the inquiry, the user can opt to include sales orders with other statuses in the results. The couple of the parameters—that is, *DateFrom* and *DateTo*—determine the date range of sales orders. The last one is *Customer*; optionally, the user can select a customer to filter the sales orders by the selected customer. Also, the inquiry results must include sales orders with the *SO* type only.

Based on above requirements, we can specify the following conditions for each sales order to be listed:

- The order date is greater than or equal to the *DateFrom* parameter value—that is, the date is after or the same as the specified date.
- The order date is less than or equal to the *DateTo* parameter value—that is, the date is before or the same as the specified date.
- If the user selects a customer in the **Customer** box, the sales order should be associated with this customer only.
- If the user does not select any customer, sales orders of all customers should be selected.
- The sales order status is *Open*, unless the user has cleared the **Open Only** check box, which includes sales order of other statuses in the inquiry results.
- The sales order type is *SO*.

To add these conditions to the inquiry, do the following (as shown in the screenshot below):

1. On the Generic Inquiry form (SM208000; System > Customization > Manage), open the *SO-OpenByCustomer* inquiry.
2. On the **Conditions** tab, add to the table the lines with the following settings:

Brackets	Data Field	Condition	From Schema	Value 1	Brackets	Operator
	SOOrder.OrderDate	*Is Greater Than or Equal To*		*[DateFrom]*		*And*
	SOOrder.OrderDate	*Is Less Than or Equal To*		*[DateTo]*		*And*
(	*Customer.AcctCD*	*Equals*		*[Customer]*		*Or*
	[Customer]	*IsNull*			*)*	*And*
((	*[OrderStatus]*	*Equals*		`=True`		*And*
	SOOrder.Status	*Equals*	Selected	*Open*	*)*	*Or*
	[OrderStatus]	*Equals*		`=False`	*)*	*And*
	SOOrder.OrderType	*Equals*	Selected	*SO*		*And*

The third and fourth rows (item 1 in the screenshot below) are a pair and specify one condition. The fourth row is used when the user does not select any customer, so the sales orders of all customers will be selected. The third row is used when the user selects a customer, so only the sales order associated with this customer will be selected. These events cannot happen at the same time. Thus, these rows are enclosed in brackets and joined with the *OR* operator.

The fifth and sixth rows (item 2 in the screenshot below) are a pair. They are used when the **Open Only** check box is selected on the inquiry form, So the *OrderStatus* value is *True*; and only sales orders with the *Open* status will be selected. Thus, these rows are enclosed in brackets and joined by the *AND* operator.

The seventh row (item 3 in the screenshot below) and the previous two rows (item 2) specify one condition. The seventh row is used when the user clears the **Open Only** check box. So the *OrderStatus* value is *False*. The check box cannot be selected and cleared at the same time. Thus, seventh row (item 3) and the previous two rows (item 2) are in brackets and joined with the *OR* operator.

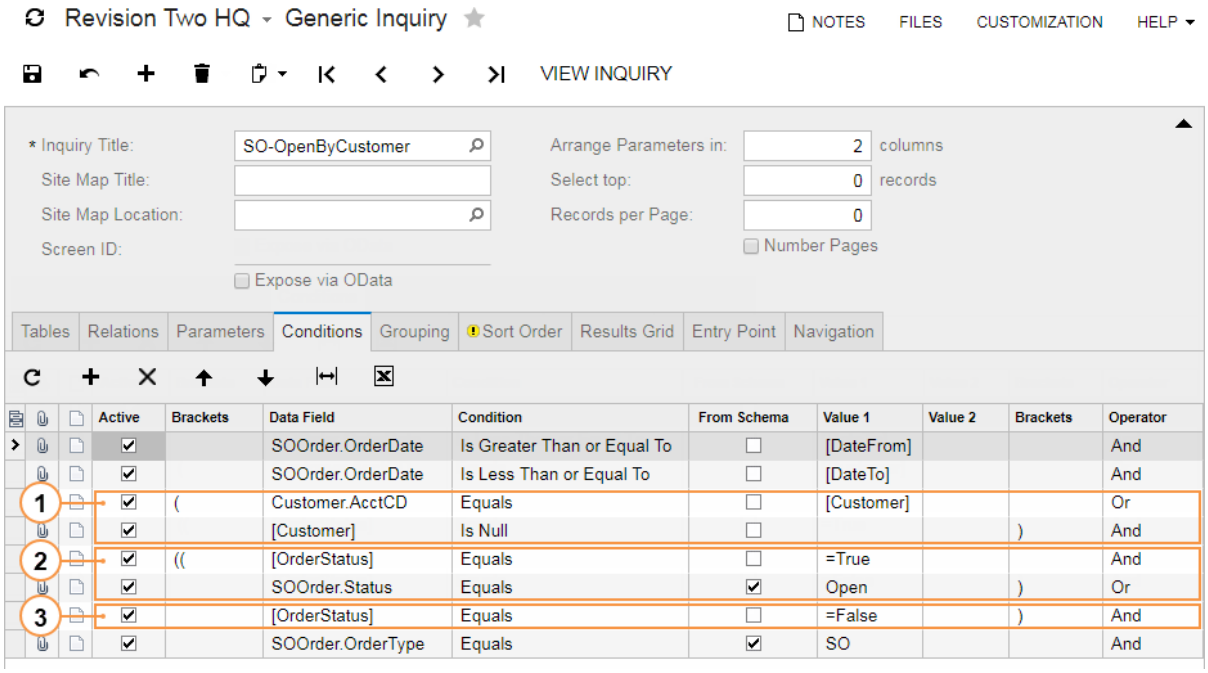


Figure: The Conditions tab with the defined inquiry conditions

3. Save your changes to the inquiry.

To select an existing value for the **Value 1** or **Value 2** columns from the database, you have to select the **From Schema** check box for the row.

Value 2 is used only with the *Is Between* condition. For example, if you were to select sales orders whose numbers are between *SO003000* and *SO003199*, you should specify the following condition:

- **Data Field**: *SOOrder.OrderNbr*
- **Condition**: *Is Between*
- **Value 1**: `SO003000`
- **Value 1**: `SO003199`

Related Links

Generic Inquiry (Conditions Tab)

Step 1.6: Sorting the Inquiry Data

You need to specify how the inquiry data is sorted—that is, the order in which the results should be displayed on the inquiry form. In this case, the inquiry results have to be sorted by date and by customer name. To specify how the data will be sorted, do the following:

1. On the Generic Inquiry form (SM208000; System > Customization > Manage), open the *SO-OpenByCustomer* inquiry.
2. On the **Sorting** tab, review the warning in the tab title, as shown in the screenshot below. Until you define any sorting condition, the default sorting conditions, which are shown at the bottom of the screen, are used for the inquiry.

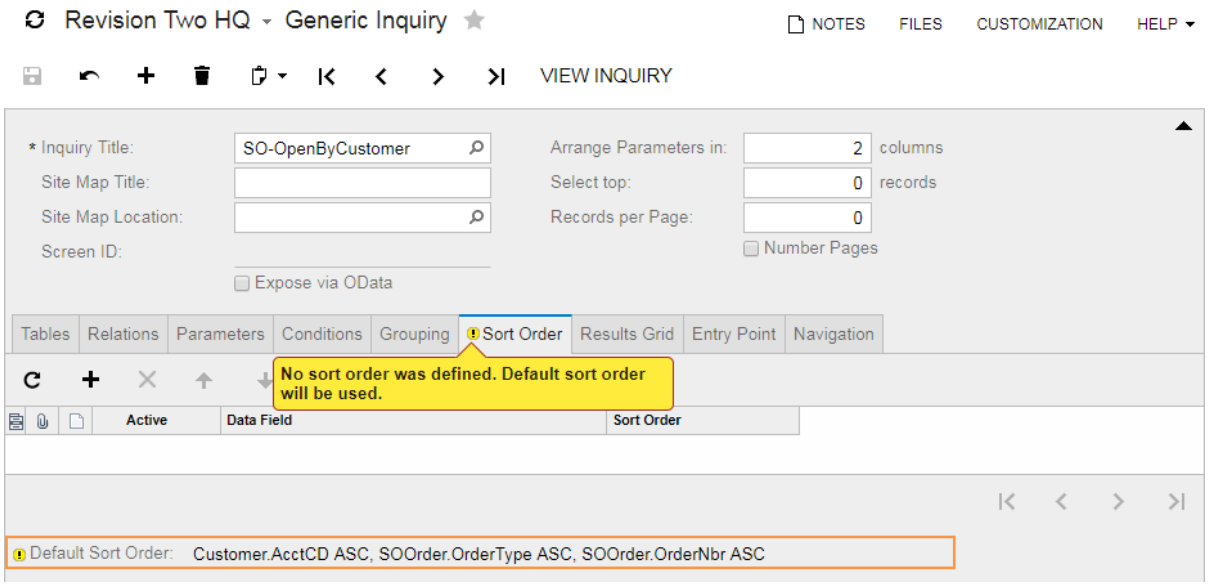


Figure: The Sort Order tab with the default sorting settings

3. Add a row, and select *SOOrder.OrderDate* in the **Data Field** column to sort the inquiry results by sales order date.

   Sort Order specifies whether the results should be ordered in *Ascending* or *Descending* order. The default *Acceding* sort order is selected automatically when you add a row.

   You can press Ctrl+Enter to confirm the row and to be able to add the next row to the table.

4. Add a second row, and select *Customer.AcctName* in the **Data Field** column to sort the inquiry results by customer's name.
5. Save the inquiry.

Step 1.7: Configuring the Inquiry Results Grid

You have to define the list of columns that will be used to show the inquiry results. (Otherwise, when you run the query, you would see the empty inquiry form with the parameters only.) To configure the inquiry results grid, do the following, as shown in the screenshot below:

1. On the Generic Inquiry form (SM208000; System > Customization > Manage), open the *SO-OpenByCustomer* inquiry.
2. On the **Results Grid** tab, make sure that the **Caption** column is visible. If the column is hidden, add it by clicking in the left column header. For more information on how to hide or display columns, see the links in the Related Links section of this topic.
3. Add to the table the following lines, each of which represents a column of the inquiry:

Object	Data Field	Caption	Default Navigation
SOOrder	*OrderDate*		Selected
Customer	*AcctCD*		Selected
Customer	*AcctName*		Selected
SOOrder	*OrderNbr*		Cleared
SOOrder	*OrderWty*	`Quantity`	Selected
SOOrder	*OrderTotal*	`Sales Order Total`	Selected
SOOrder	*Status*		Selected

4. Save your changes to the inquiry.

These rows you have added to the table define the columns to be used for the results of the inquiry you are designing.

You could simply add all fields of a data access class to an inquiry. If you were to do that, you would select this class as **Object**, select *<All Fields>* as **Data Field**, and save the inquiry. All the data fields of the selected class would be added to the inquiry.

Caption specifies the name of the column header to be displayed on the inquiry form. Some data fields have got default display names, which are defined in their classes. For example, the name of the *Customer.AcctCD* data field is Customer ID. Thus, by default, the column header of this filed on the inquiry form will be **Customer ID**. On the other hand, the *SOOrder.OrderTotal* data field has got no default display name. The captions you added are for the data fields without default names. In your inquiries, you can define captions for the columns after you preview the inquiries.

When the **Visible** check box is selected (as it is by default), the column appears by default in the table showing the inquiry results. If the check box is cleared, the column is hidden by default in the table showing the inquiry results, but the user can make this column visible.

The columns of the inquiry results that holds the key fields may contain links to the appropriate screens. If the **Default Navigation** check box is cleared and you specify no screen to navigate in the **Navigate To** column, the column (which in this case holds the key field) does not contain a link to an object. This check box is selected by default. If you leave the check box selected, the values in the column are links to objects. The user can open any of these objects by clicking the link.

The order of columns on the inquiry form matches the order of rows on the **Results Grid** tab. If you change the order of columns, the columns size, or the set of columns on the inquiry form, these settings will be used instead of the settings made on the **Results Grid** tab of the inquiry.

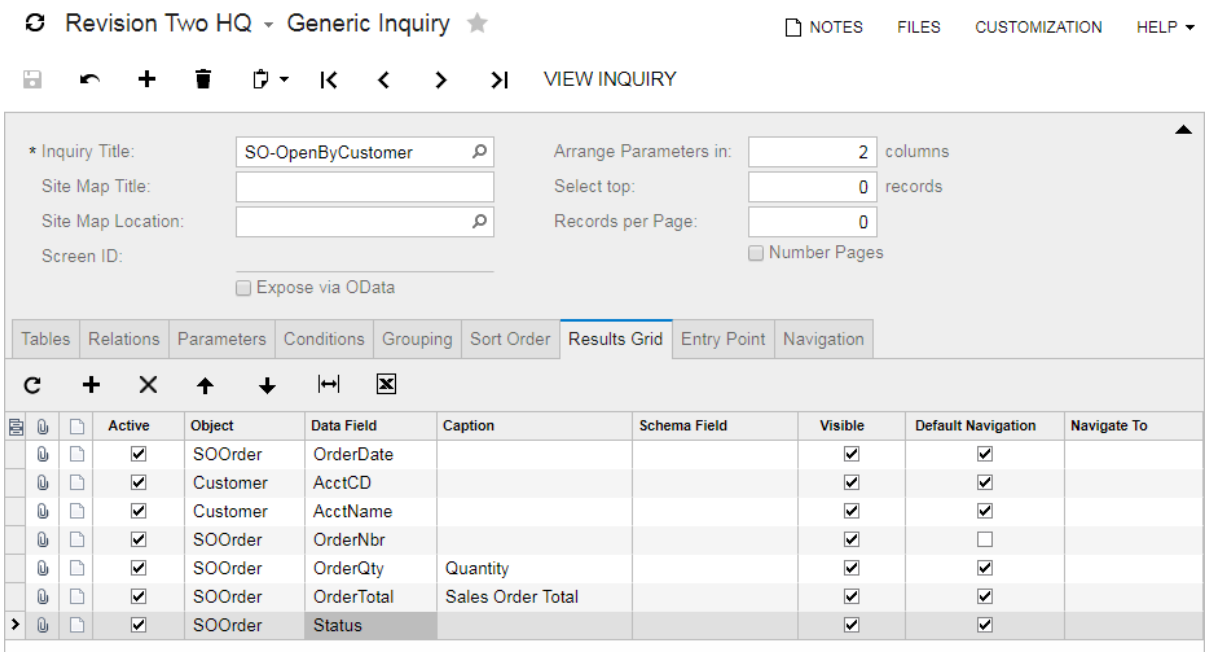


Figure: The completed Results Grid tab

Related Links

Generic Inquiry (Results Grid Tab)
To Hide or Display Columns

Step 1.8: Previewing and Publishing the Inquiry

You need to preview the inquiry, to be sure it is what you'd anticipated, and then publish it, so that users can view the inquiry.

You can preview the inquiry directly from the Generic Inquiry form (SM208000; System > Customization > Manage). Open the *SO-OpenByCustomer* inquiry, and on the form toolbar, click **View Inquiry**. The inquiry form opens (as shown in the screenshot below).

Notice the following things:

- The values in the **Customer ID** column are links, because the **Default Navigation** check box was selected by default on the **Results Grid** tab of the Generic Inquiry form (SM208000). On the other hand, although *OrderNbr* is the key field, the values in the **Order Nbr.** column are not links, because the **Default Navigation** check box was cleared and the **Navigate To** was not defined.
- The **Date**, **Customer ID**, **Customer Name**, **Order Nbr.**, and **Status** column headers, whose **Caption** you have not defined, appropriately describe the data shown in the column. When you preview an inquiry, if you don't think the column headers appropriately describe the column, you can define the needed captions for the columns.

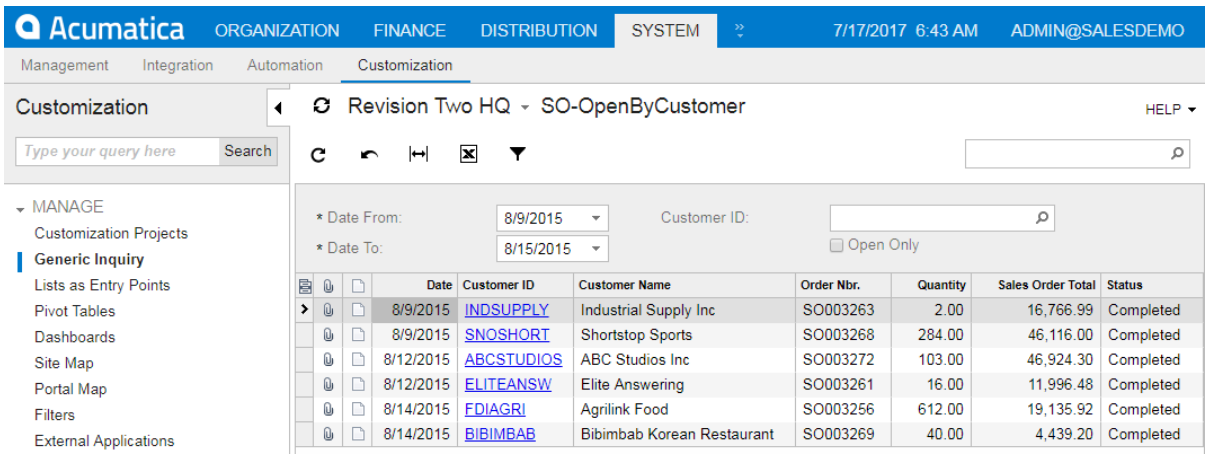


Figure: Previewing the inquiry

To make it possible for any user to view the inquiry easily, you have to publish it. To do that, perform the following instructions:

1. On the Generic Inquiry form (SM208000), open the *SO-OpenByCustomer* inquiry, if it is not already opened.
2. In the summary area, in the **Site Map Title** box, type `Open Sales Orders by Customer` (as shown in the screenshot below). This is the name of the inquiry form as it will be displayed on the site map and on the inquiry form title bar.
3. In the **Site Map Location** box, select *Distribution* > *Sales Orders* > *Reports* > *Audit*. This is the location of the inquiry form on the site map.
4. Save your changes to the inquiry.

   When you save the inquiry with the defined **Site Map Location**, the system assigns an identifier to the inquiry and shows this identifier in the **Screen ID** box.

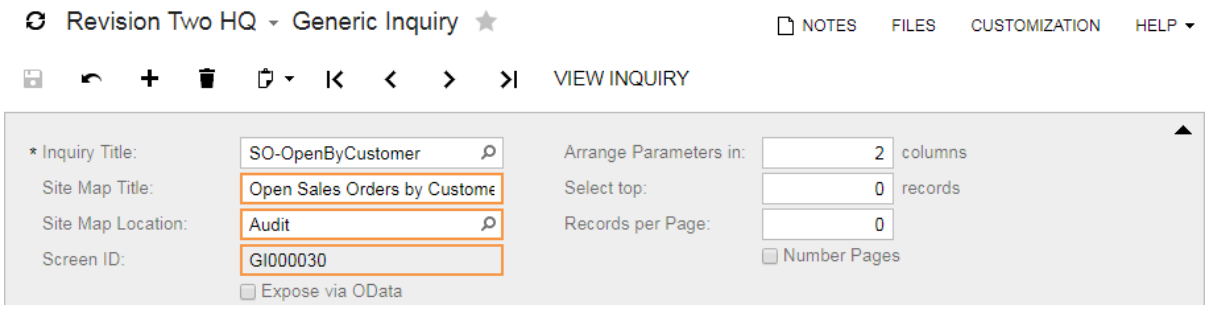


Figure: Configuring the inquiry to be published

You have successfully published the inquiry.

5. Open the Open Sales Orders by Customer form (Distribution > Sales Orders > Reports > Audit). Notice that the inquiry name is changed on the form title bar (item 1 in the screenshot below) and appears in the navigation pane according to selected inquiry location (item 2).

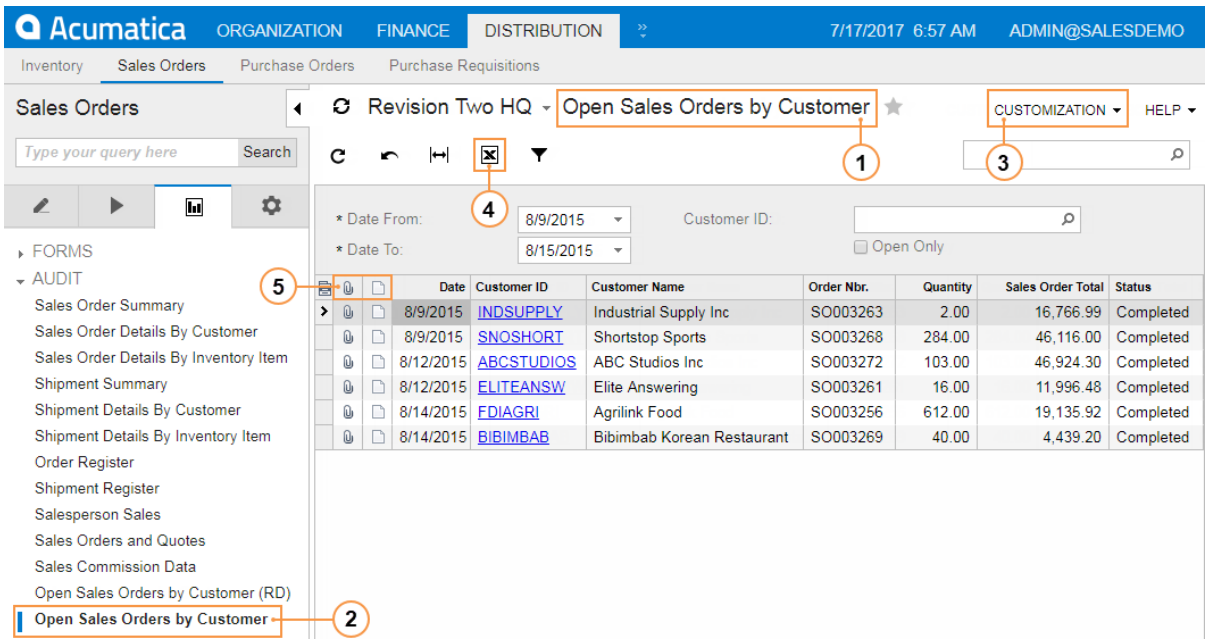


Figure: Previewing the published inquiry

You can also publish the inquiry on the Site Map form (SM200520). To do that, you should add a new row in the table in the right pane of the form, and specify **ScreenID**, **Title**, and **Url**. The format of the URL is `~/GenericInquiry/GenericInquiry.aspx?Name={inquiry title}`. For example, for the inquiry you created, you should specify the following URL: `~/GenericInquiry/GenericInquiry.aspx?Name=SO-OpenByCustomer`.

6. Add the generic inquiry to a workspace in the modern UI as follows:

a. In the main menu, select **Sales Orders**.

b. In the main menu, click configuration menu (three dots in the bottom left corner) and then click **Edit Menu** to switch to the Menu Editing mode.

c. Click **Add Menu Item**.

d. In the **Select Forms** box, type `Open Sales Orders by Customer`.

e. Select the check box to the left of the *Open Sales Orders by Customer* generic inquiry in the **Data Views** workspace (see the following screenshot).

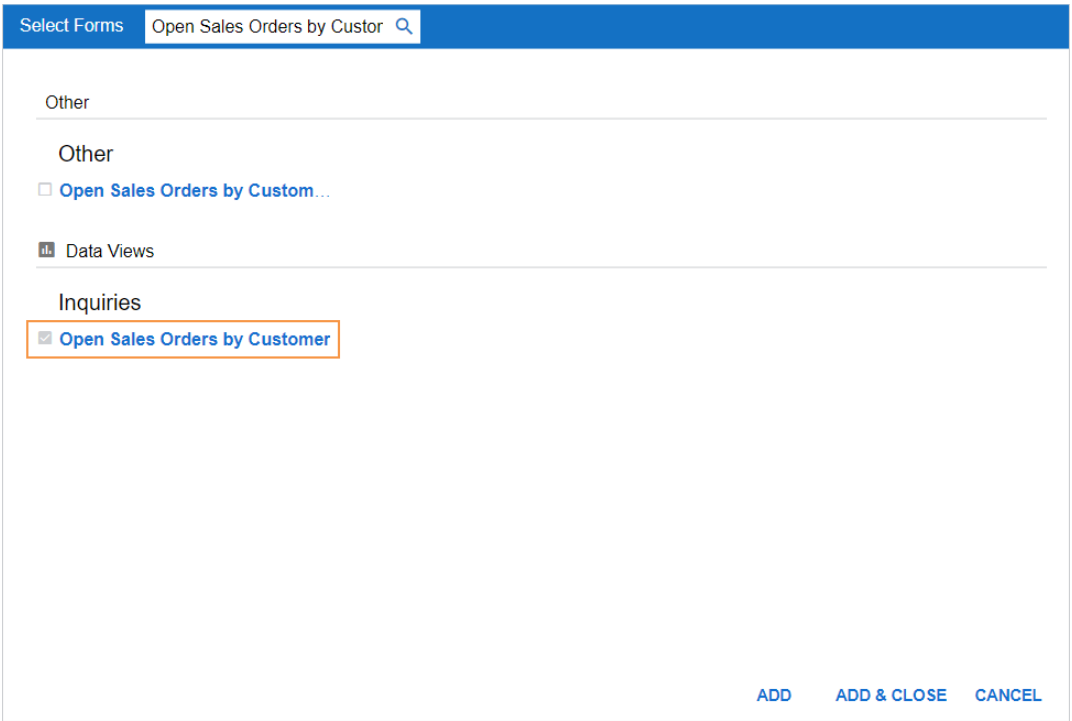


Figure: Adding a generic inquiry to a workspace in the modern UI

f. Click **Add & Close** to add the selected generic inquiry to the workspace and close the dialog box.

g. In the **Inquiries** section, select the check box to the left of the *Open Sales Orders by Customer* generic inquiry to add it to the quick menu by default.

h. Click **Exit Edit Menu** to save you changes and exit the Menu Editing mode.

Notice that the *Open Sales Orders by Customer* generic inquiry appeared in the **Sales Orders** workspace.

Once you have published an inquiry, you can simply edit it by clicking **Customization** > **Edit Generic Inquiry** on the form title bar (item 3 in the screenshot above) while you are viewing the inquiry. The Generic Inquiry form (SM208000) opens with the inquiry selected.

You can export the inquiry data to MS Excel by clicking the **Export to Excel** (⊠) button on the inquiry form toolbar (item 4).

The **Files** and **Notes** columns (item 5) contain files and notes of objects that class selected in the first row on the **Results Grid** tab of the Generic Inquiry form (SM208000) of the inquiry. The first row on the **Results Grid** tab is the sales order date. The *SOOrder* class is selected as its **Object**. Thus, the **Files** and **Notes** columns of the inquiry contain files and notes of sales orders.

When you click icons in the **Files** and **Notes** columns, appropriate pop-up windows open. Instead, you can show notes directly on the inquiry form for any class of your inquiry. To do that, add *PX.Data.Note* table in the inquiry, join the table with the class that notes you want to show by the *NoteID* key field, and add the *Note.NoteText* data field in the results grid.

Step 1.9: Configuring Navigation to a Screen from the Inquiry Form

You can configure an inquiry column to contain links to a screens you needed. Suppose you were asked to configure the Open Sales Orders by Customer inquiry so that a user could open in a new browser tab the Business Accounts form (CR3030PL) with the data of a particular customer by clicking the link in the **Customer Name** column. To configure the column to contain this link, do the following:

1. On the Generic Inquiry form (SM208000; System > Customization > Manage), open the *SO-OpenByCustomer* inquiry.
2. In the **Screens** area of the **Navigation** tab, add a line and select *Company* > *Organization* > *Customer Management* > *Work Area* > *Manage* > *Business Accounts*, as shown in the following screenshot.

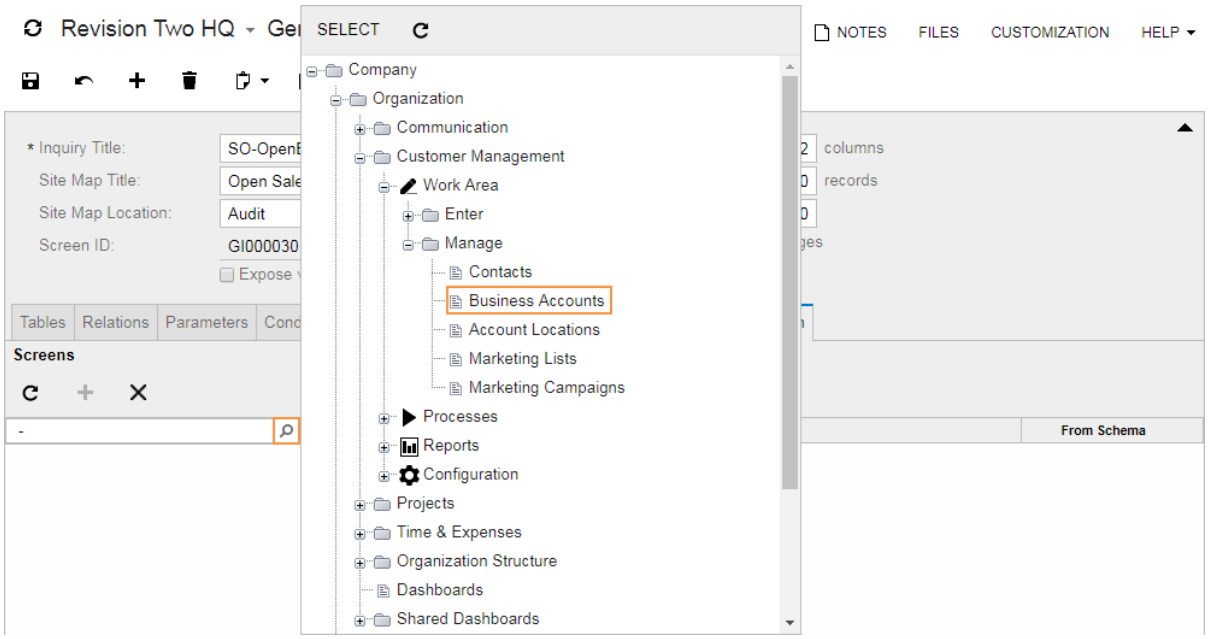


Figure: Selecting the screen to be used for navigation

3. In the **Navigation Parameters** area, add a line and specify the following settings, as shown in the screenshot below:
   - **Filed**: *AcctCD*
   - **Parameter**: *Customer.AcctCD*
   - **Window Mode**: *Mew Tab*

   In the **Filed** column, you select a key field of the screen, and in the **Parameter** column, you select a field of one of the inquiry classes to be associated with this key field.

   In the **Window Mode** box at the bottom of the area, you define the way the screen is opened. The following modes are available:

   - *Same Tab*: The screen opens in the same browser tab instead of the inquiry. This is the default mode.
   - *New Tab*: The screen opens in a new browser tab.
   - *Pop-Up Window*: The screen opens in a new pop-up window.

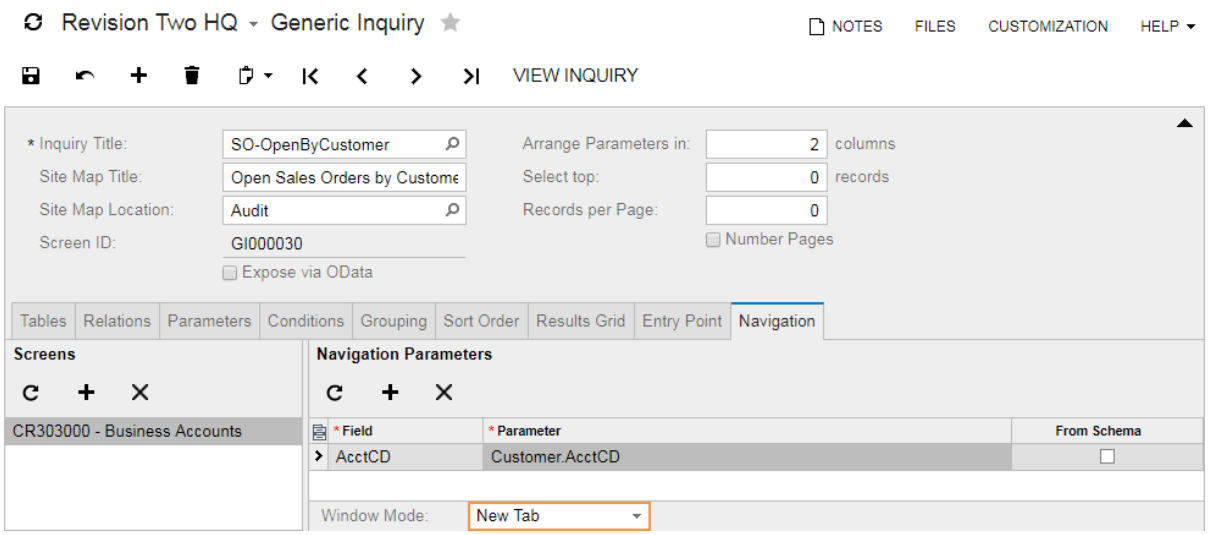


Figure: Configuring navigation parameters for the screen

4. On the **Results Grid** tab, modify the row with the *AcctName* data filed as follows:
   - **Default Navigation**: Cleared
   - **Navigate To**: *CR303000 - Business Accounts*

   If you select the **Default Navigation** check box, you should clear the **Navigate To** box.

5. Save your changes to the inquiry.
6. On the form toolbar, click **View Inquiry** to preview the inquiry.
7. On the inquiry form, which opens, click the name of any customer to make sure that the system shows the customer's details on the Business Accounts form (CR3030PL) in a new browser tab.

Step 1.10: Using Calculated Values for Columns in the Results Grid

You can use formulas to calculate the values of columns in the results grid. To define a formula for a column you have defined on the **Results Grid** tab of the Generic Inquiry form (SM208000; System > Customization > Manage), open the formula editor by clicking in the **Data Field** column (item 1 in the following screenshot) of the appropriate row. You can enter the formula directly in the formula editing area (item 2) or compose it by selecting fields and using operators and functions. For more information on formulas, see the links in the Related Links section of this topic.

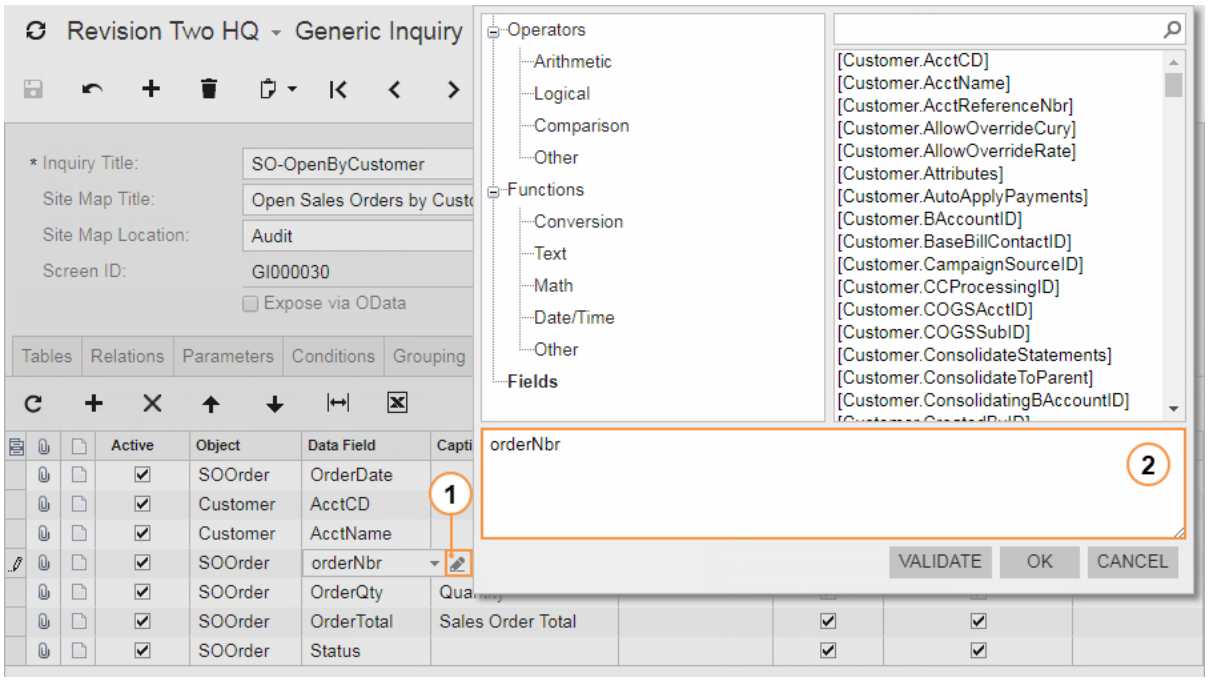


Figure: Opening the Formula Editor

Similarly, you can use formulas in the inquiry conditions in the **Value 1** and **Value 2** columns.

Suppose that you decided to add the sales order description to its number in the following format: `{order number} {order description}`. To make the formula, you will use the `IsNull(value, nullValue)` function, which returns one of two values, depending on the `value`. If `value` is *Null*, the function returns `nullValue`; otherwise, it returns `value`. The sales order description (*Customer.OrderDesc*) will be compared with NULL. If they are not equal, you will add the order description to the customer number; otherwise, you will add an empty string.

To add this formula, perform the following steps:

1. On the Generic Inquiry form (SM208000), open the *SO-OpenByCustomer* inquiry.
2. On the **Results Grid** tab, in the **Data Field** column, open the formula editor for the *OrderNbr* data field (as shown in the screenshot above), and replace *OrderNbr* with the following formula:

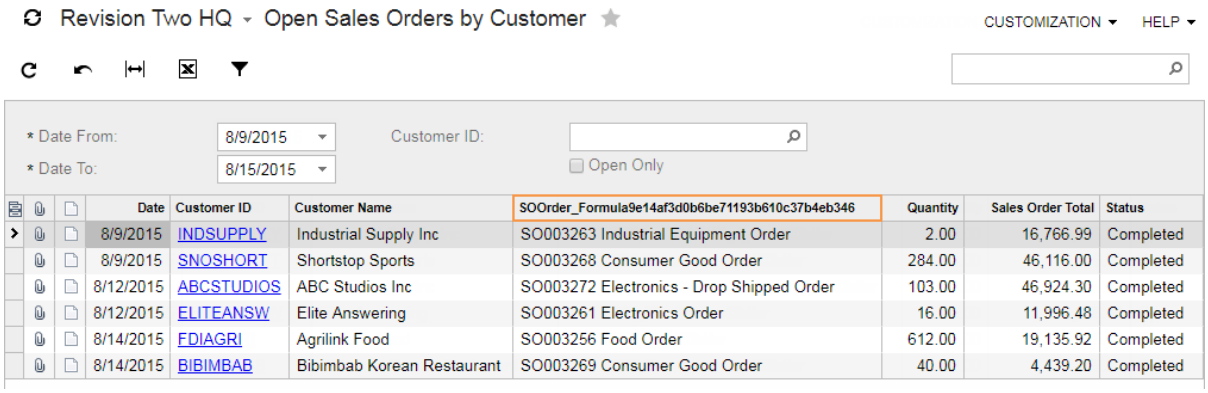
```
=[SOOrder.OrderNbr] + ' ' + IsNull([SOOrder.OrderDesc], '')
```

   If you run Acumatica ERP on a MySQL database, for generic inquiries, use the `Concat()` function instead of + to sum values of the string data type, as follows:

```
=Concat([SOOrder.OrderNbr], ' ', IsNull([SOOrder.OrderDesc], ''))
```

3. Save your changes to the inquiry.
4. Preview the inquiry.

Notice that the header of the edited column was changed, because its **Caption** was not defined (as shown in the screenshot below).



Date	Customer ID	Customer Name	SOOrder_Formula9e14af3d0b6be71193b610c37b4eb346	Quantity	Sales Order Total	Status
8/9/2015	INDSUPPLY	Industrial Supply Inc	SO003263 Industrial Equipment Order	2.00	16,766.99	Completed
8/9/2015	SNOSHORT	Shortstop Sports	SO003268 Consumer Good Order	284.00	46,116.00	Completed
8/12/2015	ABCSTUDIOS	ABC Studios Inc	SO003272 Electronics - Drop Shipped Order	103.00	46,924.30	Completed
8/12/2015	ELITEANSW	Elite Answering	SO003261 Electronics Order	16.00	11,996.48	Completed
8/14/2015	FDIAGRI	Agrilink Food	SO003256 Food Order	612.00	19,135.92	Completed
8/14/2015	BIBIMBAB	Bibimbab Korean Restaurant	SO003269 Consumer Good Order	40.00	4,439.20	Completed

Figure: Previewing the calculated inquiry column

5. On the inquiry form title bar, click **Customization** > **Edit Generic Inquiry** to open the inquiry on the Generic Inquiry form (SM208000), and fix the header by setting the `Order Nbr.` caption for the column. Then review the inquiry again.

Related Links

Formula Editor
Operators
Functions

Step 1.11: Grouping the Inquiry Data

You can group an inquiry data by specifying grouping conditions for the inquiry.

Suppose that you have decided to group sales orders of the *SO-OpenByCustomer* inquiry by date and status to get the count of sales orders, and their total and average amounts for each day and status. You will specify these grouping conditions in the duplicated inquiry.

Creating a Copy of the Inquiry

To duplicate the *SO-OpenByCustomer* inquiry, do the following:

1. On the Generic Inquiry form (SM208000; System > Customization > Manage), open the *SO-OpenByCustomer* inquiry.
2. On the form toolbar, click > **Copy** to copy the inquiry.
3. Create a new inquiry and specify the following **Inquiry Title**: `SO-SOByStatusAndDate`.
4. On the form toolbar, click > **Paste** to past the copy.
5. Specify the following settings:
   - **Site Map Title**: `Sales Orders by Date and Status`
   - **Records per Page**: `10`
   - **Number Pages**: Selected

   Records per Page specifies the number of rows to show per page on the inquiry form.

   The selected **Number Pages** check box enables the numbering of pages on the inquiry form.

   You can limit the number of rows to show on the inquiry form by specifying this number in the **Select Top** box. In this case, the extra rows of the inquiry result will not be shown at all.
6. Save your changes to the inquiry.
7. Add the generic inquiry to a workspace in the modern UI as follows:
   a. In the main menu, select **Sales Orders**.
   b. In the main menu, click configuration menu (three dots in the bottom left corner) and then click **Edit Menu** to switch to the Menu Editing mode.
   c. Click **Add Menu Item**.
   d. In the **Select Forms** box, type `Sales Orders by Date and Status`.
   e. Select the check box to the left of the *Sales Orders by Date and Status* generic inquiry in the **Data Views** workspace.
   f. Click **Add & Close** to add the selected generic inquiry to the workspace and close the dialog box.
   g. In the **Inquiries** section, select the check box to the left of the *Sales Orders by Date and Status* generic inquiry to add it to the quick menu by default.
   h. Click **Exit Edit Menu** to save you changes and exit the Menu Editing mode.

   Notice that the *Sales Orders by Date and Status* generic inquiry appeared in the **Sales Orders** workspace.

In the classic UI, the Sales Orders by Date and Status generic inquiry is in the same site map location as the original, because you did not changed its **Site Map Location**.

Grouping the Inquiry Data

To group the inquiry data by date and sales order status, do the following:

1. On the **Parameters** tab, delete the *Customer* and *OrderStatus* parameters. Only the *DateFrom* and *DateTo* parameters should remain, as shown in the screenshot below.

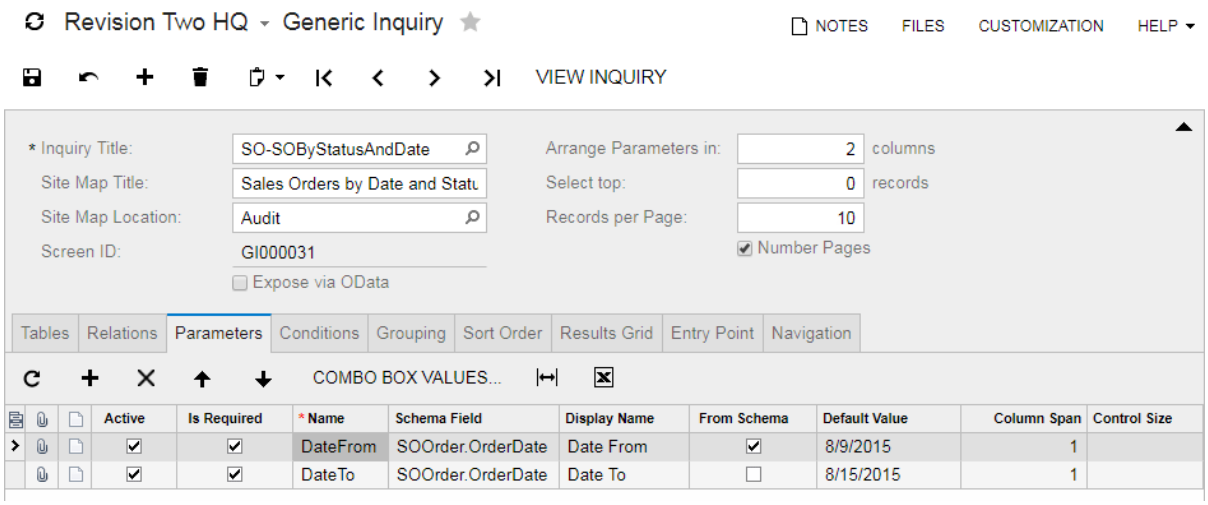


Figure: The Parameters tab with the remained parameters

2. On the **Conditions** tab, delete the conditions that use the *Customer* and *OrderStatus* parameters. Only the conditions with the *OrderDate* and *OrderType* data fields should remain, as shown in the screenshot below.

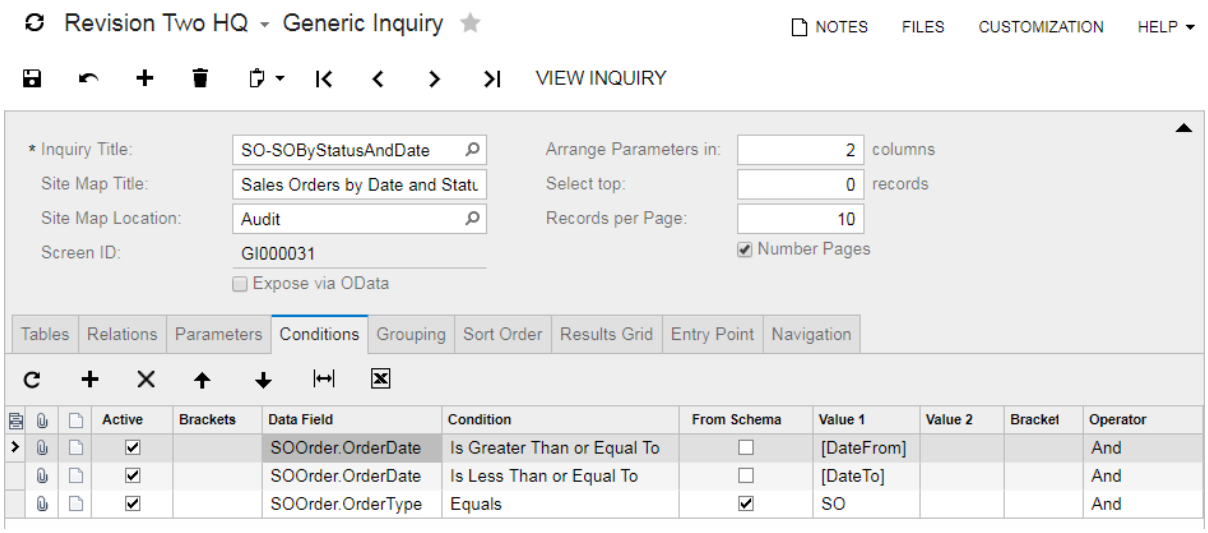


Figure: The inquiry conditions

3. On the **Grouping** tab, add two rows with the *SOOrder.OrderDate* and *SOOrder.Status* data fields, as shown in the screenshot below:

You cannot select the attribute fields that defined on the Attributes form (CS205000) as group conditions.

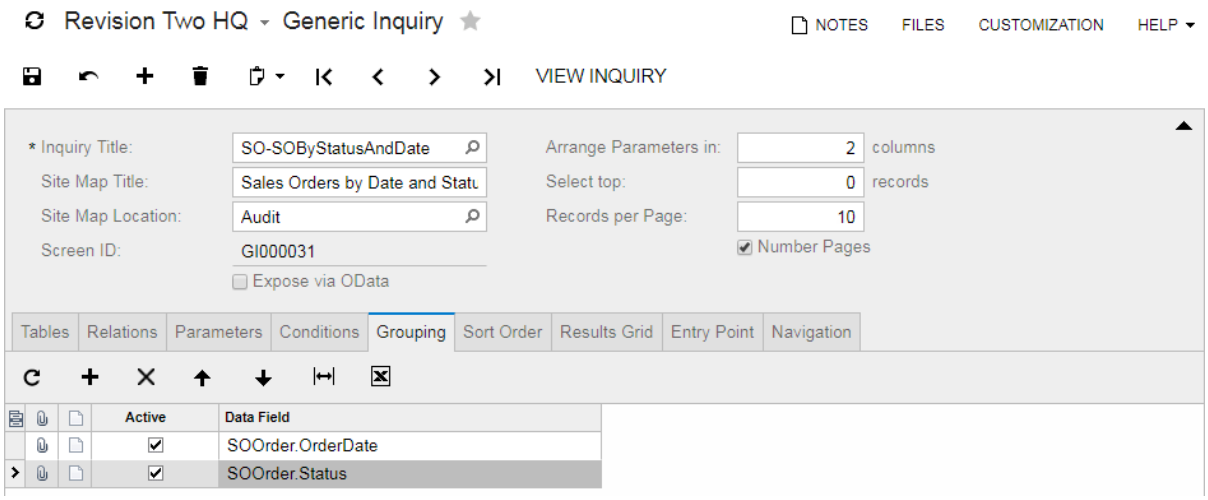


Figure: The Grouping tab with the defined grouping conditions

4. On the **Sort Order** tab, delete the sorting condition with the *Customer.AcctName* data field.

5. On the **Results Grid** tab, specify the following settings, as shown in the screenshot below:

- Delete all rows except the rows with the *OrderDate*, *Status*, and *OrderTotal* data fields.
- Make sure that the **Aggregate Function** column is visible. If this column is hidden, add it by clicking in the left column header. For more information on how to hide or display columns, see the links in the Related Links section of this topic.
- Change the row with the *OrderTotal* data field to show the total amount of sales orders, as follows:
  - **Caption**: `Total`
  - **Schema Field**: *SOOrder.OrderTotal*

    Schema Field defines the output format of the column values according to the format of the selected data field.
  - **Aggregate Function**: *SUM*
- Add a new row, and specify the following settings to show the count of sales orders:
  - **Object**: *SOOrder*
  - **Data Field**: *<Count>*

    <Count> returns the number of grouped rows. If you did not group the inquiry data, this column on the inquiry form would always contain 1 in each row.
  - **Caption**: `Sales Orders`
- Add the next row, and specify the following settings to show the average amount of sales orders:
  - **Object**: *SOOrder*
  - **Data Field**: `=[SOOrder.OrderTotal]`

    You have to use expression `=[SOOrder.OrderTotal]` instead of selecting the *OrderTotal* data field directly, because you can use a data field for the result grid once per inquiry. You have already used *OrderTotal* for the total amount column. If you select the *OrderTotal* data field for the average amount column too, the column will not be shown on the inquiry form.

You have to specify **Object** for each row of the **Result Grid** tab, but the object does not matter for the calculated rows, which contain expressions in the **Data Filed** column. Actually, you can specify any object for such the rows.

- **Caption**: `Average`
- **Aggregate Function**: *AVG*

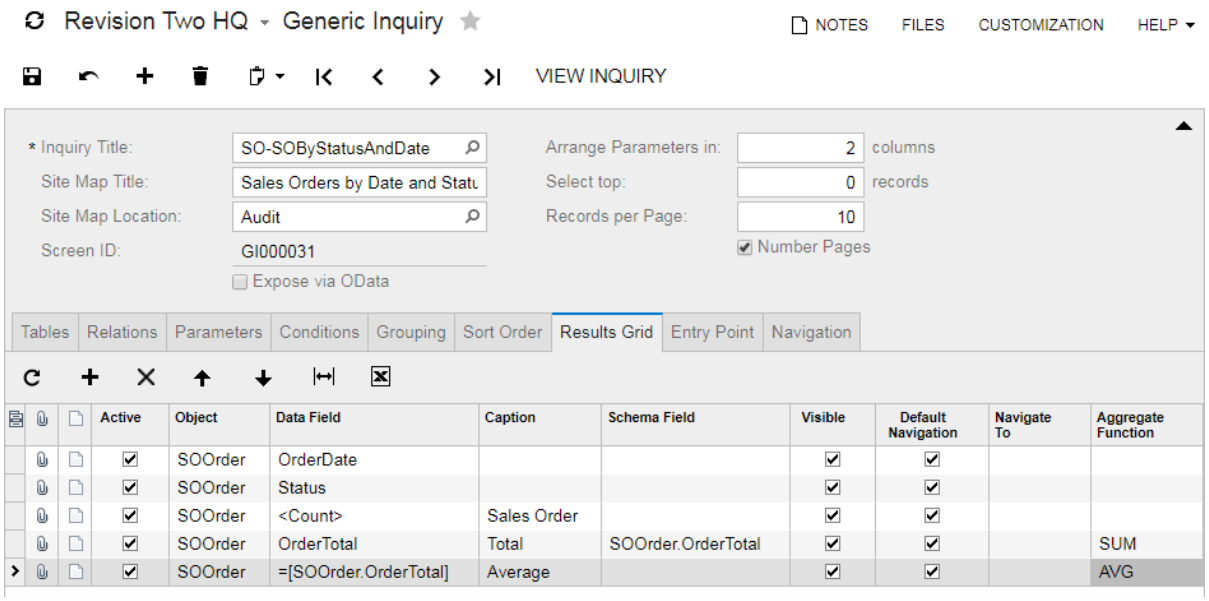


Figure: The completed Results Grid tab

Aggregate Function defines how the resulting values should be calculated for the grouped values in the column. If no aggregate function is selected, the following aggregate functions are applied to the columns that display results on the inquiry form:

- *SUM* applies to columns with the numeric data field type. The resulting value in the column is the sum of the grouped column values.
- *MAX* applies to the other columns. The resulting value in the column is the maximum value of the values in the grouped columns.

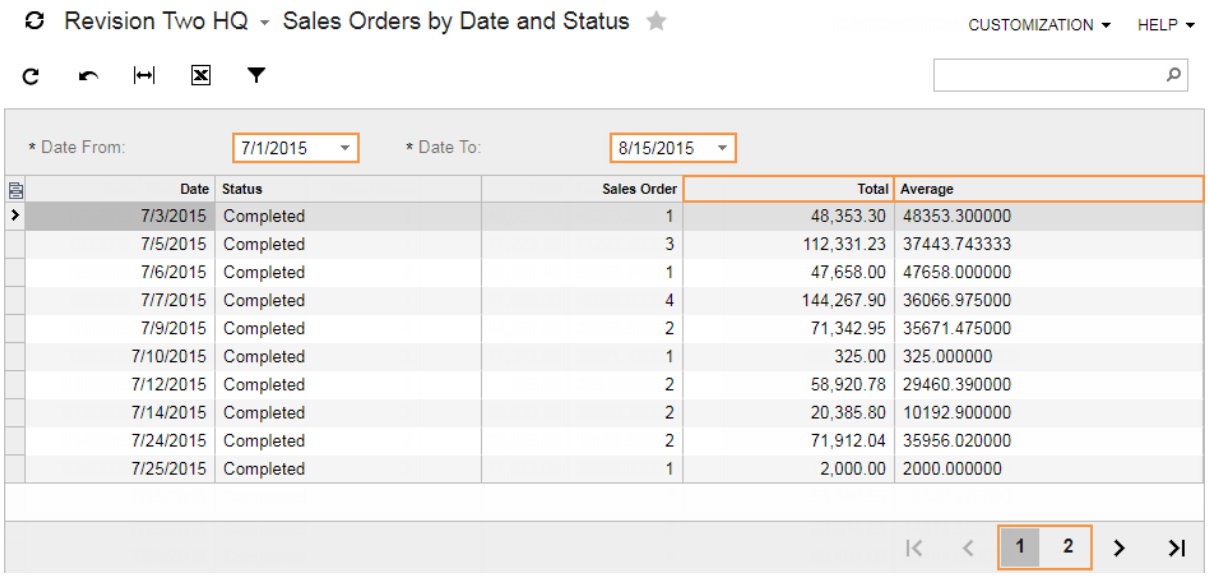
The aggregate function must correspond with the type of the field selected in the **Data Field** column. Selecting the *SUM* function for the character data types (such as customer's name, an address, an email, and similar fields) causes a run-time error.

For the calculated columns, you have to select the appropriate aggregation function manually, because no one function applies to them by default.

6. Save your changes to the inquiry.
7. Preview the inquiry for the date range from *7/1/2015* to *8/15/2015*.

   Notice that the format of values in the **Total** column differs from the format of values in the **Average** column (see the screenshot below). The values in the **Total** column are formatted according to the *SOOrder.OrderTotal* data field, which you selected in the **Schema Field** column on the **Results Grid** tab of the Generic Inquiry form (SM208000). The values in the **Average** column are not formatted at all, because you have not defined any data field in the **Schema Field** column according to which the calculated values have to be formatted.

   A list of pages is shown in the bottom right corner according to the selected **Number Pages** check box. You can navigate a page by clicking its number.



Date	Status	Sales Order	Total	Average
7/3/2015	Completed	1	48,353.30	48353.300000
7/5/2015	Completed	3	112,331.23	37443.743333
7/6/2015	Completed	1	47,658.00	47658.000000
7/7/2015	Completed	4	144,267.90	36066.975000
7/9/2015	Completed	2	71,342.95	35671.475000
7/10/2015	Completed	1	325.00	325.000000
7/12/2015	Completed	2	58,920.78	29460.390000
7/14/2015	Completed	2	20,385.80	10192.900000
7/24/2015	Completed	2	71,912.04	35956.020000
7/25/2015	Completed	1	2,000.00	2000.000000

Figure: Previewing the inquiry

Related Links

Generic Inquiry (Results Grid Tab)
To Hide or Display Columns

Step 1.12: Exporting the Inquiry

You can export an inquiry as XML. This functionality is useful if you decide to transfer a single inquiry to another company or application instance.

You can also export the inquiry as a part of customization project. For example, while completing the *course prerequisites*, you imported such customization project, which contained the *AR-Invoice* inquiry. The customization project is convenient for a set of two and more inquiries, reports, filters and so on. For a single inquiry, it is easier to export and then import this inquiry as XML.

To export the *SO-OpenByCustomer* inquiry as XML, do the following:

1. On the Generic Inquiry form (SM208000; System > Customization > Manage), open the *SO-OpenByCustomer* inquiry.
2. On the form toolbar, click > **Export as XML** to export the inquiry.

   The `SO-OpenByCustomer.xml` file is downloaded. The name of the XML file matches the inquiry title.

   If you were to import this inquiry, on the toolbar of the Generic Inquiry form (SM208000), you would click > **Import from XML**.

Lesson Summary

In this lesson, you have learned how to create generic inquiries. Below is the summary of the main steps you should perform to create a generic inquiry:

1. Investigate the appropriate forms whose data you are going to use in the generic inquiry to discover the data access classes, their data fields, and relationships between the classes.
2. Create a new generic inquiry on the Generic Inquiry form (SM208000).
3. Perform the following steps to configure the inquiry:
    a. Select at least one data access class (table).
    b. Optionally, specify the relationships between the classes.
    c. Optionally, add one or more parameters for the inquiry to allow users to filter the inquiry data by specifying values of these parameters.
    d. Optionally, specify the inquiry conditions, which determine the data to be retrieved. If you added any parameters, use the parameters in the conditions.
    e. Optionally, specify sorting conditions for the inquiry data.
    f. Optionally, specify grouping conditions for the inquiry data.
    g. Configure the inquiry results grid.
    h. Add the inquiry to the site map, if necessary.

Now the generic inquiry is ready to use.

Review Questions

1. Select only the necessary steps you should perform to configure a new inquiry. Do not select optional steps.
   - **A**. Add one or more tables
   - **B**. Specify the table relationships
   - **C**. Add the parameters
   - **D**. Specify the inquiry conditions
   - **E**. Specify the grouping conditions
   - **F**. Specify the sorting conditions
   - **G**. Configure the results grid.
2. Select all the system fields you can use as the parameters of each inquiry besides the data fields of the selected tables.
   - **A**. *<CheckBox>*
   - **B**. *<ComboBox>*
   - **C**. *<DateBox>*
   - **D**. *<TextBox>*
   - **E**. *<LookupBox>*
3. A column of the inquiry that you have created contains a link. What should you do with the column on the **Results Grid** tab to remove this link?
   - **A**. Clear the **Default Navigation** check box.
   - **B**. Clear the **Active** check box.
   - **C**. Clear the **Navigate To** box.
   - **D**. Clear the **Visible** check box.
   - **E**. Select the **Default Navigation** check box.
4. Select the aggregation functions that are applied by default to the columns of the result grid of each inquiry.
   - **A**. *AVG* to the numeric columns and *MAX* to the other
   - **B**. *SUM* to the numeric columns and *MIN* to the other
   - **C**. *COUNT* to the numeric columns and *MIN* to the other
   - **D**. *SUM* to the numeric columns and *MAX* to the other
5. How can you preview the inquiry you are creating on the Generic Inquiry form (SM208000)? Select only the necessary steps and do not select optional ones.
   - **A**. Specify the **Site Map Title** of the inquiry.
   - **B**. Specify the **Site Map Location** of the inquiry.
   - **C**. Save your changes to the inquiry.
   - **D**. On the toolbar of the Generic Inquiry form (SM208000), click **View Inquiry**.
   - **E**. Find the inquiry on the navigation pane and open it.
6. Suppose that you have just created an inquiry. Select all the ways you can add an inquiry to the navigation pane so that users can view the inquiry.
   - **A**. On the Generic Inquiry form (SM208000), specify the **Site Map Title** and **Site Map Location** for the inquiry.

- **B**. On the **Tables** tab of the Generic Inquiry form (SM208000), add the `PX.SM.SiteMap` class to the inquiry.
- **C**. On the toolbar of the Generic Inquiry form (SM208000), click **View Inquiry**.
- **D**. On the Site Map form (SM200520), add the inquiry to the site map.

7. Suppose that you have been asked to transfer an inquiry to another application instance. Select all the ways you can do that.

- **A**. Manually create the same inquiry in the needed instance.
- **B**. Copy the inquiry. Then, in the needed instance, create a new inquiry, specify its title, and paste the inquiry you have copied.
- **C**. Export the inquiry as a part of customization project. Then, in the needed instance, import this project.
- **D**. Save the inquiry as a template. Then, in the needed instance, load this template.
- **E**. Export the inquiry as XML file. Then, in the needed instance, import the inquiry from this file.

Answer Key

1 - A, G; 2 - A, B; 3 - A, C; 4 - D; 5 - C, D; 6 - A, D; 7 - A, C, E.

Practice Exercise

You have completed *Lesson 1: Creating a Generic Inquiry*. Now you know how to create and configure a generic inquiry. Practice doing the following exercise on your own.

In *Lesson 1: Creating a Generic Inquiry* you have created the Open Sales Orders by Customer inquiry, which listed sales orders sorted by date and customer.

Your task is to create a copy of this inquiry, and modify this copy named Open Sales Orders by Item so that it lists inventory items selected on sales orders. For each item, you have to display the item ID, quantity, unit of measure, item price, and line amount from the sales order. The user should be able to opt an inventory item to filter the inquiry results. To retrieve the information about inventory items, join the *SOLine* class that provides access to the data in the order lines and the *InventoryItem* class that provides access to the information about the inventory items, as shown on the diagram below.

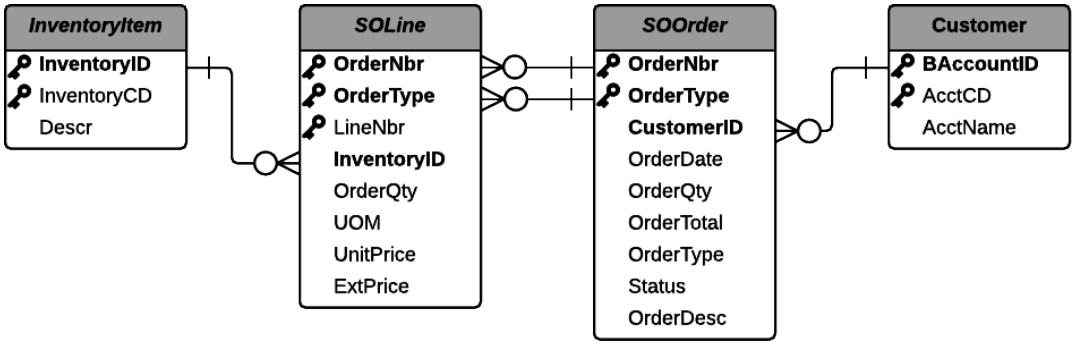
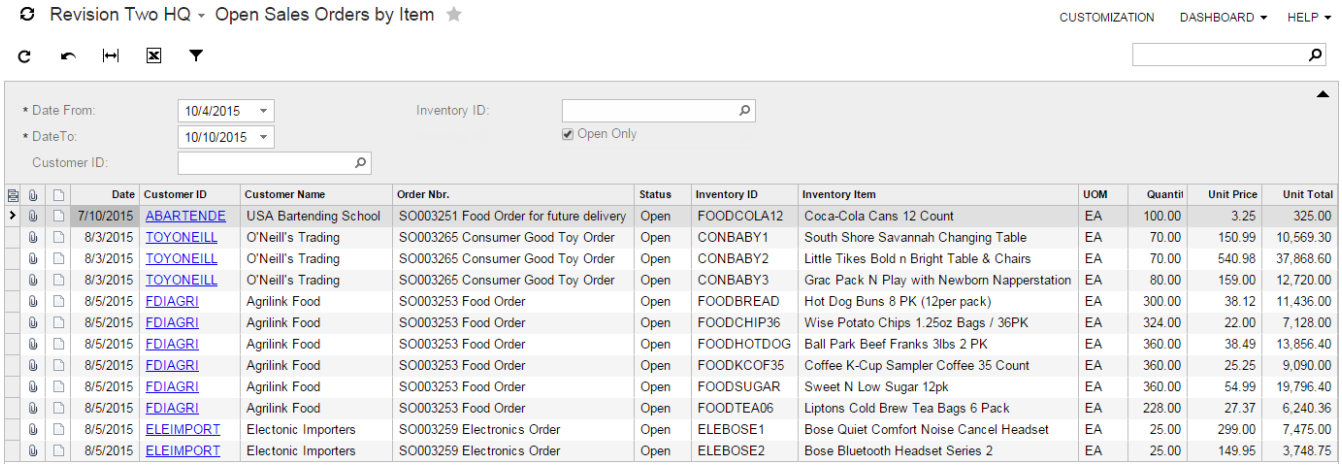


Figure: The classes and the relationships between them

We recommend that you complete the exercise on your own and compare your result with the screenshot below. If you are having difficulties with modifying the inquiry as needed, you can look into the brief solution steps listed further.



Date	Customer ID	Customer Name	Order Nbr.	Status	Inventory ID	Inventory Item	UOM	Quantit	Unit Price	Unit Total
7/10/2015	ABARTENDE	USA Bartending School	SO003251 Food Order for future delivery	Open	FOODCOLA12	Coca-Cola Cans 12 Count	EA	100.00	3.25	325.00
8/3/2015	TOYONEILL	O'Neill's Trading	SO003265 Consumer Good Toy Order	Open	CONBABY1	South Shore Savannah Changing Table	EA	70.00	150.99	10,569.30
8/3/2015	TOYONEILL	O'Neill's Trading	SO003265 Consumer Good Toy Order	Open	CONBABY2	Little Tikes Bold n Bright Table & Chairs	EA	70.00	540.98	37,868.60
8/3/2015	TOYONEILL	O'Neill's Trading	SO003265 Consumer Good Toy Order	Open	CONBABY3	Grac Pack N Play with Newborn Napperstation	EA	80.00	159.00	12,720.00
8/5/2015	FDIAGRI	Agrilink Food	SO003253 Food Order	Open	FOODBREAD	Hot Dog Buns 8 PK (12per pack)	EA	300.00	38.12	11,436.00
8/5/2015	FDIAGRI	Agrilink Food	SO003253 Food Order	Open	FOODCHIP36	Wise Potato Chips 1.25oz Bags / 36PK	EA	324.00	22.00	7,128.00
8/5/2015	FDIAGRI	Agrilink Food	SO003253 Food Order	Open	FOODHOTDOG	Ball Park Beef Franks 3lbs 2 PK	EA	360.00	38.49	13,856.40
8/5/2015	FDIAGRI	Agrilink Food	SO003253 Food Order	Open	FOODKCOF35	Coffee K-Cup Sampler Coffee 35 Count	EA	360.00	25.25	9,090.00
8/5/2015	FDIAGRI	Agrilink Food	SO003253 Food Order	Open	FOODSUGAR	Sweet N Low Sugar 12pk	EA	360.00	54.99	19,796.40
8/5/2015	FDIAGRI	Agrilink Food	SO003253 Food Order	Open	FOODTEA06	Liptons Cold Brew Tea Bags 6 Pack	EA	228.00	27.37	6,240.36
8/5/2015	ELEIMPORT	Electonic Importers	SO003259 Electronics Order	Open	ELEBOSE1	Bose Quiet Comfort Noise Cancel Headset	EA	25.00	299.00	7,475.00
8/5/2015	ELEIMPORT	Electonic Importers	SO003259 Electronics Order	Open	ELEBOSE2	Bose Bluetooth Headset Series 2	EA	25.00	149.95	3,748.75

Figure: The modified inquiry that you should do

Modifying the Inquiry

To modify the inquiry, complete the following steps:

1. On the Generic Inquiry form (SM208000), open the *SO-OpenByCustomer* inquiry. Copy this inquiry.
2. Create a new inquiry, specify its **Inquiry Title**, as follows: `SO-OpenByItem`, and save the inquiry.
3. Paste the previously copied inquiry, and specify the following new **Site Map Title**: `Open Sales Orders by Item`.
4. Add two classes to the inquiry—that is, *PX.Objects.SO.SOLine* and *PX.Objects.IN.InventoryItem*.

5. Specify the class relations according to the diagram shown above. Use an inner join and link the tables by the identity keys.
6. Add a new optional parameter with the *InventoryItem.InventoryCD* data field to allow the user to select an item.
7. Specify the conditions with the new item parameter, which should be similar to the conditions with the customer parameter.
8. Configure the results grid, as follows:
   - Hide the summary order columns: order quantity and order total.
   - Add detailed order columns—that is, the item identity (CD), item name, unit of measure, quantity, cost, and amount.
9. Specify the sorting conditions, as follows:
   - Add ascending sorting by order number.
   - Add ascending sorting by inventory item name.
10. Save your changes to the inquiry.

After you complete these steps, preview the inquiry, which should look as shown in the screenshot above.

Lesson 2: Configuring an Inquiry as the Entry Point

Sometimes you might need a faster way to access particular information in the system, such as the contacts of a particular vendor or the customers list. Generally in Acumatica ERP, you can access such information through the corresponding entry or maintenance form. After you click the magnifier icon in the appropriate box, the list of records opens in the pop-up window. This sequence of events may not give you the information you need quickly enough. The entry or maintenance forms are convenient for entering new data, but once you have entered most data, you may need to view the list of records instead.

You can create an inquiry form that presents data in a tabular format for any Acumatica ERP entry or maintenance form (which is called the *primary form* in this context). Optionally, you can replace the primary form with the inquiry you have created. Thus, when you click the name of the primary form in the navigation pane, you will access the form containing the list of records, and after you click the name of a record in the list, the primary form will open for that record.

During the configuration of the inquiry form, you can set up the form to be accessed in one of the following ways:

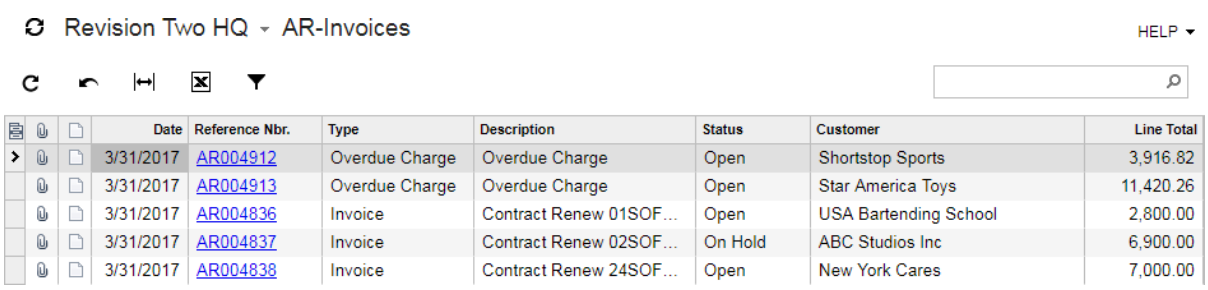
- You publish the inquiry form as a new form and locate it anywhere on the site map. The user accesses the inquiry form by clicking the specified name in the navigation pane. You took this approach in *Lesson 1: Creating a Generic Inquiry*, publishing the inquiry as a new form.
- You replace the primary form with the inquiry form. The user accesses the inquiry form by clicking the name of the primary form in the navigation pane. In this lesson, you will replace a primary form with an inquiry form.

Replacing a Primary Form with an Inquiry Form

While completing the *course prerequisites*, you imported and published the customization project that contains the *AR-Invoice* inquiry. This inquiry lists all invoices. You will replace the Invoices and Memos form (AR301000) with the inquiry you have imported. To do that, perform the following steps:

1. Open the Invoices and Memos form (AR301000; Finance > Accounts Receivable > Work Area > Enter). Make sure that the primary form opens.
2. On the Generic Inquiry form (SM208000; System > Customization > Manage), open the *AR-Invoices* inquiry, provided for the course, and on the form toolbar, click **View Inquiry**.

   Notice that the values in the **Reference Nbr.** column are links, because the **Default Navigation** check box is selected for this column on the **Results Grid** tab of the Generic Inquiry form (SM208000).



Date	Reference Nbr.	Type	Description	Status	Customer	Line Total
3/31/2017	AR004912	Overdue Charge	Overdue Charge	Open	Shortstop Sports	3,916.82
3/31/2017	AR004913	Overdue Charge	Overdue Charge	Open	Star America Toys	11,420.26
3/31/2017	AR004836	Invoice	Contract Renew 01SOF...	Open	USA Bartending School	2,800.00
3/31/2017	AR004837	Invoice	Contract Renew 02SOF...	On Hold	ABC Studios Inc	6,900.00
3/31/2017	AR004838	Invoice	Contract Renew 24SOF...	Open	New York Cares	7,000.00

Figure: Previewing the *AR-Invoices* inquiry

3. Go back to the Generic Inquiry form (SM208000) and open the *AR-Invoices* inquiry, if it is not already opened.
4. On the **Entry Point** tab, in the **Entry Screen** box, select *Company* > *Finance* > *Accounts Receivable* > *Work Area* > *Enter* > *Invoices and Memos*, as shown in the screenshot below.

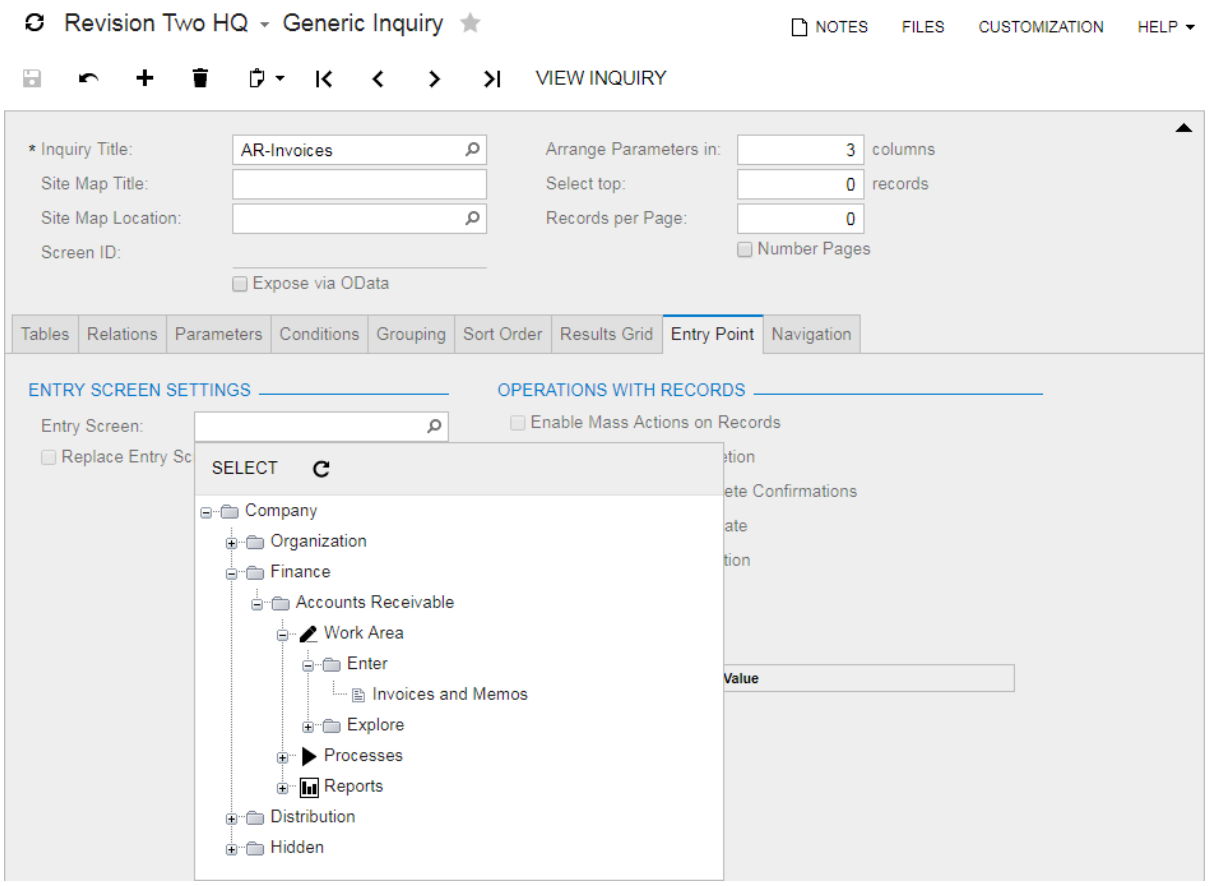


Figure: Selecting the entry screen for the inquiry

Notice that the list of available forms does not contain all locations. The list is filtered according to the classes selected on the **Tables** tab.

When you select **Entry Screen**, the system adds this screen to the list of screens on the **Navigation** tab and defines navigation parameters for that screen.

5. On the **Entry Point** tab, select the **Replace Entry Screen with this Inquiry in Menu** check box to replace the primary form with the inquiry form. When you select the check box, the **Site Map Title** and **Site Map Location** boxes in the summary area are filled in automatically.

   If you left the **Replace Entry Screen with this Inquiry in Menu** check box cleared and specify **Site Map Title** and **Site Map Location** manually, the system adds the inquiry (item 2 in the screenshot below) will be added under the node of the selected site map location (item 1).

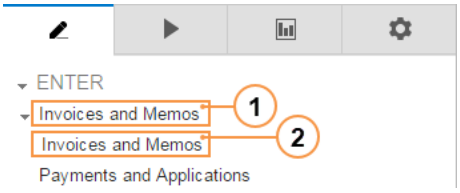


Figure: Previewing the inquiry that does not replace the entry screen

6. Select the **Enable New Record Creation** check box, as shown in the screenshot below, to allow users to create new entries from the inquiry form.

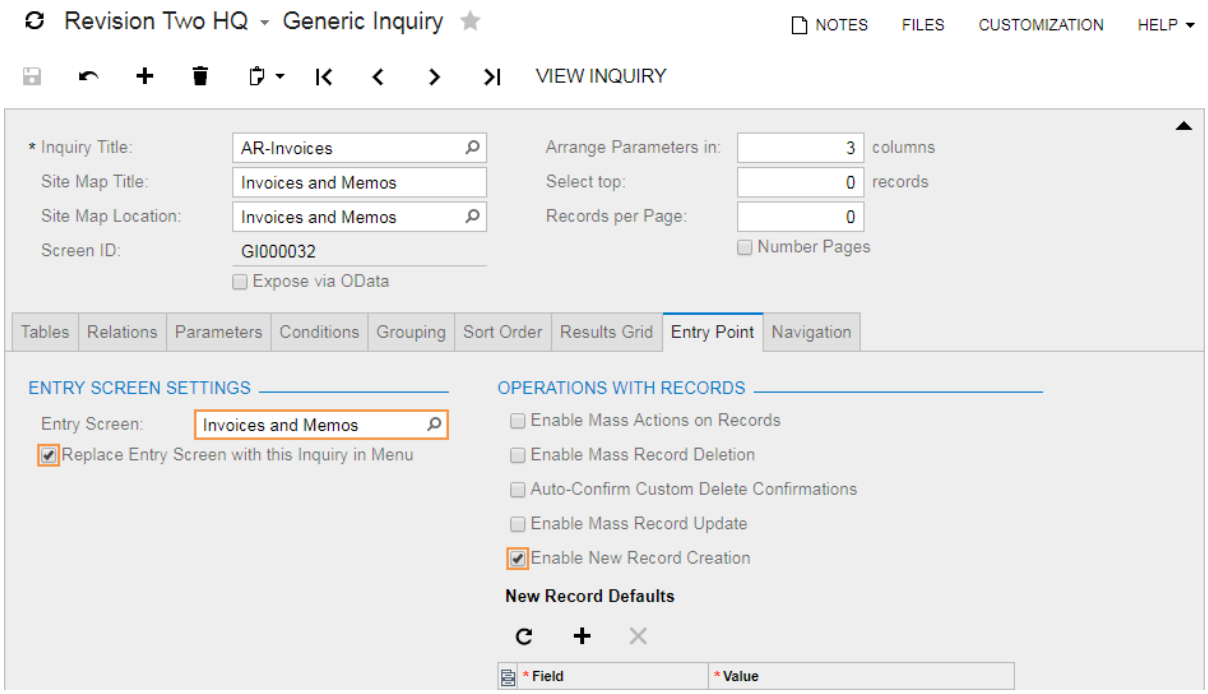


Figure: Configuring the inquiry as the entry point

7. On the **Navigation** tab, review the *AR301000 - Invoices and Memos* screen that the system added to the list of screens to navigate to when you selected this screen as the entry point.

The **Window Mode** of the screen that is selected as the entry screen on the **Entry Point** tab and replaced with the inquiry is *Inline*, as shown in the following screenshot. This means that this screen opens in the same browser tab when a user is adding a new record or viewing the details of an existing record. You cannot change this mode.

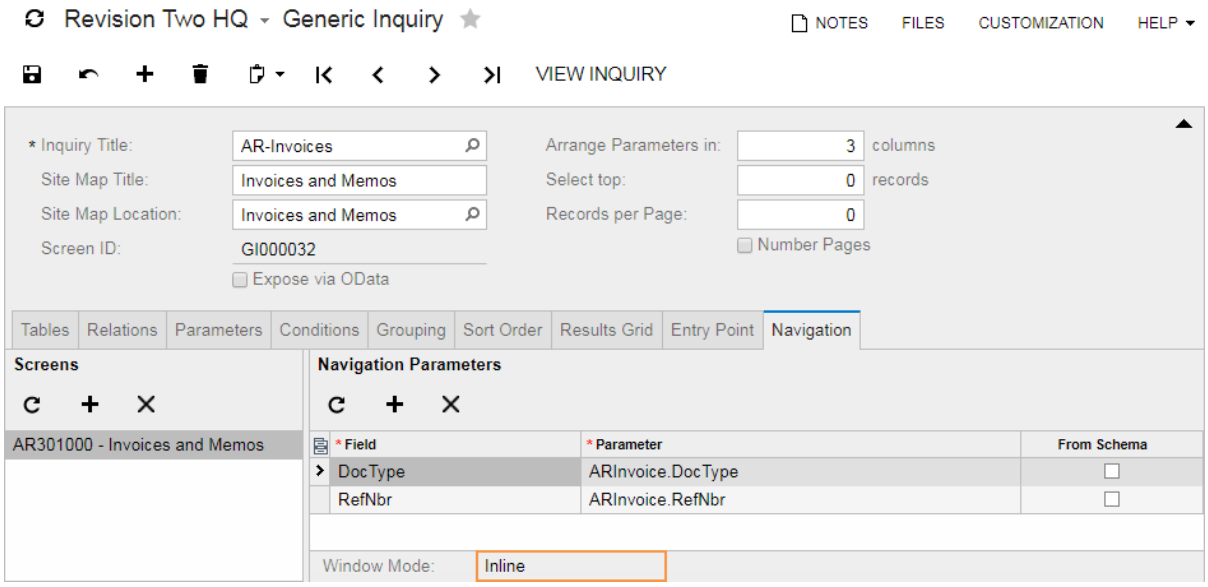


Figure: The entry screen that the system has added to the Navigation tab

8. Save the inquiry.

9. Open the Invoices and Memos form (AR301000) again. Make sure that the inquiry form opens.

Notice that now the values in the **Reference Nbr.** column are not links although the **Default Navigation** check box is still selected for this column on the **Results Grid** tab of the Generic Inquiry form (SM208000). If a screen that should be opened by clicking the link in a column is the primary form that is substituted by the inquiry, the column value is displayed with no link. You can open such rows by clicking the row and then clicking the **Edit** action on the inquiry toolbar or by double-clicking the row.

As a result, you have configured the inquiry form to open instead of the primary form, so users can initially view invoices data in a tabular format.

Lesson Summary

In this lesson, you have learned how to replace an entry or maintenance form with an inquiry form. To configure an inquiry as the entry point of a particular screen, on the **Entry Point** tab of the Generic Inquiry form (SM208000), you should specify this screen in the **Entry Screen** box of the inquiry and select the **Replace Entry Screen with this Inquiry in Menu** check box. You can also allow users to create records through such an inquiry directly.

Review Questions

1. Suppose that you need to replace a primary form with an inquiry. How should you configure this inquiry on the Generic Inquiry form (SM208000)?
   - **A**. Specify the **Site Map Title**, and select the **Site Map Location**. On the **Entry Point** tab, select the **Replace Entry Screen with this Inquiry in Menu** check box.
   - **B**. Publish the inquiry in the same node as the primary form.
   - **C**. On the **Entry Point** tab, select the **Entry Screen** and the **Replace Entry Screen with this Inquiry in Menu** check box.
   - **D**. Specify the **Site Map Title**, and select the **Site Map Location**. On the **Entry Point** tab, select the **Entry Screen**.
2. Suppose that you have replaced a primary form with an inquiry. Where will the primary form be opened if you click a link of one of the items in the table on the inquiry form?
   - **A**. In a new browser window
   - **B**. In a new browser tab
   - **C**. In the same browser tab
   - **D**. In a pop-up window
3. What operations you can allow performing from the inquiry form that is configured as the entry point? Select all the correct statements.
   - **A**. Creating a new record
   - **B**. Creating multiple records
   - **C**. Deleting a record
   - **D**. Deleting multiple records
   - **E**. Duplicating a record
   - **F**. Duplicating multiple records

Answer Key

1 - C; 2 - C; 3 - A, D.

Related Links

Generic Inquiry (Entry Point Tab, Navigation Tab, Mass Update Fields Tab, Mass Action Tab)

Lesson 3: Exposing an Inquiry by Using OData

You can expose an inquiry by using the Open Data protocol (OData) so that third-party applications that support OData can access the data provided by this inquiry.

The Open Data protocol is a general-purpose data access technology that you can use with many languages and platforms. OData defines an abstract data model and a protocol that can be used to expose information from any data source. Acumatica ERP supports OData 3.0. For more information on OData, see the protocol specification in the Related Links section of this topic.

We strongly recommend that you deploy your Acumatica ERP instance (or instances) by using HTTPS, to pass data safely. For more information, see the links in the Related Links section of this topic.

You can expose a generic inquiry at any time, when you are either creating a new inquiry or modifying an existing one. In this lesson, you will expose the Open Sales Orders by Customer inquiry you created in *Lesson 1: Creating a Generic Inquiry*.

Lesson Objectives

In this lesson, you will learn how to do the following:

1. *Expose a generic inquiry by using OData*
2. *Access the exposed generic inquiry through a browser*
3. *Access the exposed generic inquiry through an OData client*

1. Exposing the Inquiry by Using OData

To expose the inquiry, do the following:

1. On the Generic Inquiry form (SM208000; System > Customization > Manage), open the *SO-OpenByCustomer* inquiry.
2. Select the **Expose via OData** check box.

   You can expose only published inquiries, because you can grant access rights to an inquiry only through the inquiry screen. That means you should specify the **Site Map Title** and **Site Map Location** of any inquiry that you are going to expose. For more information on access rights to inquiries, see the topics of *Part 6: Access Rights to Inquiries, Reports, Dashboards, and Pivot Tables*.

   You cannot specify any value for the inquiry parameters when you access this inquiry exposed through OData. Thus, you have to specify the inquiry conditions that will be used instead of parameter values.

   If you are going to develop an inquiry to expose it through OData, you should specify no parameters for this inquiry.

3. On the **Conditions** tab, perform the following steps, as shown in the screenshot below:
   - Deactivate all the existing conditions except the condition with the *SOOrder.OrderType* data field.
   - Add a new row and specify a condition with the following settings:
     - **Data Field**: *SOOrder.Status*
     - **Condition**: *Equals*
     - **From Schema**: Selected
     - **Value 1**: *Open*

   Based on the active conditions, the inquiry lists open sales orders of the *SO* type.

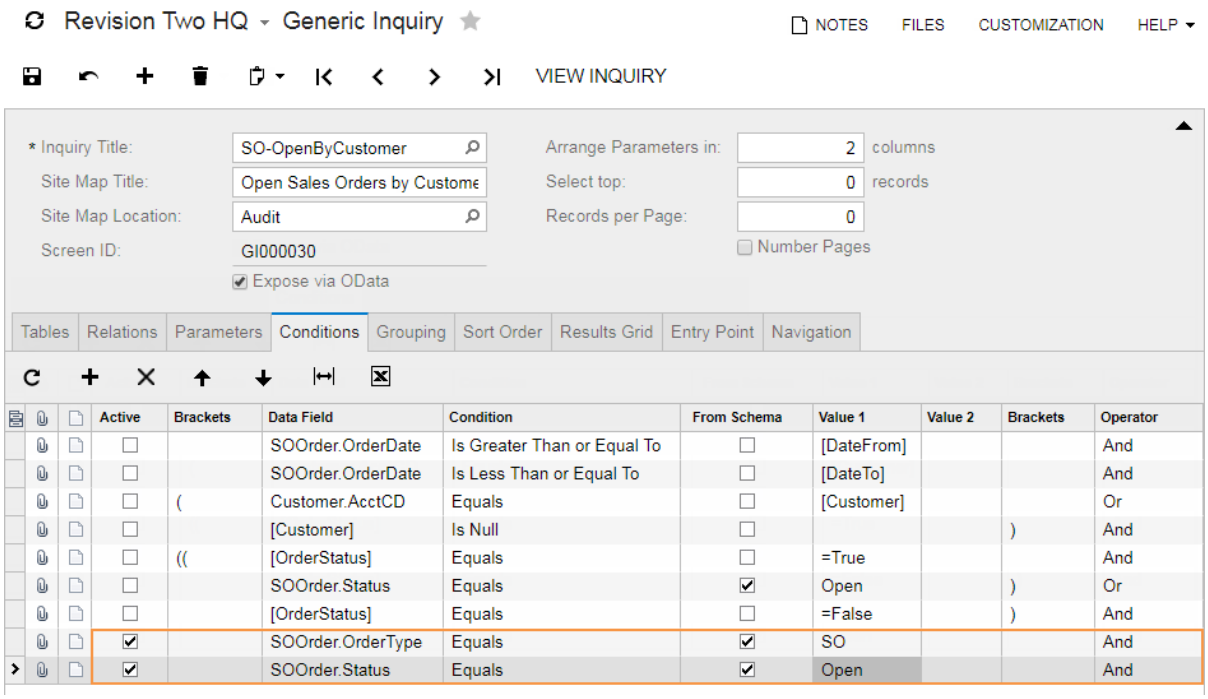


Figure: Conditions of the inquiry

4. Save your changes to the inquiry.

2. Accessing the Exposed Generic Inquiry Through a Browser

You can open the list of the inquiries exposed through OData in your browser. To access this list, you should enter the following URL in your browser: `{InstanceURL}/OData/{CompanyName}`. Here, `{InstanceURL}` is the URL of your Acumatica ERP application, and `{CompanyName}` is the login name of the company for which you configured the inquiry. The login name of the company is the name you select when you log in to Acumatica ERP. If your application contains only one company, specify the URL in the following format: `{InstanceURL}/OData`.

To access the list of exposed inquiries through your browser, do the following:

1. In your browser, enter the following URL: `http://localhost/InstanceName/OData/SalesDemo`, as shown in the screenshot below. Here and in the rest of this lesson, replace `localhost/InstanceName` with the actual URL of your application.
2. When the system asks you to authenticate yourself, provide your login credentials—that is, your user name (without the company name as follows: `admin@SalesDemo`) and your password. After your identity is confirmed, the system will display the list of available inquiries, as shown in the screenshot below.

```
localhost/InstanceName/OData/SalesDemo

This XML file does not appear to have any style information associated with it. The document tree is shown below.

▼<service xmlns="http://www.w3.org/2007/app" xmlns:atom="http://www.w3.org/2005/Atom" xml:base="http://localhost/70/odata/SalesDemo/"> esDemo/">
 ▼<workspace>
    <atom:title type="text">Default</atom:title>
  ▼<collection href="BI-Employees">
     <atom:title type="text">BI-Employees</atom:title>
   </collection>
  ▼<collection href="BI-CreationDate">
     <atom:title type="text">BI-CreationDate</atom:title>
   </collection>
  ▼<collection href="InvoicedItems">
     <atom:title type="text">InvoicedItems</atom:title>
   </collection>
  ▼<collection href="SO-OpenByCustomer">
     <atom:title type="text">SO-OpenByCustomer</atom:title>
   </collection>
  ▼<collection href="BI-Dates">
     <atom:title type="text">BI-Dates</atom:title>
   </collection>
  ▼<collection href="BI-Opportunities">
     <atom:title type="text">BI-Opportunities</atom:title>
   </collection>
  ▼<collection href="BI-Customers">
     <atom:title type="text">BI-Customers</atom:title>
   </collection>
  ▼<collection href="CommissionData">
     <atom:title type="text">CommissionData</atom:title>
   </collection>
 </workspace>
</service>
```


Figure: The list of the exposed inquiries

Even though you can see all exposed inquiries, you can access the data of only the inquiries you have sufficient access rights to.

You can view the list of fields of the exposed inquiries, as shown in the screenshot below. To access this list, in your browser, you should enter the following URL: `{InstanceURL}/OData/{CompanyName}/$metadata`. If your application contains only one company, omit `{CompanyName}` and enter the following: `{InstanceURL}/OData/$metadata`.

3. In your browser, enter the following URL to access the list of fields of the exposed inquiries: `http://localhost/InstanceName/OData/SalesDemo/$metadata`.


```
localhost/InstanceName/OData/salesdemo/$metadata

This XML file does not appear to have any style information associated with it. The document tree is shown below.

▼<edmx:Edmx xmlns:edmx="http://schemas.microsoft.com/ado/2007/06/edmx" Version="1.0">
 ▼<edmx:DataServices xmlns:m="http://schemas.microsoft.com/ado/2007/08/dataservices/metadata" m:DataServiceVersion="3.0" m:MaxDataServiceVersion="3.0">
  ▼<Schema xmlns="http://schemas.microsoft.com/ado/2009/11/edm" Namespace="PX.Data">
   ▶<EntityType Name="BI-Employees">...</EntityType>
   ▶<EntityType Name="BI-CreationDate">...</EntityType>
   ▶<EntityType Name="InvoicedItems">...</EntityType>
   ▼<EntityType Name="SO-OpenByCustomer">
    ▼<Key>
      <PropertyRef Name="CustomerID"/>
    </Key>
    <Property Name="CustomerID" Type="Edm.String"/>
    <Property Name="Date" Type="Edm.DateTime"/>
    <Property Name="CustomerName" Type="Edm.String"/>
    <Property Name="OrderNbr" Type="Edm.String"/>
    <Property Name="Quantity" Type="Edm.Decimal"/>
    <Property Name="SalesOrderTotal" Type="Edm.Decimal"/>
    <Property Name="Status" Type="Edm.String"/>
   </EntityType>
   ▶<EntityType Name="BI-Dates">...</EntityType>
   ▶<EntityType Name="BI-Opportunities">...</EntityType>
   ▶<EntityType Name="BI-Customers">...</EntityType>
   ▶<EntityType Name="CommissionData">...</EntityType>
   ▶<EntityContainer Name="Default" m:IsDefaultEntityContainer="true">...</EntityContainer>
  </Schema>
 </edmx:DataServices>
</edmx:Edmx>
```


Figure: The list of fields of the exposed inquiries

The field names in the list are changed according to the OData specification. The system generates the names of the fields for OData entities based on the display names of the Acumatica ERP fields in invariant culture (that is, the names of the fields in an English locale) as follows:

- If the display name does not contain any invalid symbols, the name is left unchanged.

- If the display name starts with an invalid symbol, an underscore _ symbol is added before the name. For example, *2Email* is converted to *_2Email*.
- If the display name contains invalid symbols, these symbols are removed from the name. For example, *Order Nbr.* is converted to *OrderNbr*.

You can access the contents of an exposed inquiry you have sufficient access rights to, as shown in the screenshot below. To access the inquiry data, in your browser, enter the following URL : `{InstanceURL}/OData/{CompanyName}/{GIName}`, where `{GIName}` is the case-sensitive name of the inquiry from the list of exposed inquiries. If your application contains only one company, omit `{CompanyName}` and enter the following: `{InstanceURL}/OData/{GIName}`.

4. In your browser, enter the following URL to access the contents of the inquiry: `http://localhost/InstanceName/OData/SalesDemo/SO-OpenByCustomer`.

Figure: The data of the exposed inquiry

Acumatica ERP supports JSON and ATOM formats. You can specify a format in the URL by using the `$format` option as follows: `$format={format}`, where `{format}` can have one of the following values:

- *json*: The data is displayed in JSON format.
- *atom*: The data is displayed in ATOM format.
- *jsonverbose*: The data is displayed in JSON Verbose format.

By default, the data of an exposed inquiry is displayed in JSON format. However, the default format in which you get the data of an exposed inquiry also depends on your browser. For example, in the screenshot above, the data is displayed in the ATOM format by default.

5. In your browser, enter the following URL to get the inquiry data in JSON format, as shown in the screenshot below: `http://localhost/InstanceName/OData/SalesDemo/SO-OpenByCustomer/?$format=json`.

A question mark starts the list of options in the URL, such as `$format`, `$filter`, and `$orderby`.

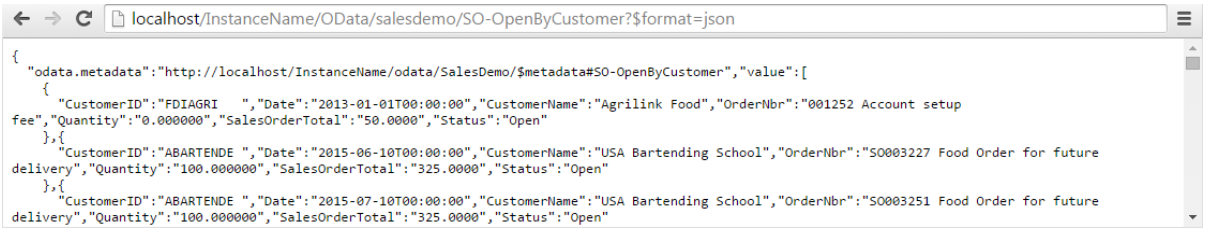


Figure: The data of the exposed inquiry in the JSON format

You can filter the data of an exposed inquiry. You cannot specify inquiry parameters through OData, but you can directly filter the data you have accessed.

As an example, you will filter the data of the SO-OpenByCustomer inquiry by customer and amount to get the sales orders of the *USA Bartending School* customer (identifier *ABARTENDE*) with an amount that is greater than or equal to 12,000.

6. In your browser, enter the following URL to filter the inquiry data: `http://localhost/InstanceName/OData/SalesDemo/SO-OpenByCustomer/?$format=json&$filter=CustomerID eq 'ABARTENDE' and SalesOrderTotal ge 12000`.

   The filtering condition in this URL is `$filter=CustomerID eq 'ABARTENDE' and SalesOrderTotal ge 12000`. The `$filter` option starts the filtering conditions, `eq` is the *equal* operator, and `ge` is the *greater than or equal* operator. The *and* operator joins multiple conditions in the filter. The `&` character is used to join multiple URL options, such as `$format`, `$filter`, and `$orderby`. For more information on OData options and operators, see the protocol specification in the Related Links section of this topic.

3. Accessing the Exposed Generic Inquiry Through an OData Client

You can access the data of an exposed inquiry by using third-party OData clients, such as Microsoft Excel and Microsoft Power BI.

In this lesson, the instructions assume that Microsoft Excel 2013 is being used. The details of this procedure may differ for other versions of Excel.

Microsoft Excel 2007 and earlier versions do not support connecting to OData feed.

To access the inquiry data through Excel, do the following:

1. Open an Excel workbook.
2. On the **Data** ribbon tab, click **From Other Sources** > **From OData Feed**. The **Data Connection Wizard** opens.
3. On the **Connect to a Data Feed** page of the wizard, specify the following settings, as shown in the screenshot below:
   - **Link or File**: `http://localhost/InstanceName/OData/SalesDemo`

     The location of the data feed is in the following format: `{InstanceURL}/OData/{CompanyName}`. Here, `{InstanceURL}` is the URL of your Acumatica ERP application, and `{CompanyName}` is the company name for which you configured the inquiry. The company name matches the name you select when you log in to Acumatica ERP.
   - **User Name**: `admin`
   - **Password**: The password you defined for this user name

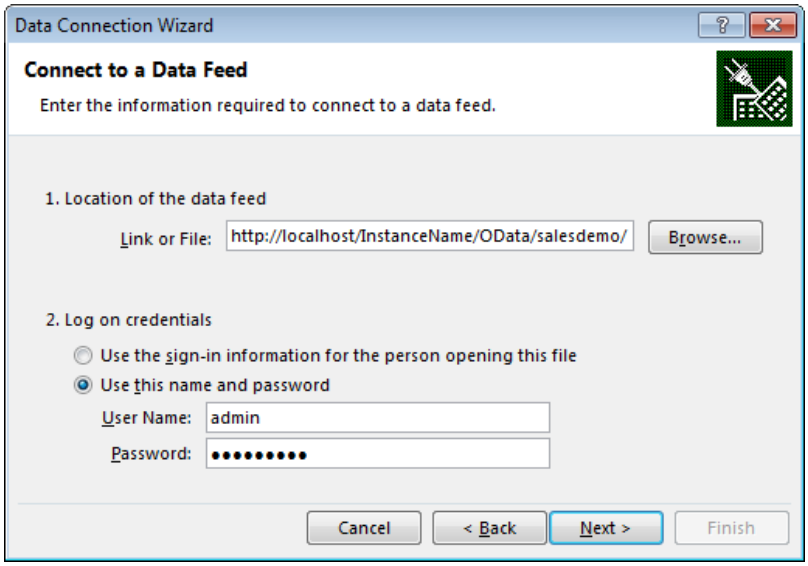


Figure: OData connection credentials

4. Click **Next**. Excel connects to the Acumatica ERP instance.

The **Select Tables** page of the wizard, which opens, shows the list of exposed generic inquiries that are available for you.

5. Select the *SO-OpenByCustomer* inquiry, as shown in the screenshot below.

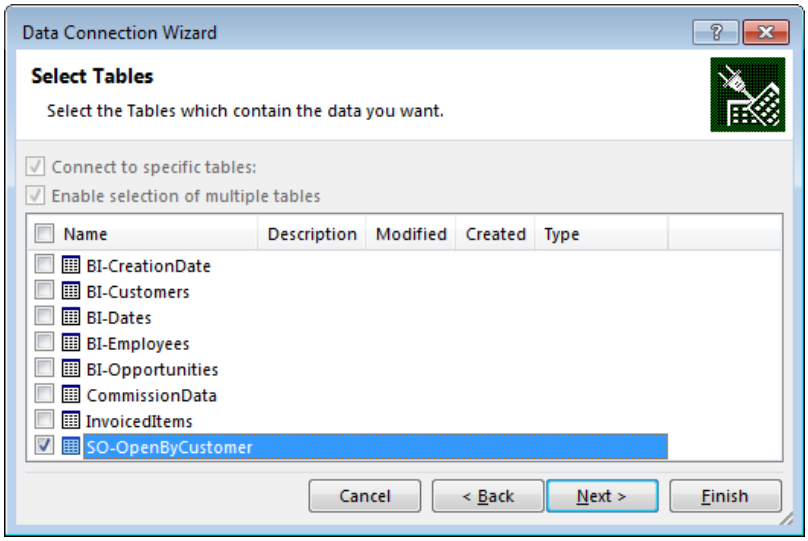


Figure: Exposed inquiry to connect

You can select multiple inquiries, if needed.

6. Click **Next**.

7. In the **Save Data Connection File and Finish** box, enter a name and description for your data connection file and click **Finish**.

8. On the **Import Data** page, specify the way you want to see the data and click **OK**.

The system connects to the application, downloads the data from your Acumatica ERP instance, and presents the data in the way you selected, as shown in the screenshot below.

	1	2	3	4	5	6	7
1	CustomerID	Date	CustomerName	OrderNbr	Quantity	SalesOrderTotal	Status
2	TOYSTAR	8/7/2015	Star America Toys	SO003266 Consumer Good Toy Order	610	66700	Open
3	CHOCOLATE	8/7/2015	Chocolate By Design	SO003267 Consumer Good Fitness order	40	7760	Open
4	FDIQVIK	12/24/2015	Qvik Process GmbH	SO003343 Food Order	1680	76262.44	Open
5	ELEVATION	11/7/2015	Elevation Computers	SO003325 Electronics Order	280	49458.4	Open
6	FDICOCCIA	11/24/2015	Cocciatari Pizza	SO003323 Food Order	1200	50562	Open
7	TOYSTAR	12/7/2015	Star America Toys	SO003352 Consumer Good Toy Order	630	69412.5	Open
8	ELITEANSW	9/12/2015	Elite Answering	SO003281 Electronics Order	16	11996.48	Open
9	TOYONEILL	11/3/2015	O'Neill's Trading	SO003330 Consumer Good Toy Order	175	48353.3	Open
10	FDIQVIK	8/24/2015	Qvik Process GmbH	SO003257 Food Order	1200	49521.65	Open
11	ABCSTUDIOS	10/12/2015	ABC Studios Inc	SO003317 Electronics - Drop Shipped Order	103	46924.3	Open
12	INDSACRAME	12/28/2015	Sacramento Industrial Supply	SO003350 Industrial Equipment Order	6	153547.27	Open
13	INDSUPPLY	9/9/2015	Industrial Supply Inc	SO003283 Industrial Equipment Order	10	43685.93	Open
14	ELEIMPORT	10/5/2015	Electonic Importers	SO003302 Electronics Order	50	11223.75	Open
15	FDICOCCIA	8/24/2015	Cocciatari Pizza	SO003258 Food Order	960	36772.8	Open
16	SNOSHORT	8/9/2015	Shortstop Sports	SO003268 Consumer Good Order	284	46116	Open
17	ABARTENDE	9/20/2015	USA Bartending School	SO003294 Industrial Equipment - Special Order	3	256500	Open
18	TOYONEILL	12/3/2015	O'Neill's Trading	SO003351 Consumer Good Toy Order	175	48353.3	Open
19	ABARTENDE	6/10/2015	USA Bartending School	SO003227 Food Order for future delivery	100	325	Open
20	FDIAGRI	8/5/2015	Agrilink Food	SO003253 Food Order	1932	67547.16	Open
21	ABCSTUDIOS	11/12/2015	ABC Studios Inc	SO003338 Electronics - Drop Shipped Order	190	57909	Open
22	CHOCOLATE	12/7/2015	Chocolate By Design	SO003353 Consumer Good Fitness order	340	55460	Open
23	MICROCHIP	8/6/2015	Microchip Restaurant	SO003254 Food Order - Microchip	2736	57189.6	Open
24	FDIQVIK	11/24/2015	Qvik Process GmbH	SO003322 Food Order	1400	63552.04	Open
25	ABCSTUDIOS	12/12/2015	ABC Studios Inc	SO003359 Electronics - Drop Shipped Order	190	57909	Open

Sheet1

Figure: The data of the exposed inquiry

The sorting order in the resulting Excel file may differ from the sorting order in Acumatica ERP, because Excel applies sorting after the data is downloaded.

In the **Data** ribbon tab, you can click **Refresh All** to update the data.

You can do what you want with the imported data—for example, remove the columns you do not want to see, or add information from other data sources in separate sheets. When you refresh the data, the structure of the file is not updated.

Using Predefined Exposed Generic Inquiries

Acumatica ERP includes several predefined generic inquiries exposed through OData; the titles of these inquiries start with *BI*. Additionally, the *BI* role has been added to the system; a user with this role assigned can access the data of the predefined inquiries. For more information on roles, see the links in the Related Links section of this topic.

Lesson Summary

In this lesson, you have learned how to expose generic inquiries by using the Open Data protocol. Below is the summary of the steps you should perform on the Generic Inquiry form (SM208000) to expose an inquiry by using OData:

1. Add the inquiry to the site map.
2. Exclude the parameter from the inquiry conditions. In the inquiry that you expose by the OData protocol, you cannot use parameters in the inquiry conditions.
3. Select the **Expose via OData** check box. As soon as you save the inquiry with the check box selected, the inquiry becomes immediately available to access by OData clients without restart of the application.

You accessed exposed generic inquiries through a browser or an OData client. Through a browser, you accessed the following data of exposed inquiries of the particular company by using the appropriate URLs:

- `{InstanceURL}/OData/{CompanyName}`: The list of all the exposed inquiries

- `{InstanceURL}/OData/{CompanyName}/$metadata`: The list of fields of the exposed inquiries
- `{InstanceURL}/OData/{CompanyName}/{GIName}`: The data of the exposed inquiry with the `{GIName}` name

Review Questions

1. What credentials should you provide to access the inquiries exposed through OData?
   - **A**. You should not provide any login credentials.
   - **B**. The user name and the password.
   - **C**. The user name, the password, and the company name.
2. In the *MyCompany* company of the `http://localhost/InstanceName` instance of Acumatica ERP, you have exposed the *AR-Invoices* inquiry by using OData. What URL you should enter in your browser to access the inquiry data?
   - **A**. `http://localhost/InstanceName/OData/MyCompany/ar-invoices`
   - **B**. `http://localhost/InstanceName/MyCompany/OData/AR-Invoices`
   - **C**. `http://localhost/InstanceName/OData/MyCompany/AR-Invoices`
   - **D**. `http://localhost/InstanceName/MyCompany/OData/ar-invoices`
3. Select all the formats in which you can get the data of an exposed inquiry.
   - **A**. XML and YAML
   - **B**. XML and JSON
   - **C**. YAML and ATOM
   - **D**. ATOM and JSON
   - **C**. JSON and YAML

Answer Key

1 - B; 2 - C; 3 - D.

Related Links

OData Support
OData Version 3.0 Specification
Setting Up an HTTPS Service in Web Server (IIS)
Managing Authorization by Using Roles

Part 2: The Report Designer

In this part, you will learn how to create and configure reports using the Report Designer. In particular, you will learn how to do the following:

- *Create, configure, and publish reports*
- *Use subreports*
- *Create tabular reports*
- *Define additional filters for reports*
- *Use images in reports*
- *Color certain report data according to some conditions*
- *Save a report as a new version*
- *Translate reports*
- *Define Excel export settings*

Reviewing Acumatica Report Designer

Acumatica Report Designer provides visual tools that you can use to design custom reports. With the Report Designer, you can select data for a report, calculate required values based on the selected data, and customize a report layout.

Installation of the Report Designer

You can install Acumatica Report Designer in one of the following ways:

- As part of Acumatica ERP. In the **Acumatica ERP** installation wizard, the **Install Report Designer** check box is selected by default, as shown in the screenshot below.

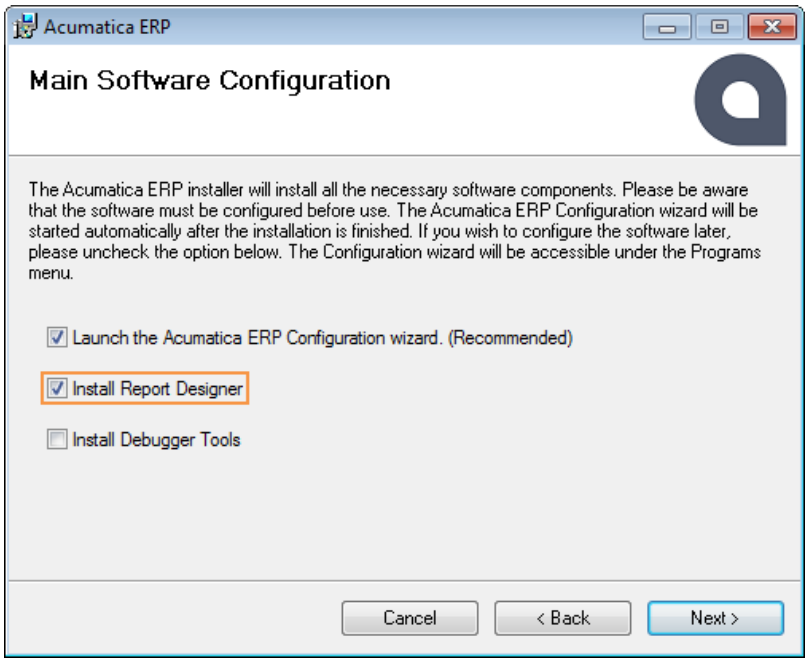


Figure: Acumatica ERP installation wizard

  If you did not change this setting while you completed the *course prerequisites*, you have successfully installed the Report Designer.

- As a standalone application.

  The Report Designer receives all information required for a report from the Acumatica ERP application server. If you install the Report Designer as a standalone application, you do not need to install Acumatica ERP locally to change or develop a report; instead, you can just connect to a remote server by using an appropriate URL.

Report Designer User Interface

To open the Report Designer, navigate as follows: **Start** > **All Programs** > **Acumatica** > **Report Designer**. This opens the main window, shown in the following screenshot.

If you install the Report Designer as a standalone application, you should navigate as follows: **Start** > **All Programs** > **Acumatica** > **Standalone Report Designer** > **Report Designer**.

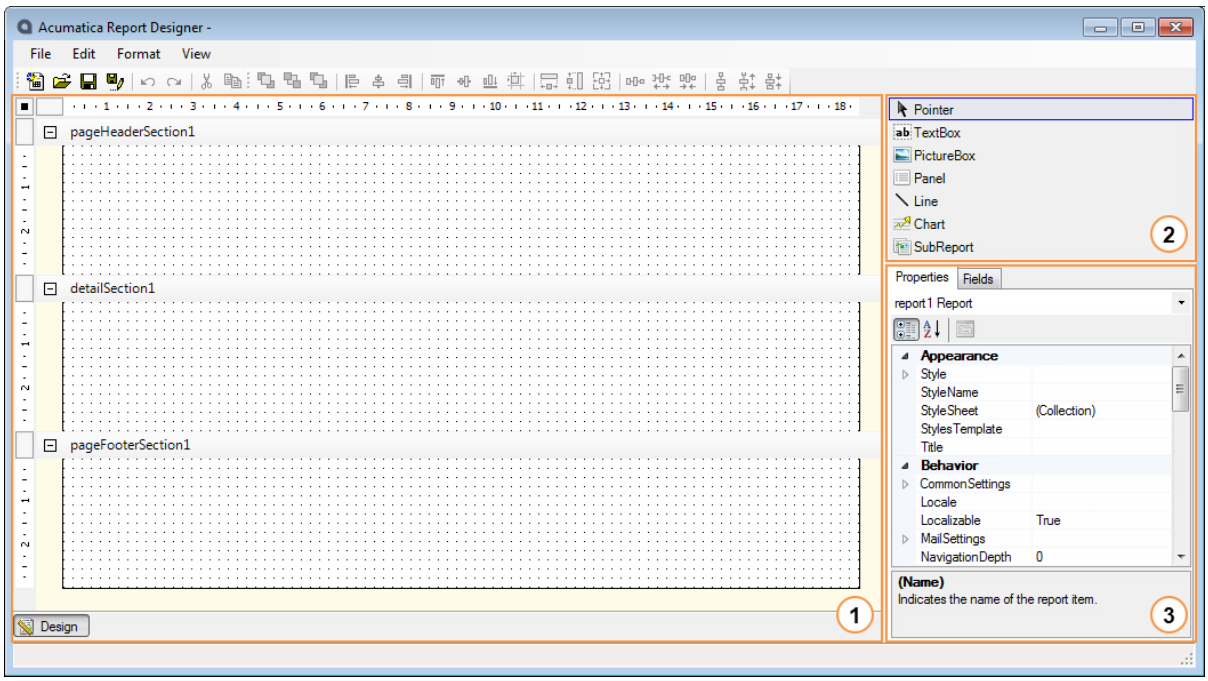


Figure: Report Designer main window

The main window of Acumatica Report Designer includes three areas:

- The left **Design** area (item 1 in the screenshot above) displays the report layout.
- The top right area (item 2) provides access to the elements and tools that you can use to design a report layout and add a report content.
- The bottom right area (item 3) includes the following tabs:
    - **Properties**: Displays the properties of a report element selected in the **Design** area.
    - **Fields**: Lists all fields of the data access classes selected as the source of data for a report.

For more information on the Report Designer, see the topics in this part as well as the online product documentation supplied with Acumatica ERP (Help > Acumatica Framework > Report Designer).

Creating New Reports and Opening Existing Ones

You can create new reports or modify existing reports by using Acumatica Report Designer, as described below.

Creating a New Report

To create a new report, on the menu bar, select **File** > **New**.

You can also create a new report by clicking the button on the main window toolbar.

Then, you should perform the following main steps, which are described in greater detail in *Lesson 4: Creating a Report*:

1. In the **Schema Builder** wizard, do the following to select the data for the report:
   a. Load the database schema and select the data classes.
   b. Optionally, specify the relationships between the classes.
   c. Optionally, add one or more parameters for the report, to allow users to filter the report data by specifying values of these parameters.
   d. Optionally, specify the filtering conditions, which determine the data to be retrieved.
2. Optionally, specify grouping conditions for the report data.
3. Optionally, specify sorting conditions for the data of the detail section.
4. Lay out the report—that is, add to the report layout some visual elements, configure these elements, specify visibility of the report sections and elements, and so on.
5. Add the URL of the report to the site map.

Modifying an Existing Report

To modify an existing report, you can open the locally stored file or load the file from the Acumatica ERP website:

- To open a locally stored file, on the menu bar, select **File** > **Open**, and then select the report file you want to modify. The reports are in the `/Site/ReportsDefault/` folder by default.

  You can also open a locally stored file by clicking the button on the main window toolbar.

- To open a report file located on the Acumatica ERP website, do the following:
  1. On the menu bar, select **File** > **Open From Server**.
  2. In the **Open report from server** dialog box, which appears, do the following:
     - Type your Acumatica ERP website URL in the following format: `http://{domain}`, where you replace `{domain}` with the actual URL to your application. The URL can be your local website, as shown in the screenshot below (item 1), or an external URL of Acumatica ERP. You may also need to replace `http` with `https`.
     - Type your login and password (item 2). If your application contains more than one company, type the appropriate company name with the user login in the following format: `{user login}@{company name}`. The company name matches the name you select when you log in to Acumatica ERP. If your application contains only one company, specify only the user login.
     - Click the **Load reports list** button to load a list of available reports from the website (item 3).

- Select a report to load (item 4) and click **OK**.

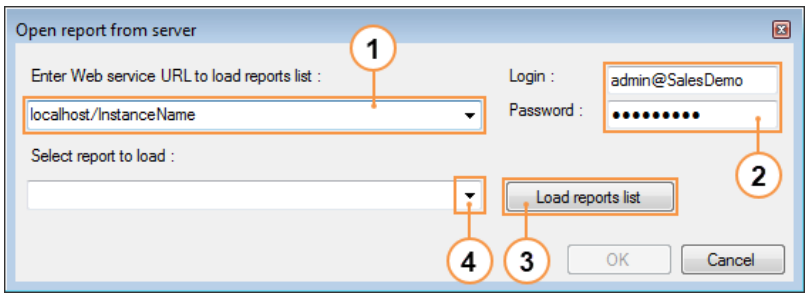


Figure: Opening an existing report from the website

You can open a report directly from the corresponding report form in Acumatica ERP, if the *ReportDesigner* role is assigned to your user. To do that, click **Edit Report** on the report form toolbar, and download the file whose name matches the report name. For example, for the `AR670000.rpx` report, the `AR670000.rps` file is downloaded. This downloaded file contains the website URL, the user login, and the report name. When you open the downloaded file, the **Open report from server** dialog box appears with the website URL, user login, and report name filled in automatically. You need to type only your password and click **OK** to open the report in the Report Designer.

The opened report file is displayed in the **Design** area of the Report Designer. Once you modify the report, you can save it locally or to the server.

Defining Report Parameters

The user can specify values of report parameters before run the report on the **Report Parameters** tab of the report form.

You can configure one or more parameters for a report, if necessary, on the **Parameters** tab of the **Schema Builder** wizard of the Report Designer. For each parameter, you can specify the following settings:

- **Name**: The parameter name to be used in the report. Once you apply your changes to the report, the parameters you added are available in the list of available parameters in the **Expression Editor**. The parameters start with the @ symbol, as with `@SalesPerson`.
- **Data Type**: The data type of the parameter. Based on this type, the appropriate form elements will be shown on the **Report Parameters** tab of the report.
- **View Name**: The data field to retrieve data for the parameter when the user selects its values on the report form.
- **Prompt**: The parameter name to be displayed on the report form. A parameter appears on the **Report Parameters** tab of the report form if you specify its **Prompt** value and select the **Visible** check box. Otherwise, the user will not see the parameter.
- **Default Value**: The value to be selected by default for the parameter on the **Report Parameters** tab of the report form. For example, as the default value of the report parameters with the date data type, you can specify an exact date or select one of the following date-relative parameters:
  - *@WeekStart* and *@WeekEnd*: The start and the end of the current week
  - *@MonthStart* and *@MonthEnd*: The start and the end of the current month
  - *@PeriodStart* and *@PeriodEnd*: The start and the end of the current financial period
  - *@QuarterStart* and *@QuarterEnd*: The start and the end of the current quarter
  - *@YearStart* and *@YearEnd*: The start and the end of the current year
  - *@Today*: The current day
- **Allow Null**: The parameter can have the *Null* value with this check box selected. For example, if you want to allow the user to execute the report without specifying a date range, select the **Allow Null** check box for the appropriate date parameters. You should select this check box for all parameters that are optional.
- **Is Required**: The user has to provide the parameter to run the report if this check box is selected and the **Default Value** is not defined for the parameter.
- **Column Span**: The number of columns on the **Parameters** tab of the report form this parameter will span.

  The report **ParamsColumns** property specifies the number of columns in which the report parameters are arranged on the **Parameters** tab of the report form. For each report parameter, in the **Column Span** box, you cannot specify the number greater than the value of **ParamsColumns**.
- **Available values**: The list of parameter values, which is available to the user on the report form to select the parameter value.

  For example, the Invoice/Memo report (`ar641000.rpx`) has two parameters. The first one is **Document Type**, which has the following available values, as shown in the screenshot below.

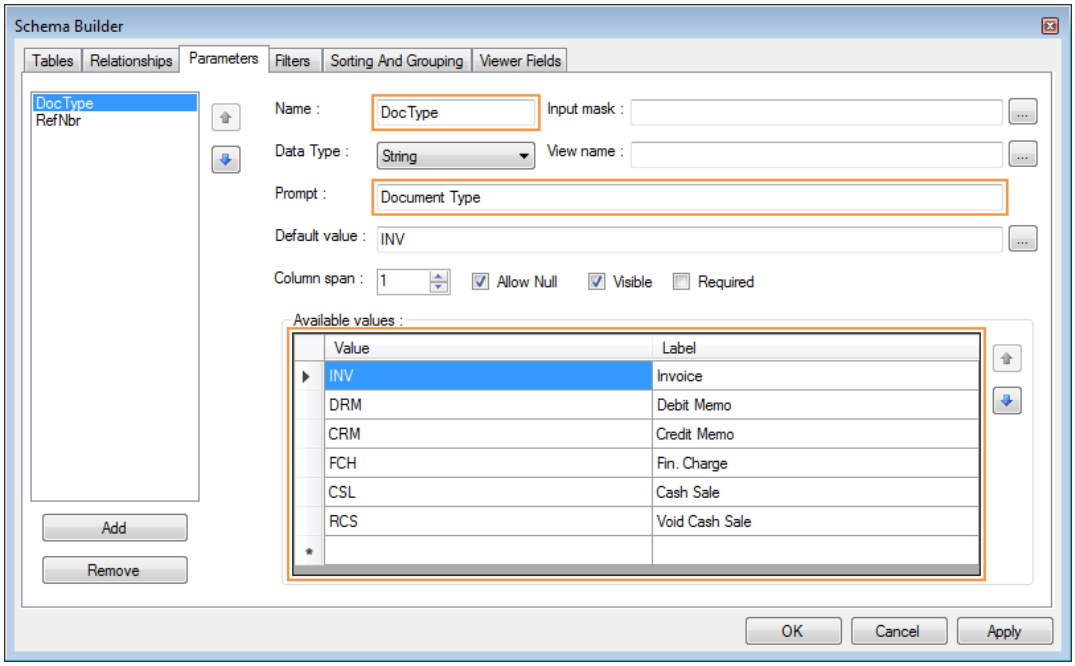


Figure: Previewing parameters of the Invoice/Memo report (AR641000)

On the report form, the parameter with the list of predefined values is shown as a combo box. In the **Label** column of the **Available values** area, you define the list of options that the user can see in the combo box (see the screenshot below). In the **Value** column, you define the list of values that are assigned to the parameter if the user selects the corresponding option of the **Label** column.

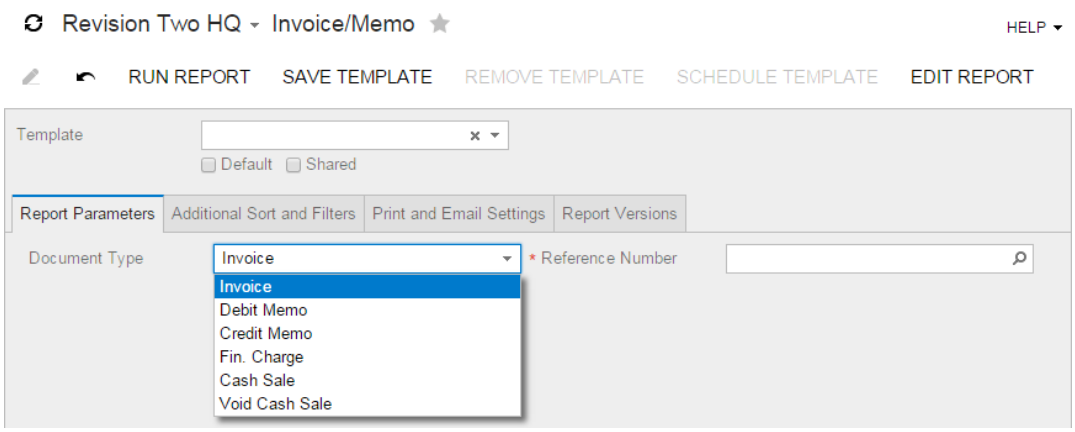


Figure: Selecting Document Type for the Invoice/Memo report (AR641000)

The second parameter of the Invoice/Memo report (`ar641000.rpx`) is **Reference Number**. The following expression is specified as **View name** of this parameter.

```
=Report.GetFieldSchema('ARInvoice.RefNbr,DocType')
```

Similarly, you can use the following expression instead of the previous one: `=[ARInvoice.RefNbr,DocType]`. In these expressions, the *DocType* attribute is the name of the first report parameter.

Based on these expressions, when the user selects **Reference Number** on the report form, the lookup table of invoices appears. In this table, the list of invoices is filtered by the selected document type.

If you explore the *ARInvoice* data access class on the **Data Access** tab of the Source Code form (SM204570), you can find the filtering condition of the *RefNbr* data field (item 1 in the screenshot below). This condition is used to filter invoices in the lookup table when the user select an invoice. In the *where* clause, you can find the optional filtering condition by document type (item 2).

Revision Two HQ - Source Code

CUSTOMIZATION HELP

Screen Aspx | Business Logic | Data Access | Find in Files | Website Sources

Table Name: PX.Objects.AR.ARInvoice

```
public partial class ARInvoice : ARRegister, IInvoice
{
        #region Selected

        #region DocType

        #region RefNbr

        public new abstract class refNbr : PX.Data.IBqlField
        {
        }

        /// <summary>
        /// Key field.
        /// The reference number of the document.
        /// </summary>
        /// <value>
        /// For most document types the reference number is generated automatically from the corresponding
        /// <see cref="Numbering">Numbering Sequence</see>, specified in the <see cref="ARSetup">Accounts Receivable module preferences</see>.
        /// </value>
        [PXDBString(15, IsKey = true, IsUnicode = true, InputMask = ">CCCCCCCCCCCCCCC")]
        [PXDefault()]
        [PXUIField(DisplayName = "Reference Nbr.", Visibility = PXUIVisibility.SelectorVisible, TabOrder = 1)]
1       [ARInvoiceType.RefNbr(typeof(Search2<ARInvoice.refNbr,
                InnerJoin<Customer, On<ARInvoice.customerID, Equal<Customer.bAccountID>>>,
2               Where<ARInvoice.docType, Equal<Optional<ARInvoice.docType>>,
                And2<Where<ARInvoice.origModule, Equal<BatchModule.moduleAR>, Or<ARInvoice.released, Equal<True>>>,
                And<Match<Customer, Current<AccessInfo.userName>>>>>, OrderBy<Desc<ARInvoice.refNbr>>>), Filterable = true)]
        [ARInvoiceType.Numbering()]
        [ARInvoiceNbr()]
        [PXFieldDescription]
        public override String RefNbr
        {
                get
                {
                        return this._RefNbr;
                }
                set
                {
                        this._RefNbr = value;
                }
        }
        #endregion
```

Figure: Exploring the ARInvoice class on the Source Code form (SM204570)

Similarly, in your reports, you can filter by subtype other documents, such as sales orders, if their reference number has the appropriate filtering condition.

Modifying a Report Layout

A layout of any newly created report consists of three main sections—the page header section (item 2 in the screenshot below), the page footer section (item 4), and the detail section (item 6).

Within the report, you can add group sections, which can be nested. For each group, you have the group header (item 3) and the group footer (item 5) sections, and the detail section is always nested into the innermost group. You can also add the report header (item 1) and report footer (item 7) sections. All these sections are briefly described below:

- The detail section is the central part of the report, containing its main data. Unlike other sections, it cannot be deleted. For example, if your report outlines sales orders, you would put a list of orders in the detail section.
- The group header and group footer sections are shown above and below, respectively, each group of the report data. These sections are a good place for information that applies to all data in the detail section. For example, if you group sales orders by customer, you could place detailed information about the customer in the group header section and use the group footer section to calculate subtotals for the customer.
- The page header and page footer sections are located at the top and bottom of every page of the report. The page header and footer sections are the best place for information that the reader may need when reading every page. For example, you can use the page header to display column headers of a table that is continued from the previous page. You can use the page footer to display the number of the current page.
- The report header and report footer sections are the only types of report sections printed once per report. The report header is the first section of the report on the first page. It also precedes the page header, making it the best place to display the report name, the company logo, the date range of the report, and similar information. The report footer finalizes the informative part of the report and is placed before the page footer on the last page of the report. It is a good place for totals or conclusions.

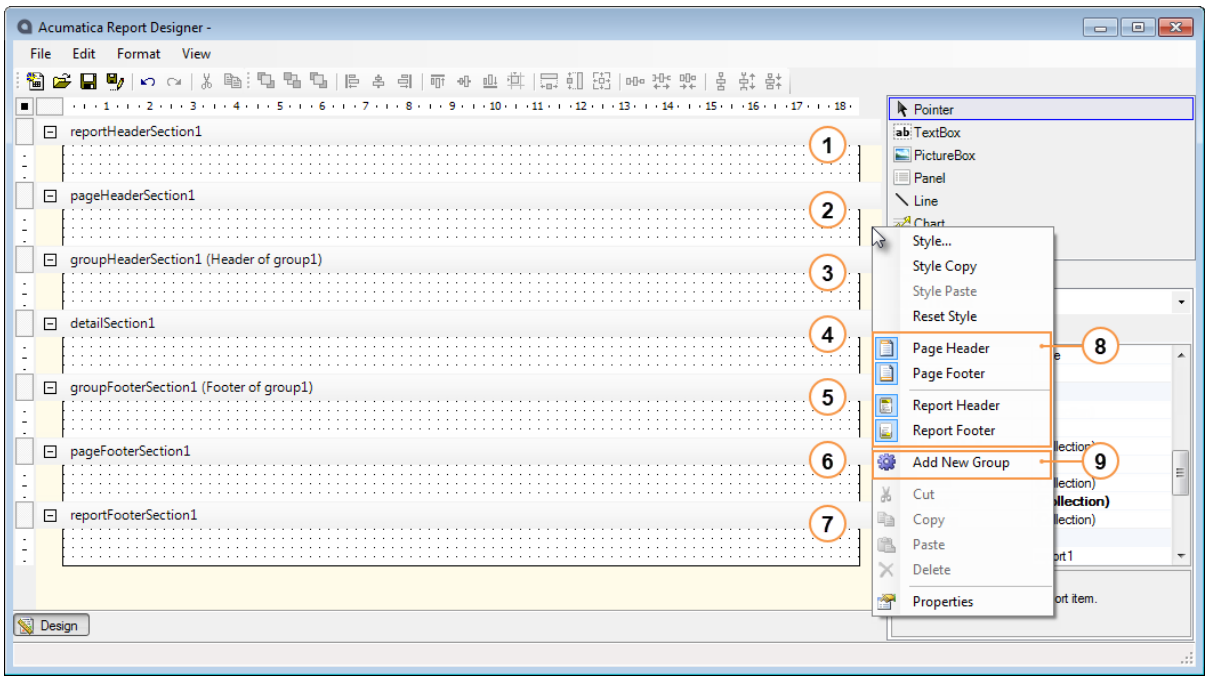


Figure: Sections of a report layout

You can easily add the report header, the report footer, the page header, and the page footer sections to the report layout or delete them. Just right-click any empty place of the report layout, and select the appropriate command (item 8 in the screenshot above). If a highlighted icon is shown left of a command, it indicates that the section is included in the report now.

To add both the group header and the group footer sections, right-click any empty place in the report layout, and select **Add New Group** (item 9 in the screenshot above). You can also add the group header and page footer sections by specifying grouping conditions for the report data. See *Step 4.4.1: Defining the Data Groups for the Report* of Lesson 4 for an example of specifying grouping conditions for a report.

To delete any section except for the detail section, right-click the section header and select **Delete**, as shown in the screenshot below.

To duplicate any section, right-click the section header and select **Duplicate**.

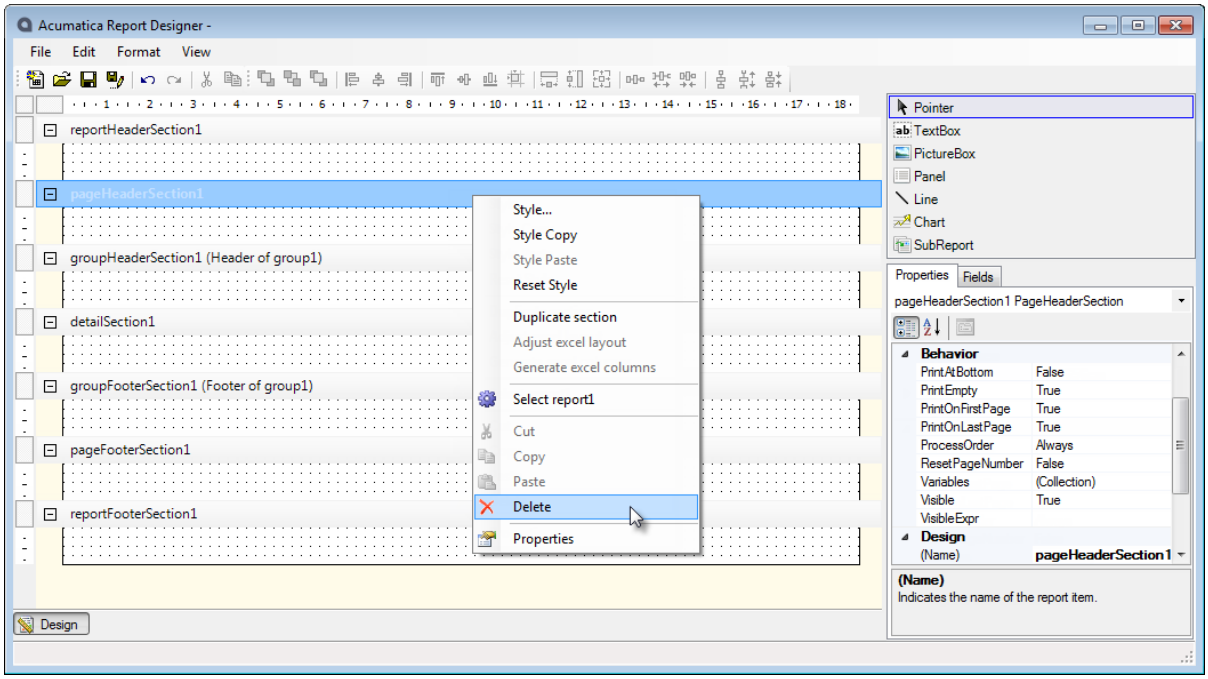


Figure: Deletion of a section

You can represent information of different kinds by using visual elements. In the Report Designer, these elements are listed in the top right area. You can add them to sections of the report layout by dragging them to the appropriate place. You can resize an element by dragging its borders.

After a visual element is added on the screen, you can do the following:

- Define the style of an element, and reset the style if desired.
- Copy and paste the style between visual elements.
- Define the order of visual elements on the layout by bringing them to the front or sending them to the back.
- Cut, copy, and paste visual elements and their content to other areas within the report.

To perform these actions with a visual element, use the commands available in the Report Designer toolbar, or right-click the visual element and select the relevant command.

In the lessons of this part, you can find details on configuring the following elements:

- *TextBox* in Lesson 4
- *PictureBox* in Lesson 8
- *Chart* in Lesson 5
- *SubReport* in Lesson 5

You can easily revert your changes to the report layout by using **Undo** command as well as revert the effect of undone actions by using **Redo** command.

Formatting Values to Be Displayed on a Report

You can specify a custom format for the numeric and date values of text boxes on the report layout, to define how these values should be displayed in the printed report.

To format the value of a text box, you have to enter a format specifier in the **Format** property of the text box, as shown in the screenshot below.

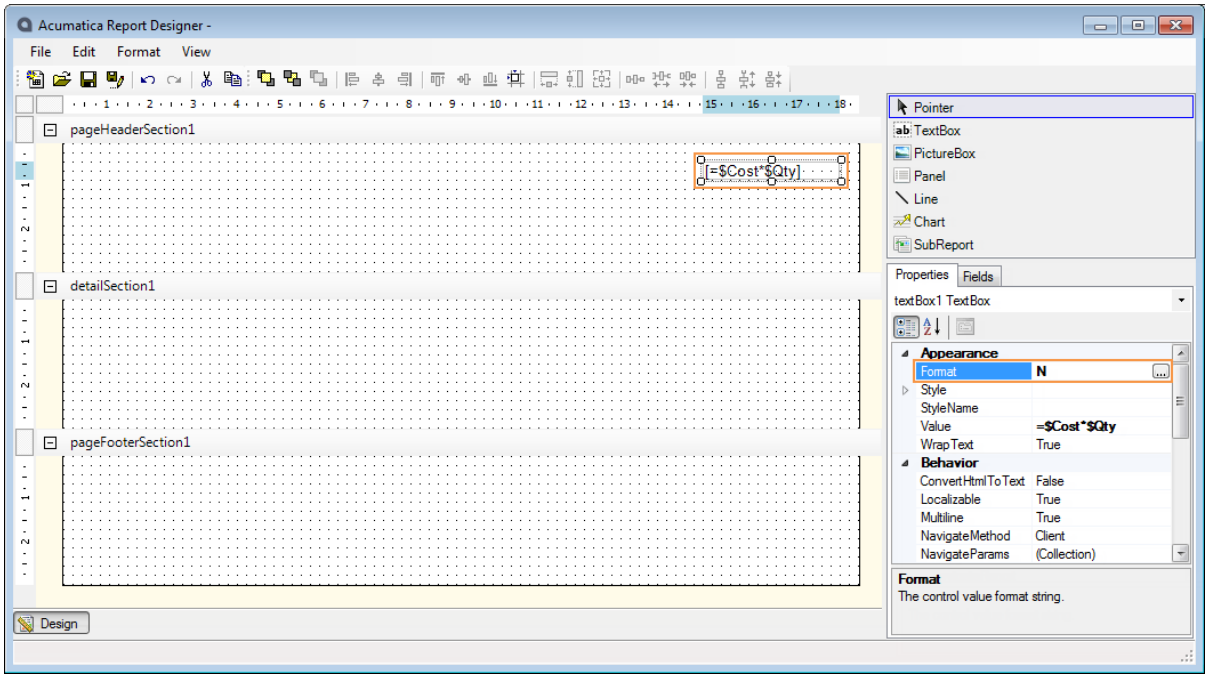


Figure: Defining the format of a text box value

You can use the following format specifiers, which are described in greater detail in this topic:

- *Format specifiers of any data fields used in a report*
- *Standard numeric format specifiers*
- *Custom numeric format specifiers*
- *Standard date format specifiers*
- *Custom date format specifiers*

Standard specifiers are applied according to the language selected when the particular user logged in to Acumatica ERP, as shown in the screenshot below. If your instance of Acumatica ERP does not allow the user to select any language, the specifiers are applied using the default language. The default language of the installed application is English (United States).

In the examples of this topic, if a format specifier depends on the language, this language is shown as follows: *en-US*.

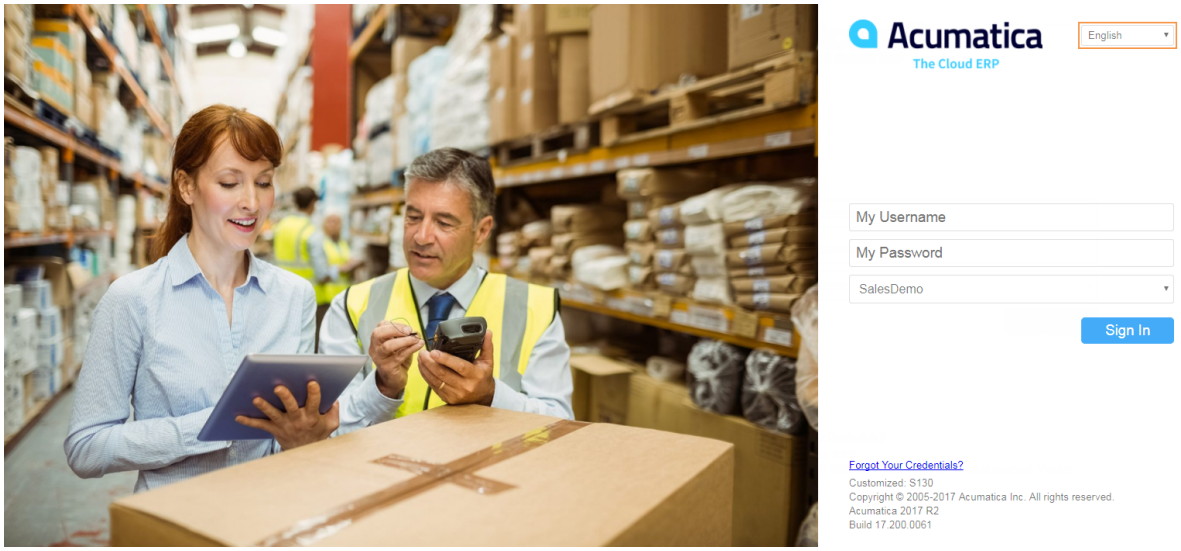
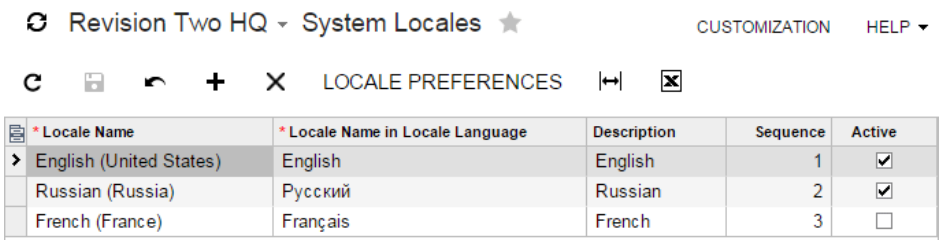


Figure: Selecting a language

A list of the languages available at login is specified on the System Locales form (SM200550; System > Management > Manage), as shown in the screenshot below.



* Locale Name	* Locale Name in Locale Language	Description	Sequence	Active
English (United States)	English	English	1	☑
Russian (Russia)	Русский	Russian	2	☑
French (France)	Français	French	3	☐

Figure: Viewing the list of available languages

For more information on locales, see the links in the Related Links section of this topic.

Formatting Values According to the Format of a Data Field

To use a data field as a format specifier for a text box, select the **Format** property of this text box, and click the button to open the **Expression Editor** dialog box. In the dialog box, select the data field to use as a format specifier, and add `.Format` to the end of the data field name inside square brackets, as shown in the following example: `=[ARTran.TranAmt.Format]`.

Formatting Numeric Values

The following table contains descriptions of standard numeric format specifiers and displays the sample output produced by each format specifier.

To use standard numeric format specifiers, type a format specifier into the **Format** property of a text box, such as `N`.

Format specifier	Description	Examples
`D` or `d`	Result: Integer digits with an optional negative sign Supported by: Integral types only Precision specifier: Minimum number of digits	1234 (`D`) –>1234 -1234 (`D6`) -> -001234

Format specifier	**Description**	**Examples**
`F` or `f`	Result: Integral and decimal digits with an optional negative sign Supported by: All numeric types Precision specifier: Number of decimal digits Default precision specifier: 2	1234.567 (`F`, en-US) -> 1234.57 1234.567 (`F`, fr-FR) -> 1234,57 -1234 (`F1`, en-US) -> -1234.0 -1234.56 (`F4`, fr-FR) -> -1234,5600
`N` or `n`	Result: Integral and decimal digits, group separators, and a decimal separator with an optional negative sign Supported by: All numeric types Precision specifier: Desired number of decimal places Default precision specifier: 2	1234.567 (`N`, en-US) -> 1,234.57 1234.567 (`N`, ru-RU) -> 1 234,57 1234 (`N1`, en-US) -> 1,234.0 -1234.56 (`N3`, en-US) -> -1,234.560
`P` or `P`	Result: Number multiplied by 100 and displayed with a percent symbol Supported by: All numeric types Precision specifier: Desired number of decimal places Default precision specifier: 2	1 (`P`, en-US) -> 100.00 % 1 (`P`, fr-FR) -> 100,00 % -0.39678 (`P1`, en-US) -> -39.7 % -0.39678 (`P3`, fr-FR) -> -39,678 %

The following table contains descriptions of custom numeric format specifiers and displays the sample output produced by each format specifier.

You can combine custom numeric format specifiers, as shown in the following example: `#,#.00`.

Format specifier	**Description**	**Examples**
`0`	Replaces the `0` symbol with the corresponding digit if one is present; otherwise, `0` appears in the result string.	1234.5678 (`00000`) -> 01235 0.45678 (`0.00`, en-US) -> 0.46 0.45678 (`0.00`, fr-FR) -> 0,46
`#`	Replaces the # symbol with the corresponding digit if one is present; otherwise, no digit appears in the result string.	1234.5678 (`#####`) -> 1235 0.45678 (`#.##`, en-US) -> .46 0.45678 (`#.##`, fr-FR) -> ,46
`.`	Determines the location of the decimal separator in the result string.	0.45678 (`0.00`, en-US) -> 0.46 .45 (`0.0000`, fr-FR) -> 0,4500
`,`	Inserts a localized group separator character between each group.	1234567 (`#,##`, en-US) -> 1,234,567 1234567 (`#,##`, fr-FR) -> 1.234.567

For more information on formatting numeric values, see the documentation about custom numeric format strings in .NET Framework.

Formatting Date Values

The following table contains descriptions of standard date format specifiers and displays the sample output produced by each format specifier.

To use standard date format specifiers, type the format specifier into the **Format** property of a text box, such as `d`.

Format specifier	Description	Examples (en-US)
`d`	Short date pattern	2009-06-15T13:45:30 -> 6/15/2009
`D`	Long date pattern	2009-06-15T13:45:30 -> Monday, June 15, 2009
`f`	Full date/time pattern (short time)	2009-06-15T13:45:30 -> Monday, June 15, 2009 1:45 PM
`F`	Full date/time pattern (long time)	2009-06-15T13:45:30 -> Monday, June 15, 2009 1:45:30 PM
`g`	General date/time pattern (short time)	2009-06-15T13:45:30 -> 6/15/2009 1:45 PM
`G`	General date/time pattern (long time)	2009-06-15T13:45:30 -> 6/15/2009 1:45:30 PM
`M` or `m`	Month/day pattern	2009-06-15T13:45:30 -> June 15
`t`	Short time pattern	2009-06-15T13:45:30 -> 1:45 PM
`T`	Long time pattern	2009-06-15T13:45:30 -> 1:45:30 PM
`Y` or `y`	Year month pattern	2009-06-15T13:45:30 -> June, 2009

The following table contains descriptions of custom date format specifiers and displays the sample output produced by each format specifier.

You can combine custom numeric format specifiers, as shown in the following example: `dddd/MMMM/yyyy hhtt:mm`.

Format specifier	Description	Examples (en-US)
`d`	The day of the month, from 1 through 31	2009-06-01T13:45:30 -> 1 2009-06-15T13:45:30 -> 15
`dd`	The day of the month, from 01 through 31	2009-06-01T13:45:30 -> 01 2009-06-15T13:45:30 -> 15
`ddd`	The abbreviated name of the day of the week	2009-06-15T13:45:30 -> Mon
`dddd`	The full name of the day of the week	2009-06-15T13:45:30 -> Monday
`h`	The hour (from 1 to 12), using a 12-hour clock	2009-06-15T01:45:30 -> 1 2009-06-15T13:45:30 -> 1

Format specifier	**Description**	**Examples (en-US)**
`hh`	The hour (from 01 to 12), using a 12-hour clock	2009-06-15T01:45:30 -> 01 2009-06-15T13:45:30 -> 01
`H`	The hour (from 0 to 23), using a 24-hour clock	2009-06-15T01:45:30 -> 1 2009-06-15T13:45:30 -> 13
`HH`	The hour (from 00 to 23), using a 24-hour clock	2009-06-15T01:45:30 -> 01 2009-06-15T13:45:30 -> 13
`m`	The minute (from 0 through 59)	2009-06-15T01:09:30 -> 9 2009-06-15T13:29:30 -> 29
`mm`	The minute (from 00 through 59)	2009-06-15T01:09:30 -> 09 2009-06-15T01:45:30 -> 45
`M`	The month (from 1 through 12)	2009-06-15T13:45:30 -> 6
`MM`	The month (from 01 through 12)	2009-06-15T13:45:30 -> 06
`MMM`	The abbreviated name of the month	2009-06-15T13:45:30 -> Jun
`MMMM`	The full name of the month	2009-06-15T13:45:30 -> June
`s`	The second (from 0 through 59)	2009-06-15T13:45:09 -> 9
`ss`	The second (from 00 through 59)	2009-06-15T13:45:09 -> 09
`t`	The first character of the AM/PM designator	2009-06-15T13:45:30 -> P
`tt`	The AM/PM designator	2009-06-15T13:45:30 -> PM
`yy`	The year (from 00 to 99)	1900-01-01T00:00:00 -> 00 2019-06-15T13:45:30 -> 19
`yyyy`	The year as a four-digit number	1900-01-01T00:00:00 -> 1900 2009-06-15T13:45:30 -> 2009
`/`	The time separator	2009-06-15T13:45:30 (`yyyy/mm/dd`) -> 2009/06/15
`:`	The date separator	2009-06-15T13:45:30 (`hh:mm:ss`) -> 13:45:30

For more information on formatting date values, see the documentation about custom date and time format strings in .NET Framework.

Related Links

Locale Preferences

To Add a New Locale

Using the Expression Editor

You can use expressions to define values to be displayed in a report, or to set report properties, such as group conditions and the visibility of sections or elements of the report.

To help you define expressions, the Report Designer provides the **Expression Editor** dialog box, which consists of four areas, as shown in the following screenshot:

- The left area of the dialog box (item 1) displays a list of classes and their fields defined for the report.
- The middle area of the dialog box (item 2) lists groups of parameters, operators, functions, and variables.
- The right area of the dialog box (item 3) contains the parameters, operators, functions, or variables in the group you select in the middle area.
- You use the bottom area of the dialog box (item 4) to compose and edit the expression. You can double click data fields listed in the left area and items listed in the right area to add them to the bottom area.

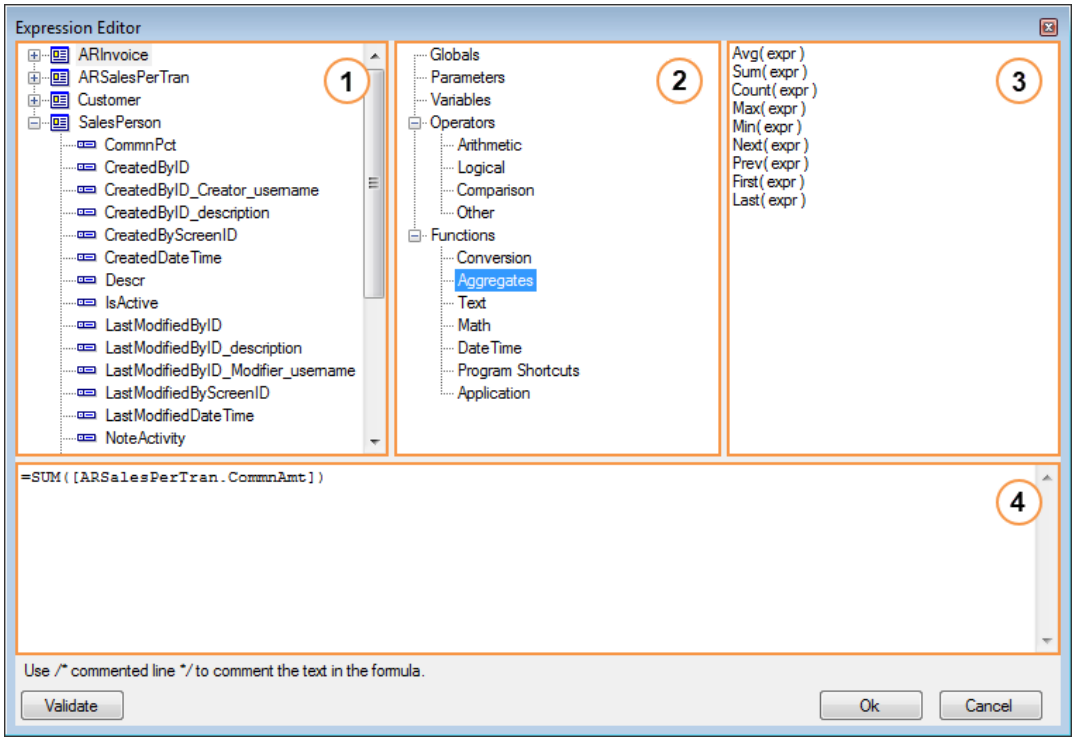


Figure: Expression Editor

To enter an expression by using the **Expression Editor** dialog box, do the following:

1. In the bottom area, click where you want to add an item.
2. In the middle area, expand the hierarchical structure of existing entities, and click a group of parameters, variables, operators, or functions to display the list of available items in the right area.
3. In the right area, double-click the item you want to insert in the bottom area.
4. In the left area, expand the hierarchical structure of classes defined for the report, and double-click a data field to insert it in the bottom area.

   You can add as many items and fields in the bottom area as you need. You can use the added items and fields to edit the expression.
5. To validate the expression, click the **Validate** button in the lower left.

6. Click **OK** to save the expression or **Cancel** to discard your changes.

For more information on using the **Expression Editor**, see the online product documentation supplied with Acumatica ERP (Help > Acumatica Framework > Report Designer > Using Expressions).

Saving Reports

Once you create or modify a report by using Acumatica Report Designer, you can save it locally or on an Acumatica ERP website.

By default, the opened report file is saved to the place from which it was opened. To save the opened report quickly, perform one of the following steps:

- On the menu bar, select **File** > **Save**
- On the main window toolbar, click the button .

If you perform either of these steps to save a new report, the report will be saved locally, and you will have to specify the report name and a folder to save the report. We recommend that you save your reports in the `/Site/ReportsCustomized/` folder, especially if you customize existing reports.

The website engine searches sequentially for reports and style template files in the following places:

1. The server
2. The `/Site/ReportsCustomized/` folder
3. The `/Site/ReportsDefault/` folder

You can choose where to save the report. When you are saving a new report, or when you are not sure where the opened report was originally saved, do the following:

- To save the report locally, on the menu bar, select **File** > **Save as**, and select the folder in which you want to save the report. If you save a new report, you have to specify its name.

  You can also save the report locally by clicking the button on the main window toolbar of the Report Designer.

- To save the report on an Acumatica ERP website, do the following:
  1. On the menu bar, select **File** > **Save to Server**. The **Save report on server** dialog box appears.
  2. In the dialog box, type your Acumatica ERP website URL (item 1 in the screenshot below) and your login and password (item 2).

     If your application contains more than one company, you have to type an appropriate company name with the user login in the following format: `{user login}@{company name}`. The company name is the name you select when you log in to Acumatica ERP.
  3. In the **Enter report name to save** box, specify the report name, if necessary.

     This box holds the name of the opened report. If you are saving a new report, the box is empty. You can type a new name for the report, or you can select an existing report to replace it with the new one. If you were to select an existing report, you could click the **Load reports list** button to load a list of available reports from the website (item 3).
  4. Click **OK** to save the report.

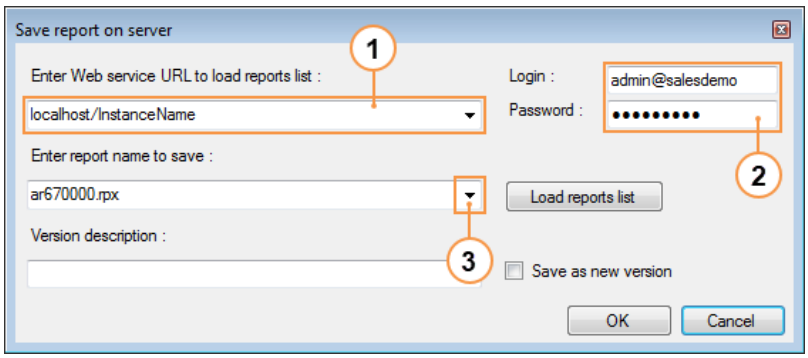


Figure: Saving a report to a server

After you have saved your report to the server of an instance or locally, you can use this report for any company of this instance.

You can save your report to an Acumatica ERP website as a new version, by selecting the **Save as new version** check box in the **Save report on server** dialog box. You can find details on saving a report as a new version in *Lesson 9*.

Running a Report

You can run the report you have created after you publish this report, which entails adding the URL of the report to the site map in Acumatica ERP. You can find details on publishing a report in *Step 4.6: Publishing and Previewing the Report* of Lesson 4.

On the **Report Parameters** tab of the form of a published report, you can opt to specify the report parameters before running the report. To execute the report, on the report form toolbar, you should click **Run Report**. To return to the report form, you can click the button on the report toolbar.

From the executed report, you can do the following by clicking appropriate commands in the report toolbar: print the report, send it via email, and export to Excel or PDF.

You can also do the following with a published report:

- *1. Edit a report*
- *2. Save a set of report parameters and settings as a template*
- *3. Filter and sort report data*
- *4. Define report print settings*
- *5. Define the email settings of a report*
- *6. Schedule a report*
- *7. Use different versions of a report*

1. Editing a Report

Once you have published a report saved to the server, you can edit the report by using its report form, if the *ReportDesigner* role is assigned to your user. To do that, on the report form toolbar, click **Edit Report** and download the file. The file name matches the report name; for example, for the `AR670000.rpx` report, the `AR670000.rps` file is downloaded. This downloaded file contains a website URL, a user login, and the report name. Open the downloaded file, and the **Open report from server** dialog box appears. In the dialog box, the website URL, the user login, and the report name are filled in automatically. You need to type only your password and click **OK** to open the report in the Report Designer.

After you change and save the report, you should reload the report form in Acumatica ERP to get the changes.

2. Saving a Set of Report Parameters and Settings as a Template

You can save as a template a set of report parameters, additional sorting and filtering conditions, and print and email settings. To do that, specify the appropriate parameters and settings, and click **Save Template** on the report form toolbar. The **Enter Template Name** dialog box appears. In this dialog box, specify the template name and click **OK**. Now you can select this template in the **Template** box on the report form to apply this set of parameters and settings to the report. You can change any parameter or setting of the selected template before running the report.

You can set any template as the default template of a report. When you open the report, the default template will be applied automatically. To set a template as the default, in the **Template** box on the report form, select the template, select the **Default** check box, and save the template. Only one template can be assigned as the default for the report. When you save a template as the default, the **Default** check box of any previous default template is cleared.

When you save a new template with the cleared **Shared** check box, the template is saved for the current user only. To share this template with other users, in the **Template** box on the report form, select the template, select the **Shared** check box, and save the template.

3. Filtering and Sorting Report Data

On the **Additional Sort & Filters** tab, you can define additional filtering and sorting conditions to apply to report data. If needed, you can save these conditions as a template. You can find more information on this functionality in *Lesson 7: Defining Additional Filters for Reports*.

4. Defining Report Print Settings

In the **Print Settings** area of the **Print and Email Settings** tab of the report form, you can define the print settings of the report. These settings will be applied when you run the report. You can save these settings as a template.

By default, each executed report is represented in HTML. Also, only one of its pages is shown on the form at a time. You can change pages by clicking the arrow buttons on the report toolbar, as shown in the screenshot below (item 1).

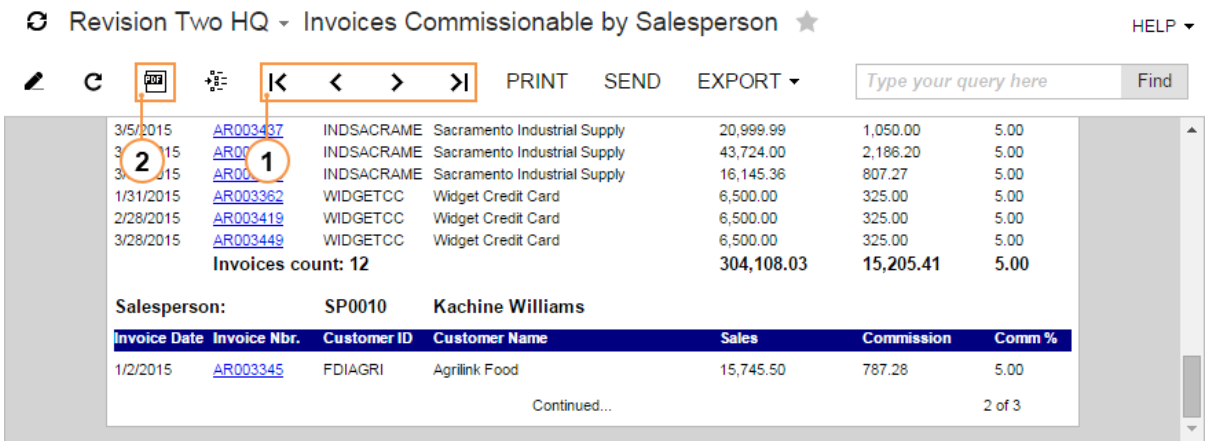


Figure: A report executed with the default print settings

You can view all pages of the executed report at a time. To do that, before you run the report, on the **Print and Email Settings** tab of the report form, select the **Print All Pages** check box.

You can view the executed report as a PDF at any time by clicking the PDF button on the report toolbar (item 2 in the screenshot above). You can also generate any report as a PDF by default. To do that, on the **Print and Email Settings** tab of the report form, select the **Print in PDF format** check box. In the PDF version, all pages of the executed report are shown at a time regardless of whether the **Print All Pages** check box is selected. You can switch the report back to the HTML version at any time by clicking the button on the report toolbar, as shown in the screenshot below.

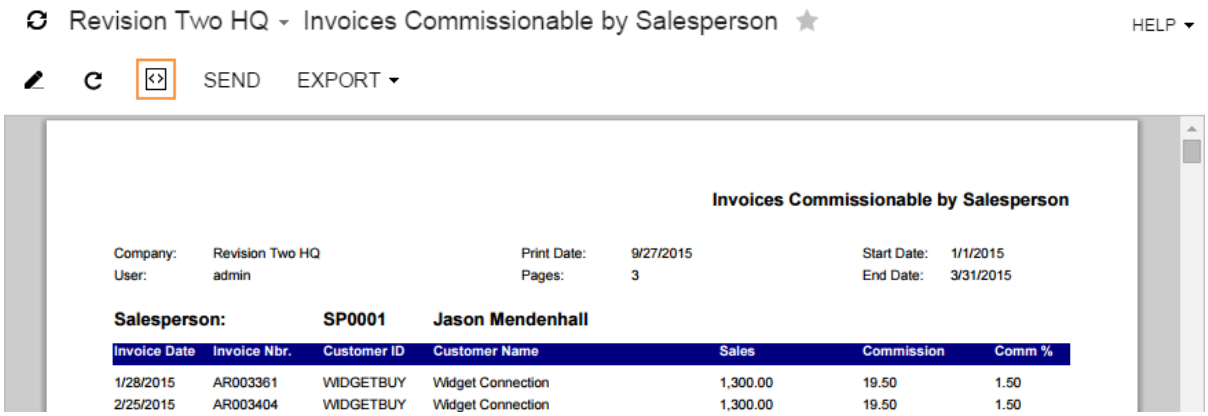


Figure: A report printed in PDF

By default, because the **Compress PDF file** and **Embed fonts in PDF file** check boxes are selected, the generated PDF is compressed with embedded fonts. These settings are also applied when you export the report to a PDF file.

You can also define the visibility of the data deleted from the database in a report by selecting one of the following values in the **Deleted Records** combo box:

- *Hide*: Hide the deleted data (default setting)
- *Print*: Print the deleted data
- *Only*: Print only the deleted data

5. Defining the Email Settings of a Report

In the **Email Settings** area of the **Print and Email Settings** tab of the report form, you can define email settings of a report, if you plan to email it. These settings will be applied when you click **Send** on the executed report form toolbar, or when the report is sent according to a schedule. You can save these settings as a template.

You can define the following email settings:

- **Format**: The report format (*HTML*, *PDF*, or *Excel*).
- **Email Account**: The recipient's email address. The value entered in this box is inserted in the **To** box of the email, which is a required email parameter (see the screenshot below). You can specify multiple email addresses separated by commas or semicolons.
- **CC**: The additional address to receive a carbon copy (CC) of the email. You can specify multiple email addresses separated by commas or semicolons.
- **BCC**: The email address to receive a blind carbon copy (BCC) of the email; the address entered in this box is hidden from the other recipients. You can specify multiple email addresses separated by commas or semicolons.
- **Subject**: The subject of the email. The **Subject** is a required parameter of the email.

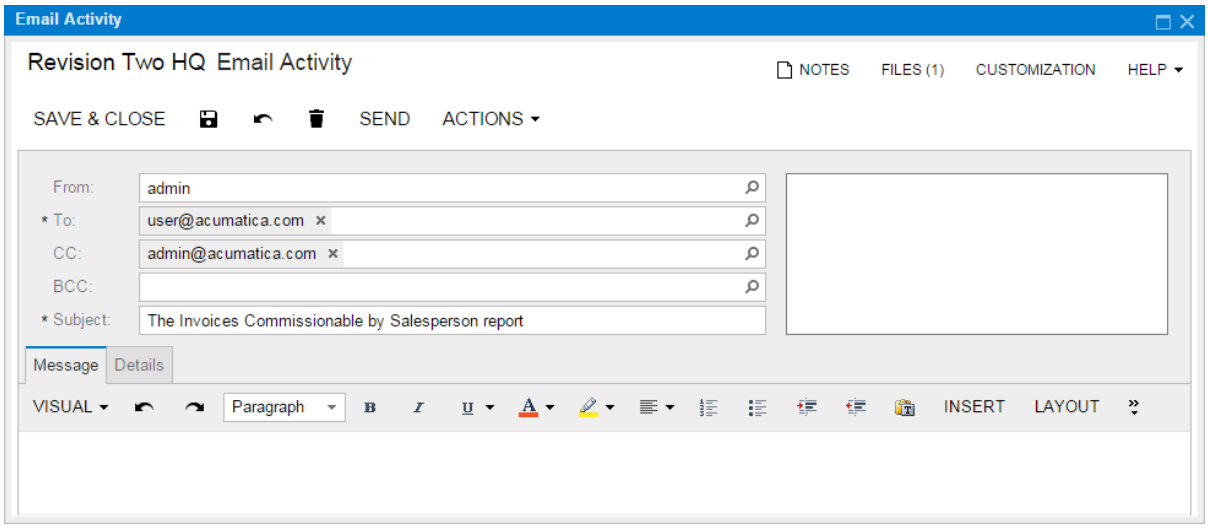


Figure: An email to send a report

You can specify the email settings for a report in the Report Designer. These settings are used instead of any email settings defined for the report in Acumatica ERP.

To specify the email settings in the Report Designer, open the report, select the report form, and define the following settings in the **MailSettings** property group:

- **ActivitySource**: The particular activity to include in the email.
- **Bcc**: The email address to receive a blind carbon copy of the email. You can specify multiple email addresses separated by commas or semicolons.
- **Body**: The body of the email.
- **Cc**: The additional address to receive a carbon copy of the email. You can specify multiple email addresses separated by commas or semicolons.
- **Format**: The report format (*HTML*, *PDF*, or *Excel*).
- **ParentSource**: The particular activity of a business account to include in the email.

  You can specify only a business account, such as a customer or a vendor, as the parent source.

- **Subject**: The subject of the email.
- **TemplateID**: A notification template to use for the email. You can manage existing templates and create new ones on the Notification Templates form (SM204003; Configuration > Email > Manage).

  In the **TemplateID** property, you can enter the notification identifier (see the screenshot below).

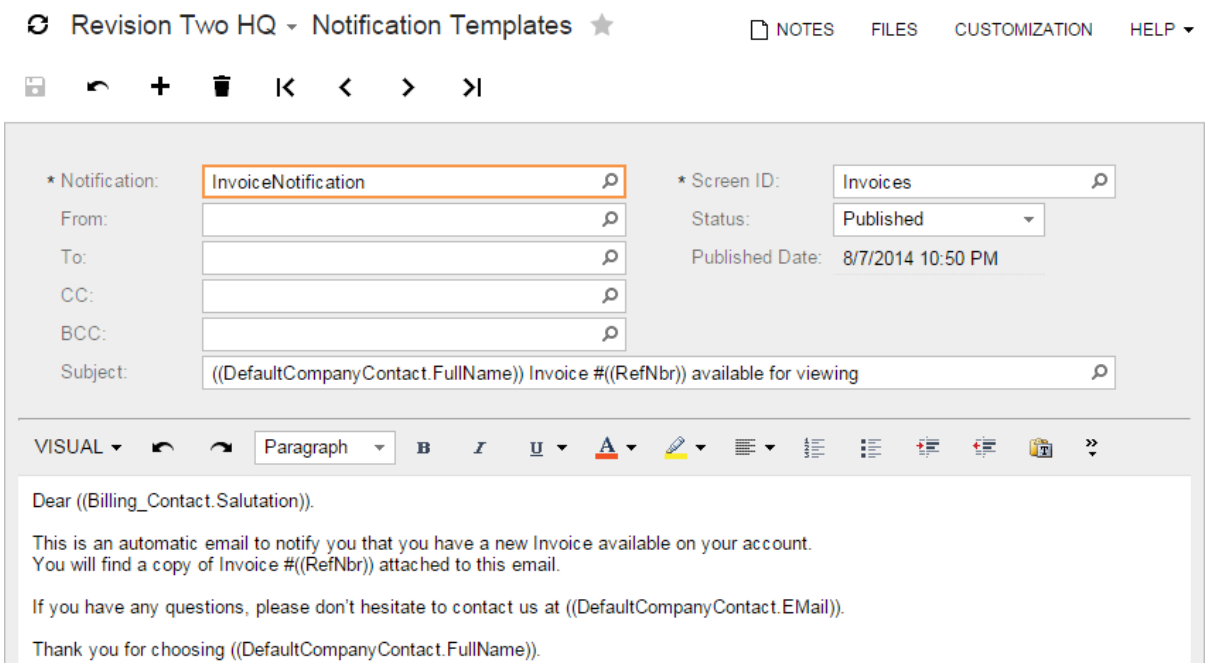


Figure: A notification template

  If the same property is defined in the **MailSettings** group of the report and in the selected template, the report property will be used instead of the template property. For example, the subject, body, and notification template are defined for a report: . In the selected notification template, the recipient's email, subject and email body are defined. If you email this report, the system will get the subject and the email body from the report properties and the recipient's email from the notification template.

- **To**: The recipient's email address. You can specify multiple email addresses separated by commas or semicolons.

For example, the Invoice/Memo report (`ar641000.rpx`) has the following **ActivitySource**: `ARInvoice.NoteID` (see the screenshot below).

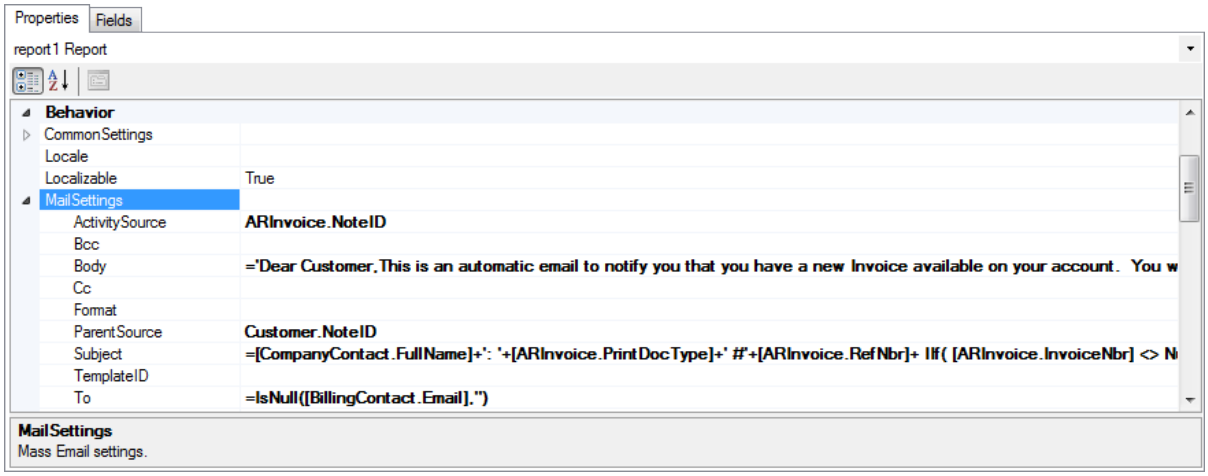


Figure: Email settings of the Invoice/Memo report (AR641000)

Based on this setting, if the user emails an invoice, the appropriate activity will be added to this invoice, as shown in the screenshot below.

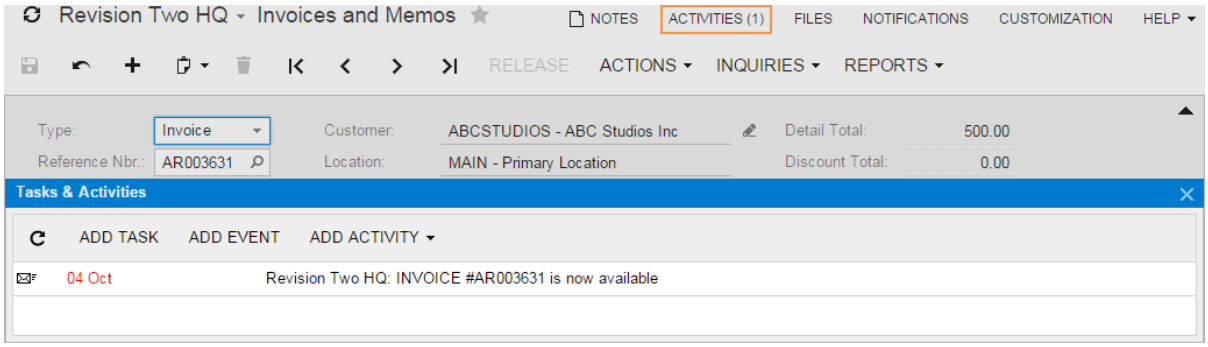


Figure: An activity created for an invoice after sending an email

ParentSource of the Invoice/Memo report (`ar641000.rpx`) is `Customer.NoteID`. Based on this setting, if the user emails an invoice, the appropriate activity will be added to the customer of the invoice, as shown in the screenshot below.

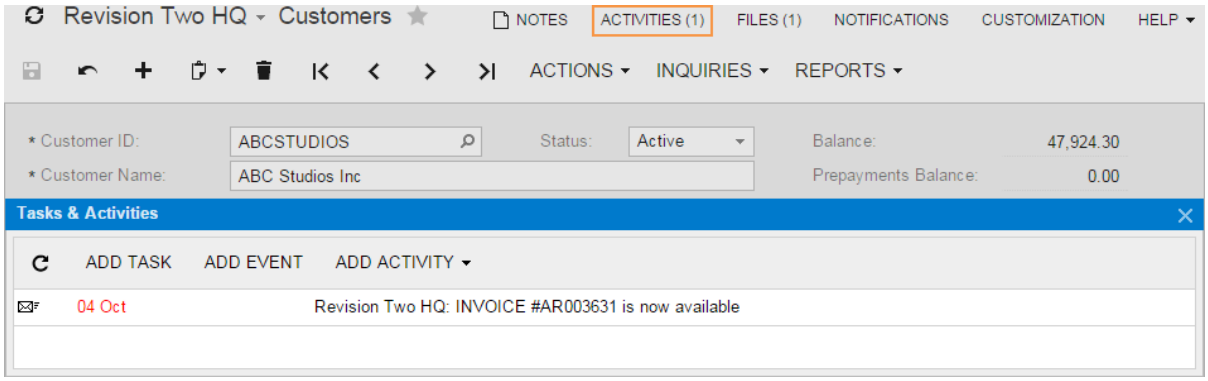


Figure: An activity created for a customer after sending an email

6.

Scheduling a Report

You can schedule report processing to email a report if the *Scheduled Processing* feature is enabled on the Enable/Disable Features form (CS100000; Configuration > Common Settings > Licensing).

To schedule a report, on the report form, select a template, which contains a set of report parameters and email settings, and click **Schedule Template** on the report form toolbar. The **Select Schedule Name** dialog box opens, as shown in the screenshot below. In this dialog box, you should select an existing schedule and click **OK**. The report results will be sent on the date and time specified in the selected schedule to the recipients specified in the report template.

If not a single schedule exists in the system, in the **Select Schedule Name** dialog box, you have to select *<Setup a schedule first>* to create a new schedule.

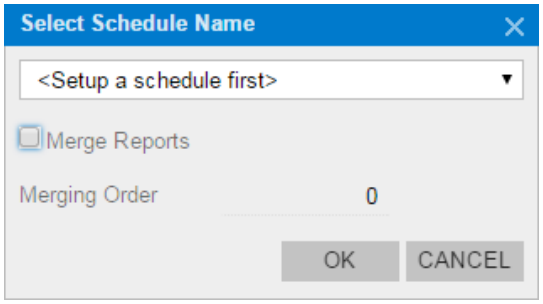


Figure: The Select Schedule Name dialog box

You can manage schedules on the Automation Schedules form (SM205020; System > Automation > Manage), as shown in the screenshot below. For each schedule, you have to specify the description, execution dates, and hours for the schedule.

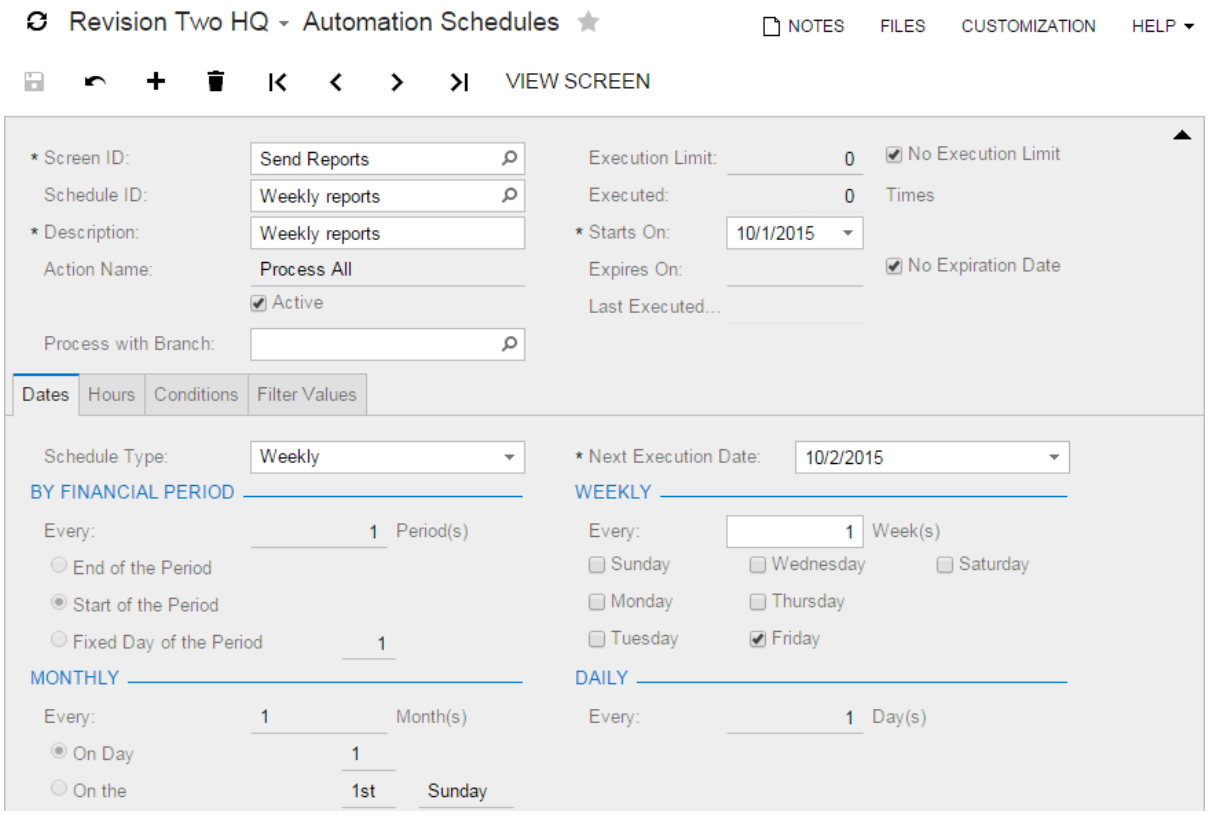


Figure: A schedule

To delete a report template from all schedules, on the report form, select the template and click **Schedule Template** on the report form toolbar. In the **Select Schedule Name** dialog box, select *<Remove from schedule>* from the drop-down list and click **OK**.

For more information on schedule processing, see the links in the Related Links section of this topic.

6. Using Different Versions of a Report

You can save the report you are editing as a new version. On the **Report Versions** tab of the report form, the user can find report versions and select one of them to execute. You can find information on using report versions in *Lesson 9*.

Related Links

Report Form
Schedule Processing

Lesson 4: Creating a Report

In this lesson, you will create the Invoices Commissionable by Salesperson report, which lists salespersons' commissions estimated from the commissionable amounts of released invoices. These commissions are listed on the **Salesperson Commissions** tab of the Invoices and Memos form (AR301000). An invoice is included if it meets the following criteria:

- Its status is *Open* or *Closed*, both of which reflect that the invoice is released.
- The type of the invoice is *INV* (*Invoice*).
- The date of the invoice falls within the date range, if the user has specified one on the report form.
- The invoice lists the salesperson, if the user has specified one on the report form.

In the report, the invoices will be grouped by salesperson and sorted by date.

In this lesson, you will go through the whole process of creating this report.

We also recommend that you complete the practice exercise at the end of the lesson.

Lesson Objectives

In this lesson, you will learn how to do the following:

- Select tables for a report
- Specify relations between tables
- Configure report parameters
- Filter report data
- Group report data
- Declare and use variables
- Configure the report layout
- Define report settings to export to Excel
- Publish and execute a report

Step 4.1: Creating the Report

To create a new report, start the Report Designer as follows: **Start** > **All Programs** > **Acumatica** > **Report Designer**. You have opened the Report Designer for the first time, so the blank report form is displayed by default.

The layout of the created report consists of three main sections—the page header section, the detail section, and the page footer section—as shown in the screenshot below.

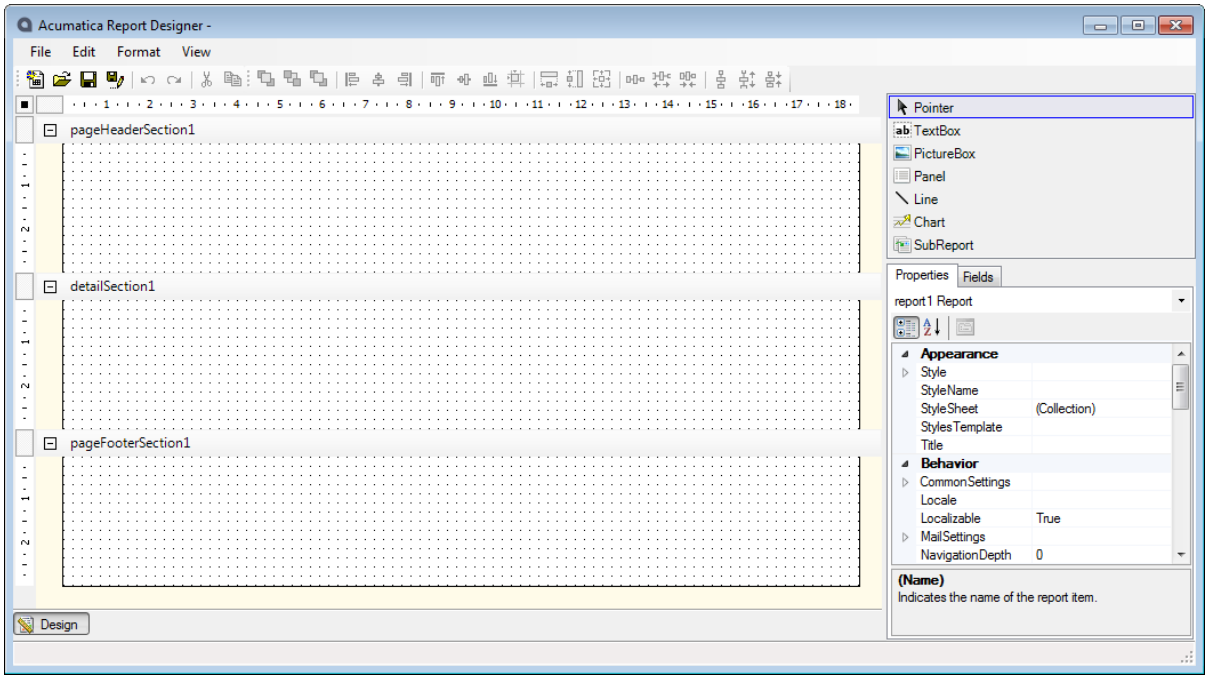


Figure: The created report

Next, you will save the report you created.

Step 4.2: Saving the Report

Save the created report to your server as follows:

1. On the menu bar of the Report Designer, select **File** > **Save to Server**. The **Save report on server** dialog box appears, as shown in the screenshot below.
2. In the dialog box, specify the following settings:
   - **Enter Web service URL to load reports list**: The application URL, for example: `http://localhost/InstanceName`
   - **Login**: `admin`

     If your application contains more than one company, type the company name with the user login as follows: `admin@SalesDemo`.
   - **Password**: The password you defined for this login
   - **Enter report name to save**: `AR670000.rpx`
3. Click **OK** to save the report.

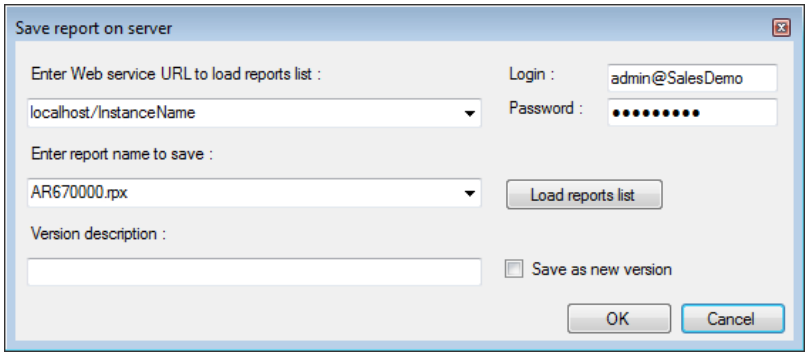


Figure: Saving the report to the server

Now you will select the data for the report.

Step 4.3: Selecting the Data for the Report

You have to define the rules the system uses to select the necessary data to be displayed in the report. This data is retrieved from the system database through the appropriate *data access classes*.

In Acumatica ERP, explore the Invoices and Memos form (AR301000; Finance > Accounts Receivable > Work Area > Enter) to recognize the classes that provide access to the necessary data. For more information, see the *Data Access Overview* topic. During this exploration, you can find the following classes, as shown in the diagram below:

- The *Customer* class provides access to the information about the customers associated with the invoices.
- The *ARInvoice* class provides access to the invoices. The *CustomerID* field of the *ARInvoice* class is the reference to the customer record.
- The *ARSalesPerTran* class provides access to the salespersons' commissions. The *RefNbr* and *DocType* fields of the *ARSalesPerTran* class are the references to the appropriate documents, including the invoices.

  The *SalesPersonID* field of the *ARSalesPerTran* class is the reference to the salesperson record.

  While you are investigating the **Salesperson Commission** tab of the Invoices and Memos form (AR301000), notice that the appropriate data fields of **Commission Amt.** and **Commissionable Amount** are *CuryCommnAmt* and *CuryCommnblAmt*, respectively. These data fields provide access to commission amounts calculated in the currency of the document.

  Every amount field in an Accounts Receivable and Accounts Payable document is stored in two currencies: the document currency and the base currency. Fields that store the amount in different currencies are usually distinguished by the *Cury* prefix. *Cury* means that the field stores the amount in the currency of the document. Therefore, for the commission amount, there are two fields in the *ARSalesPerTran* class: *CommnAmt* and *CuryCommnAmt*.

  In this lesson, you will prepare the report in the base currency. Therefore, you will use the *CommnAmt* field to retrieve the commission amount in the base currency for the report, and the *CommnblAmt* field to retrieve the commissionable amount in the base currency.
- The *SalesPerson* class provides access to the salesperson the commissions were calculated to.

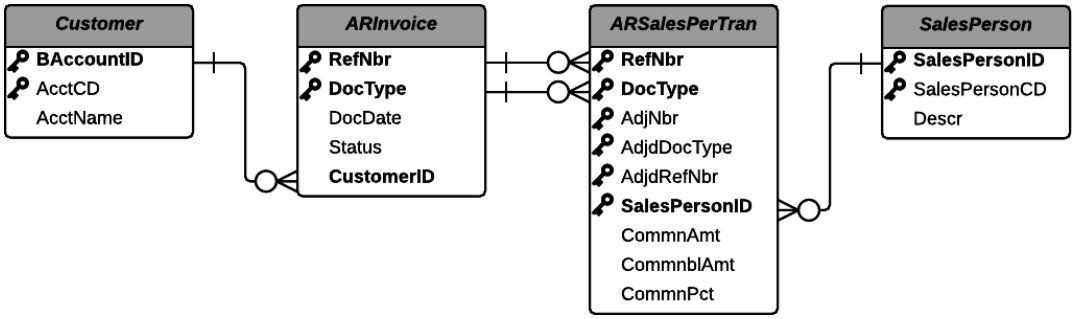


Figure: The classes and the relationships between them

In your reports, you can use the attribute fields of classes that are defined on the Attributes form (CS205000; Configuration > Common Settings > Common Settings). You can use these fields to filter report data, or to represent their values in the report.

To define the data to be selected from the database, the Report Designer provides the **Schema Builder** wizard. By using this wizard, you will perform the following tasks:

- *Loading the database schema and selecting the classes*
- *Specifying the relationships between the classes*
- *Defining the report parameters*
- *Filtering the report data*

Step 4.3.1: Loading the Database Schema and Selecting the Tables

To add to the report the classes you explored, you have to do the following:

1. *Load the database schema*
2. *Select the tables for the report*

1. Loading the Database Schema

You can load the database schema of all available classes from the application server you use to work with Acumatica ERP. To connect to the application server, do the following:

1. In the Report Designer, open the `AR670000.rpx` report from the server.
2. On the menu bar, select **File** > **Build Schema**. The **Schema Builder** wizard appears.
3. On the **Tables** tab of the **Schema Builder** wizard, do the following:
   - Type the connection string (item 1, in the screenshot below) in the following format: `http://{domain}`, where you replace `{domain}` with the actual URL to your application.
   - Type your **Login** and **Password** (item 2). If your application contains more than one company, type the appropriate company name with the user login in the following format: `{user login}@{company name}`. The company name is the name you select when you log in to Acumatica ERP.

     Acumatica Report Designer receives all information required for each report from the Acumatica ERP application server. You do not need to install Acumatica ERP locally to develop any report; instead, you can just connect to a remote server by using an appropriate URL.

   - Click the **Load schema** button (item 3). The Report Designer connects to the application server and loads the schema. When the schema is retrieved, the list of all data access classes defined in your application appears (item 4).

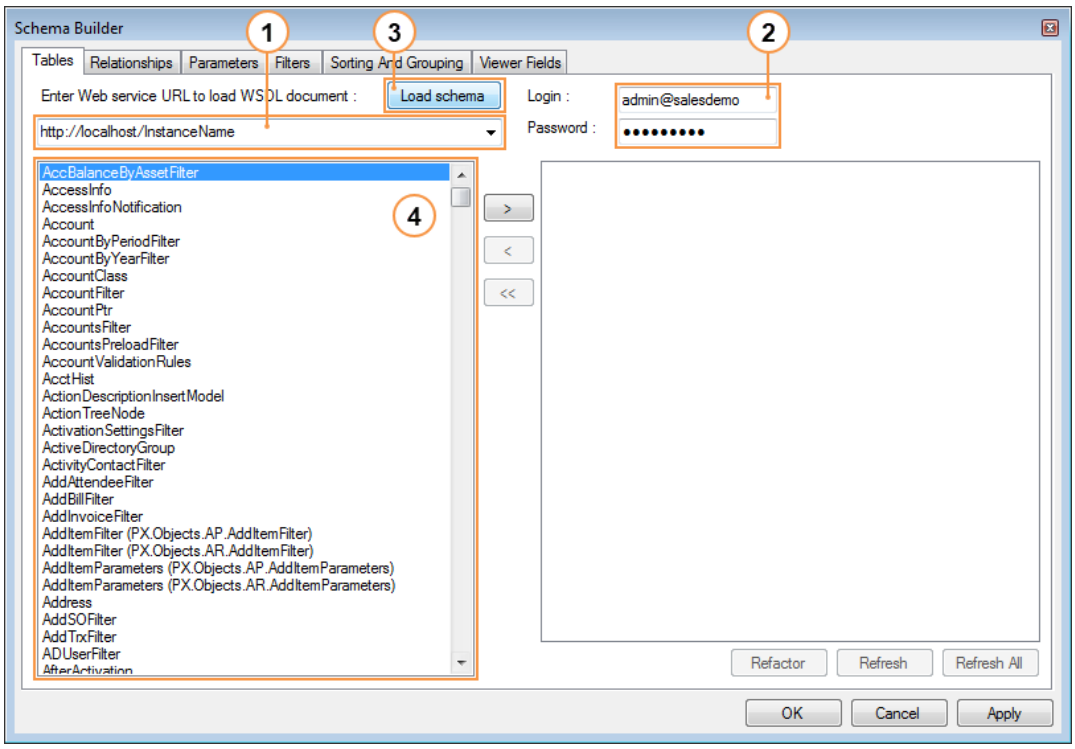


Figure: Loading the schema of the data access classes

2. Selecting the Tables for the Report

When you load the database schema, you can select the classes you found for the report. On the **Tables** tab of the **Schema Builder** wizard, do the following (see the screenshot below):

1. In the list of available data access classes (item 1), select *Customer (PX.Objects.AR.Customeer)*.
2. Click the [>] button (item 2) to move the class into the list of selected classes (item 3).
3. Repeat Steps 1 and 2 for each of the following classes:
   - *ARInvoice (PX.Objects.AR.ARInvoice)*
   - *ARSalesPerTran*
   - *SalesPerson*

   To remove a class from the list of selected classes (item 3), select the class by name and click the [<] button. To remove all the classes from the list of selected classes, click the [<<] button.
4. Click the **Apply** button to apply your changes to the report (item 4). You have to apply your changes to be able to use these changes further.

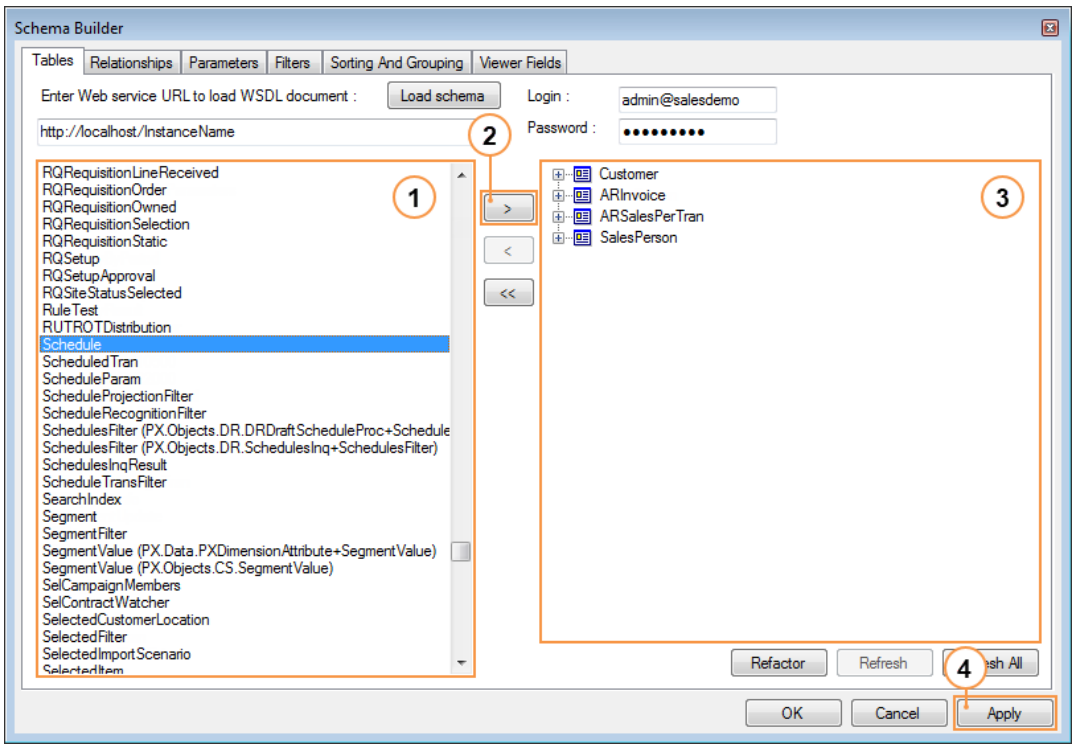


Figure: Selecting the data access classes

You have selected the tables for the report. In the next step, you will specify the relationships between the tables.

Step 4.3.2: Specifying the Relationships Between the Tables

In the **Schema Builder** wizard, you specify the relationships between the classes so that the system can generate a query. In the **Enter the report table relations here** area of the **Relationships** tab, you specify the relationships between a pair of tables. In the **Enter the data field links for the active relation** area of this tab, for each pair of related tables, you specify the links between them. To specify the relationships, do the following:

1. In the Report Designer, open the `AR670000.rpx` report from the server.
2. On the menu bar, select **File** > **Build Schema**. The **Schema Builder** wizard appears.
3. On the **Relationships** tab of the **Schema Builder** wizard, add the lines with the following settings to link the *ARSalesPerTran* and *ARInvoice* classes:
   - **Enter the report table relations here** area:

Parent Table	Join Type	Child Table
ARSalesPerTran	*Inner*	*ARInvoice*

   - **Enter the data field links for the active relation** area:

Parent Field	Link Condition	Child Field
RefNbr	*Equal*	*RefNbr*
DocType	*Equal*	*DocType*

In the **Enter the report table relations here** area, you select the classes to be linked.

In the **Enter the data field links for the active relation** area, you link the classes of the row selected in the **Enter the report table relations here** area, as shown in the screenshot below.

To add the first row to the **Enter the data field links for the active relation**area, you click anywhere in the area, and the empty row appears.

- If you need to delete any class relationships and data field links, you can click the relevant row in the area, and press Delete. If you delete a row in the **Enter the report table relations here** area, the appropriate rows in the **Enter the data field links for the active relation** area are deleted automatically.
- In the **Enter the data field links for the active relation** area, you can use formulas in the **Parent Filed** and **Child Field** columns of a particular row by clicking the row and then clicking the **Parent Formula** and **Child Formula** buttons respectively. You can find an example of using formulas in these columns in *Lesson 8: Using Images and QR Codes*

.

4. Add the lines with the following settings to link the *ARInvoice* and *Customer* classes:

- **Enter the report table relations here** area:

Parent Table	Join Type	Child Table
ARInvoice	*Inner*	*Customer*

- **Enter the data field links for the active relation** area:

Parent Field	Link Condition	Child Field
CustomerID	*Equal*	*BAccountID*

5. Add the lines with the following settings to link the *ARSalesPerTran* and *SalesPerson* classes:

- **Enter the report table relations here** area:

Parent Table	Join Type	Child Table
ARSalesPerTran	*Inner*	*SalesPerson*

- **Enter the data field links for the active relation** area:

Parent Field	Link Condition	Child Field
SalesPersonID	*Equal*	*SalesPersonID*

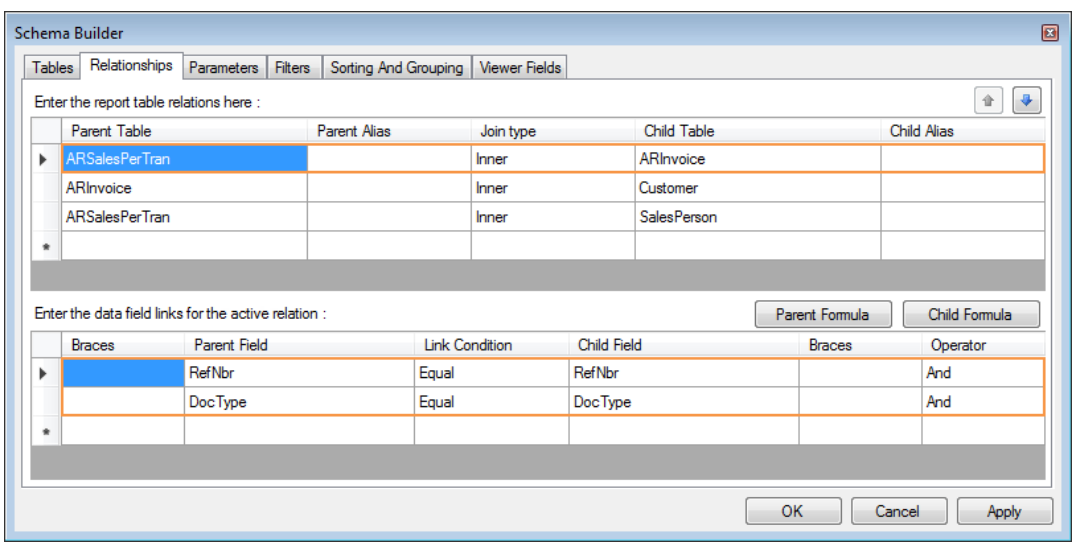


Figure: Configuring the classes relationships

6. Apply your changes to the report.

You have specified the relationships between the tables. In the next step you will define the report parameters.

Step 4.3.3: Defining the Report Parameters

You can specify parameters for the report you are creating. The user will be able to define the values for the parameters before run the report. For this report, the user can specify the date range and the salesperson. To configure these parameters, do the following:

1. In the Report Designer, open the `AR670000.rpx` report from the server.
2. On the menu bar, select **File** > **Build Schema**. The **Schema Builder** wizard appears.
3. On the **Parameters** tab of the **Schema Builder** wizard, click **Add** to add three parameters with the following settings to the parameters list:
   - The settings of the first parameter are the following:
     - **Name**: `DateFrom`
     - **Data Type**: *DateTime*
     - **Prompt**: `Date From`
     - **Default Value**: `=[@QuarterStart]`
     - **Allow Null**: Selected
   - The settings of the second parameter are the following:
     - **Name**: `DateTo`
     - **Data Type**: *DateTime*
     - **Prompt**: `Date To`
     - **Default Value**: `=[@QuarterEnd]`
     - **Allow Null**: Selected
   - The settings of the third parameter are the following:
     - **Name**: `SalesPerson`
     - **View Name**: `=[SalesPerson.SalesPersonCD]`
     - **Prompt**: `Salesperson`
     - **Allow Null**: Selected

   Based on the *DateTime* data type that you have selected for the **Date From** and **Date To** parameters, the calendar dialog box will open when the user selects their values on the report form. Based on the default values that you have selected for these parameters—that is, *@QuarterStart* and *@QuarterEnd*, the report shows salespersons' commissions for the current quarter by default.

   Based on the key field you have selected as the **View Name** of the **Salesperson** parameter, a user can select a salesperson in the appropriate lookup table on the report form.

   You can select a value or specify an expression in the **View Name** or **Default Value** in the **Expression Editor**, which you can open by clicking the button at the right of the boxes.

   Based on the selection of the **Allow Null** check box for all the parameters, a user can execute the report without specifying a date range and a salesperson.

   For all the parameter that you have added, you left the **Visible** check box selected, which is its default value, because with the cleared check box the parameters will not appear on the **Report Parameters** tab of the report form.

   Once you apply your changes to the report, the parameters you added are available in the list of parameters in the **Expression Editor**. The parameter names start with the `@` symbol, as with `@SalesPerson`.

   If you were to delete a parameter, you would select it in the parameters list, and click **Remove**.

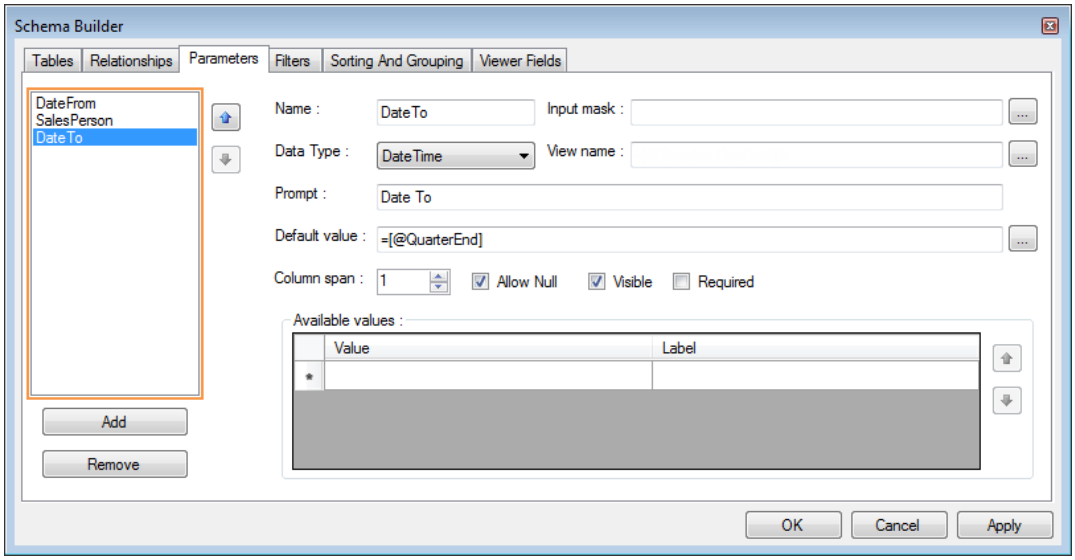


Figure: Adding the parameters of the report

4. Apply your changes to the report.

For more information on report parameters, see the *Defining Report Parameters* topic of this course.

You have defined the report parameters. In the next step you will specify the filtering conditions for the report.

Step 4.3.4: Filtering the Report Data

For the report you are designing, you also have to specify the filtering conditions, which determine the data to be retrieved.

The report is being designed to show salespersons' commissions for released invoices. Optionally, the user can specify the date range of the invoices to be included in the report. The user can also select a salesperson to view the commissions for only that salesperson.

Based on these specifications, you can specify the following conditions for each commission to be listed:

- If the user has selected a date in the **Date From** box, the invoice date must be greater than or equal to the *DateFrom* parameter value—that is, after or the same as the specified date.
- If the user has selected a date in the **Date To** box, the invoice date must be less than or equal to the *DateTo* parameter value—that is, before or the same as the specified date.
- If the user has selected a salesperson in the **Salesperson** box, the commission must be associated only with the selected salesperson.
- The invoice type must be `INV`, which corresponds to the *Invoice* type.
- The status of the invoice must be `N` or `C` (*Open* or *Closed*, respectively), which means that the invoice is released.

To add these conditions to the report, do the following:

1. In the Report Designer, open the `AR670000.rpx` report from the server.
2. On the menu bar, select **File** > **Build Schema**. The **Schema Builder** wizard appears.
3. On the **Filters** tab of the **Schema Builder** wizard, add the rows with the following settings, as shown in the screenshot below:

Braces	Data Field	Condition	Value 1	Braces	Operator
	ARInvoice.DocType	*Equal*	`INV`		*And*
(	*ARInvoice.Status*	*Equal*	`N`		*Or*

Braces	Data Field	Condition	Value 1	Braces	Operator
	ARInvoice.Status	*Equal*	`C`	*)*	*And*
(	*ARInvoice.DocDate*	*GreaterOrEqual*	`@DateFrom`		*Or*
	@DateFrom	*IsNull*		*)*	*And*
(	*ARInvoice.DocDate*	*LessOrEqual*	`@DateTo`		*Or*
	@DateTo	*IsNull*		*)*	*And*
	ARSalesPerTran.CommnAmt	*Greater*	`0`		*And*
(	*SalesPerson.SalesPersonCD*	*Equal*	`@SalesPerson`		*Or*
	@SalesPerson	*IsNull*		*)*	*And*

In the **Data Field** column, you can specify an expression if you select an appropriate row and click the **Data Field Formula** button to open the **Expression Editor**.

The second and third rows (item 1 in the screenshot below) are a pair and specify one condition. The `N` value of *ARInvoice.Status* corresponds to the *Open* status, and the `C` value of *ARInvoice.Status* corresponds to the *Close* invoice status. The invoice cannot have both statuses at the same time. Thus, these rows are enclosed in brackets and joined with the *Or* operator.

The fourth and fifth rows (item 2) are a pair and specify one condition. The fifth row is used when the user does not select any date in the **Date From** box. The fourth row is used when the user selects a date in the **Date From** box. These events cannot happen at the same time. Thus, these rows are enclosed in brackets and joined with the *Or* operator.

The sixth and seventh rows (item 3) are a pair and specify one condition. The seventh row is used when the user does not select any date in the **Date To** box. The sixth row is used when the user selects a date in the **Date To** box. These events cannot happen at the same time. Thus, these rows are enclosed in brackets and joined with the *Or* operator.

Based on the condition specified in the eighth row (item 4), you are excluding the data with the zero commission amounts from the report results.

The ninth and tenth rows (item 5) are a pair and specify one condition. The tenth row is used when the user does not select any salesperson, so the commissions of all the salespersons will be selected. The ninth row is used when the user selects a salesperson, so only the commissions associated with this salesperson will be selected. These events cannot happen at the same time. Thus, these rows are enclosed in brackets and joined with the *Or* operator.

To delete any filter condition you have defined, click the relevant row in the table, and press DELETE.

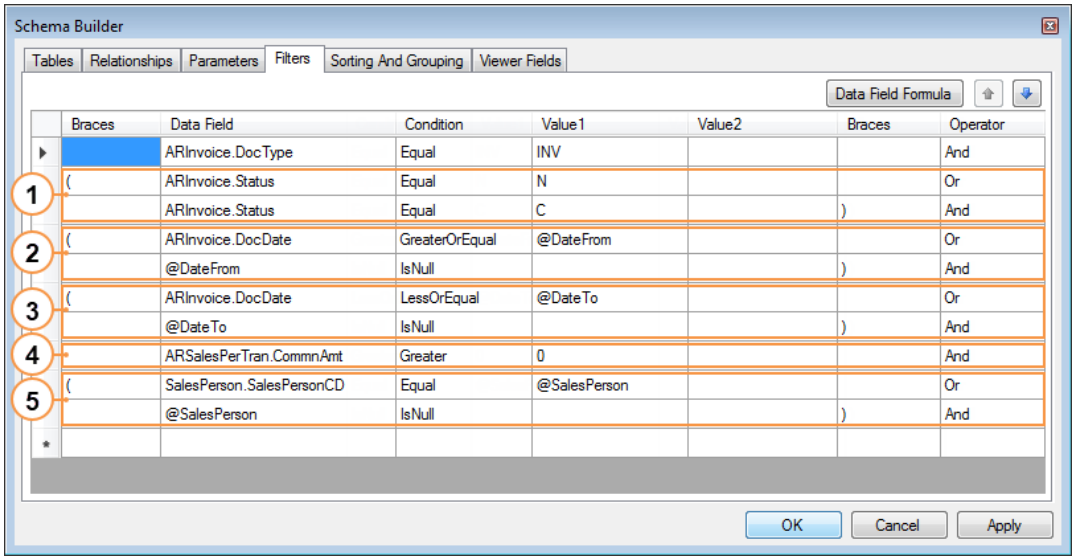


Figure: Defining the filter conditions

4. Click **OK** to apply your changes to the report and to close the **Schema Builder** wizard.

5. On the toolbar of the Report Designer main window, click the button to save your changes to the report. By default, the report will be saved to the same place, because in *Step 4.2: Saving the Report* you saved the report to the server.

   You can also save the report by pressing CTRL+S.

You have specified the filtering conditions for the report.

Step 4.4: Configuring the Report Layout

You have defined the rules to select the necessary data to display in the report. Now you will configure the visual presentation of this data by performing the following tasks:

- *Defining the data groups for the report*
- *Defining sorting rules*
- *Selecting style templates*
- *Adding elements to the report layout*
- *Making a link for values of a text box*

Step 4.4.1: Defining the Data Groups for the Report

You can use data groups to structure and logically group data in a report. For this report, you will group commissions by salesperson. To configure this grouping condition, do the following:

1. In the Report Designer, open the `AR670000.rpx` report from the server.
2. On the **Properties** tab, select the *report1 Report* object (item 1 in the screenshot below) from the drop-down list to select the report form.

   You can also select the report form by performing one of the following steps:

   - Click the top left box under the toolbar on the report form (item 2). The black square will appear in the box.
   - Right-click any place of any section on the report layout and select **Select report1**.

3. On the **Properties** tab, select the **Groups** property, and click the button (item 3) to open the **Group Collection Editor** dialog box.

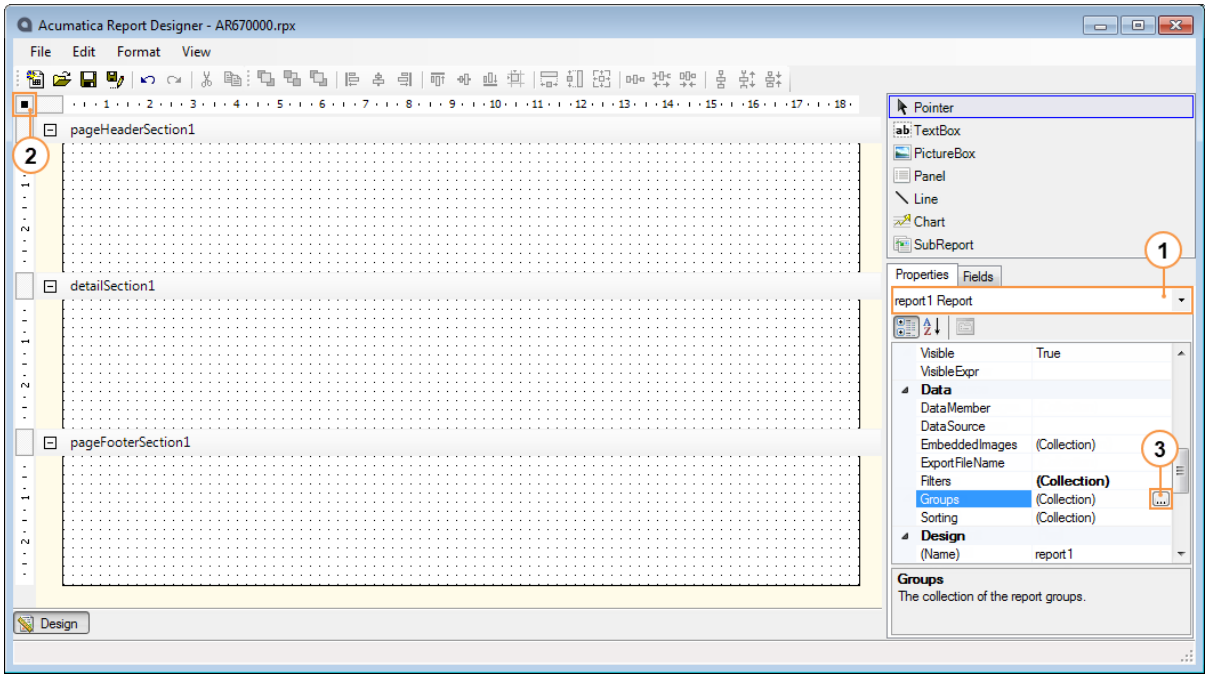


Figure: Specifying the grouping conditions

4. In the **Group Collection Editor** dialog box, click **Add** (item 1 in the screenshot below) to add a new group.
5. Select the created group, and specify the following settings:
   - **KeepTogether**: *FirstDetail*
   - **PrintEmpty**: *False*

- **(Name)**: `SalesPerson`

The **KeepTogether** property defines whether the entries of the group should be printed on the same page. The following values are available for this property:

- *WholeGroup* means that all entries of the group are printed on the same page with the group header section, if possible.
- *FirstDetail* means that at least one entry of the group is printed on the same page with the group header section.
- *None*, the default value, means that entries of the group can be printed separately with the group header section.

Based on the *FirstDetail* value you selected for the **KeepTogether** property, the report may be larger (in terms of number of pages) but easier to read than it would be with the *None* value, but it will be shorter than with the *WholeGroup* value.

The **PrintEmpty** property specifies whether an empty group section is printed. Based on the *False* selection, any group without entries will not be printed.

6. In the **Grouping** property of the *SalesPerson* group, click the button (item 2) to open the **GroupExp Collection Editor** dialog box.

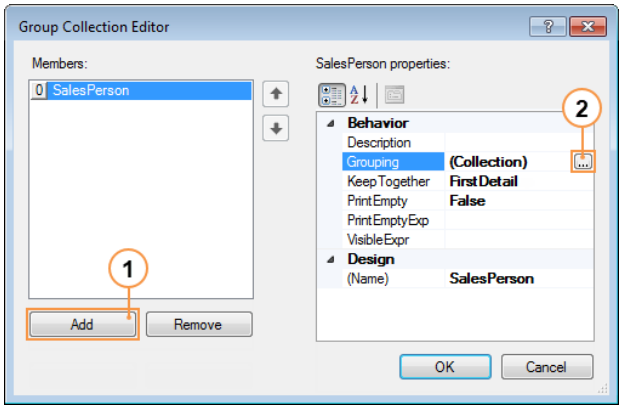


Figure: Adding a new group

7. In the **GroupExp Collection Editor** dialog box, click **Add** to add a new grouping expression. As the **Data Field** value, type: `SalesPerson.SalesPersonCD`, as shown in the screenshot below. Based on this expression, the nested data records will be grouped.

> If you used the **Expression Editor** to define the grouping expression, the value you selected for **Data Field** would be `=[SalesPerson.SalesPersonCD]`. This expression is also correct.

The group you are adding to the report is ordered in ascending order by default, based on the **Sort Order** value. You could change this sort order by selecting the *Descending* value.

Click **OK** to apply the settings you made and close the **GroupExp Collection Editor** dialog box.

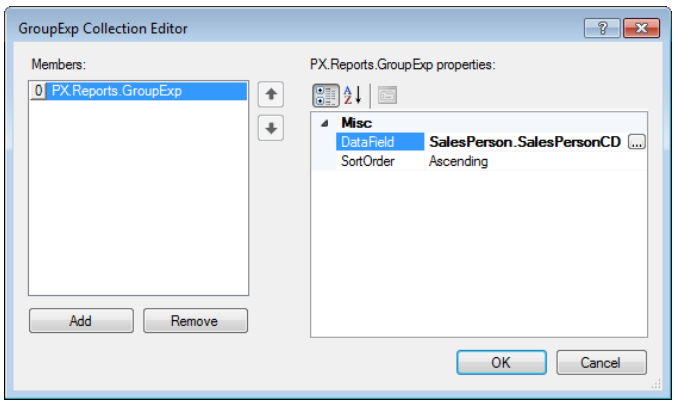


Figure: Specifying the grouping expression

8. In the **Group Collection Editor** dialog box, click **OK** to apply the grouping conditions and close the dialog box.

9. Save your changes to the report.

You have added the **SalesPerson** group to the report. The appropriate group header and group footer are shown on the report layout, as shown in the screenshot below.

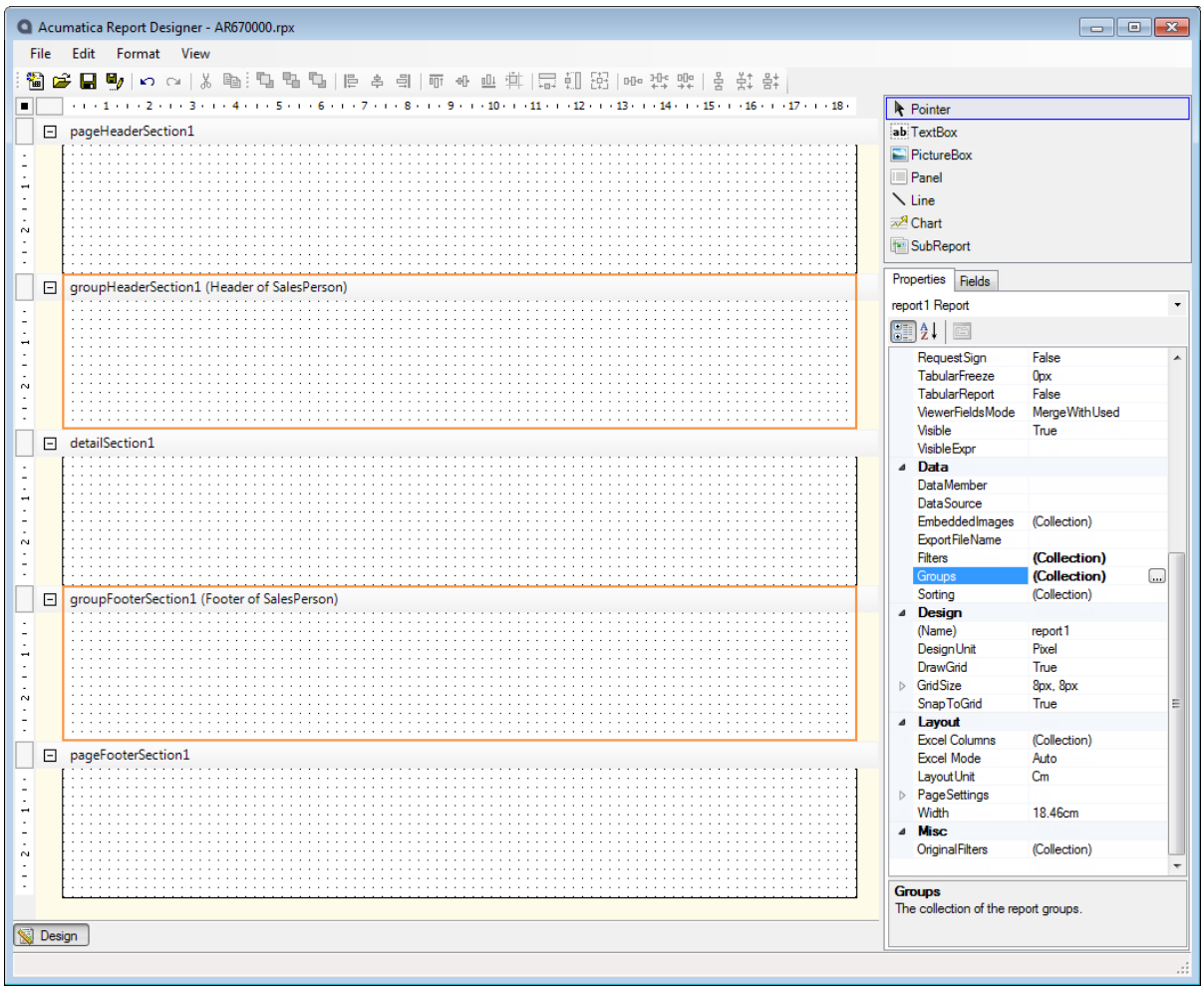


Figure: Viewing the created group

Step 4.4.2: Defining Sorting Rules for the Report

You can specify how the report data is sorted—that is, the order in which the results should be displayed in the detail section of the report. At first, the report data is sorted according to the sorting rules of the group sections, and then the data of the detail section is sorted according to the sorting rules of the report.

You sorted the report by salesperson in ascending order when you defined the grouping rules. Now you will sort the list of each salesperson's commissions by invoice date. To specify this sorting rule, do the following:

1. In the Report Designer, open the `AR670000.rpx` report from the server.
2. On the **Properties** tab, select *report1 Report* from the drop-down list to select the report form.
3. Select the **Sorting** property, and click the button to open the **SortExp Collection Editor** dialog box.
4. In the dialog box, click **Add** to add a new sorting expression. In its **Data Field**, select *ARInvoice.DocDate*, as shown in the screenshot below. Based on this expression and the default value of **Sort Order**, the data of the detail section will be sorted by invoice date in ascending order.

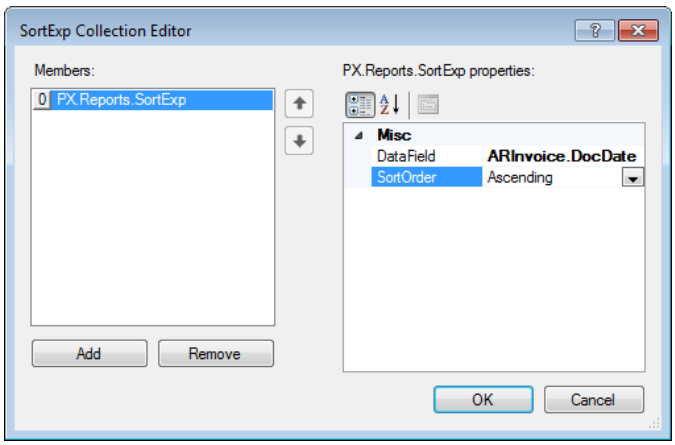


Figure: Specifying the sorting expression

5. Click **OK** to apply the settings you made and close the **SortExp Collection Editor** dialog box.
6. Save your changes to the report.

You have specified the sorting rules to the report.

Step 4.4.3: Selecting Style Templates

Style templates are extremely useful for quick and uniform formatting of text displayed in a report. In the `Site/ReportsDefault/` folder, you can find the following files with default style templates:

- `TemplateReport.rpx`: Contains styles that you can use for reports
- `TemplateForm.rpx`: Is intended for printable pages

These template files are also available on the server.

You can use existing styles, as well as define your own custom styles required for the application. To define your own style, create a new report, select the report form, specify the style collection in the **StyleSheet** property, and save this report locally or on the server. Then you can use this report as a style template.

You can also manually adjust the style of elements in the properties of the **Style** group.

To specify a style template file for the report, do the following:

1. In the Report Designer, open the `AR670000.rpx` report from the server.
2. On the **Properties** tab, select *report1 Report* from the drop-down list to select the report form.

3. In the **StyleTemplate** property, click the button and select the `TemplateForm.rpx` file.

   To select the template file from the server, you can just enter the name of the template file as the value of the **StyleTemplate** property.

4. Save your changes to the report.

You have specified the file containing the style templates for the printable page. Next, you will add elements on the report layout and apply style templates to them.

For more information on applying the style templates, see the links in the Related Links section of this topic.

Related Links

Report Designer — Recommendations (Recommended Predefined Styles)

Step 4.4.4: Adding Elements to the Report Layout

You have defined the sections of the report layout and configured the sorting rules. Now you will visually lay out the report. To do that, you will add to the report layout some of the elements listed in the top right area of the Report Designer and configure these elements.

You will configure the following sections:

1. *The page header section*
2. *The group header section*
3. *The detail section*
4. *The group footer section*
5. *The page footer section*

1. Configuring the Page Header Section

You will use the page header section to print the following common information on each page:

- The report name
- The company name
- The user who printed the report
- The print date
- The number of printed pages
- The date range specified by the user (if applicable)

To configure the page header section and add appropriate elements to the report, do the following:

1. In the Report Designer, open the `AR670000.rpx` report from the server.
2. On the page header section, to add a text box to print the report name, click **TextBox** in the elements list (as shown in the following screenshot) and then click the place where you want to put the box. You can move elements on the report layout by dragging them. Place the text box in the top right corner of the page header section.

   You can also add an element to the report layout by performing one of the following steps:

   - Drag the element from the elements list to the needed location.
   - Select a section to add the element and then double click the element in the list. The element will be added in the top left corner of the selected section.

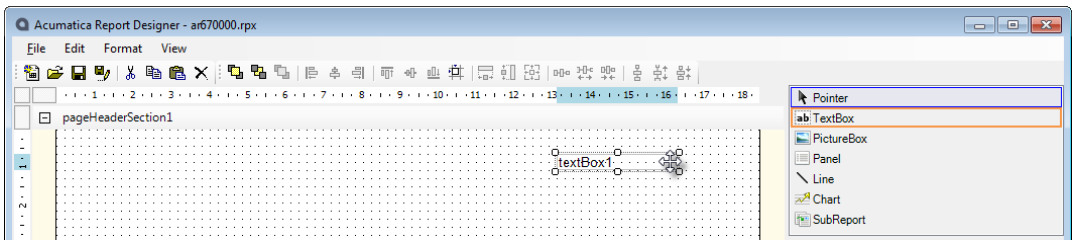


Figure: Placing a text box on the report layout

3. Configure the added text box as follows:

- The height of any new added text box is 16 pixels. Enlarge the text box height by 8 pixels by dragging the handle at the bottom of the box so that the text box height becomes 24 pixels, as shown in the following screenshot. The spacing between lines of the regular grid of the report layout is 8 pixels by default.

  You can also specify the text box height on the **Properties** tab in the **Size** > **Height** property.

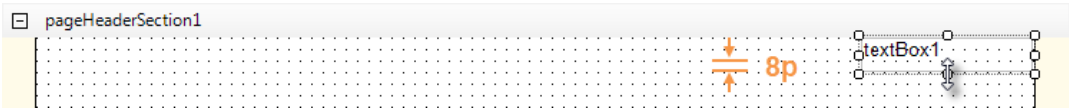


Figure: Changing the size of the text box

  Similarly, you can change a size of any element of the report layout, including the height of any section.

- Double-click the text box you added, and type inside `Invoices Commissionable by Salesperson`. You have defined the **Value** property of the text box through the report layout directly.
- In the **Style** > **Text Align** property, select *Right*.
- In the **StyleName** property, select *Report Name*. The list of styles shown in the **StyleName** property depends on the style template you have selected for the report.
- Adjust the text box width so that its entire text is visible in the box.

  You can remove any element from the report layout. To do that, select the element by clicking it, and press Delete.

4. Add 12 text boxes with the following values, as shown in the screenshot below:

- `Company`: (item 1 in the screenshot below)
- `=Report.GetDefUI('CompanyBAccount.AcctName')` (item 2)

  `GetDefUI(object field)` is an application function you can use to get the value of the `object field` parameter. Based on the value you entered, the text box shows the company name.

- `User`: (item 3)
- `=Report.GetDefUI('AccessInfo.DisplayName')` (item 4)

  Based on this value, the text box shows the name of the user who executed the report. You can use the fields of the `AccessInfo` class to get information as follows:

  - `AccessInfo.DisplayName`: The user login
  - `AccessInfo.CompanyName`: The company name

  - `AccessInfo.BusinessDate`: The Acumatica ERP business date
  - `AccessInfo.BranchID`: The branch identifier

- `Print Date:` (item 5)
- `=Today()` (item 6)

  `Today()` is a date and time function that returns the current date according to the system date on the local computer; you can use the `@Today` predefined parameter and get the same result. Based on this value, the text box shows the print date of the report.

  If you also want to print the time, you should use the `Now()` date and time function, and set the **Format** of the text box to `g`, which is a *standard format specifier*. The `Now()` and `Today()` functions use user's time zone. You can also use the `NowUTC()` and `TodayUTC()` functions to get date and time in the UTC standard.

- `Pages:` (item 7)
- `=[PageCount]` (item 8)

  `PageCount` is a global variable that returns the page count value for the current report. Based on this value, the text box shows the number of pages of the report. For more information on variables, see the links in the Related Links section of this topic.

- `Start Date:` (item 9)
- `=IsNull(@DateFrom, '___/___/_____')` (item 10)

  `IsNull(value, nullValue)` is a shortcut function that returns the `value` argument if it does not equal `NULL`. If the `value` argument equals `NULL`, the function returns the `nullValue` argument. Based on the function you entered, the text box shows the date that the user has selected in the **Date From** box. If the user has not specified the **Date From** parameter, the text box shows the string ___/___/_____.

- `End Date:` (item 11)
- `=IIf(@DateTo=NULL, '___/___/_____', @DateTo)` (item 12)

  `IIf(expression, truePart, falsePart)` is a shortcut function that returns the `truePart` argument if the `expression` evaluates to `True`. Otherwise, if `expression` evaluates to `False`, the function returns the `falsePart` argument. Based on the function you entered, the text box shows the date that the user selected in the **Date To** box, if any. Otherwise, the text box shows the string ___/___/_____.

  For more information on functions, see the links in the Related Links section of this topic.

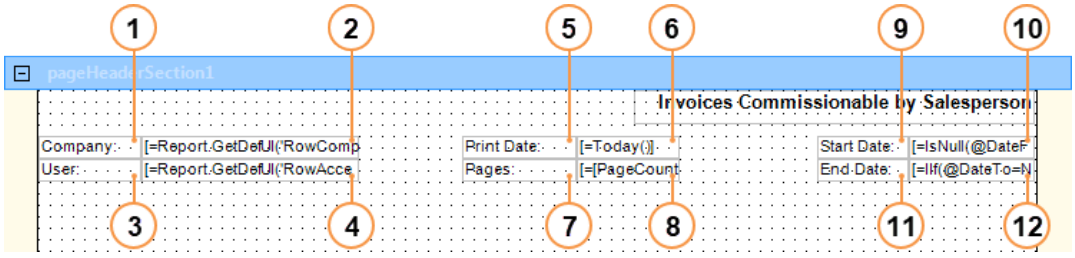


Figure: Previewing the page header section

5. Select all the text boxes you added in the previous step (as shown in the following screenshot), and in the **StyleName** property, select *Report Params*.

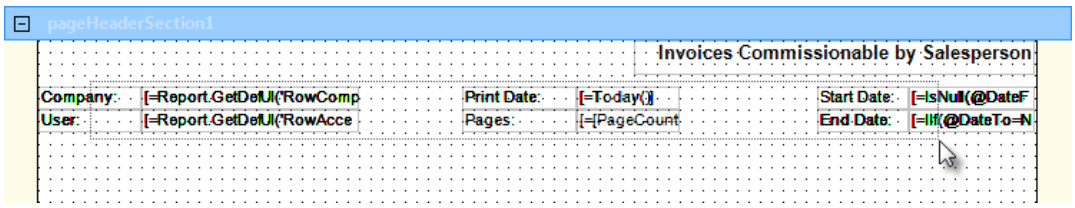


Figure: Selecting multiple elements

Notice that the values you entered in the text boxes, which start with =, are enclosed in square brackets on the report layout, as with `[=Today()]`. If you select any of these text boxes, you cannot find these square brackets in their **Value** on the **Property** tab. These brackets indicate that the text box value is not just a string constant; it is an expression.

In the rest of this document, we will refer to a layout element by the value that the element displays. For expressions, we will omit square brackets and the equal symbol and speak of, for example, the **Print Date:** text box, the **Today()** text box, or the **PageCount** text box.

6. Decrease the height of the header section so that there are 16 pixels of empty space at the bottom of the section, as shown in the following screenshot.

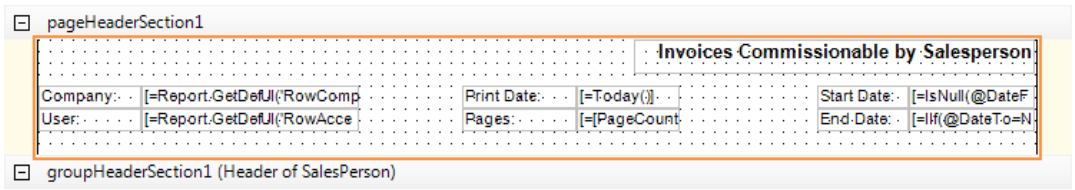


Figure: Previewing the page header section

7. Save your changes to the report.

If the designer shows a red X on a visual element, as shown in the screenshot below, this means that the element overlaps on the layout with some other element. You have to adjust the layout and move or resize the elements as needed. Overlapping elements will not cause a run time error in the report; but only one of these elements will be shown in the printed report.

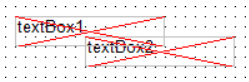


Figure: Identifying overlapping elements

2. Configuring the Group Header Section

You will use the group header section to print the following information for each group:

- The name and identifier of the salesperson whose commissions are listed in the detailed section
- The column headers for the data of the detail section

To configure the group header section and add appropriate elements to the report, do the following, as shown in the screenshot below:

1. On the group header section, to print the salesperson's identifier and name, add the text boxes with the following values:

- `Salesperson:` (item 1 in the screenshot below)
- `=[SalesPerson.SalesPersonCD]` (item 2)
- `=[SalesPerson.Descr]` (item 3)

2. Select all the text boxes you added in the previous step and enlarge their height by 8 pixels. In the **StyleName** property, select *Report Name*.
3. Add text boxes with the following values to print column headers:
   - `Invoice Date` (item 4)
   - `Invoice Nbr.` (item 5)
   - `Customer ID` (item 6)
   - `Customer Name` (item 7)
   - `Sales` (item 8)
   - `Commission` (item 9)
   - `Comm %` (item 10)
4. Select all the text boxes you added in the previous step, and then in the **StyleName** property, select *Heading1BCColored*.
5. Decrease the height of the group header section so that there are 8 pixels of empty space at the bottom of the section.

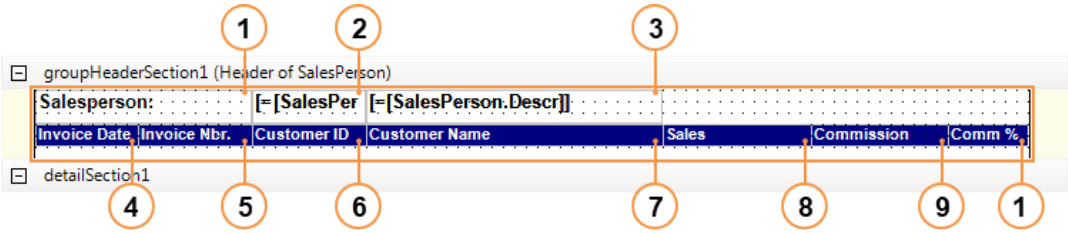


Figure: Previewing the group header section

6. On the **Properties** tab, select *groupHeaderSection1* from the drop-down list to select the page header section.

   You can also select the section by performing one of the following steps:
   - Click the section header on the report layout.
   - Click any empty place of the section on the report layout.
   - Right-click any element of the section, such as a text box, and select **Select groupHeaderSection1**
7. In the **PrintOnEveryPage** property of the page header section, select *True*.

   Based on this setting, the group header section is printed on each page of the report. This can make the report easier to read because if the user specifies a broad date range, the data of the detail section can span several pages. You have also selected the *FirstDetail* value for the **KeepTogether** property of the group section in *Step 4.4.1: Defining the Data Groups for the Report*; thus, the data of the detail section can span two pages regardless of the date range. With the group header printed on each page, the report will become more readable.
8. Save your changes to the report.

3. Configuring the Detail Section

You will use the detail section to print the following commission information for each salesperson:

- The invoice date and number
- The applicable customer's identifier and name

- The applicable commissionable amount, commission amount, and commission percent

To configure the detail section and add appropriate elements to the report, do the following:

1. To print detailed information in the detail section, add text boxes with the following values:
   - `=[ARInvoice.DocDate]` (item 1 in the screenshot below)
   - `=[ARInvoice.RefNbr]` (item 2)
   - `=[Customer.AcctCD]` (item 3)
   - `=[Customer.AcctName]` (item 4)
   - `=[ARSalesPerTran.CommnblAmt]` (item 5)
   - `=[ARSalesPerTran.CommnAmt]` (item 6)
   - `=[ARSalesPerTran.CommnPct]` (item 7)

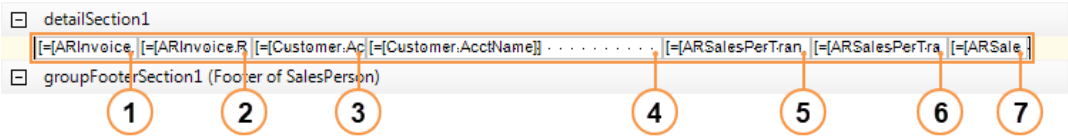


Figure: Previewing the detail section

2. Select all the text boxes you added in the detail section, and then in the **StyleName** property, select *Normal*.
3. Select the **ARSalesPerTran.CommnPct** text box on the report layout (item 7 in the screenshot above). In the **Format** property, type `0.00`.

   Based on this format specifier, the values of the text box will be formatted as shown in the following examples:

   - 23.45678 -> 23.46
   - 0.4 -> 0.40
   - .45 -> 0.45

   If it is hard for you to find the property at a glance on the **Properties** tab, you can arrange the list of properties by categories or alphabetically by clicking or respectively on the tab toolbar.

   For more information on formatting values, see the *Formatting Values to Be Displayed on a Report* topic of this course.
4. Decrease the height of the detail section so that no empty space remains at the bottom of the section.
5. Save your changes to the report.

4. Configuring the Group Footer Section

You will use the group footer section to display the following subtotals for the salesperson:

- The total commissionable amount
- The total commission amount
- The average commission percent

To configure the group footer section and add appropriate elements to the report, do the following:

1. Add a text box to the group footer section (item 1 in the screenshot below), and specify the following settings:

- **Value**: `=SUM([ARSalesPerTran.CommnblAmt])`
- **Format**: `N`

This text box shows the total commissionable amount for the salesperson.

2. Add the next text box (item 2), and specify the following settings:
   - **Value**: `=SUM([ARSalesPerTran.CommnAmt])`
   - **Format**: `#,#.00`

   This text box shows the total commission amount for the salesperson.

   Based on this format specifier, the values of the text box will be formatted as shown in the following examples:
   - 123456789 -> 123,456,789.00
   - 123.456789 -> 123.46
   - .123456789 -> .12
3. Add the last text box (item 3), and specify the following settings:
   - **Value**: `=AVG([ARSalesPerTran.CommnPct])`
   - **Format**: `=[ARSalesPerTran.CommnblAmt.Format]`

   This text box shows the average commission percent for the salesperson.
4. Select all the text boxes you added in the group footer section and enlarge their height to 24 pixels by dragging the handle at the bottom of any box. You can also manually specify the **Size** > **Height** property of each text box.
5. With all the text boxes still selected, in the **StyleName** property, select *Report Name*.
6. Decrease the height of the group footer section so that there are 8 pixels of empty space at the bottom of the section.
7. Save your changes to the report.

Figure: Previewing the group footer section

5. Configuring the Page Footer Section

You will use the page footer section to print the following common information at the bottom of each page:

- The number of the current page
- A notification that there is at least one additional page in the report

To configure the page footer section and add appropriate elements to the report, do the following:

1. Add a text box to the group footer section (item 1 in the screenshot below), and specify the following settings:
   - **Value**: `Continued...`
   - **VisibleExpr**: `=[PageIndex]<[PageCount]`

2. Add another text box (item 2), and specify the following settings:

   - **Value**: `=[PageOf]`

   The **VisibleExpr** property holds the expression that specifies the visibility of the text box value in the executed report; this value overrides the value of the **Visible** property, if it was set explicitly. If the expression returns `True`, the value is visible. Based on the expression you have entered, the text box value is visible in the executed report if the number of current page is less than the number of pages of the report. Thus, all report pages contain the `Continued...` notification except the last page.

   You can also define the visibility of a section by specifying its **VisibleExpr** property, or hide the section from the executed report by selecting *False* in the section's **Visible** property.

3. Select all the text boxes you added in the report footer section, and in the **StyleName** property, select *Normal*.

4. Decrease the height of the detail section height so that no empty space remains at the bottom of the section.

5. Save your changes to the report.

Figure: Previewing the page footer section

Notice that the default value of the **ProcessOrder** property of the page footer section is *Always*. The **ProcessOrder** property is commonly used for sections and particular text boxes. Once this property has been specified for a section, the property is applied to every text box in this section unless it is overridden for a text box.

The **ProcessOrder** property specifies when the text box value is processed during the report generation. A text box value can be processed when the data is read from the database (*WhileRead*), when the report is printed (*WhilePrint*), or in both cases (*Always*). In most cases, when a value is just read from the database and then displayed in the report, *WhileRead* is enough. However, if the value being calculated depends on data that will be known only at the report rendering stage, the *WhilePrint* mode should be specified.

For example, you have added two text boxes to the page footer section. The visibility of the `Continued...` notification depends on the page number and page count, which are calculated by the `PageIndex` and the `PageCount` global parameters, respectively. Both numbers for each page will be known only at the report rendering stage. Similarly, the page number, which is calculated by the `PageOf` global variable, will be known only at the report rendering stage. Page numbers are typical data fields that require the *WhilePrint* processing mode. Thus, *Always*, which is the default value for the page footer section, is an appropriate setting. If you select the *WhileRead* setting for the page footer section, the `Continued...` notification will be printed on every page, and the page number will never be printed.

Now that you have configured the page header section (the last available section of the report), you have configured the report (see the screenshot below).

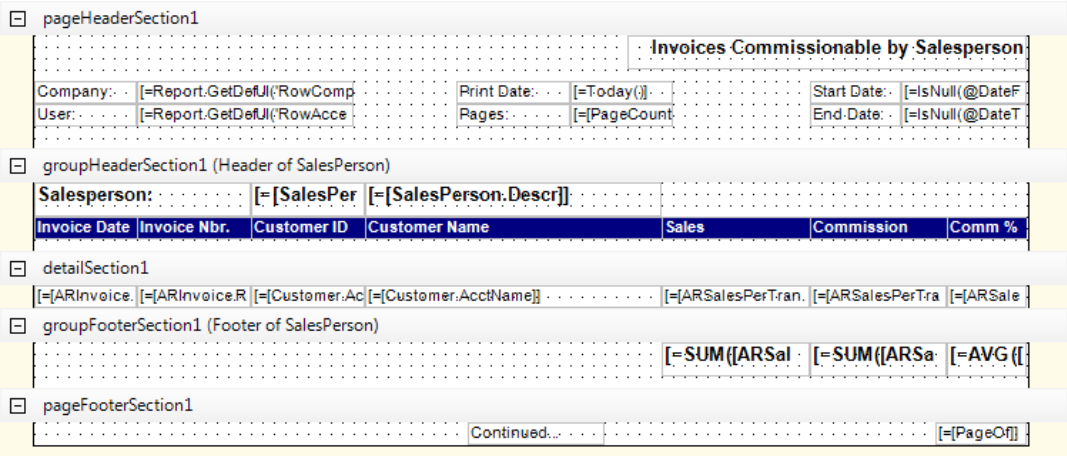


Figure: Previewing the report layout

Related Links

Parameters
Operators
Functions

Step 4.4.5: Making a Link for a Text Box

You can configure a text box so that its value will contain a link to a form or report in Acumatica ERP or to any external object. The user can click the link to get the appropriate information. For example, the value of a text box that holds the customer's name or identifier can be a link to the form for the appropriate customer. In this case, the user could view more information about the customer by clicking the customer name or identifier in the generated report.

You will configure the report you are creating so that the user will be able to do the following:

- Open the Salesperson form (AR205000) for the salesperson by clicking the salesperson's name
- Open the Invoices and Memos form (AR301000) for the invoice by clicking its number
- Open the Customer Details report (AR651000) for the customer by clicking the customer's name

Perform the following steps:

1. In the Report Designer, open the `AR670000.rpx` report from the server.
2. To specify a link to the Salesperson form (AR205000), do the following:
   a. In the group header section, select the **SalesPerson.Descr** text box.
   b. In the **NavigateMethod** property of this text box, select *Server*.

   By default, the server method is used to navigate to a specific object referenced by the data access class of the field specified in the text box. For the **SalesPerson.Descr** text box, this class is *SalesPerson*.
3. To specify a link to the Invoices and Memos form (AR301000) manually, do the following:
   a. Log in to the *SalesDemo* company of Acumatica ERP.
   b. Open the Invoices and Memos form (AR301000; Finance > Accounts Receivable > Work Area > Enter), open an invoice, and copy its URL, which should be similar to the following link.

   ```
   http://localhost/InstanceName/Main.aspx?
   CompanyID=SalesDemo&ScreenId=AR301000&DocType=INV&RefNbr=AR003628
   ```

   c. In the Report Designer, in the detail section, select the **ARInvoice.RefNbr** text box.

d. Make sure that the value of the **NavigateMethod** property of the text box is *Client*, which is the default navigation method.

e. Select the **NavigateUrl** property of the text box and click the button to open the **Expression Editor**. In the **Expression Editor**, past the URL you copied in Acumatica ERP. This URL contains elements that are specific to the application, company, and document selected. In the code below, these elements are shown enclosed in curved brackets.

```
{application URL}Main.aspx?{company
 name}&ScreenId=AR301000&DocType={document
 type}&RefNbr={document number}
```

f. Remove from the URL the Acumatica ERP URL (`{application URL}`) and the company name (`{company name}`), because the URL has to be correct for any application and company; therefore, the system sets them automatically. An ampersand `&` is used as the connection symbol between elements in the URL. If you exclude the company name, you will have to delete the ampersand that follows it as well.

```
Main.aspx?ScreenId=AR301000&DocType={document
 type}&RefNbr={document number}
```

g. In the URL, replace the document type (`{document type}`) and the document number (`{document number}`) with the appropriate data fields. Thus, the URL will be correct for any row of the detail section. You also have to start the URL with an equal sign (=), because you can use data fields in expressions only. Connect the data fields and the parts of the URL with a plus sign (+), and enclose each piece of the divided URL in single quotes. The URL will look as shown below.

```
='Main.aspx?ScreenId=AR301000&DocType='
 +[ARInvoice.DocType]+'&RefNbr='+[ARInvoice.RefNbr]
```

You have specified the URL.

h. Click **Validate** to validate the formula.

If the validation passes successfully the **Validate** button becomes unavailable and its caption is changed to **Validated**.

i. Click **OK** to close the **Expression Editor**.

4. To specify a link to the Customer Details report (AR651000), do the following:

a. In the detail section, select the **Customer.AcctName** text box.

b. In the **NavigateMethod** property, select *Server*.

c. In the **NavigateReport** property, select the `AR651000.rpx` file.

To select a report from the server, you can just enter the name of the report file as the value of the **NavigateReport** property.

To find out the name of a report file, in Acumatica ERP, you can open the Site Map form (SM200520). In the table in the right pane, find the report. The **Url** column holds the URL to the report form, such as: `~/Frames/ReportLauncher.aspx?ID=AR651000.rpx`. The report file name is at the end of this URL.

In the **NavigateParams** property, you have to specify the appropriate external parameter to be transferred to the report selected in the **NavigateReport** property, which is the Customer Details report. The names and types of these external parameters have to match the names and types of the Customer Details report parameters.

To find out the names and types of report parameters, you can open the report in the Report Designer, open the **Schema Builder** wizard, and review the **Parameters** tab.

d. Select the **NavigateParams** property and click the button to open the **ExternalParameter Collection Editor** dialog box.

e. In the dialog box, click **Add** to add a new external parameter, and specify the following settings, as shown in the screenshot below:

- **Name**: `CustomerID`
- **ValueExpr**: `=[Customer.AcctCD]`

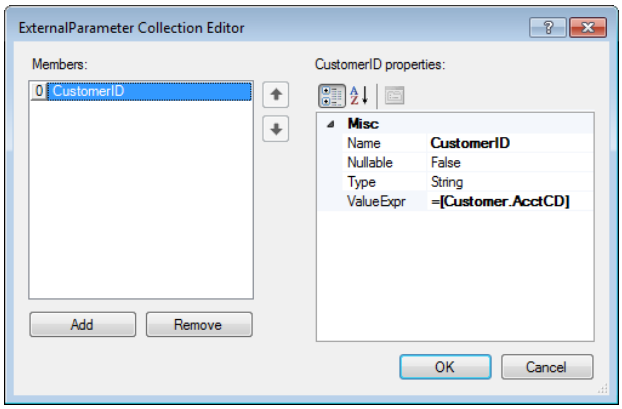


Figure: Adding an external parameter

f. Click **OK** to apply the settings you made and close the **ExternalParameter Collection Editor** dialog box.

5. Save your changes to the report.

You can define whether clicking a link causes the system to navigate to the page in the same window or to open a new one. You can specify one of the following settings in the **Target** property of the text boxes that hold the links:

- To navigate in the same window: `main`
- To navigate in a new window: `_blank`

Step 4.5: Using Variables

You can use variables to calculate values based on the expressions defined for them, to store these values, and to make them available in all sections of the report.

Suppose that you need to calculate the number of commissionable invoices for each salesperson in the detail section, and show this number in the group footer section with the subtotals. To do this, you will add a variable to the report. Do the following:

1. In the Report Designer, open the `AR670000.rpx` report from the server.
2. On the report layout, click the header of the detail section to select this section.

   You are going to add the variable to the detail section, because your purpose is to calculate the number of invoices that are listed in the detail section.
3. In the **Variables** property, click the button to open the **ReportVariable Collection Editor** dialog box.
4. In this dialog box, click **Add** to create a new variable, and specify the following settings, as shown in the screenshot below:

   - **Name**: `InvCount`
   - **ResetGroup**: *SalesPerson*
   - **ValueExpr**: `=$InvCount+1`

   Based on the setting you entered for the **ValueExpr** property, the value of the `$InvCount` variable increases by 1 for each new row of the detail section.

   Based on the setting you selected for the **ResetGroup** property, the value of the `$InvCount` variable resets to 0 when a new salesperson's group begins.

   You can also reset the value of a variable to 0 by specifying an expression in the **ResetExpr** property. When this expression returns *True*, the variable is reset to 0.

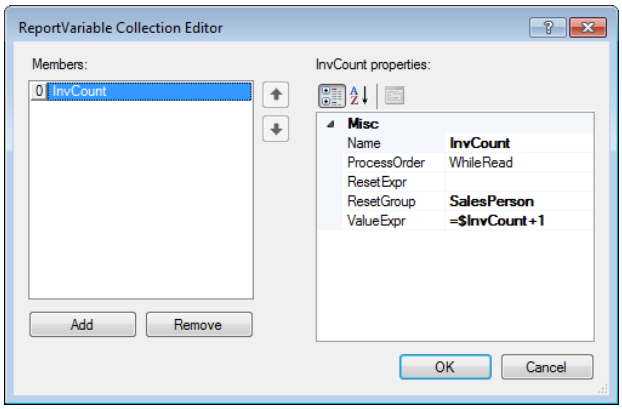


Figure: Adding a new variable

5. Click **OK** to close the dialog box and add the variable to the report. When you use this variable in expressions, you precede its name with a dollar sign (`$`) as follows: `$InvCount`.
6. Add a text box to the group footer section, as shown in the screenshot below, and specify the following settings:

   - **Value**: `='Invoices count: ' + $InvCount`
   - **StyleName**: *Report Name*
   - **Size** > **Height**: `24px`

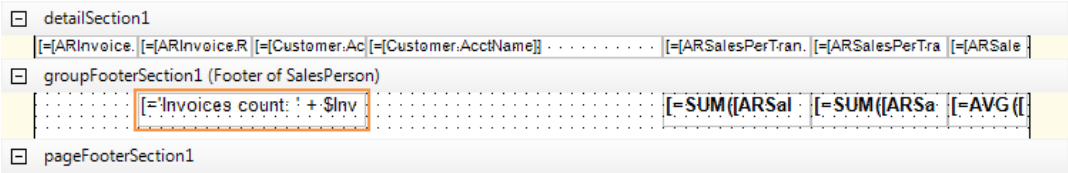


Figure: Changing the size of the text box

7. Save your changes to the report.

You have declared the variable in the detail section and used this variable in the page footer section.

If you were to declare the same variable in multiple sections, the variable would be shared between them. If the variable is modified in one section, the new value of the variable will be passed to the next section where the variable is used. The variable is initiated in the topmost section where it is used. Then the variable is sequentially modified in the following sections in the order these sections are printed in the report.

For more information on using variables, see the online product documentation supplied with Acumatica ERP (Help > Acumatica Framework > Report Designer > Using Variables).

Step 4.6: Publishing and Previewing the Report

You have to publish the report, which entails adding the URL of the report to the site map in Acumatica ERP to make it possible for users to run the report. To do that, complete the following steps:

1. Log in to the *SalesDemo* company of Acumatica ERP.
2. On the Site Map form (SM200520; System > Customization > Manage), in the left pane, select *Company* > *Finance* > *Accounts Receivable* > *Reports* > *Audit*.

   In the table in the right pane, add a new row, and specify the following settings, as shown in the screenshot below:

   - **ScreenID**: `AR.67.00.00`
   - **Title**: `Invoices Commissionable by Salesperson`
   - **Url**: `~/Frames/ReportLauncher.aspx?ID=AR670000.rpx`

   If you have saved your report both to the server and locally with the same name, Acumatica ERP opens the report from the server. In this case, if you need to modify this report, you have to open it from the server.

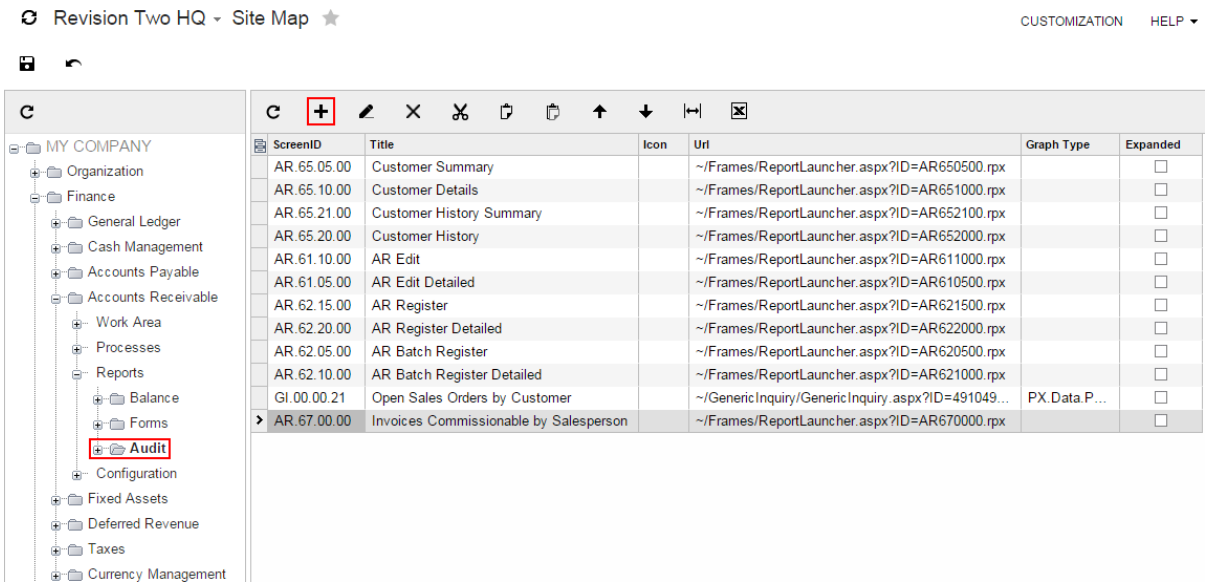


Figure: Adding the report to the site map

3. Save your changes to the site map.
4. Add the report to a workspace in the modern UI as follows:
   - **a.** If you are in the classic UI, switch to the modern UI.
   - **b.** In the main menu, click **Receivables**.
   - **c.** In the main menu, click configuration menu (three dots in the bottom left corner) and then click **Edit Menu** to switch to the Menu Editing mode.
   - **d.** Click **Add Menu Item**.
   - **e.** In the **Select Forms** box, type `Invoices Commissionable by Salesperson`.
   - **f.** Select the check box to the right of the *Invoices Commissionable by Salesperson* report.
   - **g.** Click **Add & Close** to add the selected report to the workspace and close the dialog box.
   - **h.** In the **Other** section of the workspace, find the *Invoices Commissionable by Salesperson* report, and, on the report pop-up toolbar, click Edit (the pencil icon).
   - **i.** In the **Category** box of the **Form Parameters** dialog box, select *Reports*.
   - **j.** Click **OK** to move the report to the **Reports** section and close the dialog box.

   k. In the **Reports** section, select the check box to the left of the *Invoices Commissionable by Salesperson* report to add it to the quick menu by default.

   l. Click **Exit Edit Menu** to save you changes and exit the Menu Editing mode.

   Notice that the *Invoices Commissionable by Salesperson* report appeared in the **Reports** section of the **Receivables** workspace.

5. Open the Invoices Commissionable by Salesperson report form (AR670000; Finance > Accounts Receivable > Reports > Audit).

6. On the **Report Parameters** tab, specify the report parameters, if needed.

7. On the form toolbar, click **Run Report** to execute the report. To return to the report form, click the button on the form toolbar, as shown in the screenshot below.

Revision Two HQ - Invoices Commissionable by Salesperson

HELP

PRINT SEND EXPORT Type your query here Find

Invoices Commissionable by Salesperson

Company: Revision Two HQ
User: admin

Print Date: 10/2/2015
Pages: 2

Start Date: 7/1/2015
End Date: 9/30/2015

Salesperson: SP0001 Jason Mendenhall

Invoice Date	Invoice Nbr.	Customer ID	Customer Name	Sales	Commission	Comm %
7/25/2015	AR003628	WIDGETBUY	Widget Connection	2,000.00	30.00	1.50
	Invoices count: 1			**2,000.00**	**30.00**	**1.50**

Salesperson: SP0002 Michal Bujacek

Invoice Date	Invoice Nbr.	Customer ID	Customer Name	Sales	Commission	Comm %
7/14/2015	AR003627	BIBIMBAB	Bibimbab Korean Restaurant	439.60	2.20	0.50
	Invoices count: 1			**439.60**	**2.20**	**0.50**

Salesperson: SP0003 Steve Church

Invoice Date	Invoice Nbr.	Customer ID	Customer Name	Sales	Commission	Comm %
7/7/2015	AR003625	CHOCOLATE	Chocolate By Design	23,850.00	1,192.50	5.00
7/10/2015	AR003611	ABCSTUDIOS	ABC Studios Inc	20,332.00	101.66	0.50
7/9/2015	AR003612	ABARTENDE	USA Bartending School	78.00	3.90	5.00
7/9/2015	AR003621	INDSUPPLY	Industrial Supply Inc	25,226.95	1,261.35	5.00
7/6/2015	AR003619	INDSACRAME	Sacramento Industrial Supply	7,018.20	35.09	0.50
7/6/2015	AR003613	MICROCHIP	Microchip Restaurant	47,658.00	2,382.90	5.00
7/9/2015	AR003626	SNOSHORT	Shortstop Sports	46,116.00	2,305.80	5.00
7/7/2015	AR003624	TOYSTAR	Star America Toys	61,700.00	3,085.00	5.00
7/7/2015	AR003617	ELEVATION	Elevation Computers	20,740.00	103.70	0.50
	Invoices count: 9			**252,719.15**	**10,471.90**	**3.50**

Salesperson: SP0005 Eric Killian

Invoice Date	Invoice Nbr.	Customer ID	Customer Name	Sales	Commission	Comm %
7/3/2015	AR003623	TOYONEILL	O'Neill's Trading	48,353.30	2,417.67	5.00
	Invoices count: 1			**48,353.30**	**2,417.67**	**5.00**

Salesperson: SP0007 Joshua Mueller

Invoice Date	Invoice Nbr.	Customer ID	Customer Name	Sales	Commission	Comm %
7/31/2015	AR003609	ARTCAGES	Artcages	5,700.00	5.70	0.10
	Invoices count: 1			**5,700.00**	**5.70**	**0.10**

Salesperson: SP0008 Jay Parker

Invoice Date	Invoice Nbr.	Customer ID	Customer Name	Sales	Commission	Comm %
7/10/2015	AR003611	ABCSTUDIOS	ABC Studios Inc	26,592.30	1,329.62	5.00
7/7/2015	AR003614	FDICOCCIA	Cocciatari Pizza	10,608.00	530.40	5.00
7/14/2015	AR003627	BIBIMBAB	Bibimbab Korean Restaurant	3,999.60	199.98	5.00
7/12/2015	AR003618	ELITEANSW	Elite Answering	11,996.48	599.82	5.00
	Invoices count: 4			**53,196.38**	**2,659.82**	**5.00**

Salesperson: SP0009 Theo Valich

Invoice Date	Invoice Nbr.	Customer ID	Customer Name	Sales	Commission	Comm %
7/5/2015	AR003620	INDSACRAME	Sacramento Industrial Supply	18,899.99	945.00	5.00
7/6/2015	AR003619	INDSACRAME	Sacramento Industrial Supply	18,899.99	945.00	5.00
7/27/2015	AR003610	INDSACRAME	Sacramento Industrial Supply	29,061.65	1,453.08	5.00
7/28/2015	AR003622	INDSACRAME	Sacramento Industrial Supply	73,303.20	3,665.16	5.00
7/28/2015	AR003629	WIDGETCC	Widget Credit Card	8,500.00	425.00	5.00
	Invoices count: 5			**148,664.83**	**7,433.24**	**5.00**

Continued...

Figure: Previewing the executed report

Lesson Summary

In this lesson, you have learned how to create reports by using the Report Designer. Below is the summary of the main steps you should perform to create a report:

1. Investigate the appropriate forms whose data you are going to use in the report to discover the data access classes, their data fields, and relationships between the classes.
2. Create a new report.
3. Select the data for the report, which entails performing the following steps in the **Schema Builder** wizard:
   a. Load the database schema.
   b. Select the data classes.
   c. Specify the relationships between the classes, if necessary.
   d. Add one or more parameters for the report, if necessary, to allow users to filter the report data by specifying values of these parameters.
   e. Specify the filtering conditions, if necessary, which determine the data to be retrieved.
4. Specify grouping conditions for the report data, if necessary.
5. Specify sorting conditions for the data of the detail section, if necessary.
6. Lay out the report—that is, add to the report layout some visual elements, configure these elements, specify visibility of the report sections and elements, and so on.
7. Add the URL of the report to the site map.

In the lesson, you also selected a style template for the report in the **StyleTemplate** of the report form. You applied this style template to the report elements by selecting styles in the **StyleName** property of elements. You added a variable to the report section and used this variable in the other sections of the report. You added **TextBox** elements to the report layout, and configured some of them so that their values contained links to forms and reports of Acumatica ERP.

Review Questions

1. Each Acumatica ERP reports is a XML-based file with this extension.
   - **A**. .rpx
   - **B**. .xml
   - **C**. .rpt
   - **D**. .xhtml
2. What can you do with a report, if the *ReportDesigner* role is not assigned to your user.
   - **A**. Run the report in Acumatica ERP.
   - **B**. Open the report to edit by clicking the **Edit Report** command on the toolbar of the report form in Acumatica ERP.
   - **C**. Edit the report in the Report Designer.
3. What report sections are available in Acumatica Report Designer? Select all that apply.
   - **A**. Report Total
   - **B**. Page Title
   - **C**. Group Header
   - **D**. Sub Report
   - **E**. Detail
   - **F**. Group Body
   - **G**. Page Footer
4. Suppose that your Acumatica ERP instance has multiple companies, and your login is *admin*. Select the format of the login you should enter in the **Login** box of the **Schema Builder** wizard of the Report Designer to load the schema of all available classes of the *Company* company from the application server.
   - **A**. `admin`
   - **B**. `admin/Company`
   - **C**. `admin@Company`
   - **D**. `admin:Company`
5. Suppose that your Acumatica ERP instance has a single company—that is, *Company*—and your login is *admin*. Select the format of the login you should enter in the **Login** box of the **Schema Builder** wizard of the Report Designer to load the schema of all available classes of the *Company* company from the application server.
   - **A**. `admin`
   - **B**. `admin/Company`
   - **C**. `admin@Company`
   - **D**. `admin:Company`
6. What types of joins you cannot use on the **Relationships** tab of the **Schema Builder** wizard? Select all that apply.
   - **A**. *Inner*
   - **B**. *Left*
   - **C**. *Cross*
   - **D**. *Outer*
   - **E**. *Full*

7. Suppose that you have added a new parameter to the report, but it does not appear on the **Reports Parameters** tab of the report form. What is the possible reason?
   - **A**. The **View Name** of the parameter is undefined.
   - **B**. The **Prompt** of the parameter is undefined.
   - **C**. You have specified no default value.
   - **D**. The **Allow Null** check box is selected for the parameter.
   - **E**. The **Visible** check box is cleared for the parameter.
   - **F**. You have not used the parameter in the filter conditions of the report.
   - **G**. The **Required** check box is cleared for the parameter.
8. How can you add both the group header and the group footer sections to the report? Select all that apply.
   - **A**. Right-click any empty place on the report layout and select **Add New Group**.
   - **B**. Select **Edit** > **Add New Group** on the menu bar of the Report Designer.
   - **C**. Specify the grouping condition in the **Groups** property of the report.
   - **D**. None of the above.
9. Suppose you are developing a report that lists sales orders grouped by date. How can you arrange the report data so that group sections will be sorted by date in descending order?
   - **A**. Select the **SortOrder** property of the grouping condition by the date as *Descending*.
   - **B**. Specify the **Value** property of the text box that holds sales order date in the group section as `=Sort([SOOrder.OrderDate], Desc)`.
   - **C**. Create a sorting condition by the sales order date and select **SortOrder** for this condition as *Descending*.
   - **D**. None of the above.
10. How can you add to the report layout an element from the element list in the top right area of the main window of Acumatica Report Designer? Select all that apply.
    - **A**. Click the element in the list, and then click the place on the report layout where you want to put the element.
    - **B**. Drag the element from the list to the needed location.
    - **C**. Right-click the element in the list, and select the section to add the element.
    - **D**. Select a section to add the element, and then double-click the element in the list.
11. How can you change the size of a **TextBox** element you added to the report layout? Select all that apply.
    - **A**. Select the text box, and drag any of handles on its borders.
    - **B**. Specify the height and width of the text box manually on the **Properties** tab in the **Excel Cell** > **Height** and **Excel Cell** > **Width** properties respectively.
    - **C**. Specify the height and width of the text box manually on the **Properties** tab in the **Size** > **Height** and **Size** > **Width** properties respectively.
    - **D**. None of the above.
12. How can you select the report form to access the list of report properties? Select all that apply.
    - **A**. Select the *report1 Report* object from the drop-down list on the **Properties** tab.
    - **B**. Select **Edit** > **Select Report Form** on the menu bar of the Report Designer.
    - **C**. Click the top left box under the toolbar on the report form.
    - **D**. Right-click any place of any section on the report layout, and select **Select report1**.

13. How can you select a section of a report to access the list of its properties? Select all that apply.

- **A**. Select the section from the drop-down list on the **Properties** tab.
- **B**. Click the section header on the report layout.
- **C**. Click any empty place of the section on the report layout.
- **D**. Right-click any empty place on the report layout, and select the needed section.
- **E**. Right-click any element of the section, such as a text box, and select **Select {section name}**.

14. Suppose that you are customizing a report that uses the *ARInvoice* data class to display the invoice number. You want to configure the text box that holds the invoice number so that its value will contain a link to the Invoices and Memos form (AR301000). A user will be able to open the appropriate invoice by clicking its number on the report. How can you do that? Select all that apply.

- **A**. Specify the **Value** property of the text box as `<a href="Main.aspx?ScreenId=AR301000&DocType=+[ARInvoice.DocType]+&RefNbr=+[ARInvoice.RefNbr]">[ARInvoice.RefNbr]</a>`.
- **B**. Specify the **NavigateMethod** property of the text box as *Server*.
- **C**. Specify the **NavigateMethod** property of the text box as *Client* and the **NavigateUrl** property as `='Main.aspx?ScreenId=AR301000&DocType='+[ARInvoice.DocType]+'&RefNbr='+[ARInvoice.RefNbr]`.

15. How can you reset the value of a variable to 0?

- **A**. Select one of the report groups in the **ResetGroup** property of the variable to reset the variable value for each new group.
- **B**. Specify an expression in the **ResetExpr** property of the variable to reset the variable value when the expression returns *True*.
- **C**. Specify the **ValueExpr** property of the variable as `=0`.
- **D**. None of the above.

16. What should you do to publish a report you have just created? Select only the steps that you must perform.

- **A**. Specify the **Title** property of the report.
- **B**. Add a new node with the report URL, title, and screen identifier on the Site Map form (SM200520).
- **C**. Specify the access rights to the report.
- **D**. Restart the website.

Answer Key

1 - A; 2 - A, C; 3 - C, E, G; 4 - C; 5 - A; 6 - D; 7 - B, E; 8 - A, C; 9 - A; 10 - A, B, D; 11 - A, C; 12 - A, C, D; 13 - A, B, C, E; 14 - B, C; 15 - A, B; 16 - B.

Practice Exercise

Now that you have completed *Lesson 4: Creating a Report*, you know how to create and configure a report. To check your knowledge, perform the following exercise on your own.

While completing the *course prerequisites*, you imported and published the customization project that contains the Open Sales Orders by Customer (RD) report (SO615000; Distribution > Sales Orders > Reports > Audit). The report is saved to the server with the name `SO615000.rpx`.

This report lists the details of open sales orders for specified date range and the customer (if one has been specified). The inquiry you created in *Lesson 1: Creating a Generic Inquiry* presents the same information. The only difference is that the report data is grouped by customer, as shown in the screenshot below. The report with this grouping provides details about open orders in a format that meets users' needs better than the inquiry does.

Open Sales Orders by Customer

Company:	**Revision Two HQ**	**Print Date:**	**9/16/2015**	**Start Date:**	**1/1/2015**
User:	**admin**	**Pages:**	**10**	**End Date:**	**9/30/2015**

Order		Inventory Item		Quantity	Amount
Customer:	ABARTENDE	USA Bartending School			
1/13/2015	SO003131	FOODCOLA12	Coca-Cola Cans 12 Count	24.00 EA	95.76
3/20/2015	SO003170	INDOVEN1	Industrial Conveyor Oven	2.00 EA	300,000.00
3/30/2015	SO003171	SPECIALORD	Special or custom order	15.00 EA	112,500.00
5/10/2015	SO003208	FOODCOLA12	Coca-Cola Cans 12 Count	24.00 EA	78.00
6/10/2015	SO003227	FOODCOLA12	Coca-Cola Cans 12 Count	100.00 EA	325.00
6/20/2015	SO003229	INDOVEN1	Industrial Conveyor Oven	3.00 EA	345,000.00
6/30/2015	SO003230	SPECIALORD	Special or custom order	20.00 EA	20,000.00
7/10/2015	SO003251	FOODCOLA12	Coca-Cola Cans 12 Count	100.00 EA	325.00
9/10/2015	SO003292	FOODCOLA12	Coca-Cola Cans 12 Count	100.00 EA	325.00
9/20/2015	SO003294	INDOVEN1	Industrial Conveyor Oven	3.00 EA	300,000.00
9/30/2015	SO003295	SPECIALORD	Special or custom order	20.00 EA	20,000.00
					1,098,648.76

Figure: Open Sales Orders by Customer report

Your task is to make the report more readable and usable. You should modify the report layout so that the report further groups inventory items by sales order, as shown in the screenshot below.

Open Sales Orders by Customer

Company:	**Revision Two HQ**	**Print Date:**	**9/15/2015**	**Start Date:**	**1/1/2015**
User:	**admin**	**Pages:**	**1**	**End Date:**	**9/30/2015**

	Inventory Item		Quantity	Amount
Customer:	FDIAGRI	Agrilink Food		
	SO003253	8/5/2015, "Food Order"		
	FOODBREAD	Hot Dog Buns 8 PK (12per pack)	300.00 EA	11,436.00
	FOODCHIP36	Wise Potato Chips 1.25oz Bags / 36PK	324.00 EA	7,128.00
	FOODHOTDOG	Ball Park Beef Franks 3lbs 2 PK	360.00 EA	13,856.40
	FOODKCOF35	Coffee K-Cup Sampler Coffee 35 Count	360.00 EA	9,090.00
	FOODSUGAR	Sweet N Low Sugar 12pk	360.00 EA	19,796.40
	FOODTEA06	Liptons Cold Brew Tea Bags 6 Pack	228.00 EA	6,240.36
			Line Total:	*67,547.16*
			Discount Total:	*0.00*
			Order Amount (excl. taxes):	*67,547.16*
	SO003256	8/14/2015, "Food Order"		
	FOODBREAD	Hot Dog Buns 8 PK (12per pack)	180.00 EA	6,861.60
	FOODCHIP36	Wise Potato Chips 1.25oz Bags / 36PK	264.00 EA	5,808.00
	FOODHOTDOG	Ball Park Beef Franks 3lbs 2 PK	168.00 EA	6,466.32
			Line Total:	*19,135.92*
			Discount Total:	*0.00*
			Order Amount (excl. taxes):	*19,135.92*
	SO003273	9/5/2015, "Food Order"		
	FOODBREAD	Hot Dog Buns 8 PK (12per pack)	325.00 EA	12,389.00
	FOODCHIP36	Wise Potato Chips 1.25oz Bags / 36PK	351.00 EA	7,722.00
	FOODHOTDOG	Ball Park Beef Franks 3lbs 2 PK	390.00 EA	15,011.10
	FOODKCOF35	Coffee K-Cup Sampler Coffee 35 Count	390.00 EA	9,847.50
	FOODSUGAR	Sweet N Low Sugar 12pk	390.00 EA	21,446.10
	FOODTEA06	Liptons Cold Brew Tea Bags 6 Pack	247.00 EA	6,760.39
			Line Total:	*73,176.09*
			Discount Total:	*0.00*
			Order Amount (excl. taxes):	*73,176.09*
	SO003276	9/14/2015, "Food Order"		
	FOODBREAD	Hot Dog Buns 8 PK (12per pack)	195.00 EA	7,433.40
	FOODCHIP36	Wise Potato Chips 1.25oz Bags / 36PK	286.00 EA	6,292.00
	FOODHOTDOG	Ball Park Beef Franks 3lbs 2 PK	182.00 EA	7,005.18
			Line Total:	*20,730.58*
			Discount Total:	*0.00*
			Order Amount (excl. taxes):	*20,730.58*
				180,589.75

Figure: Customized version of the report with order details

You also have to add a check box parameter that allows the user to determine whether order details are visible, as shown in the screenshots below.

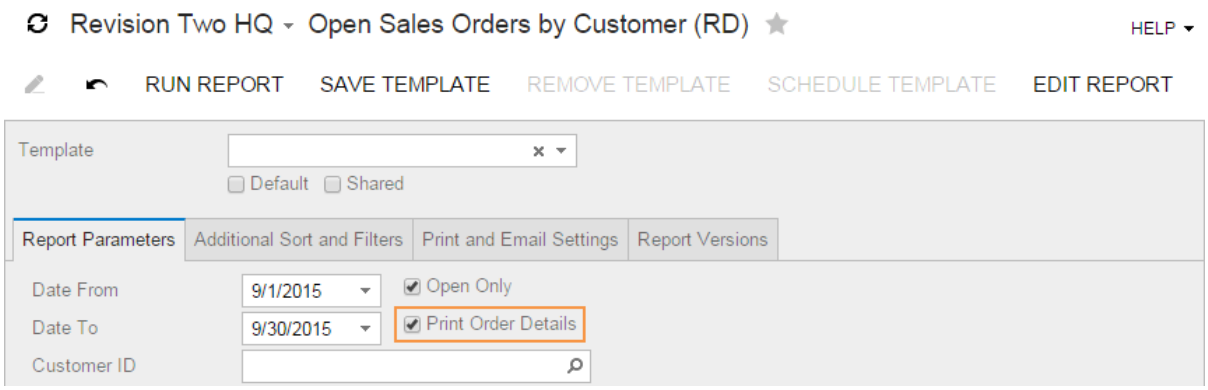


Figure: The customized version of the Open Sales Orders by Customer report

Open Sales Orders by Customer

Company:	Revision Two HQ	Print Date:	9/15/2015	Start Date:	1/1/2015
User:	admin	Pages:	1	End Date:	9/30/2015

	Sales Order		Order Amount
Customer:	FDIAGRI	Agrilink Food	
	SO003253	8/5/2015, "Food Order"	67,547.16
	SO003256	8/14/2015, "Food Order"	19,135.92
	SO003273	9/5/2015, "Food Order"	73,176.09
	SO003276	9/14/2015, "Food Order"	20,730.58
			180,589.75

Figure: Customized version of the report with order details excluded

To calculate the order amount, you will use the *SOOrder.LineTotal* data field, which contains the sum of all order lines, and *SOOrder.DiscTtl*, which holds the discount amount applied to the order (see the diagram below). The order amount is *LineTotal* minus *DiscTtl*.

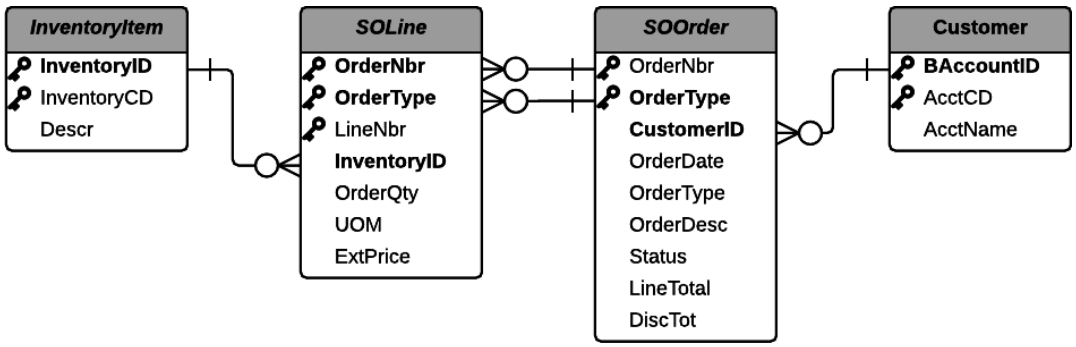


Figure: The classes and the relationships between them

We recommend that you complete the exercise on your own and compare your results with the screenshots above.

If you have difficulties modifying the report, refer to the brief steps listed below.

Modifying the Report

To modify the report, perform the following steps:

1. In the Report Designer, open the `SO615000.rpx` report from the server.
2. In the **Schema Builder** wizard, add a new parameter to the report with the following settings:
   - **Name**: `Details`
   - **Data Type**: *Boolean*
   - **Prompt**: `Print Order Details`
   - **Default Value**: `True`
3. Add a grouping condition by the `Customer.AcctCD` data field.
4. Configure the header section of the new order group as follows (see the screenshot below):
   - Add text boxes with the order number, the order date, and the order description to the section.
   - Add a text box with the order amount, which is calculated as *SOOrder.LineTotal* minus *SOOrder.DiscTtl*. Specify the text box visibility, which depends on the value of the `@Details` parameter—that is, the text box is visible if `@Details` equals `False`. Based

on this setting, the order amount will be printed when the user clears the **Print Order Details** check box.

- Set the **PrintForEmptyGroup** property of the section to `True`. This will cause the group header to be printed when the detail section is hidden and the group contains no rows.

5. Configure the detail section as follows:

- Delete the text boxes with the order date and the order number.
- Specify the section visibility, which depends on the value of the `@Details` parameter—that is, the detail section is visible if the **Print Order Detail** check box is selected and `@Details` equals `True`.

6. Configure the footer section of the new order group as follows:

- Add the following text boxes with subtotal amounts: the line total *SOOrder.LineTotal*, the discount total *SOOrder.DiscTtl*, and the order amount, which is *SOOrder.LineTotal* minus *SOOrder.DiscTtl*. Specify the **Format** of the order amount text box based on the format of any data fields used in the expressions in its value. For example, you can use the following format specifier: `=[SOOrder.LineTotal.Format]`.
- When the detail section is hidden, this group footer section will be hidden too, because the default value of the **PrintForEmptyGroup** property is `False`.
- Add a variable with the following settings to calculate the total amount of orders for each customer:
  - **Name**: `OrderAmount`
  - **ResetGroup**: *Customer*
  - **ValueExpr**: `=$OrderAmount+[SOOrder.LineTotal]-[SOOrder.DiscTot]`

7. Configure the footer section of the customer group as follows:

- Change the value of the existing text box to show the value of the variable you added to the footer section of the order group. Specify the **Format** of this text box based on the format of any data fields used in the expressions in its value. For example, you can use the following format specifier: `=[SOOrder.LineTotal.Format]`.

8. In the page header section, modify the values of the text boxes that hold column headers, which should depend on the value of the `@Details` parameter as follows:

- When the user selects the **Print Order Details** check box, show the **Inventory Item**, **Quantity**, and **Amount** column headers. To show this column headers, use the `IIf` function.
- When the user clears the **Print Order Details** check box, show the **Sales Order** and **Order Amount** column headers.

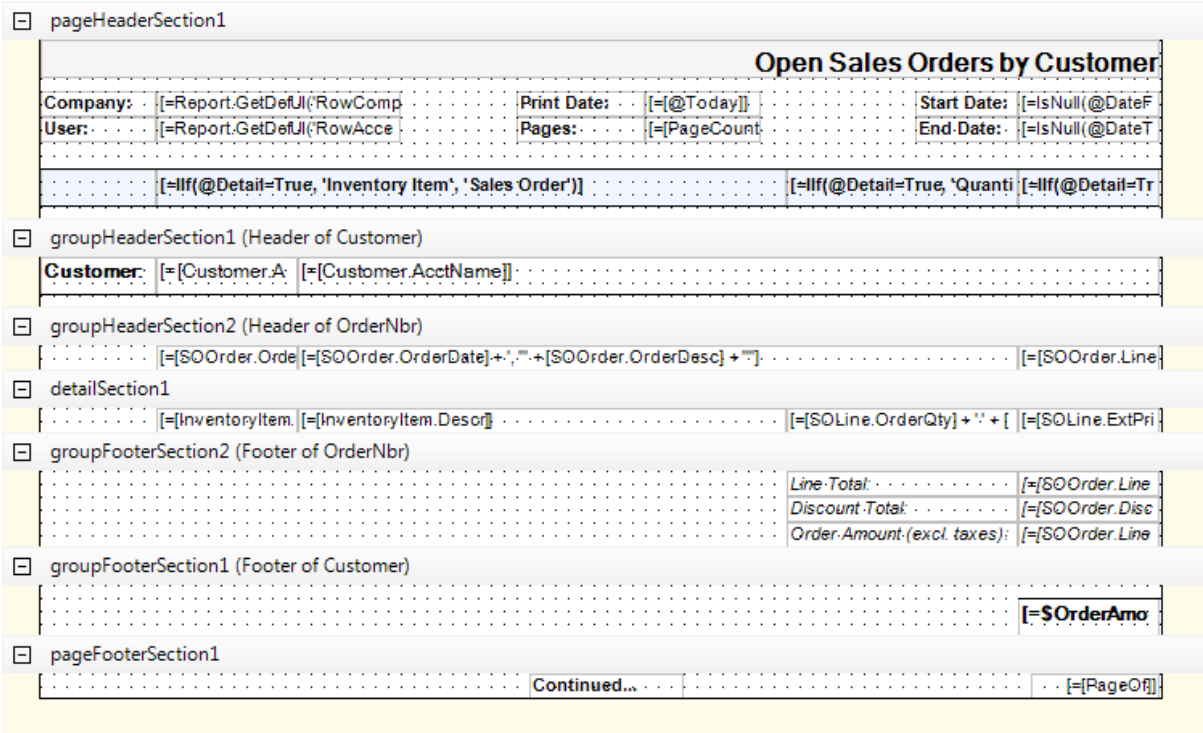


Figure: The modified report layout

Lesson 5: Using Subreports

You can include data from other reports in the current report by using subreports. You can add one subreport or multiple subreports to a single master report.

In this lesson, you will create a subreport with a chart that shows each salesperson's commissions by financial period. Then you will add this subreport to a master report—the Invoices Commissionable by Salesperson report you created in *Lesson 4: Creating a Report*.

Lesson Objectives

In this lesson, you will learn how to do the following:

1. *Create a subreport*
2. *Configure the subreport layout*
3. *Configure a chart element*
4. *Add a subreport to a master report*

1. Creating the Subreport and Selecting Its Data

To create the subreport that shows salesperson's commissions by financial period, you have to use the *ARInvoice* and *ARSalesPerTran* classes, as shown in the diagram below. The *ARInvoice* class provides access to the invoices, which belong to financial periods. *ARSalesPerTran* provides access to the salespersons' commissions. The *RefNbr* and *DocType* key fields are references between the classes.

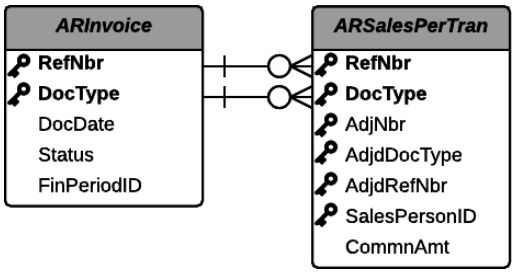


Figure: The classes and the relationships between them

To create the subreport and select the data, do the following:

1. Start the Report Designer as follows: **Start > All Programs > Acumatica > Report Designer**. When you open the Report Designer, a blank report form is displayed by default.
2. On the menu bar, select **File** > **Build Schema** to open the **Schema Builder** wizard.
3. On the **Tables** tab of the **Schema Builder** wizard, load the schema, and add the *ARInvoice (PX.Objects.AR.Customer)* and *ARSalesPerTran* data access classes to the subreport, as shown in the screenshot below.

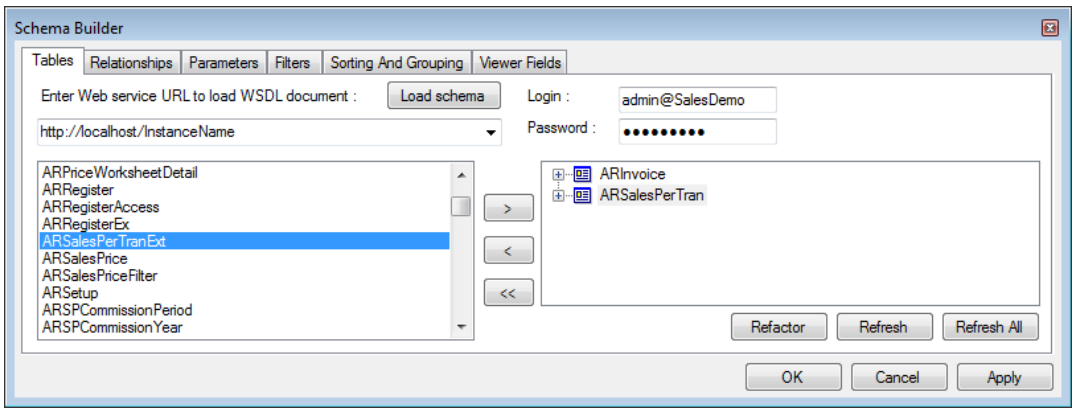


Figure: The data access classes selected for the subreport

4. Apply your changes to the subreport.

5. On the **Relationships** tab of the **Schema Builder** wizard, add the lines with the following settings to link the *ARInvoice* and *ARSalesPerTran* classes, as shown in the screenshot below:

- **Enter the report table relations here** area:

Parent Table	Join Type	Child Table
ARInvoice	*Inner*	*ARSalesPerTran*

- **Enter the data field links for the active relation** area:

Parent Field	Link Condition	Child Field
RefNbr	*Equal*	*RefNbr*
DocType	*Equal*	*DocType*

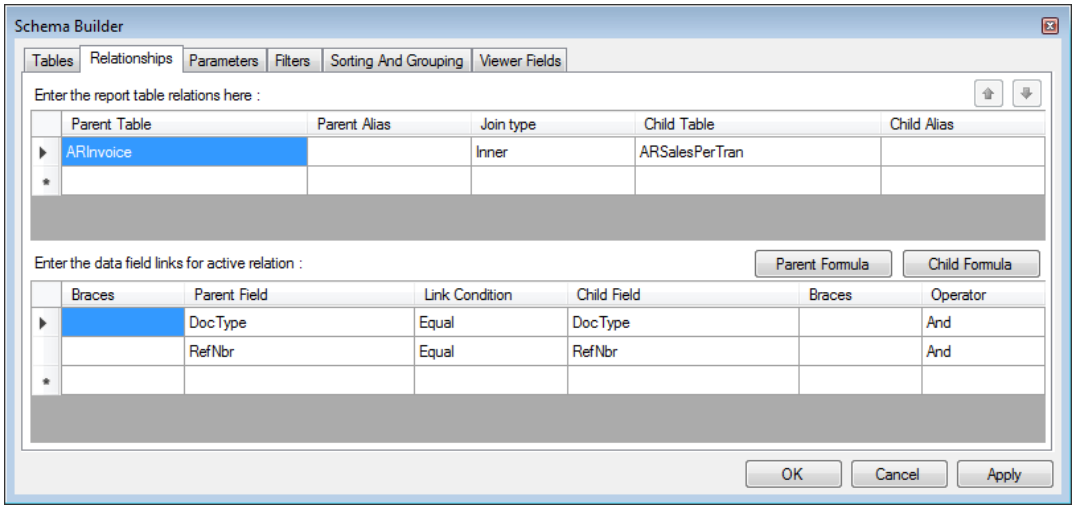


Figure: The relationships between classes

6. Apply your changes to the subreport.

The subreport has to show the data for the master report. The parameters of the master report are the date range and the salesperson. If the user specifies the date range, the master report shows the invoices that dates fall within this date range. Thus, the subreport has to show commissions for the same date range and you have to add the date range parameters to the

subreport. To be able to show the subreport for each salesperson, you also have to add the salesperson parameter.

7. On the **Parameters** tab of the **Schema Builder** wizard, add the needed parameters with the following settings to the parameters list, as shown in the screenshot below:

Name	Data Type	Allow Null
`DateFrom`	*DateTime*	Selected
`DateTo`	*DateTime*	Selected
`SalesPersonID`	*Integer*	Cleared

The master report shows commissions of all salespersons, if the user does not specify any salesperson. The subreport will show commissions of the certain salesperson for each group of the master report. That is why you did not select the **Allow Null** check box. Even though the salesperson parameter of the master report is optional, you have to specify the salesperson for the subreport in the master report regardless of the user's choice.

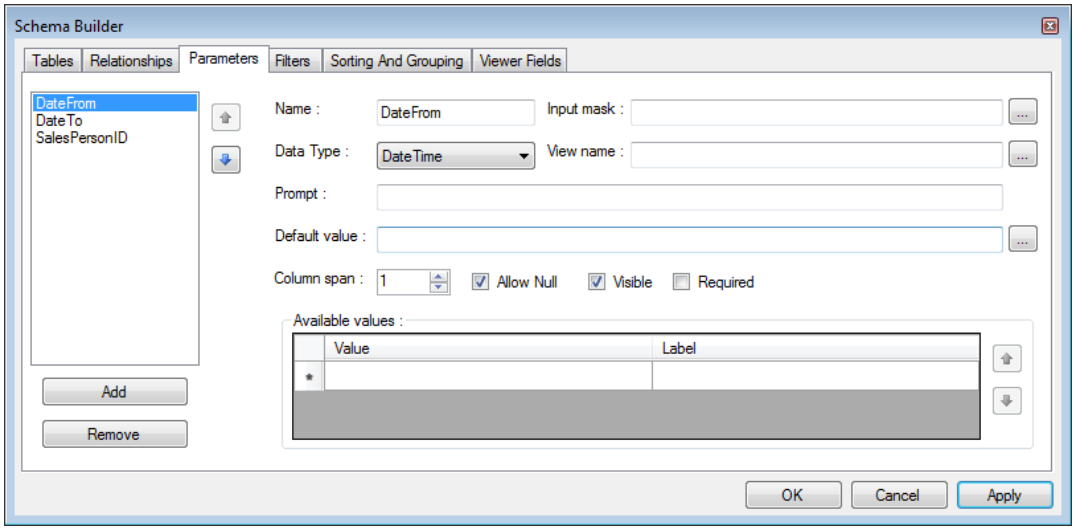


Figure: The subreport parameters

8. Apply your changes to the subreport.

The subreport has to show the same commission amounts as the master report. Therefore, their filter conditions will be almost the same with corrections for names of the parameters and the classes selected for the subreport.

9. On the **Filters** tab of the **Schema Builder** wizard, specify the following filter conditions (see the screenshot below):

Braces	Data Field	Condition	Value 1	Braces	Operator
	ARInvoice.DocType	*Equal*	`INV`		*And*
(	*ARInvoice.Status*	*Equal*	`N`		*Or*
	ARInvoice.Status	*Equal*	`C`	*)*	*And*
(	*ARInvoice.DocDate*	*GreaterOrEqual*	`@DateFrom`		*Or*
	@DateFrom	*IsNull*		*)*	*And*
(	*ARInvoice.DocDate*	*LessOrEqual*	`@DateTo`		*Or*

Braces	Data Field	Condition	Value 1	Braces	Operator
	@DateTo	*IsNull*		*)*	*And*
	ARSalesPerTran. CommnAmt	*Greater*	0		*And*
(	*ARSalesPerTran. SalespersonID*	*Equal*	`@SalesPersonID`		*Or*
	@SalesPersonID	*IsNull*		*)*	*And*

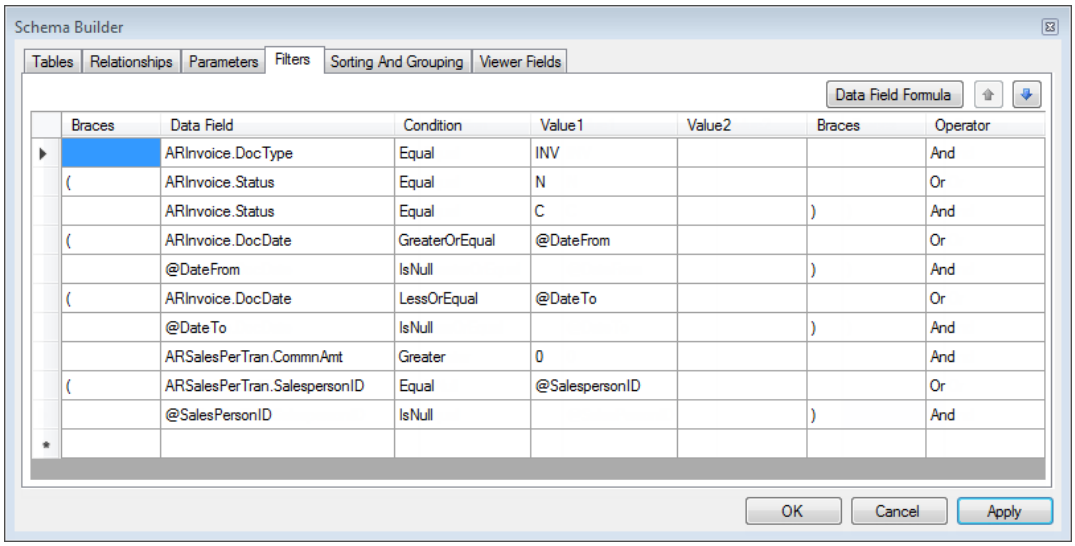


Figure: The filter conditions of the subreport

10. Click **OK** to apply your changes to the subreport and to close the **Schema Builder** wizard.

11. Save to the server the subreport with the `AR670050.rpx` name.

2. Configuring the Subreport Layout

The layout of your newly created report consists of the page header section, the page footer section, and the detail section. You will use the subreport in the master report only, and you need to show the chart only in the master report. Thus, you do not need the page header and the page footer sections in the subreport.

You have to group commission amounts by salesperson and by financial period. The chart you are going to add in the subreport will contain the total commission amounts of each group. You can represent these totals only in the report header or report footer section.

To modify the subreport layout, do the following, as shown in the screenshot below:

1. On the subreport layout, delete the page header and page footer sections, and add the report header section. To do that, click any empty place on the subreport layout, and select the appropriate command in the shortcut menu. For more information on adding and deleting sections, see *Modifying a Report Layout* topic.

2. Add the grouping conditions by salesperson and by financial period as follows:

a. On the **Properties** tab, select the *report1 Report* object from the drop-down list to select the subreport form.

b. Select the **Groups** property, and click the button to open the **Group Collection Editor** dialog box.

c. In this dialog box, add a new group.

d. In the **Grouping** property of the created group, click the button to open the **GroupExp Collection Editor** dialog box.

e. In this dialog box, add two grouping expressions, one with the `ARSalesPerTran.SalespersonID` data field and the other with the `ARInvoice.FinPeriodID` data field.

   Based on these expressions, the subreport data will be grouped by salesperson and then by financial period.

f. Click **OK** to apply the settings you made and to close the **GroupExp Collection Editor** dialog box.

g. In the **Group Collection Editor** dialog box, click **OK** to apply the grouping conditions and close the dialog box.

3. Select the subreport form, and type `500px` in the **Width** property.

4. Add a text box to the group header section and specify its **Value** as `=[ARInvoice.FinPeriodID]`.

   You will show the financial period defined in this text box in the chart that you will add later.

5. For the group header section, specify the following settings:

   - **Height**: `16px`
   - **Visible**: *False*

     You do not need to show the group header section in the master report. Actually, you have to hide all the subreport sections except for the report header section that will contain the chart.

6. For the detail section, specify the following settings:

   - **Height**: `0px`
   - **Visible**: *False*

7. Add a text box to the group footer section and specify its **Value**, as follows: `=Sum([ARSalesPerTran.CommnAmt])`.

   You will show the total commission amount calculated in this text box in the chart that you will add later.

8. For the group footer section, specify the following settings:

   - **Height**: `16px`
   - **Visible**: *False*

9. Save your changes to the subreport.

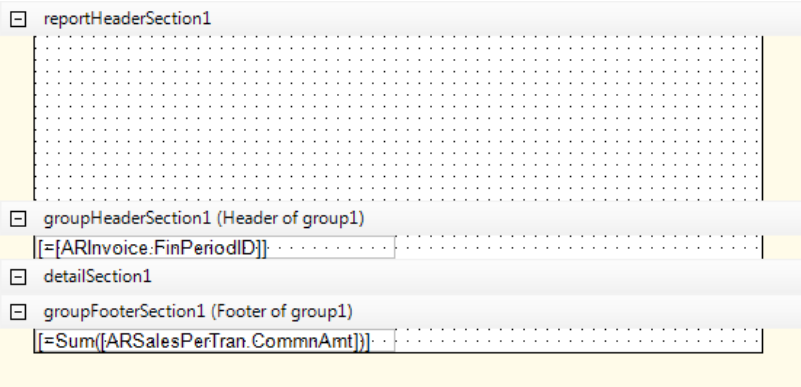


Figure: The subreport layout

You have almost configured the subreport layout. Now you will add a chart to the report header section of the subreport.

3. Adding a Chart to the Subreport Layout

To add a chart to the report header section of the subreport, do the following:

1. Click **Chart** in the elements list (in the top right area of the Report Designer), and then click on the place in the report header section where you want to put the chart. Enlarge the chart by pulling its handles so that the chart fills the whole space of the section.
2. Select the chart and enter the following settings to specify title and hide the legend for the chart:
   - **Title** > **Text**: `Commissions by Financial Period`
   - **Legend** > **Enable**: *False*
3. Select the **Series** property of the chart, and click the button to open the **MSChartSeries Collection Editor** dialog box. In this dialog box, click **Add** to add a new chart series, and specify the following settings, as shown in the screenshot below:
   - **ChartType**: *Column*
   - **AxixLabel**: `=[ARInvoice.FinPeriodID]`
   - **YValue**: `=SUM([ARSalesPerTran.CommnAmt])`

   Based on these settings, the chart will show commission amounts for each financial period in separate columns.

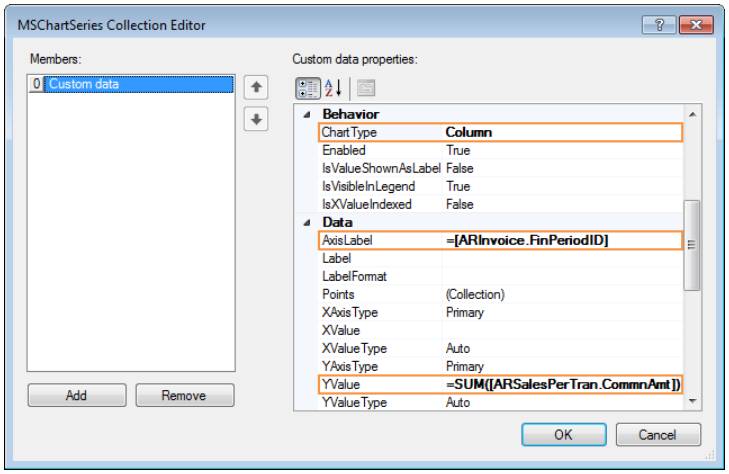


Figure: The new chart series

4. Click **OK** to apply the settings you made and to close the **MSChartSeries Collection Editor** dialog box.
5. Save your changes to the subreport.

You have configured the subreport completely.

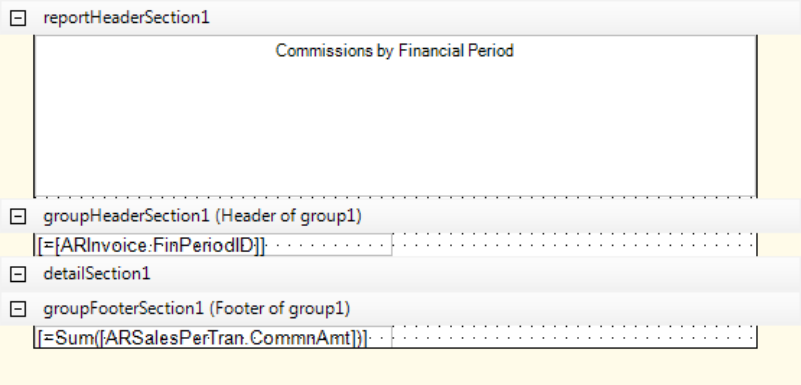


Figure: Preview of the subreport layout

4. Add the Subreport to the Master Report

Now you will add the subreport you created to the group header section of the master report. Do the following:

1. In the Report Designer, open the `AR670000.rpx` report from the server.
2. Click **SubReport** in the elements list (in the top right area of the Report Designer), and then click on the place in the group header section where you want to put the subreport (see the screenshot below).
3. Specify the **subReport1** element size according to the size of the report header section of the `AR670050.rpx` subreport. This is the only visible section in the subreport, and the chart fills the whole space of this section, so the **subReport1** element will fill the same space in the master report. Specify the size of the **subReport1** with the following settings:
   - **Size** > **Width**: `500px`
   - **Size** > **Height**: `120px`

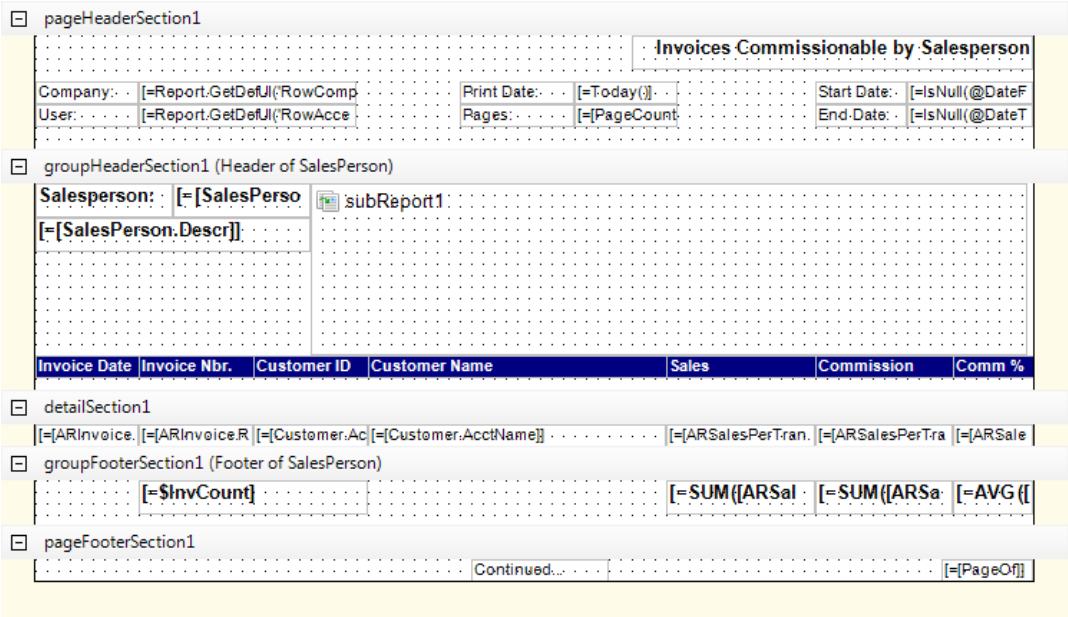


Figure: Layout of the master report

4. In the **ReportName** property of the **subReport1** element, type `AR670050.rpx` to specify the subreport, which has been saved to the server.

> If you save a subreport locally, you can click the button in the **ReportName** property, and select this locally stored file.

5. Select the **Parameters** property of **subReport1**, and click the button to open the **ExternalParameter Collection Editor** dialog box, where you have to define parameters to be transferred to the subreport. In this dialog box, add the following parameters, as shown in the screenshot below:

- Add the first parameter with the following settings:
  - **Name**: `DateFrom`
  - **Nullable**: *True*
  - **Type**: *DateTime*
  - **ValueExpr**: `=@DateFrom`

  The date range parameters of the master report are optional. Therefore, you have to allow the `Null` value to be transferred to the subreport if the user does not specify the date range. This is why you set **Nullable** to *True*.

- Add the second parameter with the following settings:
  - **Name**: `DateTo`
  - **Nullable**: *True*
  - **Type**: *DateTime*
  - **ValueExpr**: `=@DateTo`

  Based on these settings, you transfer to the subreport the date range that the user specifies for the master report.

  > If you use the Expression Editor to define **ValueExpr**, the value you selected will be `=[@DateTo]`. This is the correct expression too.

- Add the third parameter with the following settings:
  - **Name**: `SalesPersonID`
  - **Type**: *Integer*
  - **ValueExpr**: `=[SalesPerson.SalesPersonID]`

  You have to transfer the current salesperson from the group header section of the master report to the subreport to show appropriate commission amounts in the chart. In the filtering conditions of the subreport, the `@SalesPersonID` parameter is compared with the *SalespersonID* data field of the *ARSalesPerTran* class. Thus, you transfer to the subreport the identity of the current salesperson, whose commissions are listed in the detail section of the master report.

The names and types of the parameters you are defining for the **subReport1** element that holds a subreport have to match the names and types of the parameters defined for the subreport.

However, you can define fewer parameters for a **subReport1** element than a subreport has. In this case, the default values, if any, of these skipped parameters of the subreport will be applied.

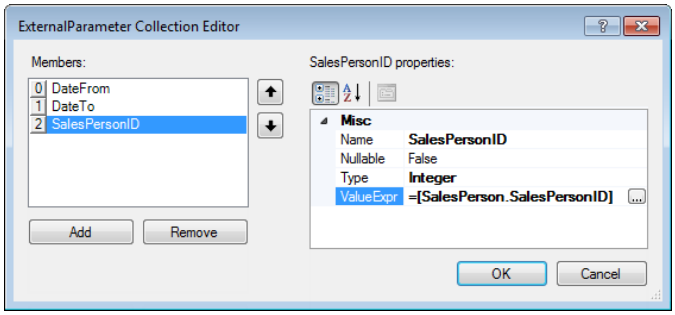


Figure: External parameters

6. Click **OK** to apply the settings you made and close the **ExternalParameter Collection Editor** dialog box.
7. Save your changes to the master report.

   You have added the subreport with the chart that shows each salesperson's commissions by financial period in the Invoices Commissionable by Salesperson report. Now you can execute and preview the report.
8. Log in to the *SalesDemo* company of Acumatica ERP.
9. Open the Invoices Commissionable by Salesperson form (AR670000; Finance > Accounts Receivable > Reports >Audit), and run the report.

Invoices Commissionable by Salesperson

Company: Revision Two HQ
User: admin

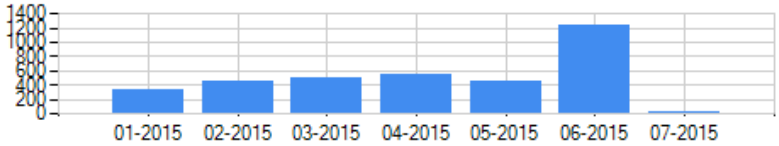
Print Date: 10/2/2015
Pages: 1

Start Date: 1/1/2015
End Date: 9/30/2015

Salesperson: SP0002

Michal Bujacek

Commissions by Financial Period



Invoice Date	Invoice Nbr.	Customer ID	Customer Name	Sales	Commission	Comm %
1/10/2015	AR003343	CARIBBEAN	Caribbean Secretary Online	8,301.78	249.06	3.00
1/17/2015	AR003358	BIBIMBAB	Bibimbab Korean Restaurant	219.80	1.10	0.50
1/27/2015	AR003359	FDIQVIK	Qvik Process GmbH	2,658.33	79.75	3.00
2/14/2015	AR003398	BIBIMBAB	Bibimbab Korean Restaurant	219.80	1.10	0.50
2/24/2015	AR003401	FDIQVIK	Qvik Process GmbH	15,339.52	460.18	3.00
3/16/2015	AR003444	BIBIMBAB	Bibimbab Korean Restaurant	219.80	1.10	0.50
3/24/2015	AR003445	FDIQVIK	Qvik Process GmbH	16,709.51	501.28	3.00
4/1/2015	AR003493	BIBIMBAB	Bibimbab Korean Restaurant	219.80	1.10	0.50
4/24/2015	AR003494	FDIQVIK	Qvik Process GmbH	18,519.10	555.57	3.00
5/14/2015	AR003531	BIBIMBAB	Bibimbab Korean Restaurant	219.80	1.10	0.50
5/25/2015	AR003532	FDIQVIK	Qvik Process GmbH	14,932.13	447.96	3.00
6/14/2015	AR003572	BIBIMBAB	Bibimbab Korean Restaurant	439.60	2.20	0.50
6/24/2015	AR003573	FDIQVIK	Qvik Process GmbH	41,268.04	1,238.04	3.00
7/14/2015	AR003627	BIBIMBAB	Bibimbab Korean Restaurant	439.60	2.20	0.50
	Invoices count: 14			**119,706.61**	**3,541.74**	**1.75**

Figure: The executed master report

You can declare a variable in a subreport and use this variable in a master report. For example, you have added the *$Test* variable to the subreport. You added this subreport to the master report with the **subReport1** element. Now you can use the *$Test* variable of the subreport in the master report as *$subReport1_Test*.

Lesson Summary

In this lesson, you have learned how to create subreports. To add a report as the subreport to a master report, you should save the subreport to the same instance of Acumatica ERP where the master report is. Then you should add the **SubReport** element to the layout of the master report. In this element, you should select the subreport and specify the parameters to be transferred to this subreport, if necessary. The names and types of these parameters have to match the names and types of the subreport parameters.

You also added the **Chart** element to the report layout and configured this element.

Review Questions

1. What chart types are not available for the **Chart** element in Acumatica Report Designer? Select all that apply.
   - **A**. Table
   - **B**. Bar
   - **C**. Article
   - **D**. Range
   - **E**. Pyramid

2. Select all the statements that are not applicable for transferring parameters to subreports.
   - **A**. The parameter names should match.
   - **B**. The number of parameters should match.
   - **C**. The parameter data types should match.
   - **D**. The order of parameters should match.
3. Suppose that you are going to add the subreport you have just created to an existing and published master report. Select only the step or steps that must be performed.
   - **A**. Save the subreport to the instance of Acumatica ERP where the master report is.
   - **B**. Publish the subreport by adding the URL of the subreport to the site map.
   - **C**. Add the **SubReport** element to the layout of the master report.
   - **D**. Select the subreport in the **ReportName** property of the **SubReport** element.
   - **E**. Add the collection of parameters for the **SubReport** element to be transferred to the subreport.

Answer Key

1 - A, C ; 2 - B, D; 3 - A, C, D.

Lesson 6: Creating Tabular Reports

A tabular report is a report that displays information from the database in a format consisting of multiple columns and rows. You can use a tabular report, for example, to see a breakdown of your sales by salesperson and inventory item. In this case, the rows would be salespersons' names, the columns would be inventory item names, and the cell at the intersection of each row and column would be the total sales amount of the item by salesperson.

In this lesson, you will create a tabular report that shows the sum total (a cost) of invoiced items sold by each salesperson. Each row of this report will contain an item, each column will contain a salesperson, and the cell at their intersection will show the total sales sum of the item sold by the salesperson. The total sales sum will be calculated from released invoices for the date range, which the user can specify.

Lesson Objectives

In this lesson, you will learn how to create a tabular report. In particular you will do the following:

1. *Create the tabular report and select its data*
2. *Specify the grouping conditions for the report*
3. *Configure the layout of the report*
4. *Publish and preview the report*

1. Creating the Tabular Report and Selecting the Data

To create a tabular report that shows the amounts of invoiced items sold by each salesperson, you have to use the *ARTran*, *InventoryItem*, and *SalesPerson* classes, as shown in the diagram below. The *ARTran* class provides access to the invoice details. *SalesPerson* provides access to the salesperson whose sold the item. The *SalesPersonID* field is a reference between the *ARTran* and *SalesPerson* classes. *InventoryItem* provides access to the item that was included in the invoice. The *InventoryID* joins the *ARTran* and *InventoryItem* classes.

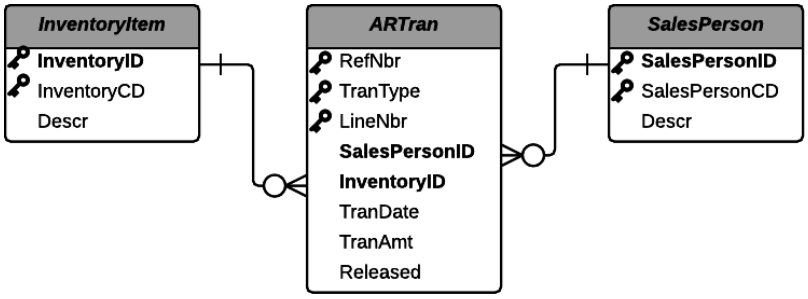


Figure: The classes and the relationships between them

To create the tabular report and select the data, do the following:

1. Start the Report Designer as follows: **Start > All Programs > Acumatica > Report Designer**. When you open the Report Designer, a blank report form is displayed by default.
2. On the menu bar, select **File** > **Build Schema** to open the **Schema Builder** wizard.
3. On the **Tables** tab of the **Schema Builder** wizard, load the schema, and add the *ARTran*, *InventoryItem*, and *SalesPerson* data access classes to the report, as shown in the screenshot below.

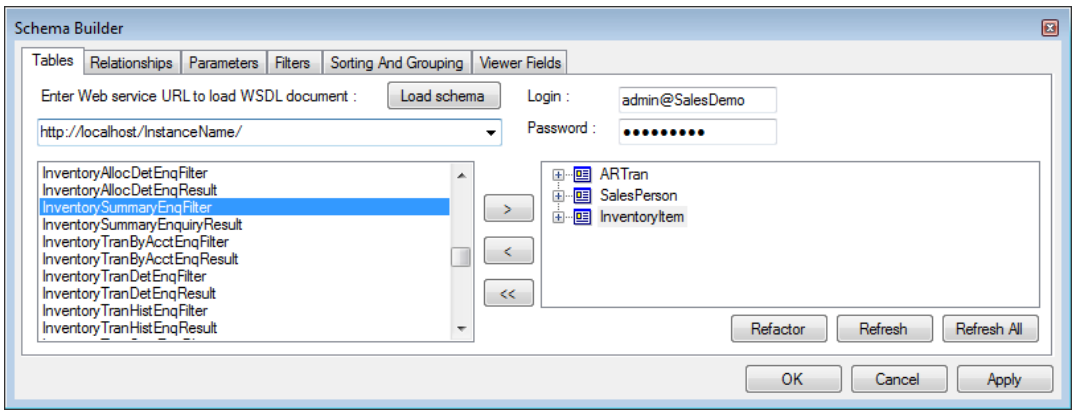


Figure: The data access classes of the report

4. Apply your changes to the report.

5. On the **Relationships** tab of the **Schema Builder** wizard, add the lines with the following settings to link the *ARTran* and *SalesPerson* classes, as shown in the screenshot below:

- **Enter the report table relations here** area:

Parent Table	Join Type	Child Table
ARTran	*Inner*	*SalesPerson*

- **Enter the data field links for the active relation** area:

Parent Field	Link Condition	Child Field
SalesPersonID	*Equal*	*SalesPersonID*

6. Add the lines with the following settings to link the *ARTran* and *InventoryItem* classes:

- **Enter the report table relations here** area:

Parent Table	Join Type	Child Table
ARTran	*Inner*	*InventoryItem*

- **Enter the data field links for the active relation** area:

Parent Field	Link Condition	Child Field
InventoryID	*Equal*	*InventoryID*

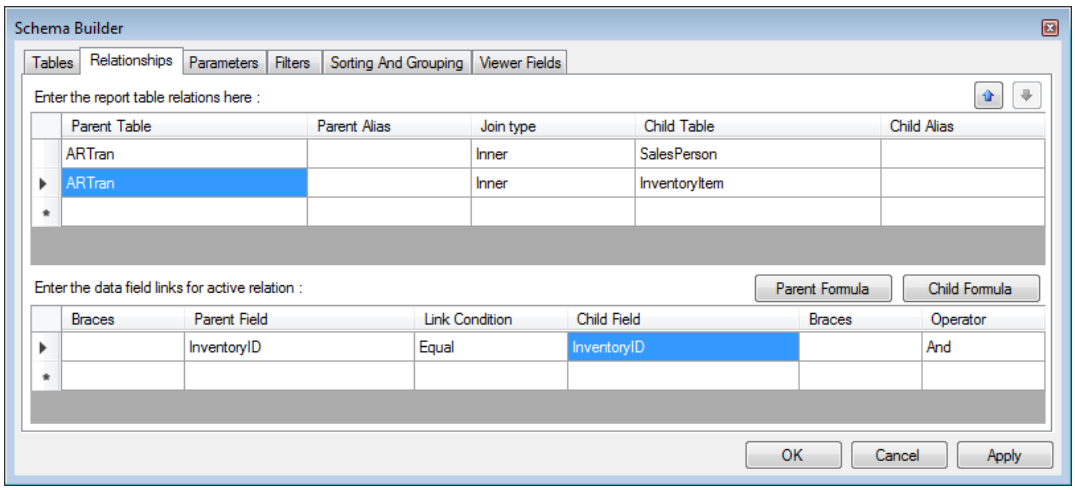


Figure: The relationships between classes

7. Apply your changes to the report.

8. On the **Parameters** tab of the **Schema Builder** wizard, add two parameters with the following settings to the parameters list (as shown in the screenshot below):

Name	Data Type	Prompt	Default Value	Allow Null
`DateFrom`	*DateTime*	`Date From`	`=[@QuarterStart]`	Selected
`DateTo`	*DateTime*	`Date To`	`=[@QuarterEnd]`	Selected

Based on the default values you entered, the report shows the data for the current quarter by default.

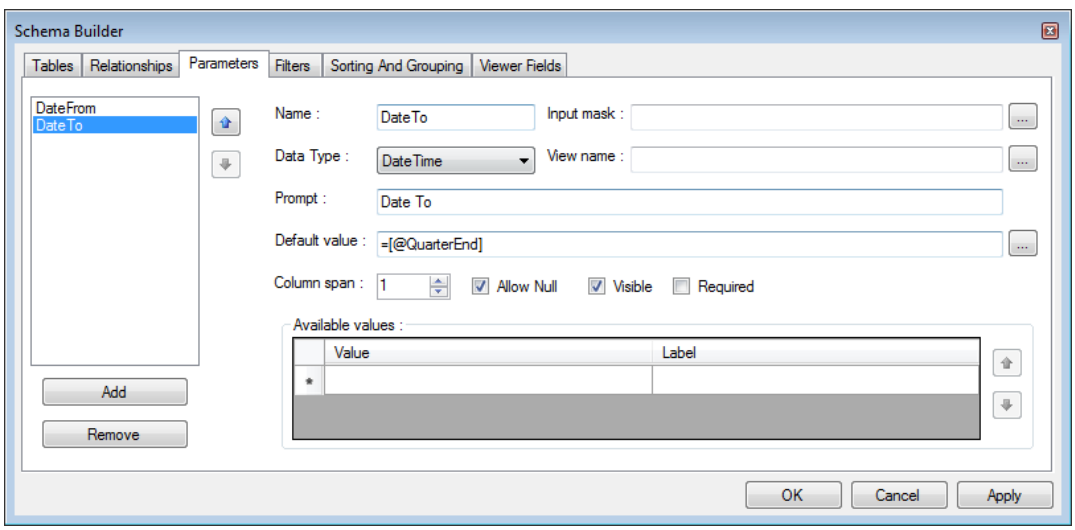


Figure: The report parameters

9. Apply your changes to the report.

10. On the **Filters** tab of the **Schema Builder** wizard, specify the following filter conditions (as shown in the screenshot below):

Brackets	Data Field	Condition	Value 1	Brackets	Operator
(	*ARInvoice.DocDate*	*GreaterOrEqual*	`@DateFrom`		*Or*

Brackets	Data Field	Condition	Value 1	Brackets	Operator
	@DateFrom	*IsNull*		*)*	*And*
(	*ARInvoice.DocDate*	*LessOrEqual*	`@DateTo`		*Or*
	@DateTo	*IsNull*		*)*	*And*
	ARTran.TranType	*Equal*	`INV`		*And*
	ARTran.Released	*Equal*	`1`		*And*

Based on the condition specified in two last rows of the table above with the *ARTran.TranType* and *ARTran.Released* data fields, the report will contain only the data of released invoices.

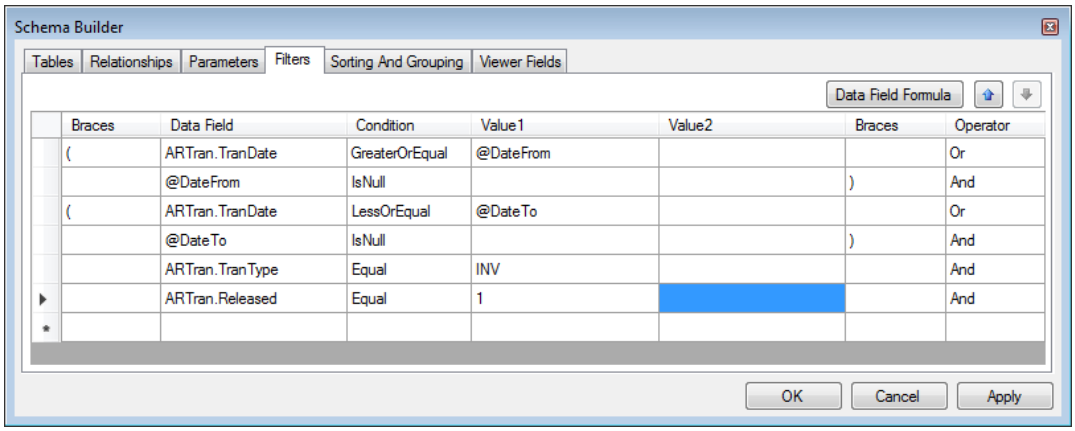


Figure: The filter conditions

11. Click **OK** to apply your changes to the report and close the **Schema Builder** wizard.
12. Save the report with the `AR680000.rpx` name to the server.

2. Specifying the Grouping Conditions for the Report

To calculate the total sales sum of each inventory item sold by each salesperson, you have to group the report data by salesperson and item. Do the following

1. On the **Properties** tab, select the *report1 Report* object from the drop-down list to select the report form.
2. On the **Properties** tab, select the **Groups** property, and click the button to open the **Group Collection Editor** dialog box.
3. In the **Group Collection Editor** dialog box, add a new group and specify its **(Name)** as `SalesPerson`.
4. In the **Grouping** property of the **SalesPerson** group, click the button to open the **GroupExp Collection Editor** dialog box.

   In the **GroupExp Collection Editor** dialog box, add a grouping expression and specify its **Data Field** as `SalesPerson.SalesPersonID`.

   Based on this expression, the report data will be grouped by salesperson.
5. Click **OK** to apply the settings you made and close the **GroupExp Collection Editor** dialog box.
6. In the **Group Collection Editor** dialog box, add the second group and specify its **(Name)** as `Item`.

7. In the **Grouping** property of **Item** group, click the button to open the **GroupExp Collection Editor** dialog box.

   In the **GroupExp Collection Editor** dialog box, add a grouping expression and specify its **Data Field** as `InventoryItem.InventoryID`.

   Based on this expression, the report data will be grouped by inventory item.

8. Click **OK** to apply the settings you made and close the **GroupExp Collection Editor** dialog box.

9. In the **Group Collection Editor** dialog box, click **OK** to apply the grouping conditions and close the dialog box.

10. Save your changes to the report.

3. Configuring the Tabular Report Layout

To modify the report layout, do the following:

1. On the **Properties** tab, select the *report1 Report* object from the drop-down list to select the report form, and specify the following settings:

   - **StylesTemplate**: `TemplateForm.rpx`
   - **TabularReport**: *True*
   - **TabularFreeze**: `272px`
   - **Width**: `368px`

   Based on the value of **TabularFreeze**, the red line has appeared on the report layout, as shown in the screenshot below. The line passes through all the group headers, the group footers, and the detail sections of the tabular report. You should use the topmost group section for columns of the tabular report and place columns to the right of the red line. A new column will be created for each new group of the data of this group section.

   For example, if you group the report data by customer, you can use the customer's name as the header of report columns and place a text box with the appropriate data field right of the red line.

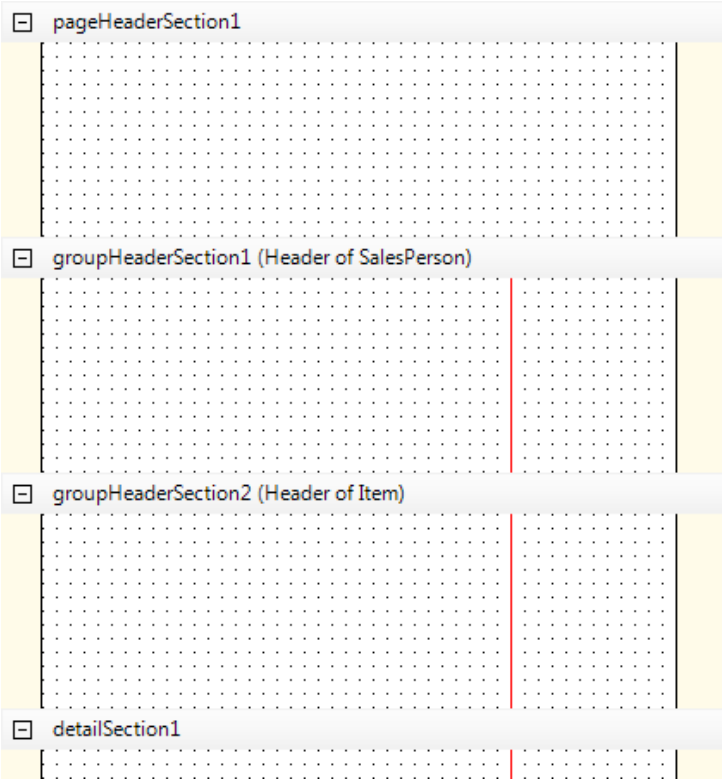


Figure: The tabular report layout

2. Configure the page header section as follows (see the screenshot below):
   - Add a text box and specify the following settings to show the report name:
     - **Value**: `Items Sold by Salesperson`
   - Add text boxes with the following values to show the report parameters:
     - **Value**: `Start Date:`
     - **Value**: `=IsNull(@DateFrom, '___/___/_____')`
     - **Value**: `End Date:`
     - **Value**: `=IsNull(@DateTo, '___/___/_____')`
   - Select *Report Params* for the **StyleName** property of the text boxes added in the previous step.

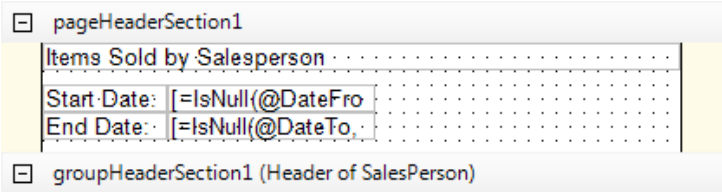


Figure: The page header section

3. Configure the group header section for salespersons, which will contain the column headers, as follows (see the screenshot below):
   - Click **groupHeaderSection1 (Header of SalesPerson)** to select the section, and specify the following settings for the section properties:

- **PrintOnEveryPage**: *True*.

  Based on this setting, the group header section for salespersons will be printed on every page.

- **StyleName**: *Bottom Line*

- Add the first text box left of the red line, and specify the following settings:

  - **Value**: `Inventory Item`
  - **Size**: `272px, 40px`

    This settings sets **Width**, which is the first attribute of the **Size** parameter, to 272px and the **Height**, which is the second attribute of the **Size** parameter, to 40px, respectively.

- Add the second text box right of the red line, and specify the following settings:

  - **Value**: `=Replace(CStr([SalesPerson.Descr]), ' ', '#010;')`
  - **Size**: `96px, 40px`

  A new column will be created automatically for each salesperson's group because the text box is right of the red line.

  Based on the **Value** you entered, the column header will consist of each salesperson's name. The first name and the last name will be separated by carriage return symbol. The `Replace()` function you entered replaces the space with the `#010;` symbol, which is the ASCII code of the carriage return (which begins a new line). Because the `Replace()` function can be applied only to strings, you have to use the `CStr()` function. The `CStr()` function converts its argument into a string.

  You can place two or more text boxes or other elements right of the red line. All these elements will be duplicated for each group of the group header section.

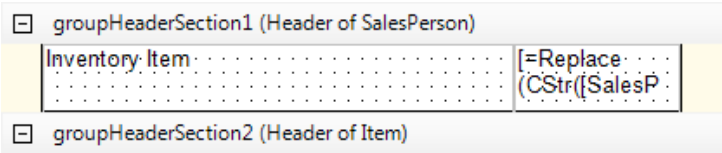


Figure: The group header section for each salesperson

4. Configure the group header section for items, which will contain the list of items and the total sales sum for each item by each salesperson who sold the item, as follows (see the screenshot below):

- Click **groupHeaderSection2 (Header of Item)** to select the section, and select *Normal* as the **StyleName** of the section:
- Add the first text box left of the red line, and specify the following settings:

  - **Value**: `=[InventoryItem.Descr]`
  - **Size** > **Width**: `272px`

- Add the second text box on the right of the red line and specify the following settings:

  - **Value**: `=SUM([ARTran.TranAmt])`
  - **Size** > **Width**: `96px`

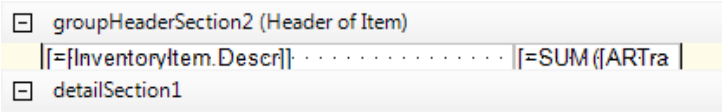


Figure: The group header section of the item

5. For the detail section (which will hold no elements), specify the following settings to hide the section:
   - **Height**: `0px`
   - **Visible**: *False*
6. For the group footer section of items (which will contain no elements), specify the following settings to hide the section:
   - **Height**: `0px`
   - **Visible**: *False*
7. Configure the group footer section for salespersons, which will contain the total sales sum of invoiced items for each salesperson, as follows (see the screenshot below):
   - Click **groupFooterSection1 (Footer of SalesPerson)** to select the section, and select *Top Line* as the **StyleName** of the section:
   - Add the first text box left of the red line, and specify the following settings:
     - **Value**: `Total:`
     - **Size**: `272px, 24px`
   - Add the second text box right of the red line, and specify the following settings:
     - **Value**: `=SUM([ARTran.TranAmt])`
     - **Size**: `96px, 24px`

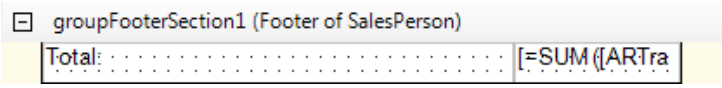


Figure: The group footer section of salespersons

8. Delete the page footer section.
9. Save your changes to the report.

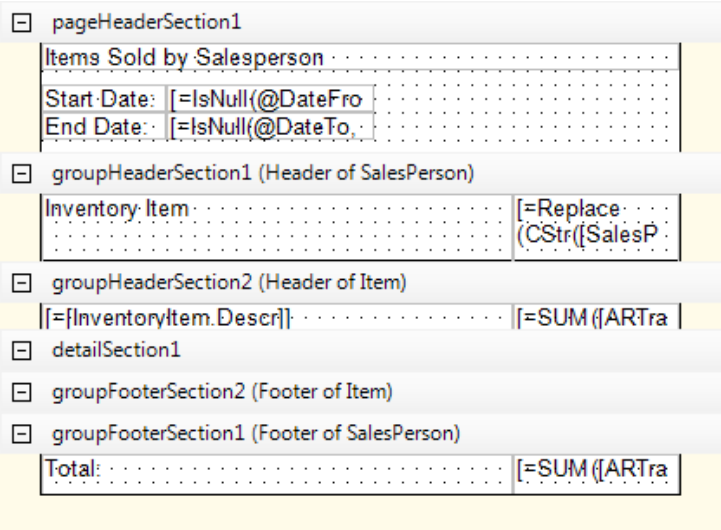


Figure: The tabular report layout

You have configured the tabular report.

4. Publishing the Tabular Report

You have to add the URL of the tabular report to the site map in Acumatica ERP to give users the ability to run the report. Complete the following steps:

1. Log in to the *SalesDemo* company of Acumatica ERP.
2. On the Site Map form (SM200520; System > Customization > Manage), in the left pane, select *Company* > *Finance* > *Accounts Receivable* > *Reports* > *Audit*.
3. In the table in the right pane, add a new row to the table, and specify the following settings:
   - **ScreenID**: `AR.68.00.00`
   - **Title**: `Items Sold by Salesperson`
   - **Url**: `~/Frames/ReportLauncher.aspx?ID=AR680000.rpx`
4. Save your changes to the site map.

   Now you can run the Items Sold by Salesperson report.
5. Add the report to a workspace in the modern UI as follows:
   - **a.** If you are in the classic UI, switch to the modern UI.
   - **b.** In the main menu, click **Receivables**.
   - **c.** In the main menu, click configuration menu (three dots in the bottom left corner) and then click **Edit Menu** to switch to the Menu Editing mode.
   - **d.** Click **Add Menu Item**.
   - **e.** In the **Select Forms** box, type `Items Sold by Salesperson`.
   - **f.** Select the check box to the right of the *Items Sold by Salesperson* report.
   - **g.** Click **Add & Close** to add the selected report to the workspace and close the dialog box.
   - **h.** In the **Other** section of the workspace, find the *Items Sold by Salesperson* report, and, on the report pop-up toolbar, click Edit (the pencil icon).
   - **i.** In the **Category** box of the **Form Parameters** dialog box, select *Reports*.

j. Click **OK** to move the report to the **Reports** section and close the dialog box.

k. In the **Reports** section, select the check box to the left of the *Items Sold by Salesperson* report to add it to the quick menu by default.

l. Click **Exit Edit Menu** to save you changes and exit the Menu Editing mode.

Notice that the *Items Sold by Salesperson* report appeared in the **Reports** section of the **Receivables** workspace.

6. Open the Items Sold by Salesperson report form (AR680000; Finance > Accounts Receivable > Reports >Audit).

7. On the **Report Parameters** tab, specify the report parameters, if needed.

8. On the form toolbar, click **Run Report** to execute the report.

Items Sold by Salesperson

Start Date: 7/1/2015
End Date: 9/30/2015

Inventory Item	Jason Mendenhall	Michal Bujacek	Steve Church	Eric Killian	Joshua Mueller	Jay Parker	Theo Valich	Kachine Williams
Widget 01 - High volume, low cost	6,000.00							
Widget 02 - Serial numbered item							3,000.00	
Widget 03 - Standard cost item							22,500.00	
Acer Laptop Computer			2,500.00					
Lego 500 piece set			125,000.00					
South Shore Savannah Changing Table				28,688.10				
Little Tikes Bold n Bright Table & Chairs				97,376.40				
Grac Pack N Play with Newborn Napperstation				31,800.00				
Char-Broil Classic 480						15,998.40		
Mr BBQ 18 PC Stainless Set & Case		1,758.40						
Kiddraft Nantucket Toybox			25,334.40					
Radio Flyer Interactive Riding Horse			39,765.60					
Lobster Portable Tennis Ball Machine			11,186.00					
Stamina In-Motion Elliptical Trainer			83,660.00					
Skywalker trampoline - 15ft round			52,640.00					
Bowflex Adjustable Dumbbells			91,195.00					
Bose Quiet Comfort Noise Cancel Headset								22,425.00
Bose Bluetooth Headset Series 2								11,246.25
Dell desktop computer			56,250.00					
Lenovo laptop computer						115,766.34		
Intel CPU - 2.6GHz			5,970.00					
Kindle Fire 8.9" Tablet HD		6,817.20	60,996.00			5,382.00		4,784.00
Hot Dog Buns 8 PK (12per pack)		52,952.77				38,120.00		63,851.00
Wise Potato Chips 1.25oz Bags / 36PK						23,100.00		42,570.00
Coca-Cola Cans 12 Count			8,246.00			11,730.08		
Ball Park Beef Franks 3lbs 2 PK		53,769.88				38,490.00		67,934.85
Coffee K-Cup Sampler Coffee 35 Count								18,937.50
Sweet N Low Sugar 12pk			97,020.00					41,242.50
Liptons Cold Brew Tea Bags 6 Pack			34,003.20					8,977.36
Eagle American Auto Lift			23,394.00					
Genie Scissor Lift Aerial Work Platform GS-1930							104,999.95	
Rider Forklift - Big Joe							203,620.00	
Ranger Wheel Balancer DST-2420			28,199.85					
Hobart HL600-1STD 60QT Mixer							64,581.44	
Industrial Conveyor Oven			300,000.00					
Baker Pride Y-602 double Deck Pizza Oven 60"			67,000.00					
Project Consulting					19,020.00			
Special or custom order			20,000.00					
Hard drive 2TB 7200rpm			27,196.60					
Coca-Cola Diet Cans - 12 pack			5,656.40					
Total:	6,000.00	115,298.25	1,165,213.05	157,864.50	19,020.00	248,586.82	398,701.39	281,968.46

Figure: The executed report

Lesson Summary

In this lesson, you have learned how to create tabular reports. To configure the tabular report, You specified the **TabularReport** parameter of the report as *True*. With the **TabularFreeze** parameter, you divided the detail section and the group sections of the report with a vertical line into two areas. You defined two groups for the report. You used the topmost group to define the report columns, and the other group to define the row headers and column values. In the right area of the report, whose contents are duplicated for each group, you placed the text boxes with the column headers, column values, and column totals.

Review Questions

1. To create a tabular report, you should set that report property to that value.
   - **A**. **ReportFormat** to *Tabular*
   - **B**. **TabularReport** to *True*
   - **C**. **TabularColumns** to *True*
   - **D**. **ReportType** to *Tabular*
2. The **TabularFreeze** property divides a tabular report into two areas with a vertical red line. What sections does the line pass through?
   - **A**. Detail
   - **B**. Page header, Detail, and Page footer
   - **C**. Group header, Detail, and Group footer
   - **D**. Group header and Group footer
3. How many elements that you have placed to the right of the red line of the tabular report will be duplicated for each new group?
   - **A**. The first
   - **B**. The first and the second
   - **C**. All

Answer Key

1 - B; 2 - C; 3 - C.

Lesson 7: Defining Additional Filters for Reports

A user can define additional filtering and sorting conditions for a report directly in Acumatica ERP without using the Report Designer.

In this lesson, you will apply additional conditions to a report and specify a list of data fields to sort and filter the report data.

Lesson Objectives

In this lesson, you will learn how to do the following:

1. *Specify additional sorting and filtering conditions*
2. *Extend the list of properties to sort and filter report data*
3. *Limit the list of sorting and filtering properties*

1. Specifying Additional Sorting and Filtering Conditions

In Acumatica ERP, users can specify additional filtering and sorting conditions of a report on the **Additional Sort and Filters** tab of the report form; an example is shown in the screenshot below.

Once you define additional filtering and sorting conditions of any report, you can *save them as a template*.

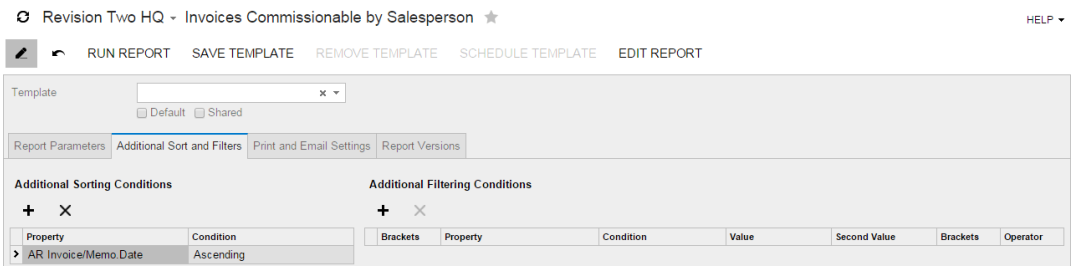


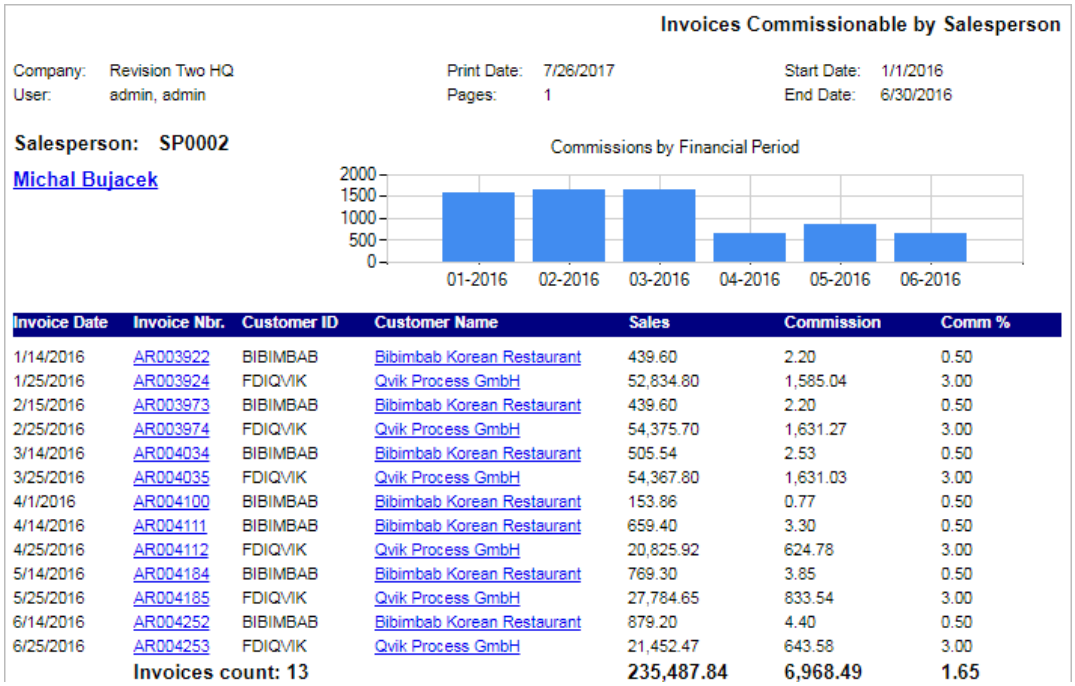
Figure: Viewing the additional sorting and filtering conditions

The **Additional Sorting Conditions** table lists the default sorting conditions of the report. The user can specify additional sorting conditions. Also, the user can delete or change the default sorting conditions. The next time the user opens the report, the default sorting conditions will be restored.

In the **Additional Filtering Conditions** table, the user can specify additional filtering conditions. However, the user cannot see, delete, or modify the default filtering conditions.

To become familiar with these capabilities, log in to the *SalesDemo* company of Acumatica ERP, open the Invoices Commissionable by Salesperson report form (AR670000; Finance > Accounts Receivable > Reports > Audit), open the **Additional Sort and Filters** tab to view the default sorting conditions (shown in the previous screenshot), and then run the report with the following settings (shown in the screenshot below):

- **Date From**: *1/1/2016*
- **Date To**: *6/30/2016*
- **Salesperson**: *SP0002 - Michal Bujacek*



Invoices Commissionable by Salesperson

Company: Revision Two HQ
User: admin, admin
Print Date: 7/26/2017
Pages: 1
Start Date: 1/1/2016
End Date: 6/30/2016

Salesperson: SP0002

Michal Bujacek

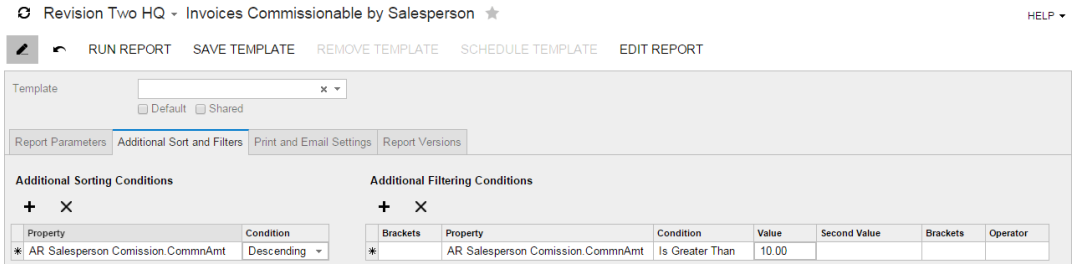
Commissions by Financial Period

Invoice Date	Invoice Nbr.	Customer ID	Customer Name	Sales	Commission	Comm %
1/14/2016	AR003922	BIBIMBAB	Bibimbab Korean Restaurant	439.60	2.20	0.50
1/25/2016	AR003924	FDIQVIK	Qvik Process GmbH	52,834.80	1,585.04	3.00
2/15/2016	AR003973	BIBIMBAB	Bibimbab Korean Restaurant	439.60	2.20	0.50
2/25/2016	AR003974	FDIQVIK	Qvik Process GmbH	54,375.70	1,631.27	3.00
3/14/2016	AR004034	BIBIMBAB	Bibimbab Korean Restaurant	505.54	2.53	0.50
3/25/2016	AR004035	FDIQVIK	Qvik Process GmbH	54,367.80	1,631.03	3.00
4/1/2016	AR004100	BIBIMBAB	Bibimbab Korean Restaurant	153.86	0.77	0.50
4/14/2016	AR004111	BIBIMBAB	Bibimbab Korean Restaurant	659.40	3.30	0.50
4/25/2016	AR004112	FDIQVIK	Qvik Process GmbH	20,825.92	624.78	3.00
5/14/2016	AR004184	BIBIMBAB	Bibimbab Korean Restaurant	769.30	3.85	0.50
5/25/2016	AR004185	FDIQVIK	Qvik Process GmbH	27,784.65	833.54	3.00
6/14/2016	AR004252	BIBIMBAB	Bibimbab Korean Restaurant	879.20	4.40	0.50
6/25/2016	AR004253	FDIQVIK	Qvik Process GmbH	21,452.47	643.58	3.00
	Invoices count: 13			**235,487.84**	**6,968.49**	**1.65**

Figure: Executing the report with the default sorting and filtering conditions

Next, you will try to modify the filtering and sorting conditions of the report to see how these changes affect the report data. Do the following:

1. On the **Additional Sort and Filters** tab of the Invoices Commissionable by Salesperson report (AR670000), perform the following instructions, as shown in the screenshot below:
   - In the **Additional Sorting Conditions** table, delete the sorting condition by invoice date (which is there by default).
   - Add a row to this table, and specify the following settings, to show the largest commission amounts first:
     - **Property**: *AR Salesperson Comission.CommnAmt*
     - **Condition**: *Descending*
   - In the **Additional Filtering Conditions** table, add a row, and specify the following settings, to exclude from the report results commissions that are less than or equal to $10:
     - **Property**: *AR Salesperson Comission.CommnAmt*
     - **Condition**: *Is Greater Than*
     - **Value**: 10



Revision Two HQ - Invoices Commissionable by Salesperson

HELP

RUN REPORT | SAVE TEMPLATE | REMOVE TEMPLATE | SCHEDULE TEMPLATE | EDIT REPORT

Template

Default Shared

Report Parameters | Additional Sort and Filters | Print and Email Settings | Report Versions

Additional Sorting Conditions

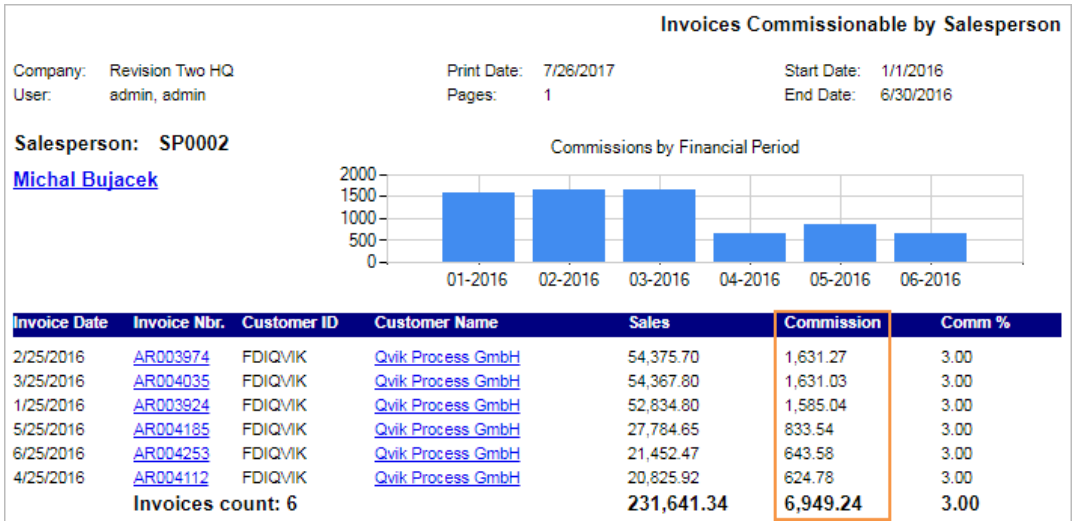
Property	Condition
AR Salesperson Comission.CommnAmt	Descending

Additional Filtering Conditions

Brackets	Property	Condition	Value	Second Value	Brackets	Operator
	AR Salesperson Comission.CommnAmt	Is Greater Than	10.00			

Figure: Customizing the sorting and filtering conditions

2. Run the report and view the results, as shown in the screenshot below.



Invoices Commissionable by Salesperson

Company: Revision Two HQ
User: admin, admin
Print Date: 7/26/2017
Pages: 1
Start Date: 1/1/2016
End Date: 6/30/2016

Salesperson: SP0002
Michal Bujacek

Invoice Date	Invoice Nbr.	Customer ID	Customer Name	Sales	Commission	Comm %
2/25/2016	AR003974	FDIQVIK	Qvik Process GmbH	54,375.70	1,631.27	3.00
3/25/2016	AR004035	FDIQVIK	Qvik Process GmbH	54,367.80	1,631.03	3.00
1/25/2016	AR003924	FDIQVIK	Qvik Process GmbH	52,834.80	1,585.04	3.00
5/25/2016	AR004185	FDIQVIK	Qvik Process GmbH	27,784.65	833.54	3.00
6/25/2016	AR004253	FDIQVIK	Qvik Process GmbH	21,452.47	643.58	3.00
4/25/2016	AR004112	FDIQVIK	Qvik Process GmbH	20,825.92	624.78	3.00
	Invoices count: 6			231,641.34	6,949.24	3.00

Figure: Running the report with customized sorting and filtering conditions

Keep in mind that sorting conditions are applied to only the data of the detail section of a report, while filtering conditions can affect the data of the whole report.

By default, the user can select in the **Property** column any data field you used in the text boxes, or in the sorting or filtering conditions of the report. You can extend or limit this list of available properties, as described further in this topic.

2. Extending the List of Properties to Sort and Filter the Report Data

To extend the list of properties that the user can use to define sorting and filtering conditions of the report, do the following:

1. In the Report Designer, open the `AR670000.rpx` report from the server.
2. On the menu bar, select **File** > **Build Schema**; the **Schema Builder** wizard appears.
3. On the **Viewer Fields** tab of the wizard, do the following to add properties, as shown in the screenshot below:
   - In the **Name** column of the first row, select *Customer.Status*.
   - In the **Name** column of the second row, select *ARInvoice.Released*.

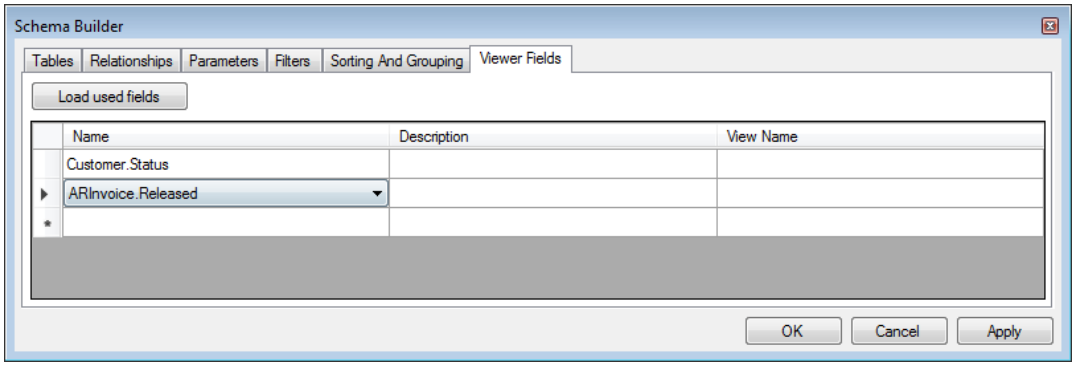


Figure: Executing the report with customized sorting and filtering conditions

4. Click **OK** to apply your changes to the report and close the **Schema Builder** wizard.
5. Save your changes to the report.

6. Log in to the *SalesDemo* company of Acumatica ERP.
7. Open the Invoices Commissionable by Salesperson report form (AR670000).
8. On the **Additional Sort and Filters** tab, find in the list of properties the ones that you have added, as shown in the following screenshot.

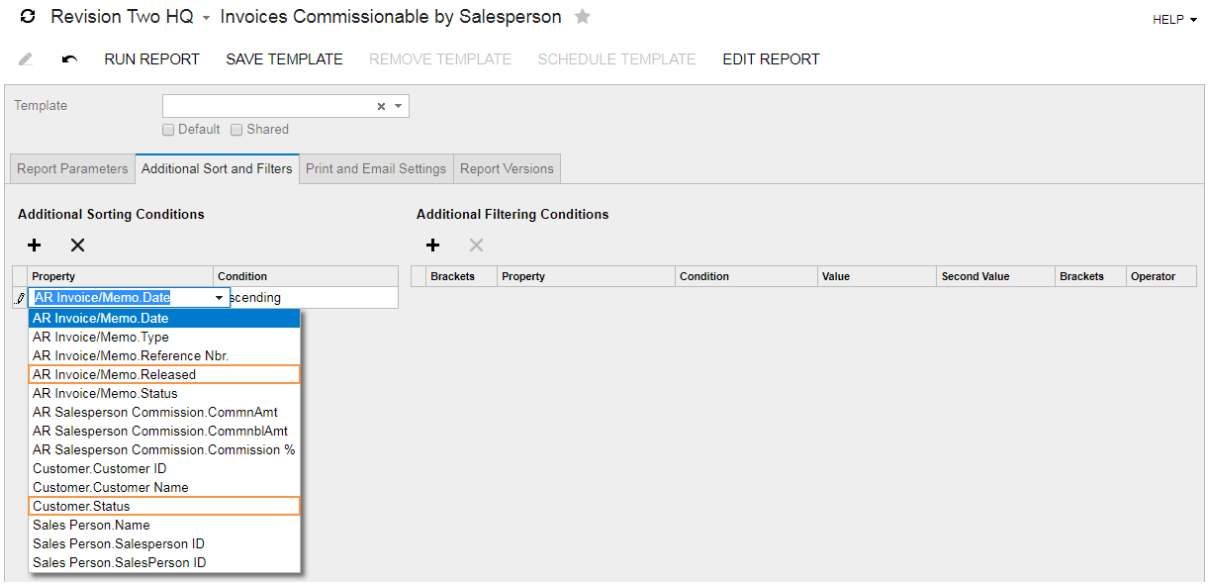


Figure: Reviewing the properties used to sort and filter the report data

3. Limiting the List of Sorting and Filtering Properties

To limit the list of properties that the user can use to define sorting and filtering conditions of the report, do the following:

1. In the Report Designer, open the `AR670000.rpx` report from the server.
2. On the **Properties** tab, select the *report1 Report* object from the drop-down list to select the report form. In the **ViewerFieldsMode** property, select *OnlySpecified*. Based on this setting, only the data fields specified on the **Viewer Fields** tab of the **Schema Builder** wizard will be available for selection on the **Additional Sort and Filters** tab of the report form.

   On the **Viewer Fields** tab of the **Schema Builder** wizard, you could add to the list of available properties all the data fields used in the report. To do that, you would click the **Load used fields** button.

3. Save your changes to the report.
4. Log in to the *SalesDemo* company of Acumatica ERP.
5. Open the Invoices Commissionable by Salesperson report form (AR670000).
6. On the **Additional Sort and Filters** tab, find that the list of available properties.

   Notice that the list of available properties exactly matches the list you defined on the **Viewer Fields** tab of the **Schema Builder** wizard, as shown in the following screenshot. Also notice that the default sorting condition of the report by invoice date has been removed because the *ARInvoice.DocDate* data field is not in the list of viewer fields.

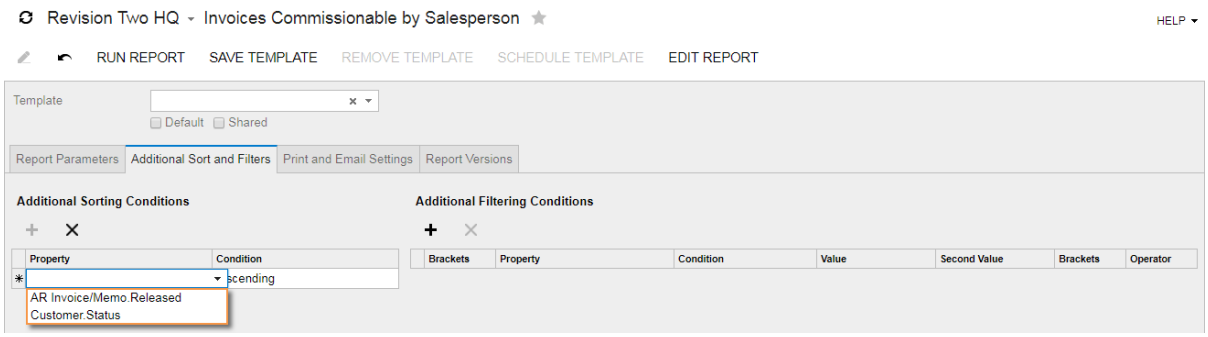


Figure: Reviewing the properties used to sort and filter the report data

Lesson Summary

In this lesson, you have learned how to sort and filter report data directly in Acumatica ERP.

With the Report Designer, you configured the list of properties used for sorting and filtering the report data in Acumatica ERP. You extended the list of these properties with the **Schema Builder** wizard and limited this list by changing the default value of the **ViewerFieldsMode** property of the report.

Review Questions

1. On the **Additional Sort and Filters** tab of a report form, you can sort and filter the report data. Select all activities you cannot perform.
   - **A**. Change or delete the default sorting conditions
   - **B**. Specify additional sorting conditions
   - **C**. Modify or delete the default filtering conditions
   - **D**. Specify additional filtering conditions
2. Suppose that *MergeWithUsed* (the default value) is selected as the value of the **ViewerFieldsMode** property of a report. What data fields can a user select as the properties of filtering and sorting conditions on the **Additional Sort and Filters** tab of the form of this report? Select all that apply.
   - **A**. Any data field used in the text boxes on the report layout
   - **B**. Any data field used in the sorting conditions of the report
   - **C**. Any data field used in the filtering conditions of the report
   - **D**. Any data field listed on the **Viewer Fields** tab of the **Schema Builder** wizard
   - **E**. Any data field of the classes added to the report
3. Suppose that *OnlySpecified* is selected as the value of the **ViewerFieldsMode** property of a report. What data fields can a user select as the properties of filtering and sorting conditions on the **Additional Sort and Filters** tab of the form of this report? Select all that apply.
   - **A**. Any data field used in the text boxes on the report layout
   - **B**. Any data field used in the sorting conditions of the report
   - **C**. Any data field used in the filtering conditions of the report
   - **D**. Any data field listed on the **Viewer Fields** tab of the **Schema Builder** wizard
   - **E**. Any data field of the classes added to the report
   - **F**. None of the above

Answer Key

1 - C; 2 - A, B, C, D; 3 - D.

Lesson 8: Using Images and QR Codes

You can use images in your reports. You can add locally stored images in a report, show images from the database, and generate a barcode or QR code.

In this lesson, you will create a report that lists stock items with the images uploaded for these items. You can upload images to a stock item, as shown in the screenshot below, or to any other object or entity,such as an employee or an invoice.

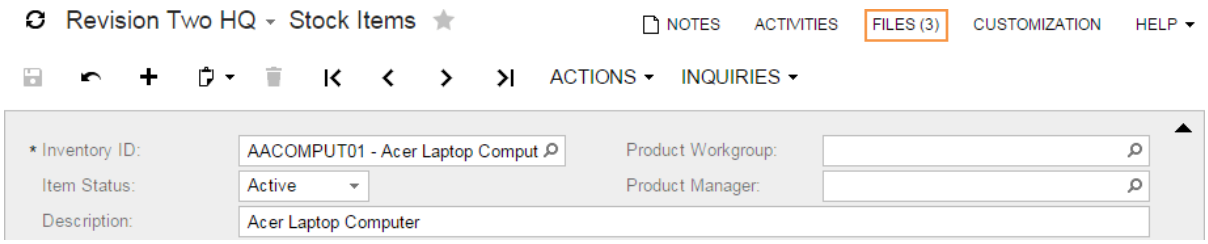


Figure: Stock item with uploaded files

You can upload files of various formats, as shown in the screenshot below. Thus, for the report, you have to filter files to show only images.

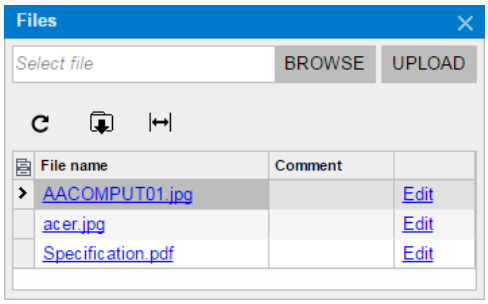


Figure: List of uploaded files

Lesson Objectives

In this lesson, you will learn how to do the following:

- *Upload locally stored images to a report*
- *Show images uploaded to the report*
- *Show images stored in the database*
- *Generate a QR code*

Creating the Report and Selecting the Data

To create the report that lists stock items with uploaded images, you have to use *InventoryItem*, *UploadFile*, *NoteDoc*, and *UploadAllowedFileTypes* classes, as shown in the diagram below. The *InventoryItem* class provides access to the stock items. *UploadFile* provides access to the uploaded files. The *NoteDoc* class links the *InventoryItem* and *UploadFile* classes by using the *NoteId* and *FileId* fields, respectively. *The UploadAllowedFileTypes* class provides access to the file extensions that the user can upload. You will use this class to filter images among the files uploaded to items.

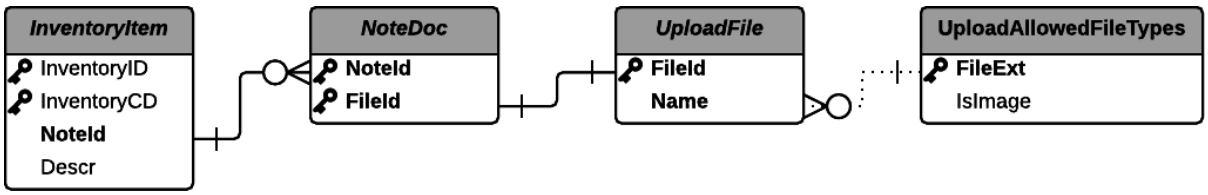


Figure: The classes and relationships between them

To create the report and select the data, do the following:

1. Start the Report Designer; a blank report form is displayed by default.
2. Open the **Schema Builder** wizard.
3. On the **Tables** tab of the wizard, load the schema, and add the *InventoryItem*, *UploadFile (PX.SM.UploadFile)*, *NoteDoc*, and *UploadAllowedFileTypes* data access classes to the report.
4. Apply your changes to the report.
5. On the **Relationships** tab, specify the relationships between the added classes as follows:
   a. Add the lines with the following settings to link the *InventoryItem* and *NoteDoc* classes:
      - **Enter the report table relations here** area:

Parent Table	Join Type	Child Table
InventoryItem	*Inner*	*NoteDoc*

      - **Enter the data field links for the active relation** area:

Parent Field	Link Condition	Child Field
NoteId	*Equal*	*NoteId*

   b. Add the lines with the following settings to link the *NoteDoc* and *UploadFile* classes:
      - **Enter the report table relations here** area:

Parent Table	Join Type	Child Table
NoteDoc	*Inner*	*UploadFile*

      - **Enter the data field links for the active relation** area:

Parent Field	Link Condition	Child Field
FileId	*Equal*	*FileId*

   c. Add the lines with the following settings to link the *UploadFile* and *UploadAllowedFileTypes* classes:
      - **Enter the report table relations here** area:

Parent Table	Join Type	Child Table
UploadFile	*Inner*	*UploadAllowedFileTypes*

      - **Enter the data field links for the active relation** area:

Parent Field	Link Condition	Child Field
FileExt	*Equal*	*FileId*

To specify the expression in the **Parent Field** column, select the row and click the **Parent Formula** button, as shown in the screenshot below.

You can specify an expression in the **Child Field** column by clicking the **Child Formula** button.

The `UploadFile.Name` field holds the names of uploaded files. The file name ends with an extension, as with `filename.png`. The `UploadAllowedFileTypes.FileExt` field holds file extensions, such as `.png`. You cannot compare these fields directly. Thus, you have to use the `Right(str, length)` text function. This function returns a string containing the number of characters specified by the `length` argument from the right side of a string specified by the `str` argument.

Based on the expression you specified for **Parent Field**, you can compare file extensions. This allows you to link the *UploadAllowedFileTypes* and *UploadFile* classes selected in the **Enter the report table relations here** area.

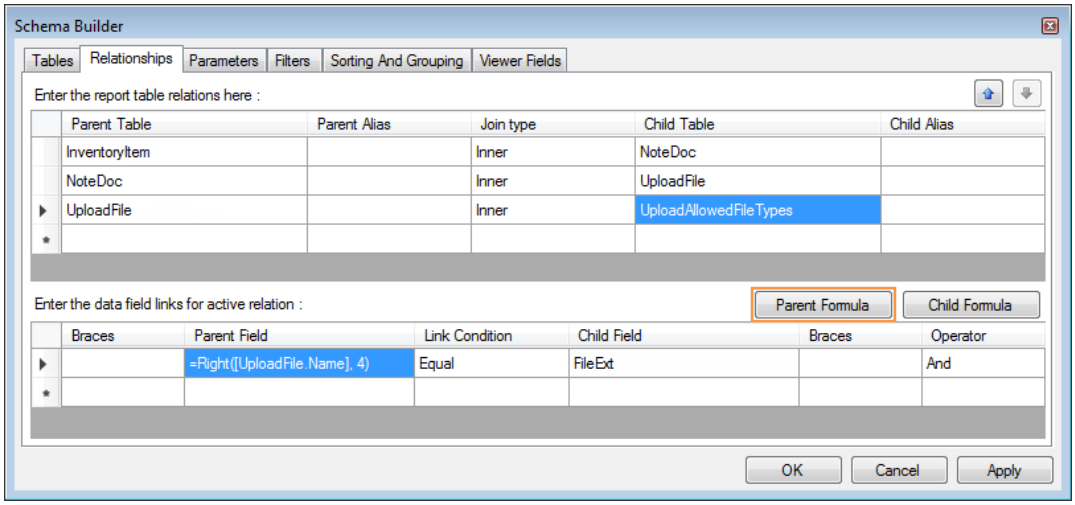


Figure: The relationships of the classes

6. Apply your changes to the report.
7. On the **Filters** tab of the **Schema Builder** wizard, specify a filtering condition with the following settings:
   - **Data Field**: *UploadAllowedFileTypes.IsImage*
   - **Condition**: *Equal*
   - **Value1**: `1`

   Based on this condition, the report will show the images uploaded to stock items and won't show other files. If a user uploads images with a new extension, the files with this extension will be shown in the report automatically.

   If you had to filter files by only one extension, you could do it without the *UploadAllowedFileTypes* class. Instead, you might filter the report data by comparing the `=Right([UploadFile.Name], 3)` expression with the extension you need directly. For example, you might specify the following settings for the condition you add on the **Filters** tab:

   - **Data Field**: `=Right([UploadFile.Name], 3)`
   - **Condition**: *Equal*
   - **Value1**: `pdf`

8. Click **OK** to apply your changes to the report and close the **Schema Builder** wizard.
9. On the **Properties** tab, select the *report1 Report* object from the drop-down list to select the report form.
10. Add a new grouping condition to the report with the following settings:
    - **(Name)**: `Item`
    - **KeepTogether**: *FirstDetail*
    - **Grouping** > **Data Field**: `InventoryItem.InventoryCD`

    Based on this condition, the report data will be grouped by stock item.
11. Save the report to the server with the `IN660000.rpx` name.

Configuring the Report Layout

To modify the report layout, do the following:

1. On the **Properties** tab, select the *report1 Report* object from the drop-down list to select the report form, and specify the following settings:
    a. In the **EmbeddedImages** property, click the ... button to open the **Embedded Images** dialog box.
    b. In the dialog box, click the **New image ...** button, as shown in the screenshot below, and select the `report_header.png` file, which is provided with this course and contains the report name. (The **Name** and **Mime Type** of the selected file are defined automatically.)

    > You can add images of the following types to the collection of embedded images: `bmp`, `gif`, `jpg`, and `png`.

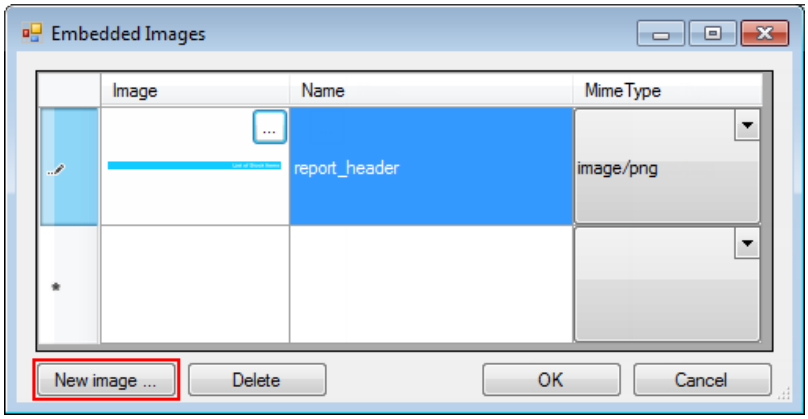


Figure: List of embedded images

    c. Click **OK** to add the image you selected to the embedded images collection of the report and to close the **Embedded Images** dialog box. Now you can use this image in the report.
2. Configure the page header section as follows (see the screenshot below):
    a. Click the section header to select the section, and specify its **Height** as `64px`.
    b. Adjust the width of the text box with the report name and the width of the picture box with the company logo so that their combined width will equal the width of the report.
    c. Add a picture box and specify the following settings to print the embedded image with the report name you have uploaded to the report:

- **Source**: *Embedded*

  Based on this setting, the image will be taken from the list of embedded images of the report.

- **Value**: *report_header*

> You can also show images uploaded to the site folder. If you were to do that, for the image box, you would select **Source** as *External* and specify the URL of the image in the **Value** property. For example, you have uploaded the `MyImage.png` file to the `/Site/Images/` folder. In the **Value** property, you should specify the following URL: `Images/MyImage.png`.

d. Adjust the width of the picture box with the embedded image so that it will equal the report width and leave its height as is.

e. Under the picture you have added, add text boxes with the following values to print column headers:

- **Value**: `QR-Code`
- **Value**: `Item CD`
- **Value**: `Item Name`
- **Value**: `Images`

f. Select all the text boxes added in this step, and enter `24px` as their **Size** > **Height**.

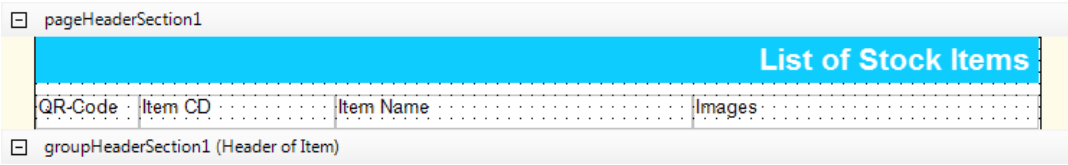


Figure: Page header section

The group header section will contain the item whose images are listed in the detail section and the QR code of this item.

3. Configure the group header section as follows (see the screenshot below):

- Click the section header to select the section, and specify its **Height** as `64px`.
- Add a picture box and specify the following settings to show the QR code of the item:
  - **Source**: *Barcode*
  - **BarcodeType**: *QRCode*

    Based on these settings, the image will be a QR code.

  - **Value**: `='http://localhost/InstanceName/Main.aspx?ScreenId=IN202500&InventoryCD='+[InventoryItem.InventoryCD]`

    Make sure that you has inserted the copied link fully, as the screenshot below shows.

    Based on this value, each item group will contain the QR code that links to the appropriate item. Notice that the link contains the application URL explicitly.

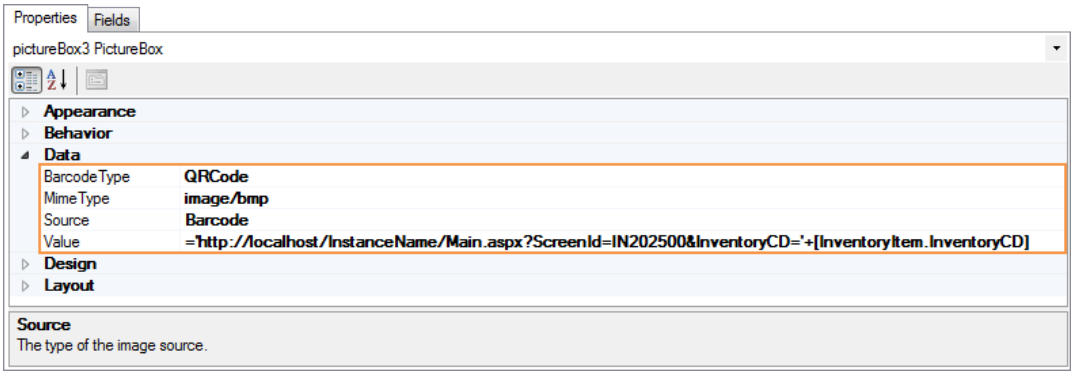


Figure: The settings of the QR code

- **QRCodeSettings** > **CodeSize**: `64`

  The default **CodeSize** of any QR code image is 50. If the length of the string you specified as the **Value** is too long, the QR code will disappear from the image preview on the report layout. If the user runs this report, the QR code will be invisible too. The larger the string whose value you specified for the barcode, the larger the **CodeSize** you should specify to make the image visible.

  If you do not see the QR code on the report layout, the user will not see this QR code in the executed report either.

- **Size**: `64px, 64px`

- Add the first text box and specify the following settings:
  - **Value**: `=[InventoryItem.InventoryCD]`
  - **Size** > **Height**: `24px`
- Add the second text box and specify the following settings:
  - **Value**: `=[InventoryItem.Descr]`
  - **Size** > **Height**: `24px`

Figure: Group header section

4. The detail section will contain a list of the images uploaded to the item. Configure the section as follows (see the screenshot below):

- Click the section header to select the section, and specify its **Height** as `88px`.
- Add a picture box and specify the following settings:
  - **Source**: *Database*
  - **Value**: `=[UploadFile.Name]`
  - **Sizing**: *Scale*

    Based on this setting, the image will be scaled to the size of the picture box so that one of dimensions of the image and the picture box—height or width—should be equal, the whole image should be visible, and the image proportion should remain.

With the *Fit* sizing, the image fills the whole space of the picture box, and the image proportion can be changed.

- **Size**: `240px, 88px`

Figure: Detail section

5. Specify the following settings for the group footer section, which will contain no elements, to hide the section:
   - **Height**: `0px`
   - **Visible**: *False*
6. Delete the page footer section.
7. Save your changes to the report.

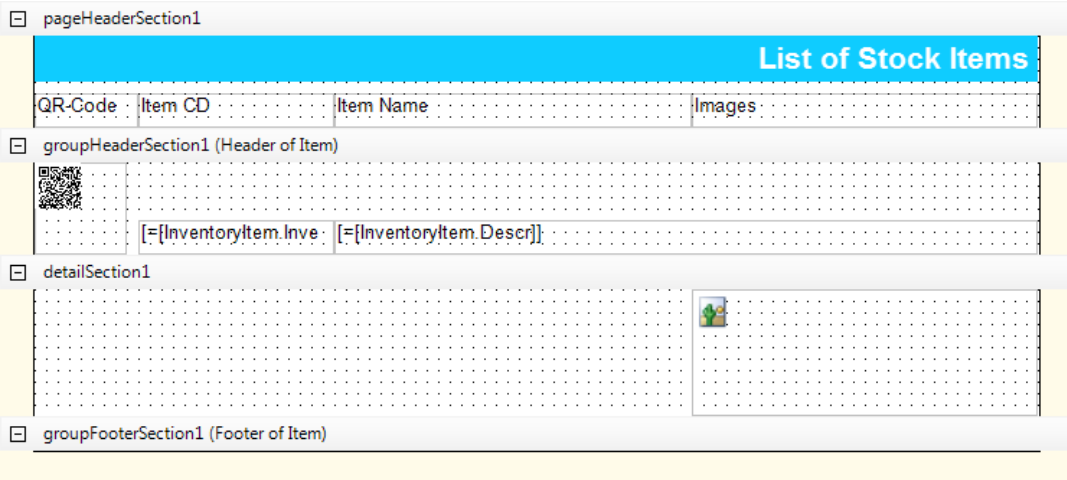


Figure: Final report layout

You have configured the report.

Publishing the Report

To add the URL of the created report to the site map in Acumatica ERP, do the following:

1. Log in to the *SalesDemo* company of Acumatica ERP.
2. On the Site Map form (SM200520; System > Customization > Manage), in the left pane, select *Company* > *Distribution* > *Inventory* > *Reports* > *Audit*.
3. In the table in the right pane, add a new row in the table, and specify the following settings:
   - **ScreenID**: `IN.66.00.00`
   - **Title**: `List of Stock Items`
   - **Url**: `~/Frames/ReportLauncher.aspx?ID=IN660000.rpx`

4. Save your changes to the site map.
5. Now you can execute the List of Stock Items report.

   Open the List of Stock Items report form (IN660000; Distribution > Inventory > Reports >Audit). On the form toolbar, click **Run Report** to preview the report, as shown in the screenshot below.

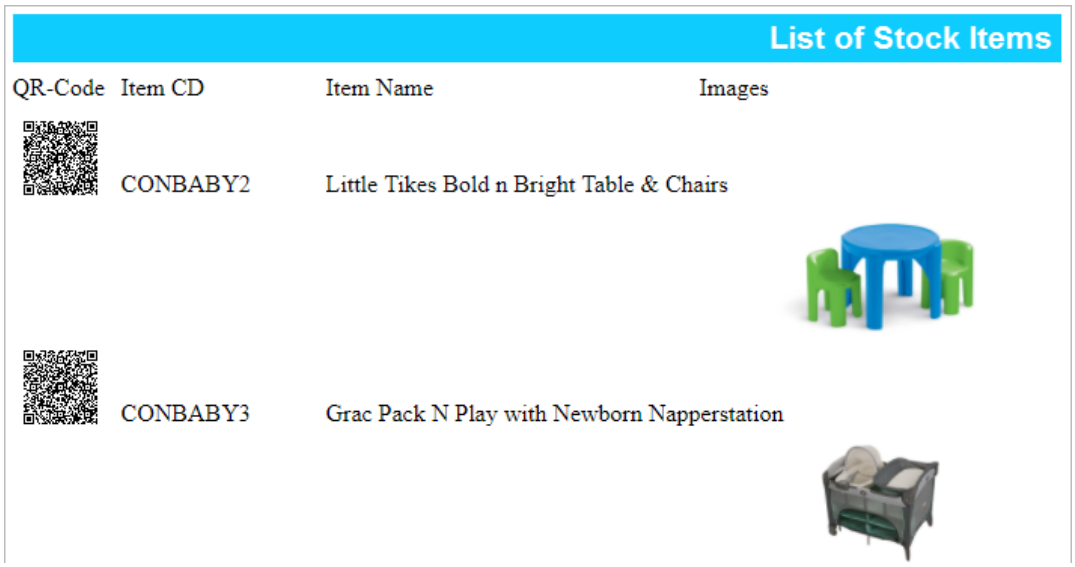


Figure: Generated report

Lesson Summary

In this lesson, you have learned how to use images in reports. You uploaded an image to a report by using the **EmbeddedImages** property of the report. You added the **PictureBox** elements to the report layout to show this uploaded image and to show images stored in the database. You also configured a picture box to show a QR code, which contained links to an Acumatica ERP form.

Review Questions

1. Select all the images you can show in a report.
   - **A**. An image uploaded to the report
   - **B**. An image uploaded to the site folder
   - **C**. Any image from the Internet
   - **D**. An image from the database
   - **E**. An image from the Partner Portal
   - **F**. A barcode
2. How can you add a QR code in your report. Select all that could apply.
   - **A**. Add to the report an image with this QR code as an embedded image and select this image as the value of an picture box.
   - **B**. Select *Barcode* as the source of an picture box, select *QRCode* as the barcode type of this picture box, and specify the text of the QR code as the value of the picture box.
   - **C**. Select *Database* as the source of an picture box, and as the value of this picture box, specify the `QRCode` expression with the text of the QR code, such as: `QRCode('The text of the QR code')`.

3. Suppose that you have added a picture box with an image to your report. You also selected *Scale* as the **Sizing** property of the picture box. When you execute the report, what will happen with the image of this picture box? Select all the correct statements.

- **A**. The image can be increased
- **B**. One of dimensions of the image—height or width—equals the same dimension of the picture box.
- **C**. The image fills the whole space of the picture box.
- **D**. The whole image is visible.
- **E**. The image proportion is remain.
-

Answer Key

1 - A, B, D, F; 2 - A, B; 3 - A, B, D, E.

Lesson 9: Using Alternative Colors in Report Data

You can use alternative colors—that is, different than the colors used by default, to mark report data according to some conditions.

Suppose you have to modify the Customer Summary report (AR650500; Finance > Accounts Receivable > Reports > Audit), which is shown in the screenshot below. You need to highlight customers' balances that are greater than or equal to 10,000.

Customer Summary

Company: Revision Two HQ
User: admin

Page: 1 of 1
Date: 9/23/2015 12:14 PM

Customer ID	Customer Name	Status	Class ID	Stmt. Cycle	Curr. ID	Tax Zone ID	Phone	FAX	Current Balance
ABARTENDE	USA Bartending School	Active	LOCAL	EOM	USD		+1 (908) 532-9522		42,053.00
ABCSTUDIOS	ABC Studios Inc	Active	LOCAL	EOM	USD		+1 (777) 446-7537		47,924.30
ARTCAGES	Artcages	Active	LOCAL	EOM	USD		+1 (777) 252-6488		5,700.00
BRASSKEY	Brass Key Bar	Active	LOCAL	EOM	USD		+1 (777) 898-0326		4,784.00
ELEIMPORT	Electonic Importers	Active	LOCAL	EOM	USD		+1 (972) 123-1231		4,784.00
FDIAGRI	Agrilink Food	Active	LOCAL	EOM	USD		+1 (281) 231-1232		15,946.60
FDICOCCIA	Cocciatari Pizza	Active	LOCAL	EOM	USD		+1 (777) 623-5001		25,179.50
FDIQVIK	Qvik Process GmbH	Active	INTLEU	EOM	EUR		+ 49 (99111) 6842685		56,200.16
INDSACRAME	Sacramento Industrial Supply	Active	LOCAL	EOM	USD		+1 (777) 254-5312		147,183.03
INDSUPPLY	Industrial Supply Inc	Active	LOCAL	EOM	USD		+1 (954) 343-3433		25,226.95
NYLIBRARY	New York Public Library for the	Active	LOCAL	EOM	USD		+1 (777) 832-1630		7,000.00
PREMIERE	Premiere Dermatology and Surgery	Active	LOCAL	EOM	USD		+1 (777) 344-2450		17,800.00
ROADBUILDR	Road Builder Company	Active	LOCAL	EOM	USD		+1 (614) 269-0150		5.00
SAFECREDIT	Safe Credit Union	Active	LOCAL	EOM	USD		+1 (777) 934-7533		1,000.00
SNOSHORT	Shortstop Sports	Active	LOCAL	EOM	USD		+1 (777) 476-6971		47,816.53
TOYONEILL	O'Neill's Trading	Active	LOCAL	EOM	USD		+1 (469) 098-0988		48,353.30
TOYSTAR	Star America Toys	Active	LOCAL	EOM	USD		+1 (212) 262-4896		61,700.00
WATERPROC	CHENGDU RONGYI WATER	Active	INTL	EOM			+86 (7777) 6546776		4,560.00
WESTERNTRC	Western Star Trucks	Active	LOCAL	EOM	USD		+1 (215) 945-0350		500.00
WIDGETCC	Widget Credit Card	Active	LOCAL	EOM	USD		+1 (415) 123-5678		8,500.00

Figure: Customer Summary report

Lesson Objectives

In this lesson, you will learn how to do the following:

1. *Use color for report data according to some conditions*
2. *Save a report as a new version*

1. Using Color for the Report Data

To use color for report data based on the customer's balance amount, do the following:

1. Start the Report Designer, and open the `AR650500.rpx` report from the server.

   You can also open the report through Acumatica ERP by performing the following steps:

   - Open the Customer Summary report (AR650500; Finance > Accounts Receivable > Reports > Audit).
   - On the report form toolbar, click **Edit Report**. The system will suggest that you download the `AR650500.rps` file.
   - Download and open the `AR650500.rps` file. The **Open report from server** dialog box appears.
   - In the dialog box, type your password and click **OK** to open the report in the Report Designer.

2. In the **groupHeaderSection1** section, select the **Sum([ARBalances.CurrentBal])** text box, as shown in the screenshot below.

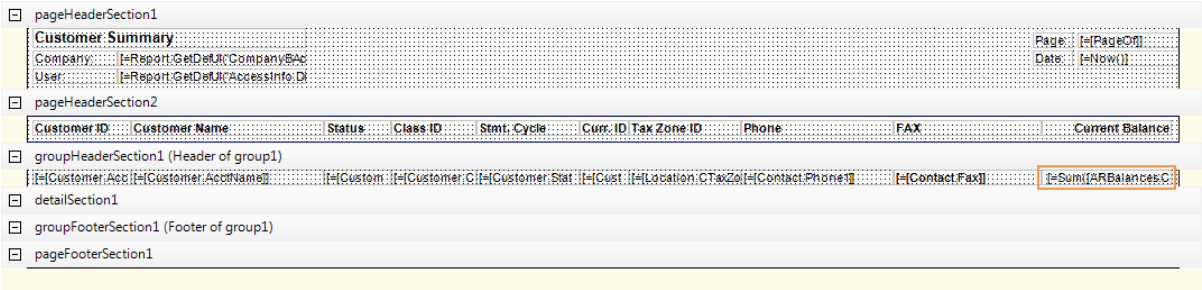


Figure: Customer Summary report layout

This text box holds the following expression, which calculates each customer's current balance: `=Sum([ARBalances.CurrentBal])`.

In the **VisibleExpr** property of the text box, type the following expression: `=Sum([ARBalances.CurrentBal])<10000`. Based on this expression, the text box will be visible when the customer's current balance is less than 10,000.

3. Right-click the text box, and select **Copy**; then right-click the text box again, and select **Paste** to duplicate the text box.

   You can also duplicate the text box by selecting it on the report layout and then, on the main window toolbar, clicking the button and the button sequentially.

   A copy of the text box will be inserted in the same place and will overlap with the original text box, as shown in the screenshot below.

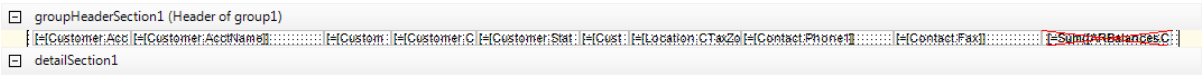


Figure: Duplicated text box

4. In the **VisibleExpr** property of the duplicated text box, modify the expression as follows: `=Sum([ARBalances.CurrentBal])>=10000`. Based on this expression, the duplicated text box will be visible when the customer's current balance is greater than or equal to 10,000.

   In the **Style** > **Color** property, select *Red* to makes the color of the values of the duplicated text box red.

You have customized the report.

2. Saving a Report as a New Version

You can save your report to the server as a new version, which allows you to revert your changes quickly, if needed.

To save your changes to the report as a new version, perform the following steps:

1. On the menu bar of the Report Designer, select **File** > **Save to Server**. The **Save report on server** dialog box appears.
2. To save the modified report as a new version, select the **Save as new version** check box, as shown in the screen hot below.
3. In the **Version description** text box, type the following: `Current Balances >= 10,000 are red`.

   The version description is an optional parameter.

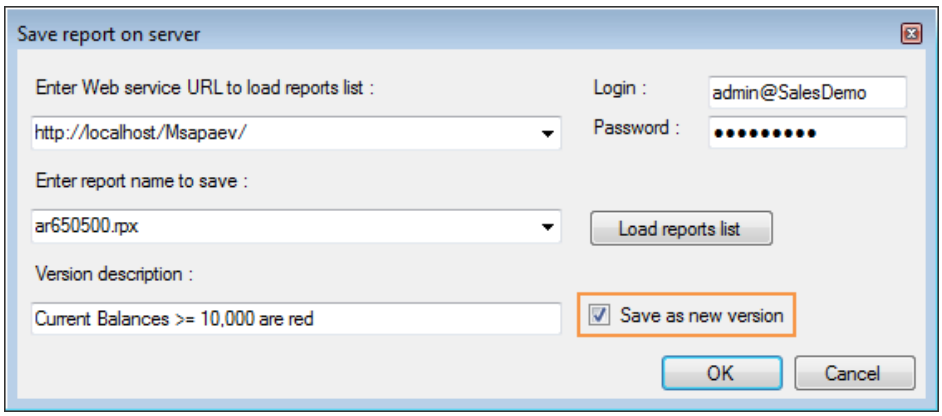


Figure: New version of the report being saved

4. Click **OK** to save your changes to the report.
5. Log in to the *SalesDemo* company of Acumatica ERP, and open the Customer Summary form (AR650500; Finance > Accounts Receivable > Reports > Audit).

   If you opened the report for editing from its report form in Acumatica ERP, you have to reload the report form to get the changes you made.

6. On the **Report Version** tab, find the version you saved, as shown in the screenshot below.

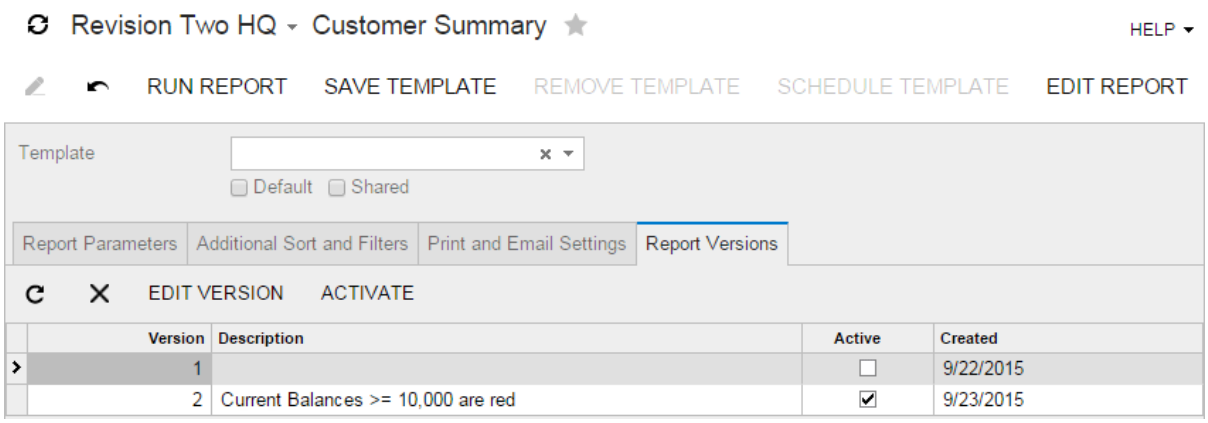


Figure: A new version of the report

The **Active** check box is selected for the version that will be used when the user runs the report. Each new version is saved as active.

If you were to make a version active, you could perform one of the following steps:

- Select the version on the **Report Version** tab, and click **Activate** on the tab toolbar.
- Select the **Active** check box of the needed version.

When you click **Edit Report** on the form toolbar, the active version will be opened for editing. To edit an inactive version, you can select it on the **Report Version** tab, and click **Edit Version** on the tab toolbar.

7. On the form toolbar, click **Run Report** to run the report and preview the changes you made, as shown in the screenshot below.

Figure: The customized Customer Summary report

Customer Summary

Company: Revision Two HQ
User: admin

Page: 1 of 1
Date: 9/23/2015 2:09 PM

Customer ID	Customer Name	Status	Class ID	Stmt. Cycle	Curr. ID Tax Zone ID	Phone	FAX	Current Balance
ABARTENDE	USA Bartending School	Active	LOCAL	EOM	USD	+1 (908) 532-9522		42,053.00
ABCSTUDIOS	ABC Studios Inc	Active	LOCAL	EOM	USD	+1 (777) 446-7537		47,924.30
ARTCAGES	Artcages	Active	LOCAL	EOM	USD	+1 (777) 252-6488		5,700.00
BRASSKEY	Brass Key Bar	Active	LOCAL	EOM	USD	+1 (777) 898-0326		4,784.00
ELEIMPORT	Electonic Importers	Active	LOCAL	EOM	USD	+1 (972) 123-1231		4,784.00
FDIAGRI	Agrilink Food	Active	LOCAL	EOM	USD	+1 (281) 231-1232		15,946.60
FDICOCCIA	Cocciatari Pizza	Active	LOCAL	EOM	USD	+1 (777) 623-5001		25,179.50
FDIQVIK	Qvik Process GmbH	Active	INTLEU	EOM	EUR	+ 49 (99111) 6842685		56,200.16
INDSACRAME	Sacramento Industrial Supply	Active	LOCAL	EOM	USD	+1 (777) 254-5312		147,183.03
INDSUPPLY	Industrial Supply Inc	Active	LOCAL	EOM	USD	+1 (954) 343-3433		25,226.95
NYLIBRARY	New York Public Library for the	Active	LOCAL	EOM	USD	+1 (777) 832-1630		7,000.00
PREMIERE	Premiere Dermatology and Surgery	Active	LOCAL	EOM	USD	+1 (777) 344-2450		17,800.00
ROADBUILDR	Road Builder Company	Active	LOCAL	EOM	USD	+1 (614) 269-0150		5.00
SAFECREDIT	Safe Credit Union	Active	LOCAL	EOM	USD	+1 (777) 934-7533		1,000.00
SNOSHORT	Shortstop Sports	Active	LOCAL	EOM	USD	+1 (777) 476-6971		47,816.53
TOYONEILL	O'Neill's Trading	Active	LOCAL	EOM	USD	+1 (469) 098-0988		48,353.30
TOYSTAR	Star America Toys	Active	LOCAL	EOM	USD	+1 (212) 262-4896		61,700.00
WATERPROC	CHENGDU RONGYI WATER	Active	INTL	EOM		+86 (7777) 6546776		4,560.00
WESTERNTRC	Western Star Trucks	Active	LOCAL	EOM	USD	+1 (215) 945-0350		500.00
WIDGETCC	Widget Credit Card	Active	LOCAL	EOM	USD	+1 (415) 123-5678		8,500.00

Lesson Summary

In this lesson, you have learned how to use various colors to mark report data according to some conditions. You duplicated the text box, whose color should depend on the text box value, and changed its **Style** > **Color** property. Then, you configured the **VisibleExpr** property of both text boxes—the original and the copy, which are overlapped—so that only one of them is visible at the moment.

You also saved the report to the server as a new version.

Review Questions

1. How can you save the report as a new version? Select all that apply.
   - **A**. In the Report Designer, select the **Save as new version** check box when you save the report to the server.
   - **B**. In Acumatica ERP, duplicate the report as a new version on the **Report Versions** tab of the report form.
   - **C**. In the Report Designer, save the report locally with the different name.
   - **D**. In the Report Designer, specify a new version in the **Version** property of the report.
2. How cannot you activate a report version? Select all that apply.
   - **A**. In Acumatica ERP, on the **Report Version** tab of the report form, select the needed version and click **Edit Version** on the tab toolbar. Open the report in the Report Designer by opening the downloaded file, and save the report.
   - **B**. In Acumatica ERP, on the **Report Version** tab of the report form, select the needed version and click **Activate** on the tab toolbar.
   - **C**. In Acumatica ERP, on the **Report Version** tab of the report form, select the needed version and click **Run Report** on the form toolbar.
   - **D**. In Acumatica ERP, on the **Report Version** tab of the report form, select the **Active** check box of the needed version.
3. Select all the correct sentences about the report versions.
   - **A**. You may enter a description for each version.
   - **B**. You cannot change the description of an existing version.
   - **C**. Only a report developer can switch report versions.
   - **D**. When a user runs a report, the active version of the report is executed.

- **E**. If you save a report as a new version, this version will replace the active one.
- **F**. You can edit an inactive version of the report.

Answer Key

1 - A; 2 - A, C; 3 - A, D, F.

Lesson 10: Translating Reports

Acumatica ERP provides built-in localization functionality. You can translate your report so that the user can execute this report and get the result in the language selected during the login to Acumatica ERP.

The value of the **Localizable** property determines the multiple language support of a report. You can specify this property for the whole report as well as for each element, such as a text box. The default value of this property is *True*. This means that multiple languages are supported for reports and report elements by default.

In this lesson, you will go through the whole process of translation of the List of Stock Items report (IN660000) you created in *Lesson 8: Using Images and QR Codes*. The translation process will occur in Acumatica ERP. You will not need the Report Designer, because you did not change the default value of the **Localizable** property of the report or its elements.

When Acumatica ERP is first installed, its default language is English (United States). To translate the report, you have to add at least one extra language to the system. In this lesson, the second language will be Russian. You can perform the lesson tasks with this language, or you can choose another one; the translation process will not differ.

Lesson Objectives

In this lesson, you will learn how to do the following:

- *Add additional languages to the system*
- *Translate a report*

Adding a Language to the System

The languages available in the system are listed on the System Locales form (SM200550). To add a new language, do the following, as shown in the screenshot below:

1. Log in to the *SalesDemo* company of Acumatica ERP.
2. Open the System Locales form (SM200550; System > Management > Manage).
3. Add a new string and specify the following settings:
   - **Locale Name**: *ru-RU*
   - **Locale Name in Locale Language**: `Русский`
   - **Description**: `Russian`
   - **Sequence**: `2`
   - **Active**: Selected

   Because the **Active** check box is selected, the user will be able to select this active language during a login to Acumatica ERP. (You could translate your report into an inactive language, but the user could not select this inactive language when logging in to Acumatica ERP.)

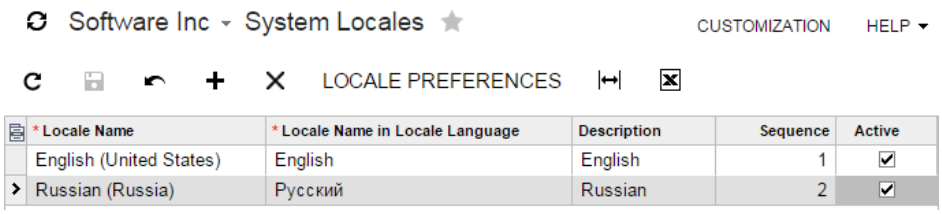


Figure: Specifying a list of available languages

4. Save your changes to the locales.

5. Sign out of Acumatica ERP. Notice that the language combo box has appeared in the top right corner of the login page of Acumatica ERP, as shown in the screenshot below. The languages in this combo box are sorted according to their **Sequence** values.

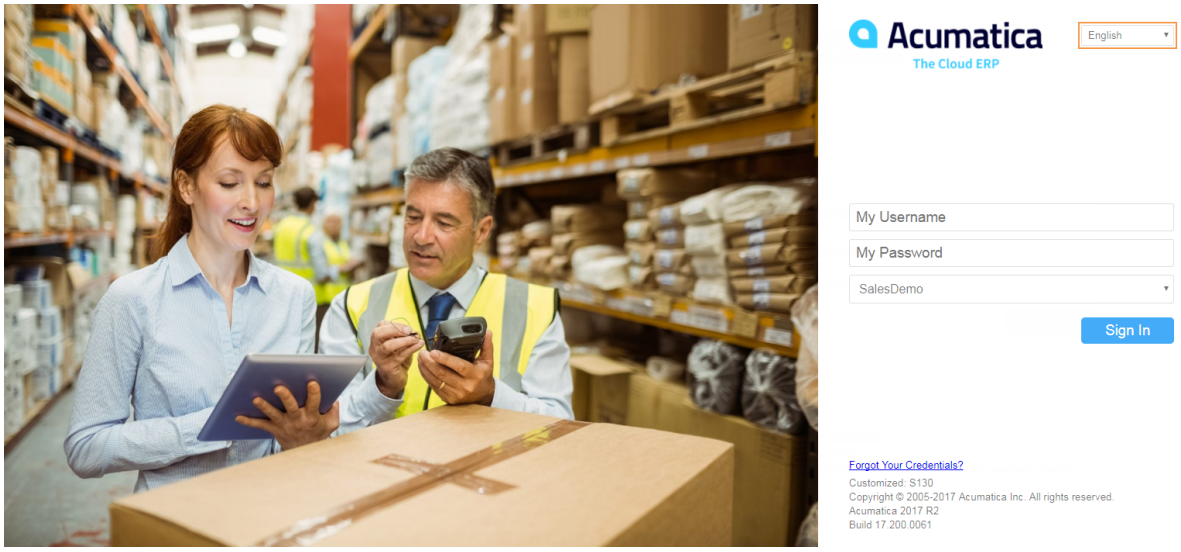


Figure: Selecting a language during login

Translating the Report

To localize the report, you have to translate its source strings. Source strings include form names, element labels, parameters, predefined values of parameters, and constant strings of variables and formulas. To translate the report, do the following:

1. On the Acumatica ERP login page, in the language combo box, select the *Русский* language, and log in to the *SalesDemo* company.
2. Open the List of Stock Items report form (IN660000; Distribution > Inventory > Reports >Audit). The report does not have any parameters, so you will not translate the report parameters. Run the report. Further in this lesson, you will use this executed report to find its strings.
3. Open the Translation Dictionaries form (SM200540; System > Management > Manage) in a new browser tab. On this form, you can collect, filter, and then translate any strings of the Acumatica ERP forms including reports.
4. To collect the strings used in the system, on the form toolbar, click **Collect Strings**. This operation may take a significant amount of time.

   When you localize the system for the first time, or after you update your instance or publish any report, you should collect all the strings used in the system for translation to get the new strings. When the strings are collected, you can start translating the report.
5. Specify the following settings to select the strings to translate, as shown in the screenshot below:
   - **Language**: *Русский*

     In this combo box, you should select the language you are going to translate the report into.

     You can select two or more languages, if you want to translate the report into multiple languages simultaneously.
   - **Show Only Unbound**: Selected

If you translate an Acumatica ERP form, you can select this form in the **Show Used in UI** combo box. This filters the string in the **Default Values** area of the **Collected** tab according to the selected form.

Reports and generic inquiries are not the forms you can select in the **Show Used in UI** combo box, so their strings are unbound. You have to select the **Show Only Unbound** check box. Based on this selection, all unbound strings will be shown in the **Default Values** area of the **Collected** tab.

You can filter unbound strings by selecting some options of the **Unbound Resources To Display** box.

In the **Default Values** area of the **Collected** tab, the strings selected for translation are listed. You can type translations in the columns with language names (such as **Русский**) as their headers, as shown in the screenshot below.

In the **Key-Specific Values** area of the **Collected** tab, the occurrences of the string selected in the **Default Values** area are listed. If the string was found in many forms, you can translate only its occurrences in the needed forms in this area.

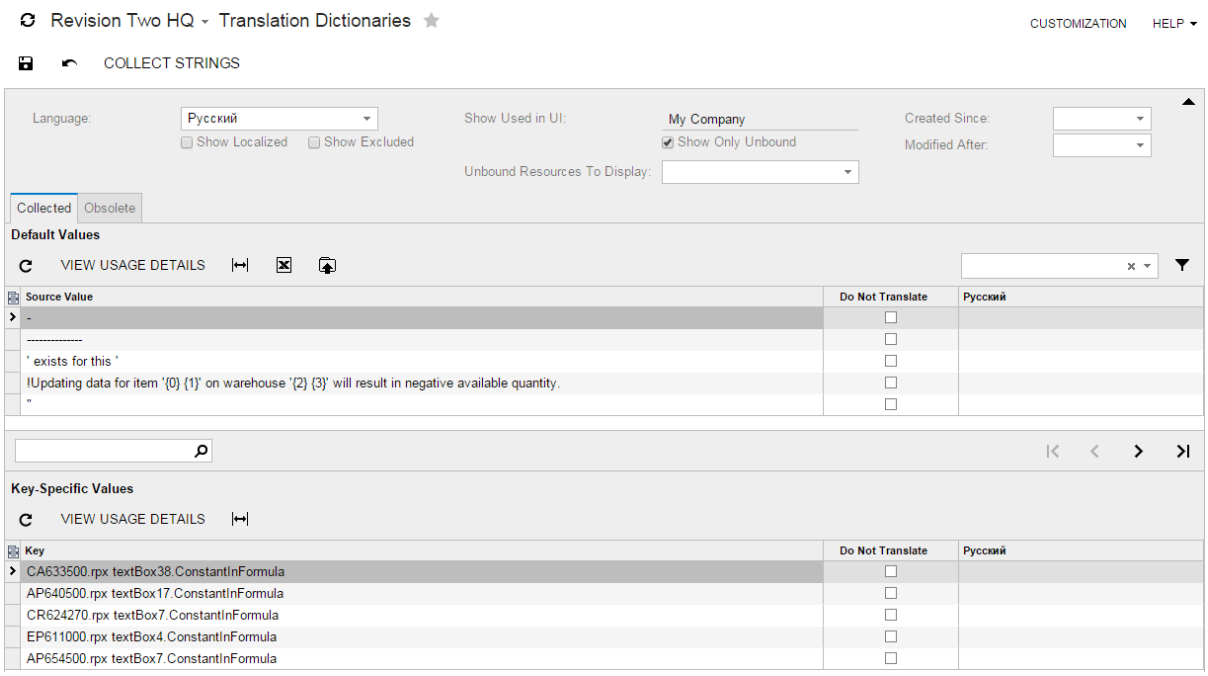


Figure: Selecting the strings to translate

6. To find the strings of your report, in the **Default Values** area of the **Collected** tab, click the ▼ button to open the **Filter Settings** dialog box.

   In the **Filter Settings** dialog box, specify the following settings, as shown in the screenshot below, to use an additional filter:

   - **Property**: *Source Value*

     Based on this setting, the strings of the **Default Values** area of the **Collected** tab will be filtered by values of the **Source Value** column.

   - **Condition**: *Contains*

   - **Value**: `List of Stock Items`

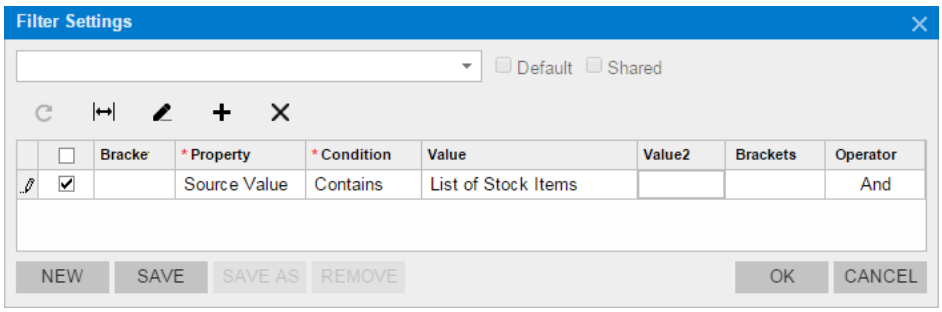


Figure: Filtering the report strings

To define the **Value** of the filter, you can use the generated report you opened in Step 1 (see the screenshot below). Keep in mind that you can translate only the static text labels of the report, but not the report data. For example, you can find on the Translation Dictionaries form (SM200540) and translate the *Item Name* column header, but you cannot translate the *Acer Laptop Computer* string, which is the data retrieved from the database.

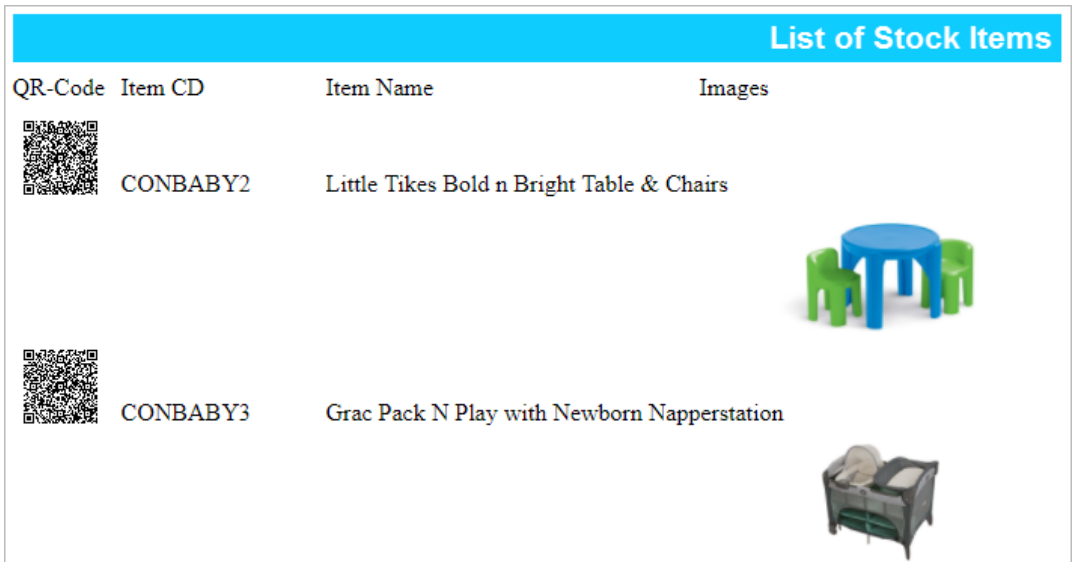


Figure: Getting strings from the executed report

Click **OK** to apply your filtering condition and close the **Filter Settings** dialog box.

When the filter is applied, only one string remains in the **Default Values** area, as shown in the screenshot below. According to the entries shown in the **Key-Specific Values** area, this string is used in the List of Stock Items report (IN660000), which you are translating, and in the site map for the same report.

7. In the **Русский** column of the **Default Values** area, type the following value to translate the string for both instances: `Список Товаров`.

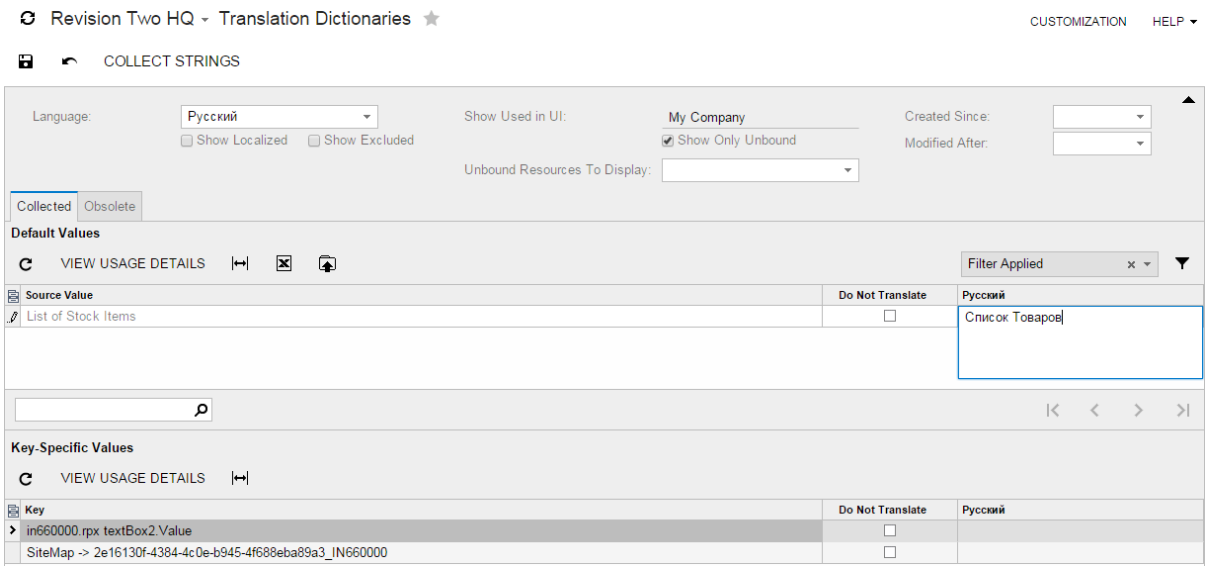


Figure: Translating the report string

8. Save your translation.
9. Repeat Steps 6 to 8 to find and translate the following strings:
   - *QR-Code*: `QR-Код`
   - *Item CD*: `Код Товара`
   - *Item Name*: `Название Товара`
   - *Images*: `Изображения`

   You have translated the report.
10. Open the Список Товаров report form (IN660000; Distribution > Inventory > Reports >Audit), and run the report to preview your translation (see the screenshot below).

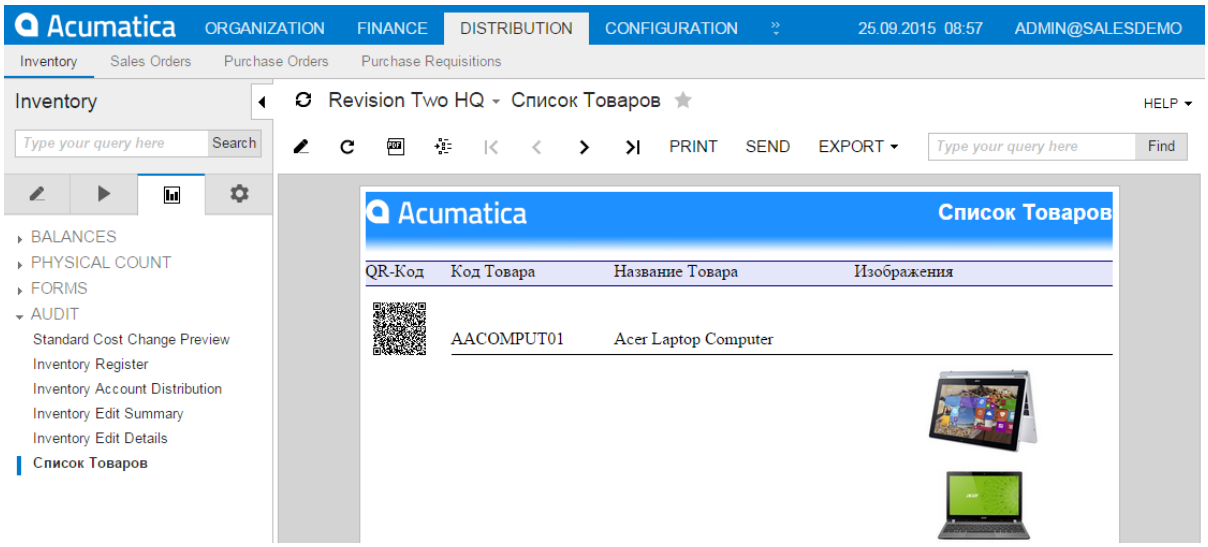


Figure: Previewing the translated report

Lesson Summary

In this lesson, you have learned how to translate a report. You added a new language on the System Locales form (SM200550). On the Translation Dictionaries form (SM200540), you collected all the strings used in the system. Among collected strings, you selected the strings of the report and translated them.

Review Questions

1. Select all the correct statements about translating reports.
   - **A**. You need the Report Designer to localize a report.
   - **B**. You can translate a report into any language from the list of languages on the System Locales form (SM200550).
   - **C**. You can translate a report into multiple languages simultaneously.
2. How can you localize a report on the Translation Dictionaries form (SM200540)? Select only the steps that you must perform.
   - **A**. Select the **Language**.
   - **B**. Select the **Show Localized** check box.
   - **C**. Select the report in the **Show Used in UI** box.
   - **D**. Select the **Show Only Unbound** check box.
   - **E**. Filter the report strings among the unbound strings, which appear on the **Collected** tab.
   - **F**. Translate the report strings.
3. On the Translation Dictionaries form (SM200540), you are trying to find and translate the strings of a report but cannot find any. What are the possible reasons? Select all that could apply.
   - **A**. The value of the **Localizable** property of the report is *False*.
   - **B**. You have not selected the **Show Only Unbound** check box.
   - **C**. You have filtered the list of unbound strings by selecting some options of the **Unbound Resources To Display** box.

Answer Key

1 - B, C; 2 - A, D, E, F; 3 - A, B, C.

Related Links

Translation Process
Managing Locales and Languages

Lesson 11: Defining Excel Export Settings for Reports

The user can export executed reports to MS Excel. By default, the **Excel Mode** property of any report is *Auto*, which is the minimum setting you need to export a report to Excel. Some reports are exported readably by using this default setting. Otherwise, you can define exactly how a report should be exported. In this lesson, you will configure the Invoices Commissionable by Salesperson report, which you created in *Lesson 4: Creating a Report* and modified in *Lesson 5: Using Subreports*, to export it to Excel.

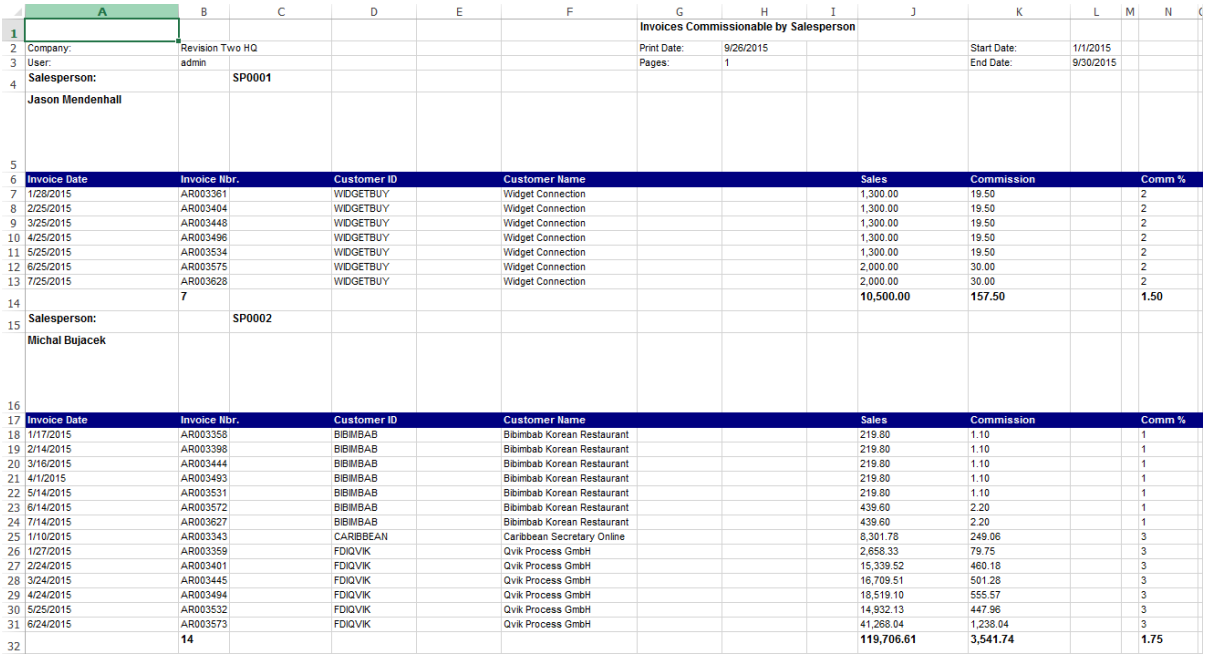
Lesson Objectives

In this lesson, you will learn how to define Excel export settings for a report.

Exporting the Report to Excel with the Default Settings

To export the report to Excel, do the following:

1. Log in to the *SalesDemo* company of Acumatica ERP.
2. Open the Invoices Commissionable by Salesperson form (AR670000; Finance > Accounts Receivable > Reports > Audit). Run the report.
3. On the form toolbar, click **Export** > **Excel** to export the executed report to Excel with the default settings, as shown in the following screenshot. (The exported report may look different depending on the Excel version.)



	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1							Invoices Commissionable by Salesperson							
2	Company:	Revision Two HQ					Print Date:	9/26/2015			Start Date:	1/1/2015		
3	User:	admin					Pages:	1			End Date:	9/30/2015		
4	Salesperson:		SP0001											
	Jason Mendenhall													
5														
6	Invoice Date	Invoice Nbr.		Customer ID		Customer Name				Sales	Commission			Comm %
7	1/28/2015	AR003361		WIDGETBUY		Widget Connection				1,300.00	19.50			2
8	2/25/2015	AR003404		WIDGETBUY		Widget Connection				1,300.00	19.50			2
9	3/25/2015	AR003448		WIDGETBUY		Widget Connection				1,300.00	19.50			2
10	4/25/2015	AR003496		WIDGETBUY		Widget Connection				1,300.00	19.50			2
11	5/25/2015	AR003534		WIDGETBUY		Widget Connection				1,300.00	19.50			2
12	6/25/2015	AR003575		WIDGETBUY		Widget Connection				2,000.00	30.00			2
13	7/25/2015	AR003628		WIDGETBUY		Widget Connection				2,000.00	30.00			2
14		7								10,500.00	157.50			1.50
15	Salesperson:		SP0002											
	Michal Bujacek													
16														
17	Invoice Date	Invoice Nbr.		Customer ID		Customer Name				Sales	Commission			Comm %
18	1/17/2015	AR003358		BIBIMBAB		Bibimbab Korean Restaurant				219.80	1.10			1
19	2/14/2015	AR003398		BIBIMBAB		Bibimbab Korean Restaurant				219.80	1.10			1
20	3/16/2015	AR003444		BIBIMBAB		Bibimbab Korean Restaurant				219.80	1.10			1
21	4/1/2015	AR003493		BIBIMBAB		Bibimbab Korean Restaurant				219.80	1.10			1
22	5/14/2015	AR003531		BIBIMBAB		Bibimbab Korean Restaurant				219.80	1.10			1
23	6/14/2015	AR003572		BIBIMBAB		Bibimbab Korean Restaurant				439.60	2.20			1
24	7/14/2015	AR003627		BIBIMBAB		Bibimbab Korean Restaurant				439.60	2.20			1
25	1/10/2015	AR003343		CARIBBEAN		Caribbean Secretary Online				8,301.78	249.06			3
26	1/27/2015	AR003359		FDIQVIK		Qvik Process GmbH				2,658.33	79.75			3
27	2/24/2015	AR003401		FDIQVIK		Qvik Process GmbH				15,339.52	460.18			3
28	3/24/2015	AR003445		FDIQVIK		Qvik Process GmbH				16,709.51	501.28			3
29	4/24/2015	AR003494		FDIQVIK		Qvik Process GmbH				18,519.10	555.57			3
30	5/25/2015	AR003532		FDIQVIK		Qvik Process GmbH				14,932.13	447.96			3
31	6/24/2015	AR003573		FDIQVIK		Qvik Process GmbH				41,268.04	1,238.04			3
32		14								119,706.61	3,541.74			1.75

Figure: The report exported to Excel with the default settings

Defining Excel Export Settings

To define the export settings to Excel for the report, do the following:

1. In the Report Designer, open the `AR670000.rpx` report from the server.
2. On the **Properties** tab, select the *report1 Report* object from the drop-down list to select the report form.

3. In the **Excel Mode** property, select *Manual*. Based on this setting, you can set up manually how the report should be exported.

4. On the menu bar, select **View** > **Excel Grid** > **Show Columns** to show the Excel column grid. By default, the width of all columns are the same, as shown in the screenshot below.

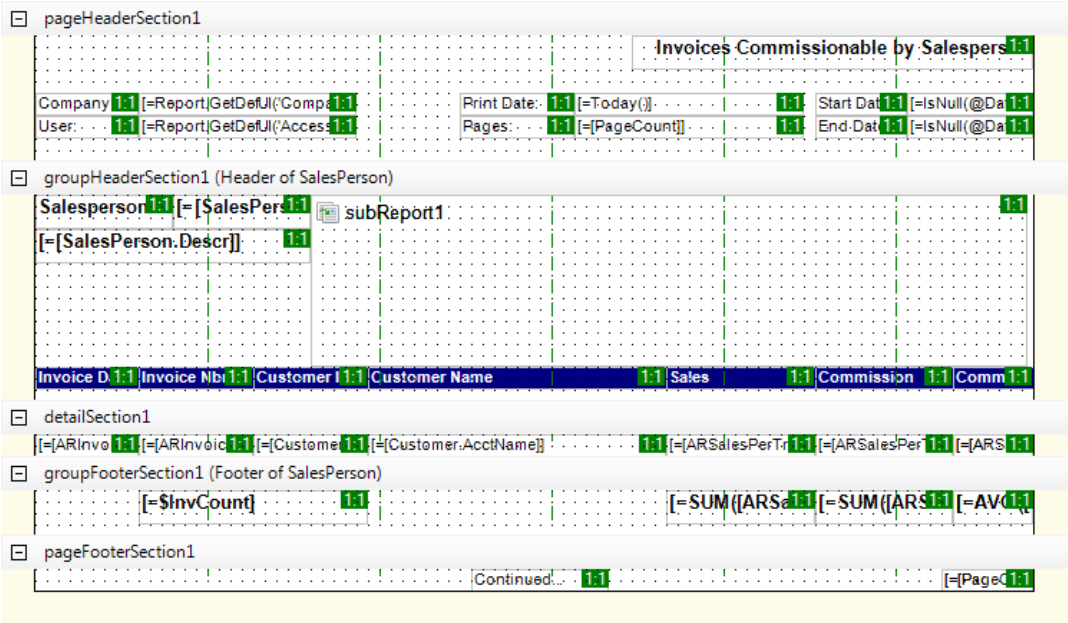


Figure: Default Excel column grid

In the right top corner of each element, notice two numbers divided by a colon. The first number is the row to which the element content will be exported. This number is specified by the value of the **Excel Cell** > **Row** property. By default, this value is `1`. By changing this number, you can define the order of elements within each exported section, but you cannot change the order of sections. For example, in the report exported to Excel, you can print the company name above the report name, but you cannot print the salesperson's name above any field of the page header section. The second number is a column to which the element content will be exported. This number is specified by the value of the **Excel Cell** > **Column** property. By default, this value is `1`.

You can generate the list of columns automatically according to the number and width of elements of any section. The best way is to use the most populated section to get enough columns.

5. Right-click the detail section header and selected **Generate Excel Columns** in the shortcut menu. The Report Designer generates the Excel column grid, as shown in the following screenshot.

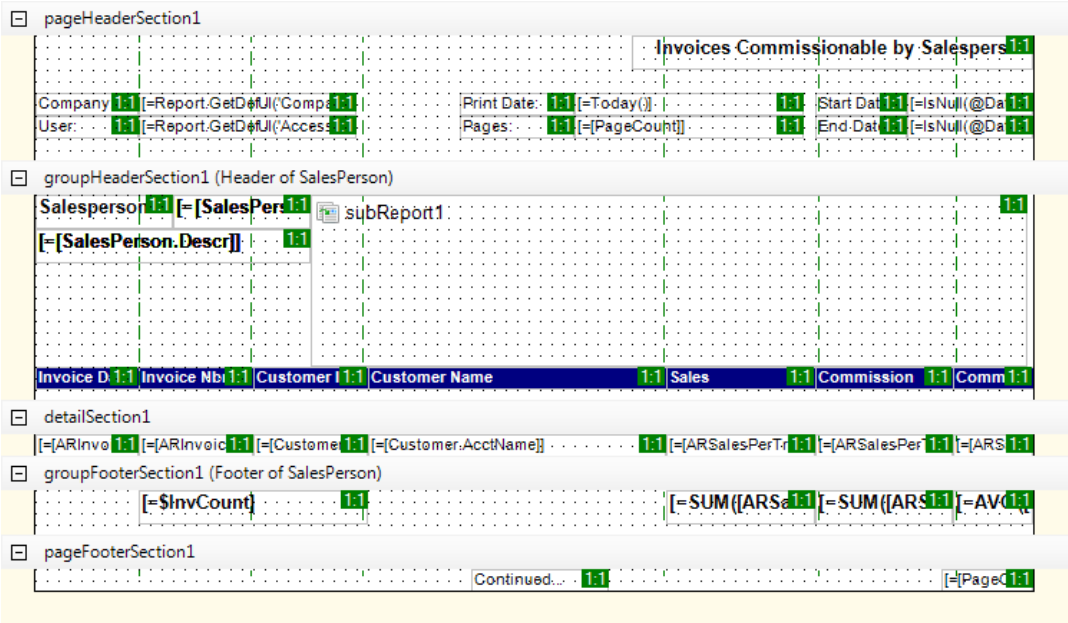


Figure: Modified Excel column grid

If you need to refresh the Excel columns grid, on the menu bar, you can select **View** > **Excel Grid** > **Hide Columns**, and then select **View** > **Excel Grid** > **Show Columns**.

You can also manually adjust the list of Excel columns generated for the report or define it from scratch. To do that, you can select the report form, and in the **Excel Columns** property on the **Properties** tab, click the ... button to open the **Int32 Collection Editor** dialog box, which is shown in the screenshot below. In this dialog box, you can adjust the number, order and size of columns to export to Excel.

The number of the first **0** column corresponds to the **A** column of the Excel grid. You can specify the width of each column by its **Value** property. The column width corresponds to the element width in pixels in approximately a 1:6 ratio. For example, the width of a column with a **Value** of `10` is approximately equal to the width of a text box with a **Size** > **Width** of `60px`.

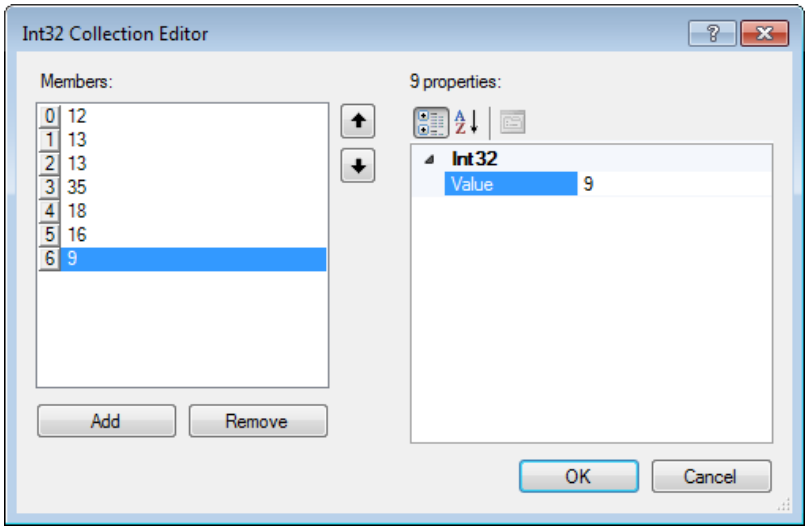


Figure: List of columns to export

After you specify the list of columns to export, you can define the row and column position of all report elements.

6. On the menu bar, select **Edit** > **Adjust Excel Layout**. The Report Designer changes the row and column position of all the report elements depending on how they fit the Excel columns.

This functionality works accurately for simple report layouts but may work inaccurately for some complicated layouts. Anyway, we recommend you to initially try this way of automatically assigning the row and column position for report elements because you can always adjust them manually.

> Similarly, you can define the row and column position of elements of any particular section by right clicking the section header and selecting **Adjust Excel Layout** in the shortcut menu.

7. Adjust the position of each element content to export to Excel, as shown in the screenshot below. The number on the left of each colon is **Excel Cell** > **Row**. The number on the right of each colon is **Excel Cell** > **Column**. For example, for the **Invoice Commissionable by Salesperson** text box, specify the following settings:

- **Excel Cell** > **Row**: `1`
- **Excel Cell** > **Column**: `7`

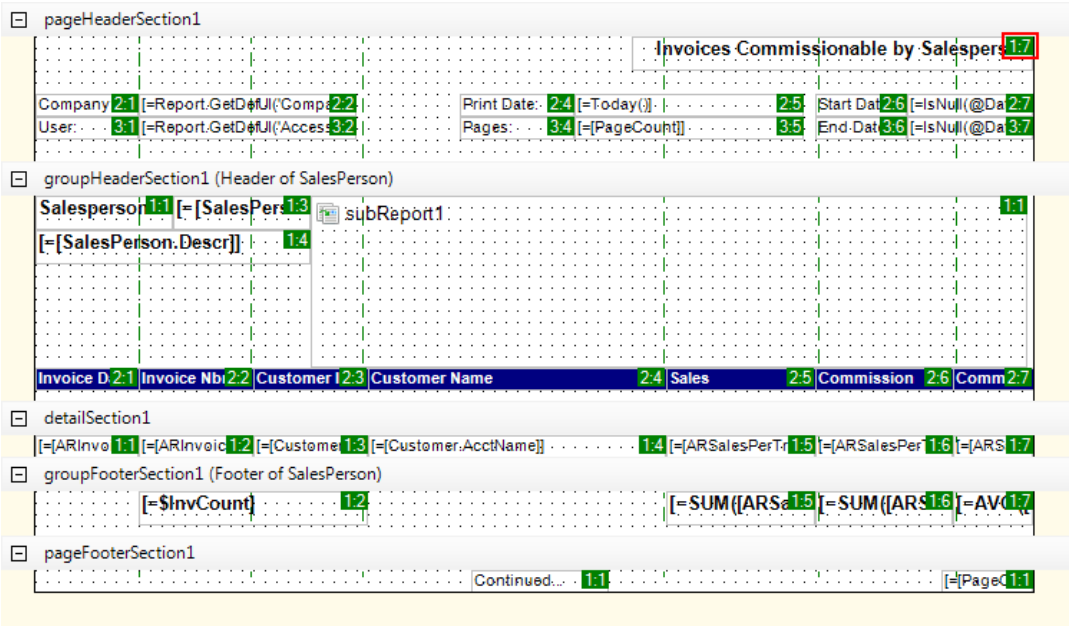


Figure: The modified report layout to export

8. Specify the following additional settings:

- For the group header section, in the **Excel Margin** > **Top** property, type `1` . Based on this setting, one extra empty row will be printed before each group header section.
- For the **subReport1** element, in the **Excel Visible** property, select *False* . Based on this setting, the subreport will not be exported in Excel.

  > The export of the **SubReport**, **Chart**, **Line** and **ImageBox** elements to Excel is not supported. To export contents of the **Panel** element to Excel, you should specify the position —a row and a column—of each element inside the panel.

- For the page footer section, in the **Excel Visible** property, select *False*. Based on this setting, the section will not be exported in Excel.

You have configured the export settings.

9. Save your changes to the report.

10. In Acumatica ERP, open the Invoices Commissionable by Salesperson report form (AR670000; Finance > Accounts Receivable > Reports > Audit), and run the report. Then export the report to Excel and preview how the report looks with the settings you made (see the screenshot below).

	A	B	C	D	E	F	G
1						Invoices Commissionable by Salesperson	
2	Company:	Revision Two HQ		Print Date:	9/26/2015	Start Date:	1/1/2015
3	User:	admin		Pages:	6	End Date:	9/30/2015
4							
5	**Salesperson:**		**SP0001**	**Jason Mendenhall**			
6	**Invoice Date**	**Invoice Nbr.**	**Customer ID**	**Customer Name**	**Sales**	**Commission**	**Comm %**
7	1/28/2015	AR003361	WIDGETBUY	Widget Connection	1,300.00	19.50	1.50
8	2/25/2015	AR003404	WIDGETBUY	Widget Connection	1,300.00	19.50	1.50
9	3/25/2015	AR003448	WIDGETBUY	Widget Connection	1,300.00	19.50	1.50
10	4/25/2015	AR003496	WIDGETBUY	Widget Connection	1,300.00	19.50	1.50
11	5/25/2015	AR003534	WIDGETBUY	Widget Connection	1,300.00	19.50	1.50
12	6/25/2015	AR003575	WIDGETBUY	Widget Connection	2,000.00	30.00	1.50
13	7/25/2015	AR003628	WIDGETBUY	Widget Connection	2,000.00	30.00	1.50
14		**7**			**10,500.00**	**157.50**	**1.50**
15							
16	**Salesperson:**		**SP0002**	**Michal Bujacek**			
17	**Invoice Date**	**Invoice Nbr.**	**Customer ID**	**Customer Name**	**Sales**	**Commission**	**Comm %**
18	1/17/2015	AR003358	BIBIMBAB	Bibimbab Korean Restaurant	219.80	1.10	0.50
19	2/14/2015	AR003398	BIBIMBAB	Bibimbab Korean Restaurant	219.80	1.10	0.50
20	3/16/2015	AR003444	BIBIMBAB	Bibimbab Korean Restaurant	219.80	1.10	0.50
21	4/1/2015	AR003493	BIBIMBAB	Bibimbab Korean Restaurant	219.80	1.10	0.50
22	5/14/2015	AR003531	BIBIMBAB	Bibimbab Korean Restaurant	219.80	1.10	0.50
23	6/14/2015	AR003572	BIBIMBAB	Bibimbab Korean Restaurant	439.60	2.20	0.50
24	7/14/2015	AR003627	BIBIMBAB	Bibimbab Korean Restaurant	439.60	2.20	0.50
25	1/10/2015	AR003343	CARIBBEAN	Caribbean Secretary Online	8,301.78	249.06	3.00
26	1/27/2015	AR003359	FDIQVIK	Qvik Process GmbH	2,658.33	79.75	3.00
27	2/24/2015	AR003401	FDIQVIK	Qvik Process GmbH	15,339.52	460.18	3.00
28	3/24/2015	AR003445	FDIQVIK	Qvik Process GmbH	16,709.51	501.28	3.00
29	4/24/2015	AR003494	FDIQVIK	Qvik Process GmbH	18,519.10	555.57	3.00
30	5/25/2015	AR003532	FDIQVIK	Qvik Process GmbH	14,932.13	447.96	3.00
31	6/24/2015	AR003573	FDIQVIK	Qvik Process GmbH	41,268.04	1,238.04	3.00
32		**14**			**119,706.61**	**3,541.74**	**1.75**

Figure: The report exported to Excel with the custom settings

Lesson Summary

In this lesson, you have learned how to define MS Excel export settings for a report if you are not satisfied with the report exported with the default settings. You selected the *Manual* value for the **Excel Mode** property. You created the list of columns to export. For each report element, you specified the **Row** and **Column** values of the **Excel Cell** property group to arrange elements in the created columns.

Review Questions

1. Can you export to Excel the report with the default Excel export setting?

- **A**. No, you cannot.
- **B**. Yes, you can if the report has no more than three sections.
- **C**. Yes, you can if the layout of your report contains only text box elements.
- **D**. Yes, you can.

2. To customize the MS Excel export format of a report, you should set that report property to that value.

- **A**. **Export Format** to *Excel*

- **B**. **Excel Mode** to *Manual*
- **C**. **Export Type** to *Excel*
- **D**. **Excel Format** to *Manual*

3. Select the elements whose contents are exported to Excel.

- **A**. **SubReport**
- **B**. **Chart**
- **C**. **Line**
- **D**. **ImageBox**
- **E**. None of the above

4. How can you define the set of rows for the report layout to export it to Excel? Select all that apply.

- **A**. Specify the collection of columns manually.
- **B**. Export the set of columns of an Acumatica ERP report.
- **C**. Generate the list of columns automatically according to the width of elements of any selected section.
- **D**. Export the set of columns of an Excel file.

Answer Key

1 - D; 2 - B; 3 - E; 4 - A, C.

Part 3: Filters

In Acumatica ERP, forms often use tables, which are a convenient way to present data. However, when a table spans multiple pages, it may be quite difficult to find needed information. Filters give you a way to display only those records that you want to see at the moment.

All Acumatica ERP filters are form-specific—that is, if a filter is designed for one form, you cannot apply the filter to another form.

In *Lesson 7: Defining Additional Filters for Reports*, you learned how to filter report data. In this part, you will learn how to configure and manage reusable filters, which are used to filter data in the table part of processing and inquiry forms.

As a result of completing the lesson of this part, you will be able to create filters for an inquiry form and manage them.

Reviewing Reusable Filters

Reusable filters in Acumatica ERP are filters that you can set up on processing and inquiry forms to filter the table data both in the current user session and when you open the form in the future. You can create and apply these filters any time you want to, and save them for future use.

Filter Tabs

By adding a reusable filter to a processing or inquiry form and saving the filter, you add a tab with the filter applied to the form. You can see the following tabs on the Acumatica ERP processing and inquiry forms after you have applied a reusable filter:

- The **All Records** tab shows all records of the type shown on the form without any filter applied. Once any filter is available for the form (whether it is created by the user or shared with the user), this tab appears automatically as the first tab.
- The **Filter Applied** tab, which appears if you are defining a filter but have not yet saved it, shows the data with the unsaved filter applied. If you do not save the new filter before your user session ends, the system deletes the filter.
- The names of any other tabs are the name of each respective reusable filter defined and saved for the form.

Filter Clauses

When you create a filter you add one filter clause or multiple filter clauses. Each filter clause contains a form element (such as a box or check box) associated with the particular form, a condition (logical operation), and the value or values of the selected element. You can use *And* and *Or* operators and parentheses to group clauses into logical expressions.

A reusable filter may contain active and inactive clauses. When a filter is applied, the active clauses are applied to the table, and the inactive clauses are ignored.

User-Relative and Date-Relative Filter Clauses

Filter clauses can be user-relative and date-relative. These clauses contain special parameters as a value.

User-relative clauses are clauses for which the system filters data relative to the user that is currently signed in. You can configure user-relative clauses by using one of three predefined user-relative parameters. You can use the *@Me* parameter for the user-relative properties with the *Equal* or *Does Not Equal* conditions. You can also filter data by the workgroup or workgroups the signed-in user is a member of by using the *@MyGroups* parameter for the *Workgroup* property, with the *Is In* or *Is Not In* conditions. Similarly, you can use the *@MyWorktree* parameter to include in the list of the user's workgroups the subordinate workgroups according to the structure of the company tree.

Date-relative clauses contain a date and date-relative parameters, which relate to the current date. For example, you can use the *@Today* parameter to relate a clause to the current day. Other date-relative parameters relate a clause to a current week, month, quarter, and year. You can modify the date-relative parameters by adding or subtracting integers. For example, the *@WeekStart - 1* expression returns the first day of the previous week, and the *@Today + 2* expression returns the day after tomorrow.

Shared Filters

Shared filters are a type of reusable filters that are available for every user of your instance. You use the Filters form (CS209010; System > Customization > Manage) to create, modify, and delete the shared filters.

For more details on reusable filters in Acumatica ERP, see the links in the following section.

Related Links

Reusable Filters
Reusable Filter Settings Reference (the Filter Settings Dialog Box)
Creation of Ad Hoc and Reusable Filters
Filter Settings Reference (Parameters of Shared Filters)
Shared Filters

Lesson 12: Using Reusable Filters

You can create reusable filters for any processing or inquiry form to filter the data of the table shown on the form. Once you create a reusable filter for a particular form, you can reuse it anytime you open that form in the future. Reusable filters are shown as tabs on the form. You can create reusable filters for your personal use or share them with other users.

In this lesson, you will create reusable filters for the *AR-Invoices* inquiry and manage them. In *Lesson 2: Configuring an Inquiry as the Entry Point*, you set up this inquiry as the entry form of the Invoices and Memos form (AR301000).

Lesson Objectives

In particular, in this lesson, you will learn how to do the following:

- Create reusable filters
- Share reusable filters
- Modify reusable filters
- Delete reusable filters
- Manage shared reusable filters

Step 12.1: Creating Reusable Filters

For the *AR-Invoices* inquiry, you will create four filters. Each filter will show data that meets one of the following criteria:

- Open invoices
- Documents of the current user
- Documents for the current quarter
- Documents for the previous quarter

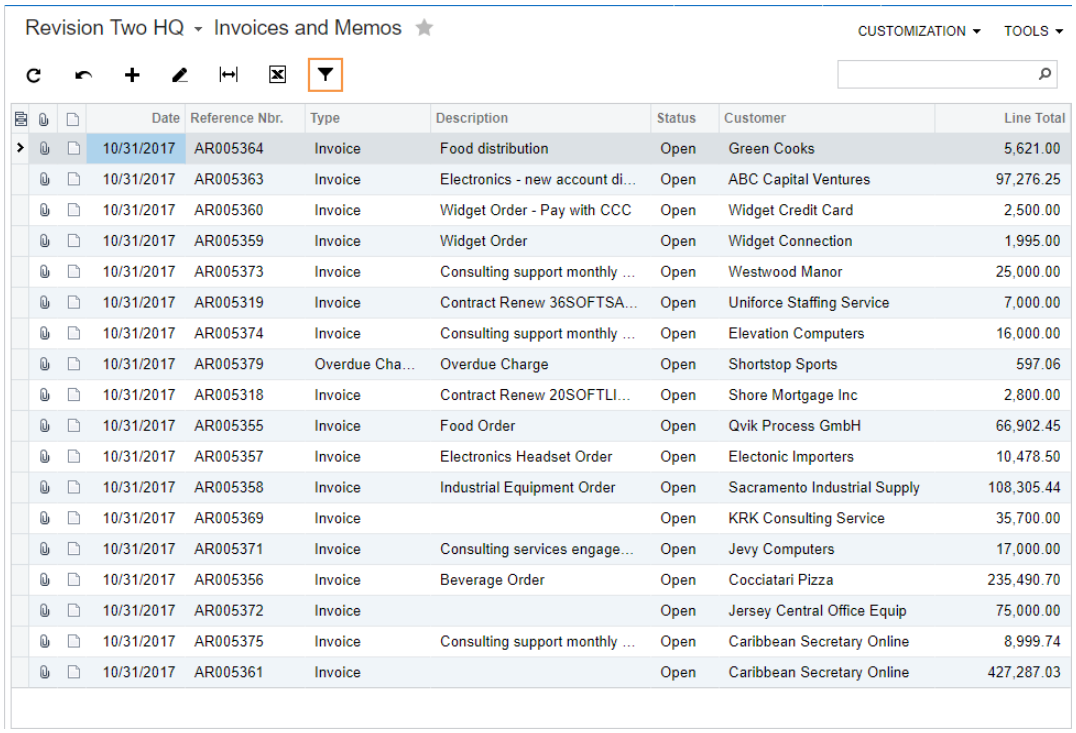
To create the first filter, a reusable filter that will display only open invoices, do the following:

1. Create the first reusable filter that will display only open invoices. Do the following:

a. Sign in to the *SalesDemo* company of Acumatica ERP.

b. Open the Invoices and Memos form (Finance > Accounts Receivable > Work Area). The *AR-Invoices* inquiry, which you set up to be the entry form of this form, opens.

c. On the table toolbar, click **Filter Settings** (▼), shown in the screenshot below, to open the **Filter Settings** dialog box.



Date	Reference Nbr.	Type	Description	Status	Customer	Line Total
10/31/2017	AR005364	Invoice	Food distribution	Open	Green Cooks	5,621.00
10/31/2017	AR005363	Invoice	Electronics - new account di...	Open	ABC Capital Ventures	97,276.25
10/31/2017	AR005360	Invoice	Widget Order - Pay with CCC	Open	Widget Credit Card	2,500.00
10/31/2017	AR005359	Invoice	Widget Order	Open	Widget Connection	1,995.00
10/31/2017	AR005373	Invoice	Consulting support monthly ...	Open	Westwood Manor	25,000.00
10/31/2017	AR005319	Invoice	Contract Renew 36SOFTSA...	Open	Uniforce Staffing Service	7,000.00
10/31/2017	AR005374	Invoice	Consulting support monthly ...	Open	Elevation Computers	16,000.00
10/31/2017	AR005379	Overdue Cha...	Overdue Charge	Open	Shortstop Sports	597.06
10/31/2017	AR005318	Invoice	Contract Renew 20SOFTLI...	Open	Shore Mortgage Inc	2,800.00
10/31/2017	AR005355	Invoice	Food Order	Open	Qvik Process GmbH	66,902.45
10/31/2017	AR005357	Invoice	Electronics Headset Order	Open	Electonic Importers	10,478.50
10/31/2017	AR005358	Invoice	Industrial Equipment Order	Open	Sacramento Industrial Supply	108,305.44
10/31/2017	AR005369	Invoice		Open	KRK Consulting Service	35,700.00
10/31/2017	AR005371	Invoice	Consulting services engage...	Open	Jevy Computers	17,000.00
10/31/2017	AR005356	Invoice	Beverage Order	Open	Cocciatari Pizza	235,490.70
10/31/2017	AR005372	Invoice		Open	Jersey Central Office Equip	75,000.00
10/31/2017	AR005375	Invoice	Consulting support monthly ...	Open	Caribbean Secretary Online	8,999.74
10/31/2017	AR005361	Invoice		Open	Caribbean Secretary Online	427,287.03

Figure: Opening the Filter Settings dialog box

d. In the **Filter Settings** dialog box, add two rows with the following settings, as shown in the screenshot below.

Property	Condition	Value
Status	*Equals*	*Open*
Type	*Equals*	*Invoice*

In the **Property** column, you could select any column of the table the filter will be applied to. In this case, you selected *Status* because you need to display on the form only

documents with the *Open* status; you also selected *Type* because you need to display on the form only invoices.

In the **Condition** column, you could select the logical operation that applies to the value of the selected property. In this case, you selected *Equals* in both clauses because you want to filter the selected properties by the exact values.

e. Click **Save** to save the filter for future use.

f. In the **Enter the filter name here** box of the dialog box that appears, type the name of the new filter as `Open Invoices`, and click **OK** to save the filter.

g. Select the **Default** check box to use this filter as the default filter for the form.

In the future, when you open the form, the default filter will be applied automatically.

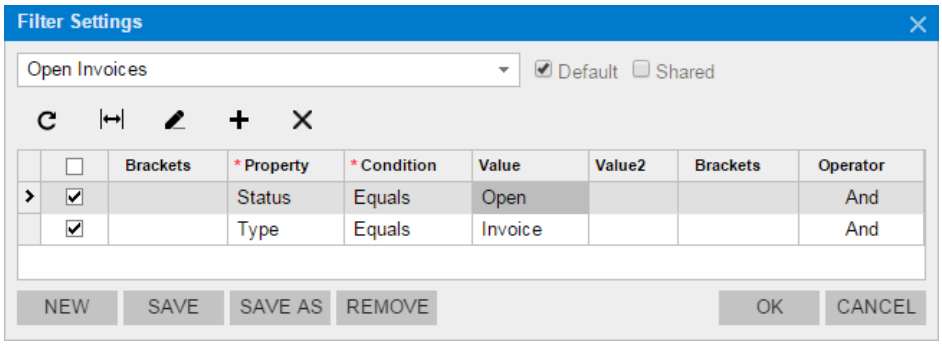


Figure: Defining filter settings

h. Click **OK** to close the dialog box and apply the filter.

When you close the dialog box, on the Invoices and Memos form, two tabs appear, as shown in the following screenshot.

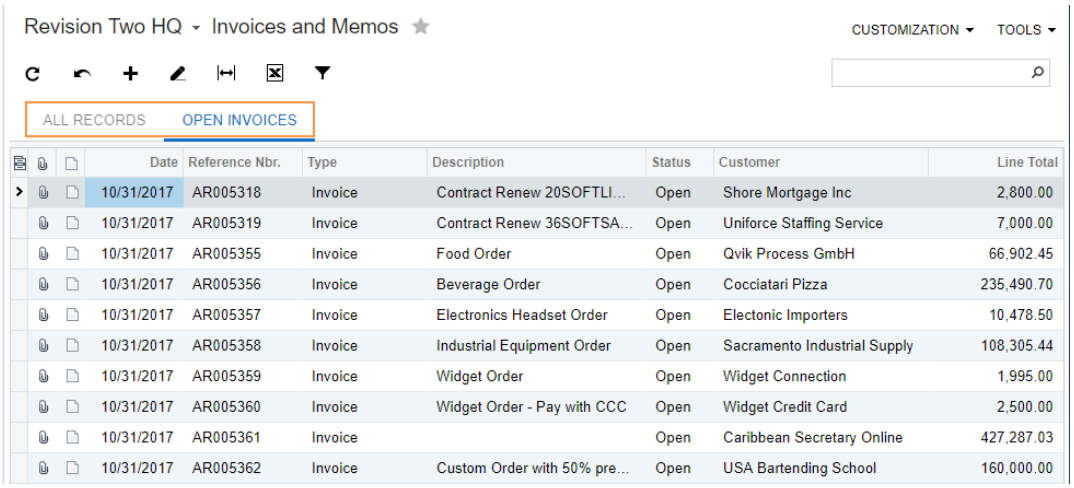


Figure: Reviewing the Open Invoices filter tab

2. Create a filter that displays the current user's documents as follows:

a. On the table toolbar of the Invoices and Memos form, click **Filter Settings** (▼) to open the **Filter Settings** dialog box.

b. In the **Filter Settings** dialog box, click **New** to create a new filter and clear the filter table.

c. Add a row with the following settings.

Property	Condition	Value
Owner	*Equals*	`@Me`

Owner is a column of the table. Any column of the table, even a hidden one, could be selected as the property.

d. Save the filter with the following name: `My Documents`.

In the following screenshot, you can see the settings of the *My Documents* filter.

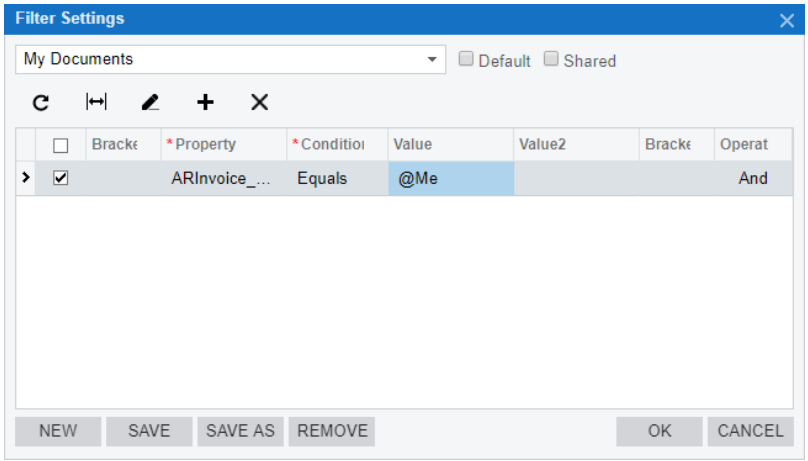


Figure: Reviewing the settings of the My Documents filter

3. Create the third filter, which will list documents for the current quarter, as follows:

a. In the **Filter Settings** dialog box, create a new filter.

b. Add a row with the following settings.

Property	Condition	Value	Value2
Date	*Is Between*	*@QuarterStart*	*@QuarterEnd*

c. Save the filter with the following name: `Current Quarter`.

In the following screenshot, you can find the settings of the *Current Quarter* filter.

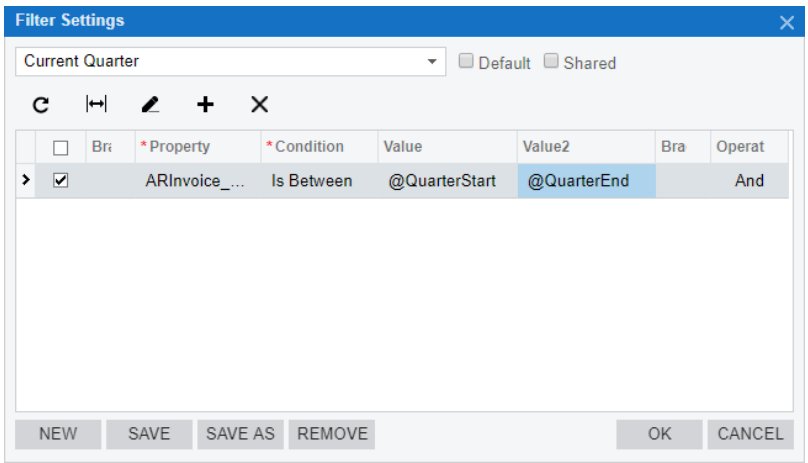


Figure: Reviewing the settings of the Current Quarter filter

4. Create the fourth filter that lists documents for the previous quarter. Do the following:

a. In the **Filter Settings** dialog box, create a new filter.

b. Add a row with the following settings.

Property	Condition	Value	Value2
Date	*Is Between*	`@QuarterStart - 1`	`@QuarterEnd - 1`

c. Save the filter with the following name: `Previous Quarter`.

In the following screenshot, you can find the settings of the *Previous Quarter* filter.

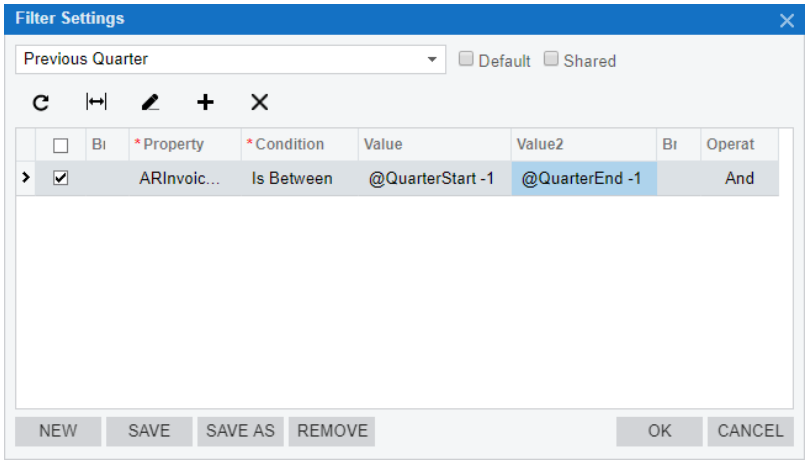


Figure: Reviewing the Previous Quarter filter settings

After you have created and saved all four filters, the tabs that correspond to each filter appear on the Invoices and Memos form; see the following screenshot.

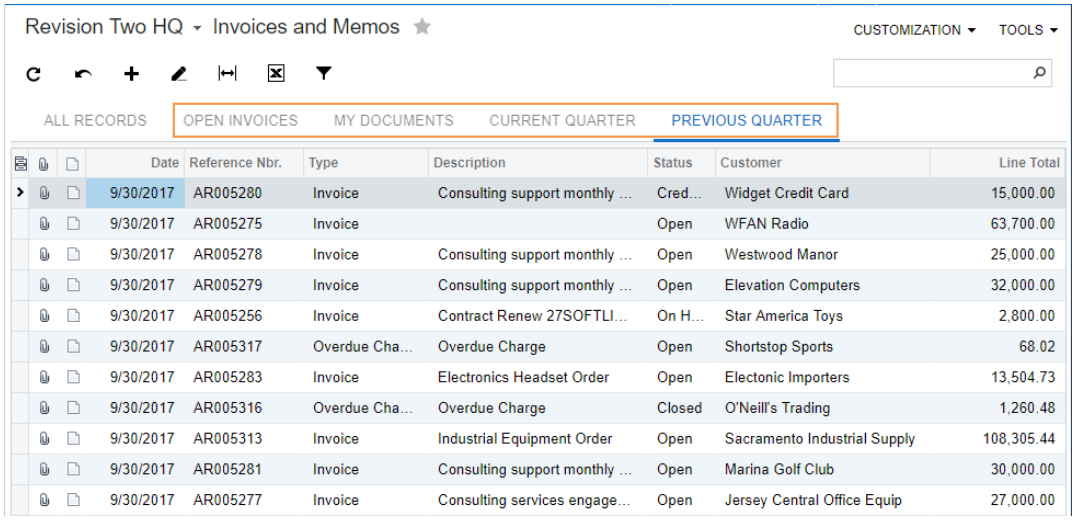


Figure: Reviewing the form with filter tabs

You can find examples of reusable filters on the Tasks form (EP404000; Organization > Communication > Tasks).

Step 12.2: Sharing Reusable Filters

To make two of your reusable filters available to other users of the system, you will share them.

To share the *Current Quarter* and *Previous Quarter* filters, do the following:

1. Open the Invoices and Memos form (Finance > Accounts Receivable > Work Area).
2. On the **Current Quarter** tab, click **Filter Settings** (▼) on the table toolbar. The **Filter Settings** dialog box opens with the *Current Quarter* filter selected.
3. In the dialog box, select the **Shared** check box.
4. Click **Save** to save the filter.
5. In the filter name box, select *Previous Quarter*.
6. Select the **Shared** check box, and save the filter.
7. In the filter name box, select *Open Invoices*.
8. Select the **Shared** check box, and save the filter.
9. Click **OK** to close the dialog box.

Now other users of the system can view the *Current Quarter* and *Previous Quarter* filters on the Invoices and Memos form.

Step 12.3: Modifying a Reusable Filter

You can modify a reusable filter on the form it was applied to if the filter is not shared. (Modification of shared reusable filters is described in *Step 12.5: Managing Shared Reusable Filters*.)

Now you will modify a reusable filter. Do the following:

1. Open the Invoices and Memos form (Finance > Accounts Receivable > Work Area).
2. On the **Open Invoices** tab, click **Filter Settings** (▼) on the table toolbar. The **Filter Settings** dialog box opens with the *Open Invoices* filter selected.
3. In the **Filter Settings** dialog box, clear the **Default** check box.
4. Click **Save** to save the filter.
5. In the Filter Name box, select *Current Quarter*.
6. Add a line with the following settings to the filter conditions, as shown in the screenshot below.

Property	Condition	Value
Status	*Equals*	*On Hold*

   The *Current Quarter* filter is shared, and thus the **Save** button is unavailable. (That is, you cannot save changes to this filter.) You can, however, click **Save As** and save the filter with another name.

7. Click **Save As**, and save the filter with the following name: `Documents On Hold for Current Quarter`.

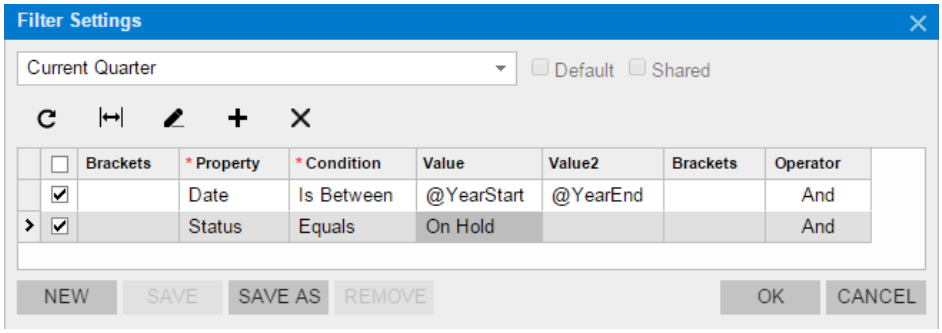


Figure: Modifying the filter settings

8. Click **OK** to close the dialog box.

You have modified the reusable filter and created a copy of the shared filter.

Step 12.4: Deleting Reusable Filters

You can delete reusable filters on the form they were applied to as long as the filters are not shared. (The management of shared filters, including their deletion, is described in *Step 12.5: Managing Shared Reusable Filters*.)

Now you will delete a reusable filter that is not shared. Do the following:

1. Open the Invoices and Memos form (Finance > Accounts Receivable > Work Area).
2. On the **Documents On Hold for Current Quarter** tab, click **Filter Settings** (▼) on the table toolbar. The **Filter Settings** dialog box opens with the *Documents On Hold for Current Quarter* filter selected.
3. Click **Remove** to delete the filter.
4. Click **OK** to close the dialog box.

You have deleted the reusable filter.

Step 12.5: Managing Shared Reusable Filters

You can create, modify, and delete shared reusable filters on the Filters form (CS209010); you cannot modify or delete these filters on the form they are applied to.

Now you will manage shared reusable filters. Do the following:

1. Modify the settings of a shared reusable filter as follows:

   a. On the Filters form (CS209010; System > Customization > Manage), in the **Filter ID** box, click the magnifier icon and type `Current` to find *Current Quarter*, as shown in the screenshot below. Select this option.

   You can also search for a filter by typing the screen identifier of the form the filter is applied to.

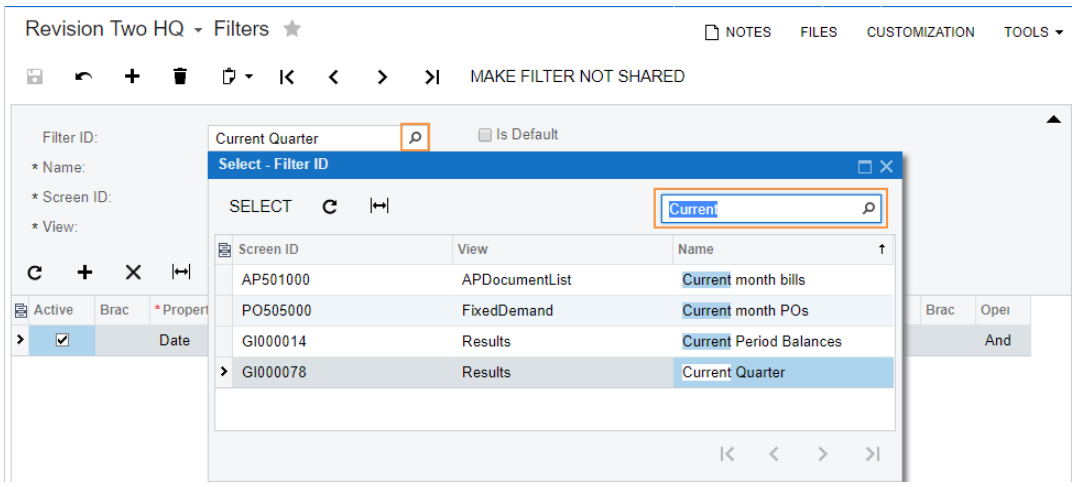


   Figure: Searching for an existing shared filter

   b. Change the filter settings to the following:

      - **Name**: `Current Year`
      - **Is Default**: Selected.

   c. Change the filter condition settings to the following:

      - **Value**: *@YearStart*
      - **Value2**: *@YearEnd*

   d. Save your changes to the filter.

      Notice that the **Filter ID** has been changed and now is equal to the filter name.

   e. Open the Invoices and Memos form (Finance > Accounts Receivable > Work Area). Notice that the *Current Year* tab is opened by default.

2. Stop sharing the *Open Invoices* filter. Proceed as follows:

   a. On the Filters form (CS209010), select the *Open Invoices* filter.

   b. On the form toolbar, click **Make Filter Not Shared**. In the warning dialog box that appears, click **OK**.

      The filter is no longer shared; it is no longer shown on the Filters form (CS209010), where you can manage only shared filters.

   c. Save your changes to the filter.

   d. On the table toolbar, click **Filter Settings** (▼) to open the **Filter Settings** dialog box, and make sure that the **Shared** check box is cleared for the *Current Year* filter.

3. Delete a shared filter as follows:

   a. On the Filters form (CS209010), select the *Previous Quarter* filter.

   b. On the form toolbar, click **Delete**.

   c. In the dialog box, click **OK** to confirm the deletion of the filter.

   d. Open the Invoices and Memos form. Notice that the **Previous Quarter** tab disappeared.

Lesson Summary

In this lesson, you have learned how to filter the data in the tables of processing or inquiry forms. You used the **Filter Settings** dialog box to create several reusable filters for an inquiry form. You opened this dialog box by clicking **Filter Settings** (▼) on the table toolbar of the inquiry form, and managed these filters on this form. Also, you shared some reusable filters with other users and managed these shared filters on the Filters form (CS209010).

Review Questions

1. Can you edit the filter for the **All Records** tab of the table on an Acumatica ERP form?
   - **A**. Yes, you can.
   - **B**. Yes, you can, if this filter is not shared.
   - **C**. No, you cannot.
2. Will the system create a new reusable filter after you have specified filter settings and clicked **OK** in the **Filter Settings** dialog box without saving the filter?
   - **A**. Yes, the system will create a filter.
   - **B**. Yes, the system will create a filter, but the filter will be deleted when your user session ends.
   - **C**. No, the system will not create a filter.
3. Can you edit a shared reusable filter in the **Filter Settings** dialog box?
   - **A**. Yes, you can.
   - **B**. Yes, you can, but you can save only a copy of the reusable filter with a different name.
   - **C**. No, you cannot.

Answer Key

1 - C; 2 - B; 3 - B.

Part 4: Dashboards

A dashboard is a collection of widgets displayed on a single page to give you needed information at a glance.

In this part of the course, you will learn how to create and configure dashboards. In particular, you will learn how to do the following:

- Create dashboards
- Add widgets to a dashboard
- Manage widgets
- Set up a dashboard as the home page

Reviewing Dashboards

By using dashboards, each of which is a collection of widgets on a page, users can view the information they are most likely to need and can quickly access further details. With Acumatica ERP dashboards, users can monitor current financial, operational, and organizational information, and analyze real-time trends in their scope of responsibility. You can create personalized dashboards to display exactly the information you need, depending on your role and responsibilities.

Types of Widgets

A widget is a small component of a dashboard that delivers a particular type of information. You can add the following types of widgets to any dashboard:

- **Charts**: Charts are graphical representations of data from Acumatica ERP forms. You can use charts of various types, such as bar charts and line charts.
- **Data tables**: Tables are data from an Acumatica ERP form arranged into rows and columns.
- **Embedded pages**: Embedded pages are documents or images that are stored on external resources, such as cloud storage.
- **Power BI tiles**: Charts, scorecards, and other analytical information can be represented on Power BI dashboards designed by your organization.
- **Scorecard KPIs**: Scorecard KPIs display parameters that are important for the business processes of your organization and that should be monitored on a daily basis.
- **Trend card KPIs**: Trend card KPIs display parameters whose dynamic change is important for the business processes of your organization.
- **Wiki pages**: Wiki pages display reference articles, procedures, business plans, and other content that is frequently referenced by users of Acumatica ERP.

Location of Dashboards

You can create dashboard pages and place them in the site map where they are most convenient for users who could use the dashboards in their daily work. In the modern UI, dashboards that you add to the system appear in the **Dashboards** workspace, which is predefined in the system. You can add a dashboard to any other workspace manually in Menu Editing mode. For details on configuring workspaces, see the links at the end of this topic.

Work with Dashboards

From a widget created from an inquiry form, you can open the source inquiry form and drill down to view the underlying data. By viewing a widget created from a processing form, you can monitor whether there are new entities to be processed by using the relevant source form.

If additional filtering conditions have been specified during the creation of the widget (such as a range of dates), the system applies this filter to the form that was used as a data source when you open a form by clicking the widget.

Access Rights to Dashboards

Dashboards are visible to users depending on their access rights to these dashboards. An administrator can configure specific access rights to dashboards for different roles. Users who will work with dashboards can be given any of the following access rights capabilities:

- Managing dashboard pages: Users with this capability can create new dashboard pages, delete dashboard pages, set up access rights to dashboard pages, and populate the dashboard pages with widgets. With regard to access rights to dashboards, these are the most powerful users.

- Configuring an original dashboard: Users with this capability can modify widgets on an original dashboard and reset all user copies to the original settings. These users are regarded as dashboard owners.
- Viewing dashboards: Users with this capability can only view information on a dashboard. These users are the least powerful dashboard users because they cannot modify widgets on a dashboard.
- Personalizing a dashboard: Users with this capability can view and modify widgets on their copy of a dashboard.

Related Links

Dashboards
Dashboard Pages
To Add a Link to a Workspace

Lesson 13: Creating and Managing Dashboards

In this lesson, you will create a public dashboard and a personal dashboard, add widgets to these dashboards, manage these widgets, and set up the public dashboard as a default home page and the personal dashboard as your home page.

Lesson Objectives

In this lesson, you will learn how to do the following:

- Create a dashboard that is visible to all employees
- Add a chart widget to a dashboard
- Change the type of a chart widget
- Add a scorecard KPI widget to a dashboard
- Change the settings of a scorecard KPI widget
- Add a trend card KPI to a dashboard
- Embed an external webpage to a dashboard
- Arrange widgets on a dashboard
- Set up a dashboard as a default home page
- Create a dashboard for a particular user role
- Add a table widget to a dashboard
- Add a chart widget to a dashboard
- Add an article widget to a dashboard
- Create a custom widget and add it to a dashboard
- Set up a dashboard as your personal home page
- Set up a dashboard as a personal page for any user

Step 13.1: Creating a Dashboard That Is Visible to All Employees

After you have deployed your Acumatica ERP instance, you may want to add a dashboard page that will be used as a default home page. This dashboard page must be visible to all employees of your organization who use the system. You use the Dashboards form (SM208600) to create, manage, and delete dashboards in the system.

In this step, you will create a dashboard page and specify users' access rights to the dashboard page. Do the following:

1. Sign in to the *SalesDemo* company of Acumatica ERP.
2. Open the Dashboards form (SM208600; System > Customization > Manage).
3. On the form toolbar, click **Add New Record**.
4. In the **Name** box, type the name of the new dashboard: `SalesDemo`.

   The dashboard name should be unique within the system, because it is used as the identifier of the dashboard.
5. To the right of the **Site Map Location** box, click **Add New Node**.
6. In the **Add New Dashboard Node** dialog box, which opens, do the following:
   a. In the **Folder** box, select *Shared Dashboards* (*Company* > *Organization*), as shown in the following screenshot.

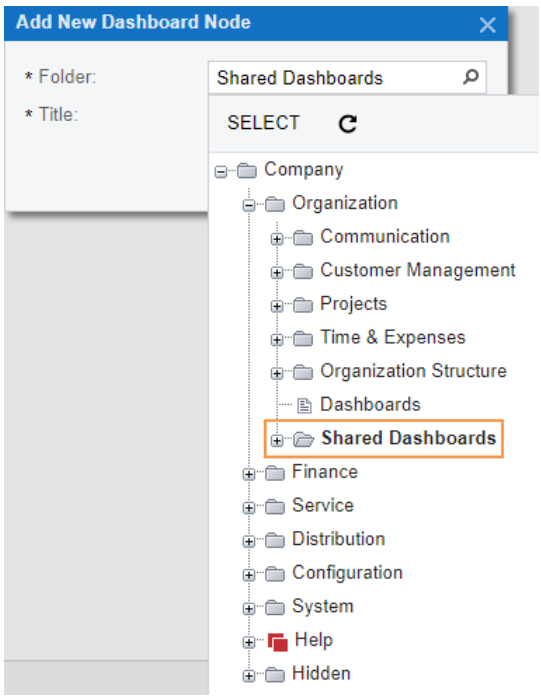


Figure: Selecting a dashboard location

   By selecting a folder for a dashboard in the **Folder** box, you define the location of the dashboard in the site map. In the modern UI, the dashboard will be automatically added to the **Data Views** workspace.

   b. In the **Title** box, type the title of the node: `SalesDemo`.
   c. Click **Add** to save your changes and close the dialog box.

7. In the **Owner Role** box, select *DashboardDesigner*.

   Users with the dashboard owner role (in this case, *DashboardDesigner*) have full access to the dashboard. That is, they can edit the dashboard page and manage the widgets on the dashboard.

8. Clear the **Allow Users to Personalize** check box.

   This setting means that users cannot create their personal copy of this dashboard and edit it.

9. In the **Visible to** table, select all roles by clicking the unlabeled check box in the table header.

   You have allowed users with all roles assigned to view the dashboard page.

10. On the form toolbar, click **Save**.

After you have performed these instructions, you will see the dashboard settings displayed in the following screenshot.

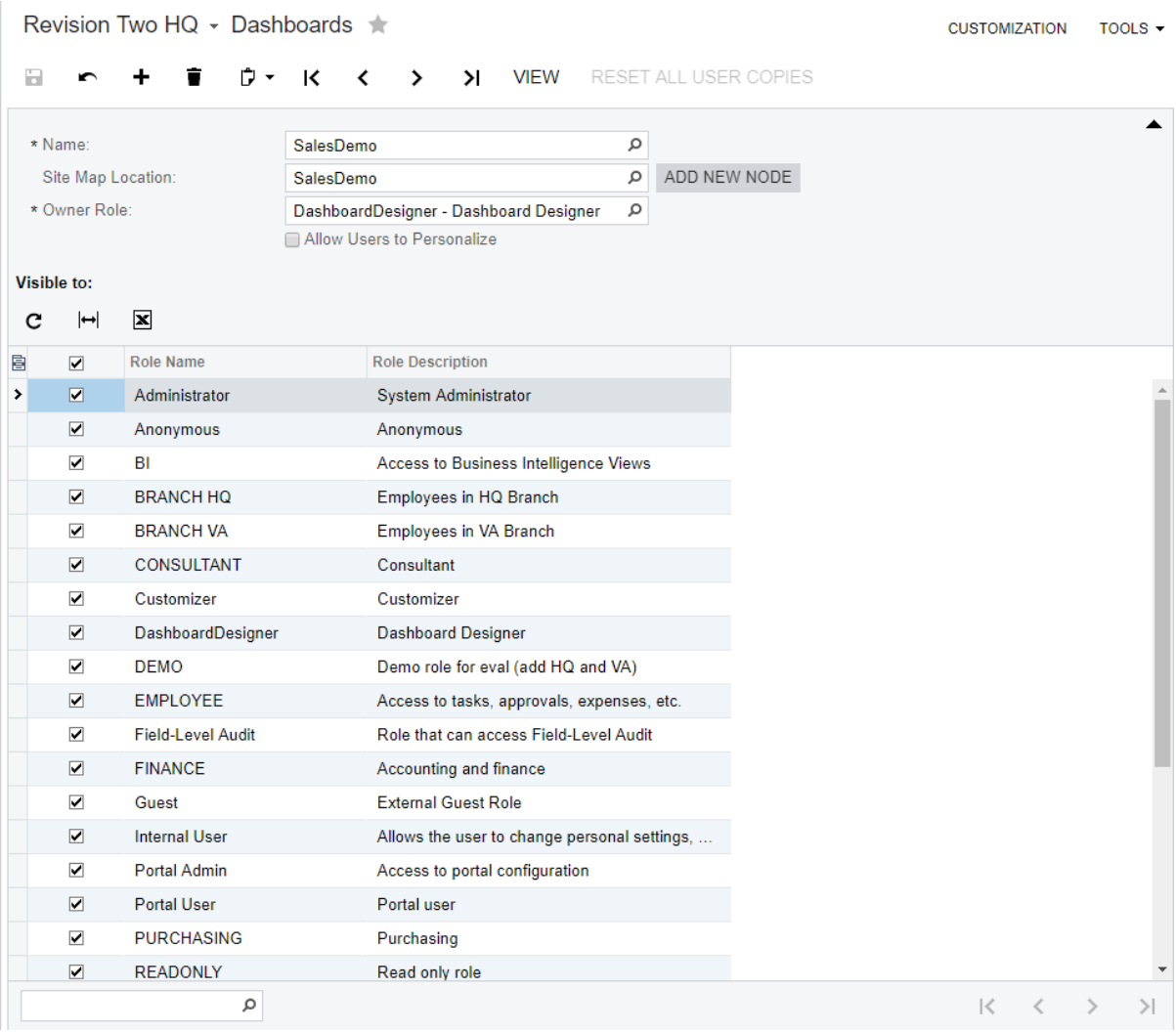


Figure: Reviewing the settings of the SalesDemo dashboard

Now that you have created the dashboard, you need to add widgets to it.

Step 13.2: Adding a Chart Widget to the SalesDemo Dashboard

Now you need to populate the dashboard with widgets. First, you will add to the *SalesDemo* dashboard a chart widget that displays the top ten customers by total sales during the last activity period, using data from the Customer Summary form (AR401000). Do the following:

1. In the **Search** box on the top panel of the Acumatica ERP screen, type `SalesDemo` to find the *SalesDemo* dashboard, and click the link under **Dashboards** to open the dashboard (see the following screenshot).

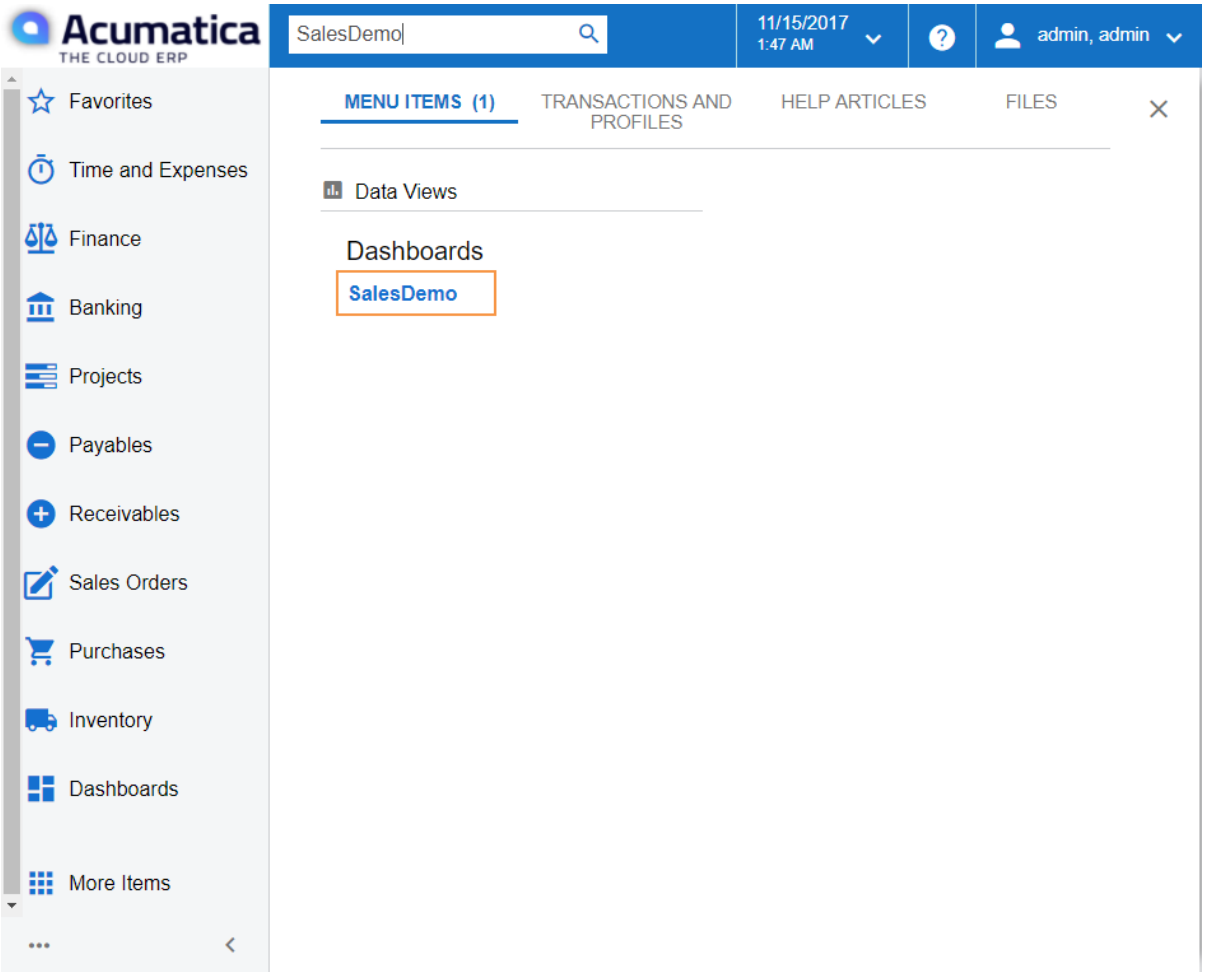


Figure: Searching for a dashboard

Alternatively, you can open any dashboard from the Dashboards form (SM208600; System > Customization > Manage) by selecting that dashboard by its name and then clicking **View** on the form toolbar.

2. On the dashboard title bar (top right), click **Design** to turn on design mode for the dashboard.
3. On the widget placeholder, click **add a new widget**.
4. In the **Add Widget** dialog box, which opens, click **Chart** and then click **Next**.
5. In the **Widget Properties** dialog box, which opens, do the following:
   a. In the **Inquiry Screen** box, select *Customer Summary* (*Company* > *Finance* > *Accounts Receivable* > *Work Area* > *Explore*), which is the form whose data will be used for the chart widget.

b. Click **Inquiry Parameters**, and in the **Inquiry Parameters** dialog box (which opens), clear the **Split by Currency** check box to list customers' total sales regardless of the currency of the items and services sold.

In the **Inquiry Parameters** dialog box, you can specify the values of the form parameters to be used to select the displayed data; otherwise, the default values will be used.

c. Click **OK** to close the **Inquiry Parameters** dialog box.

d. Make sure the **Shared Filter to Apply** box contains the default value: *All Records*.

In this box, you can select any shared filter that has been created for the selected form.

e. Click **Configure** to specify the settings of the chart.

f. In the **Chart Settings** dialog box, which opens, do the following:

a. In the **Chart Type** box, select *Doughnut*.

A doughnut chart is a circular chart divided into sectors or parts that illustrate proportions. This type of chart effectively conveys how the parts compare to one another.

b. In the **Legend** box of the **Categories** section, select *Customer Name*.

The selected parameter of the form is used to label the names of the sectors on the doughnut. Based on the selected value, the customers' names will be the labels of the sectors.

c. In the **Sort By** boxes, make sure the default values are selected: *Legend Values* and *Descending*.

In these boxes, you select the sort order for the legend data. The left box defines the sequence to be sorted, and the right box defines the sort order.

d. Make sure that the **Legend Position** box, which appeared when you when you made a selection in the **Legend** box, contains the default value: *Popup*.

The legend position is the location of the legend on the widget. With the selected value, the user can open the legend as a pop-up box by clicking the icon in the bottom left corner of the widget. The **Legend Position** box is displayed for only doughnut and funnel chart types.

e. In the **Maximum Number of Values Shown** box, make sure the default value of *10* is selected.

f. Make sure the **Show Sum of Other Entities** check box is cleared.

If you had selected this check box, the values that are not among the largest values (those whose number is specified in the **Maximum Number of Values Shown** box) would be summed and shown on the chart as a single element. With the check box cleared, the system will display only the ten largest values on the chart.

g. In the **Value** boxes of the **Values** section, in the left box, select *PTD Sales*, and in the right box, make sure that the default *Sum* value is selected.

The parameter of the form that you select in the left box defines the size of doughnut sectors. You have selected *PTD Sales*, which holds the total amount (in the base currency) of the period-to-date sales for the specified period. You have specified no period in the inquiry parameters. Thus, *PTD Sales* shows the total sales amount of a customer during the last period in which any transactions related to the customer were released.

In the right box, you select the aggregation function, which the system uses to perform a calculation on the column of data selected in the **Value** box and return a single value. The *Sum* function, which you have selected, calculates the sum of the items in the column.

h. In the **Format** box, select *0.00*.

In this box, you can select the format of the numeric values.

i. Review the settings of the doughnut chart (see the following screenshot).

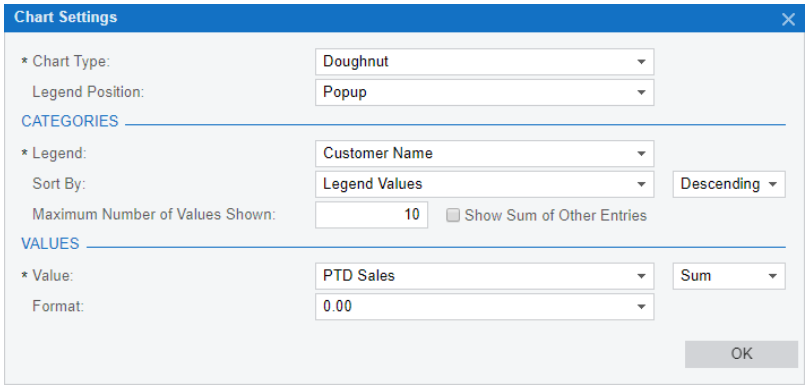


Figure: Reviewing the settings of the chart

j. Click **OK** to save your changes and close the **Chart Settings** dialog box.

g. In the **Caption** box, type `Top 10 Companies`.

h. Click **Finish** to save your changes and close the **Widget Properties** dialog box.

6. Drag the bottom right corner of the widget placeholder to widen the widget area so that the company names appear on the widget.

7. On the dashboard title bar, click **Design** to turn off design mode.

In the following screenshot, you can see the dashboard with the chart widget. You can click the legend icon in the bottom right corner of the widget to view the chart legend.

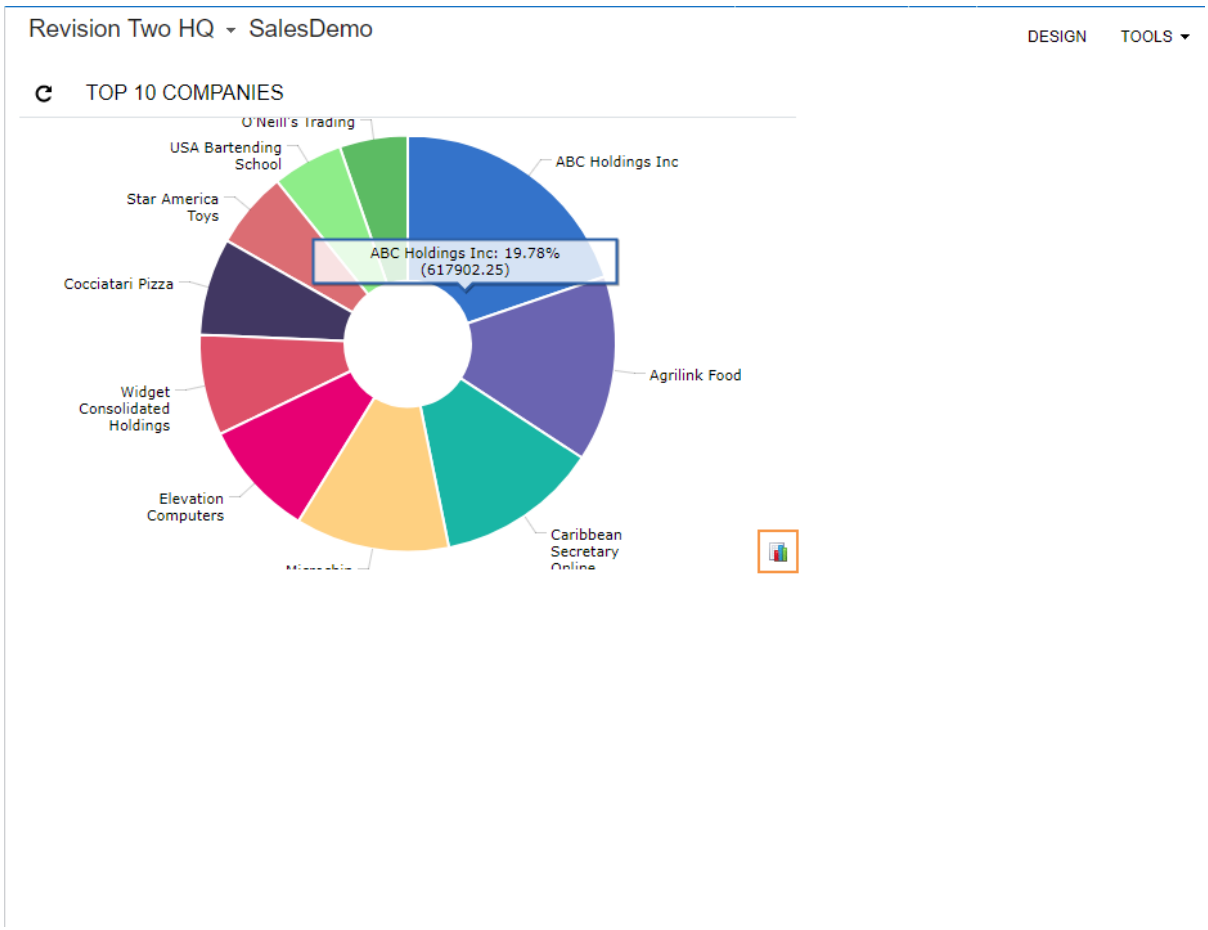


Figure: Viewing the SalesDemo dashboard with the doughnut chart

Now that you have added the chart widget to the *SalesDemo* dashboard, you will change its type from *Doughnut* to *Columns* in the next step.

Step 13.3: Changing the Type of a Chart Widget

At any time, you can change the type of chart that is used for a widget.

In this step, you will change the type of the *Top 10 Companies* chart from *Doughnut* to *Columns*. Proceed as follows:

1. Open the *SalesDemo* dashboard.
2. On the title bar of the dashboard, click **Design** to turn on design mode.
3. On the toolbar of the *Top 10 Companies* widget, click Edit (the pencil icon).
4. In the **Widget Properties** dialog box, which opens, click **Configure**.
5. In the **Chart Type** box, select *Column*.

   Notice that the **Legend Position** box has disappeared and the **Series** group of boxes has appeared in the dialog box, as shown in the following screenshot.

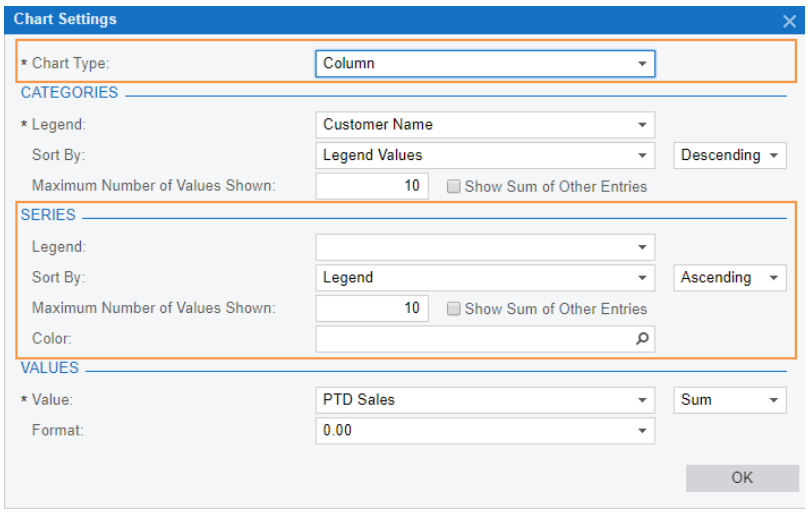


Figure: Reviewing the settings of the column chart

   The **Legend** box of the **Categories** section contains the element whose values the system will display on the horizontal or vertical axis, depending on the type of chart. For example, for the column chart, the element values are displayed on the horizontal axis.

   The **Legend** box of the **Series** section contains the element whose values the system will use for additional data view. For example, in the stacked column chart, the values of this element are displayed as sections of the chart column for each category.

   The **Value** box of the **Values** section contains the element whose values the system will use in the data area on the horizontal or vertical axis, depending on the type of chart. For example, for the column chart, the element values are displayed on the vertical axis.

6. Click **OK** to save your change and close the **Chart Settings** dialog box.
7. Click **Finish** to save your changes and close the **Widget Properties** dialog box.
8. On the dashboard title bar, click **Design** to turn off design mode of the dashboard.

As you can see in the following screenshot, the doughnut chart was changed to a column chart where columns are sorted in descending order by the values of the **PTD Sales** element on the Customer Summary form (AR401000).

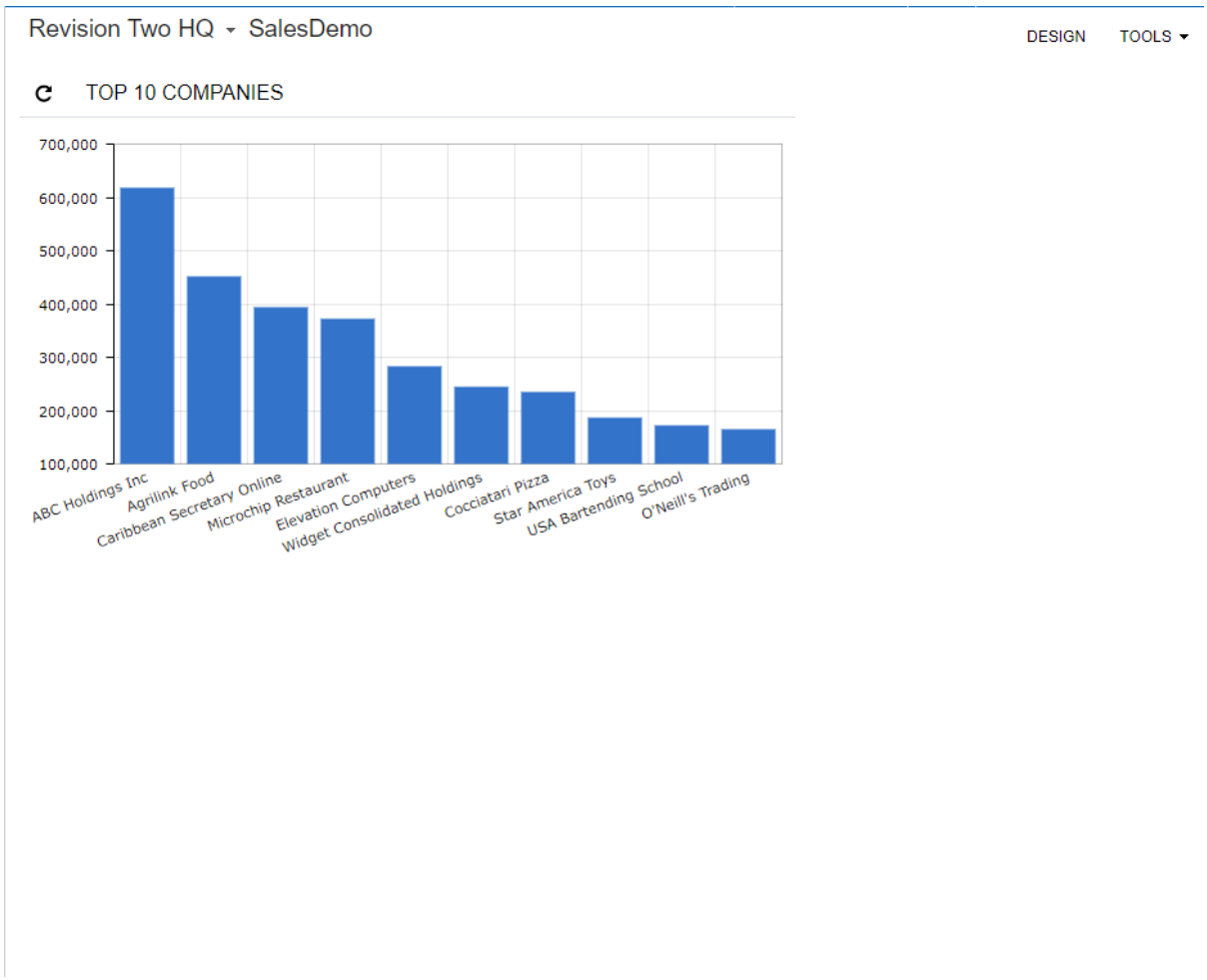


Figure: Viewing the SalesDemo dashboard with the column chart

Now that you have added the chart widget to the *SalesDemo* dashboard, you will add a scorecard KPI widget to the same dashboard in the next step.

Step 13.4: Adding a Scorecard KPI Widget to the SalesDemo Dashboard

The second widget that you will add to the *SalesDemo* dashboard is a scorecard KPI (key performance indicator) widget that displays the average deal size. (In our example, the average deal size is calculated based on totals of closed sales orders).

You can configure the scorecard KPI widget to indicate the level of a parameter directly or conversely. You use the direct way for parameters whose lower values indicate that the performance is good (such as the number of unprocessed support requests). You use the converse way for parameters whose lower values indicate that the performance is dissatisfied (such as the average deal size).

Do the following:

1. On the title bar of the *SalesDemo* dashboard, click **Design** to turn on design mode.
2. On the widget placeholder to the right of the *Top 10 Companies* widget, click the **add a new widget** link.
3. In the **Add Widget** dialog box, which opens, click **Scorecard KPI** and then click **Next**.
4. In the **Widget Properties** dialog box, which opens, do the following:
   a. In the **Inquiry Screen** box, select *DB SO Total* (*Company* > *Hidden* > *Hidden Generic Inquiries*), as shown in the following screenshot.

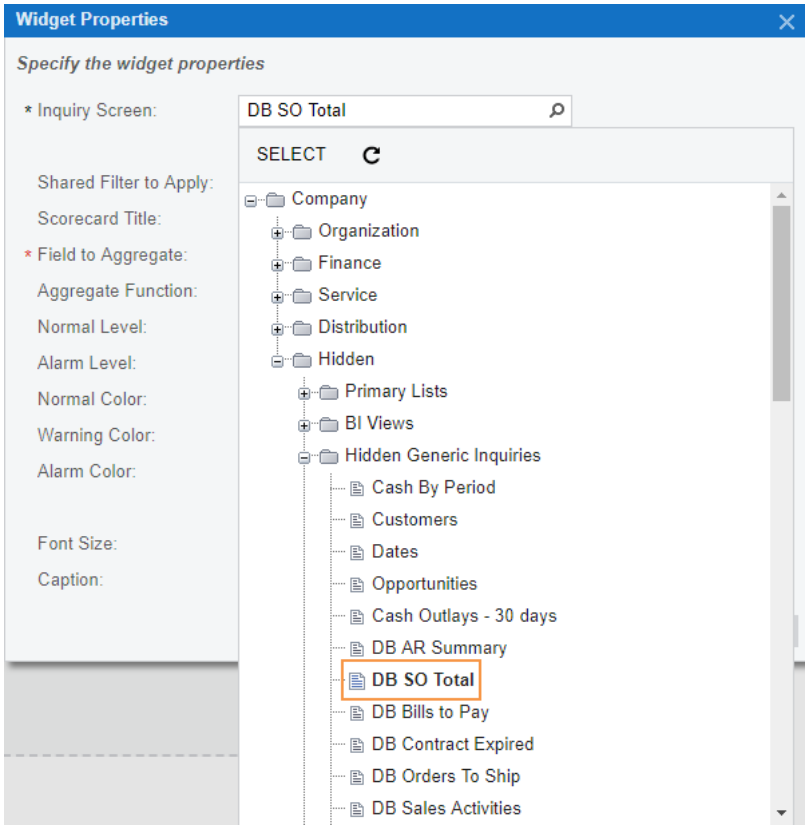


Figure: Selecting a generic inquiry

   b. Make sure the **Shared Filter to Apply** box contains the default value: *All Records*.
   c. In the **Scorecard Title** box, type `Average Deal Size`.
   d. In the **Field to Aggregate** box, select *Order Total*.

      The widget will aggregate the total sums of sales orders.

e. In the **Aggregate Function** box, select *Average*.

With this setting, the system calculates the average of sales order totals.

f. In the **Normal Level** box, type `20,000`.

In this box, you have typed the low end of the normal range of the budgeted deal size.

g. In the **Alarm Level** box, type `30,000`.

In this box, you have typed the desired average deal size.

h. In the **Normal Color** box, select *Acumatica Red*.

If the average deal size is less than or equal to the threshold you have specified in the **Normal Level** box, the system will use the color selected in the **Normal Color** box for the widget background. You have selected the red color in this box because the low deal size may indicate about improper performance of the sales department.

i. In the **Warning Color** box, keep the default value: *Acumatica Yellow*.

If the real average deal size is between the values specified in the **Normal Level** and **Alarm Level** boxes, the system will use the color specified in the **Warning Color** box for the widget background. You have selected the yellow color in this box to indicate that the average deal size is not as good as it is expected to be.

j. In the **Alarm Color** box, select *Acumatica Green*.

If the real average deal size is equal to or greater than the value specified in the **Alarm Level** box, the system will use the color specified in the **Alarm Color** box for the widget background. You have selected the green color in this box to indicate that the average deal size is equal to or above the desired figure.

k. Keep the **Automatically Adjust Front Size** check box selected.

With this check box selected, the size of the font used in the widget is adjusted automatically, depending on the widget size.

l. Keep the **Caption** box blank.

m. Review the properties of the scorecard KPI widget (see the following screenshot).

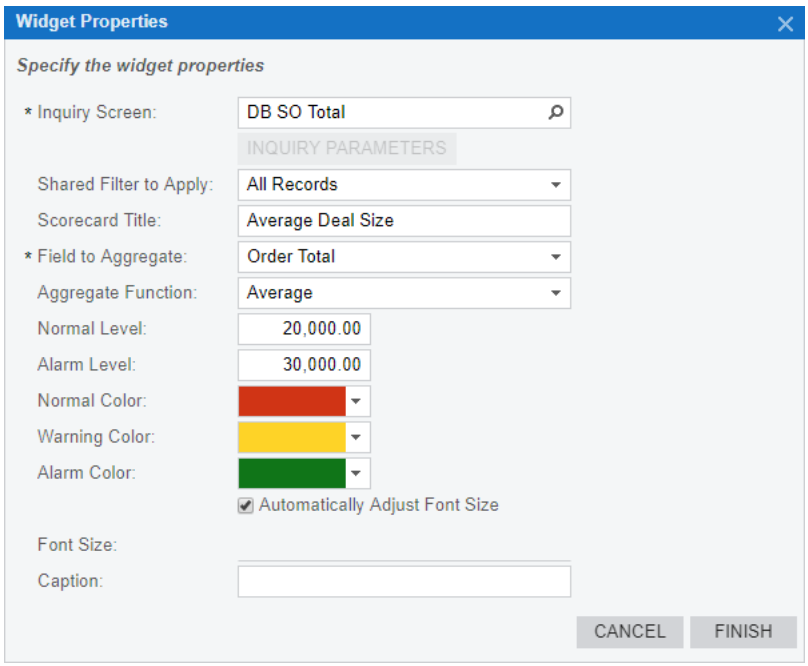


Figure: Reviewing the properties of the widget

n. Click **Finish** to save your changes and close the **Widget Properties** dialog box.

5. On the dashboard title bar, click **Design** to turn off design mode.

You can see the result in the following screenshot, where the color of the widget is green. This means that the average deal size is above the desired figure.

The widgets that you see may differ from the widgets on the screenshot below because data in the *SalesDemo* data set is regularly updated.

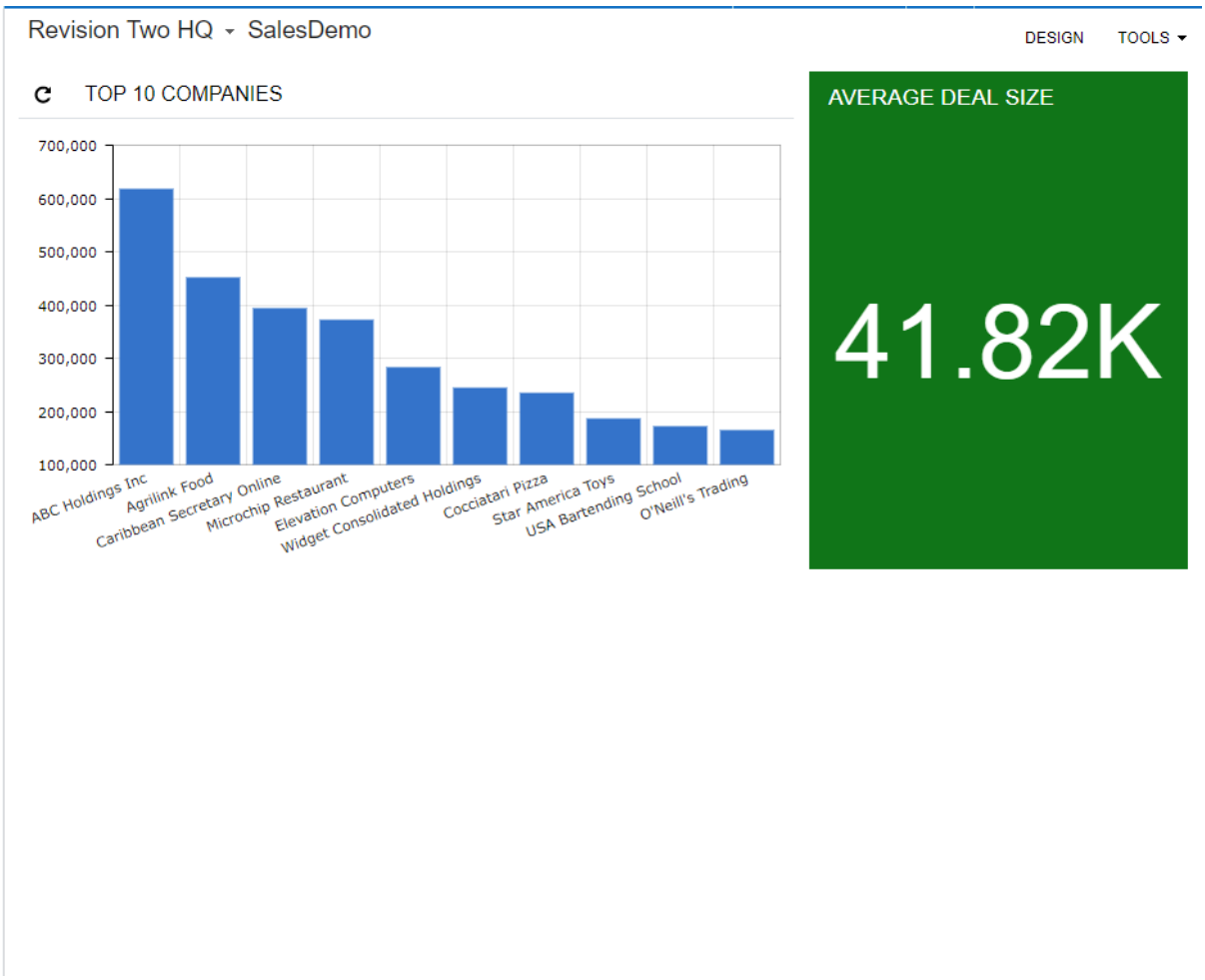


Figure: Reviewing the SalesDemo dashboard with the scorecard KPI

Now that you have added the scorecard KPI to the *SalesDemo* dashboard, you will change its settings in the next step.

Step 13.5: Changing the Settings of a Scorecard KPI Widget

After you create a scorecard KPI widget, the limits that you used (which influence the background color of the widget) may change. In this case, you can easily apply these changes to the widget settings.

Suppose that in your organization, the minimum deal size (that is, the low end of the normal range) was budgeted as $50,000 for the next year. The desired average deal size is $70,000 and higher. You will reflect this change on the *SalesDemo* dashboard. Proceed as follows:

1. On the title bar of the *SalesDemo* dashboard, click **Design** to turn on design mode.
2. On the toolbar of the **Average Deal Size** widget, click Edit (the pencil icon).
3. In the **Widget Properties** dialog box, do the following:
   a. In the **Normal Level** box, type `50,000`.
   b. In the **Alarm Level** box, type `70,000`.
   c. Click **Finish** to save your changes and close the dialog box.
4. On the dashboard title bar, click **Design** to turn off design mode.

In the following screenshot, you can see that the widget background color is now red. This means that the current average deal size of $41,820 is below the minimum size of $50,000.

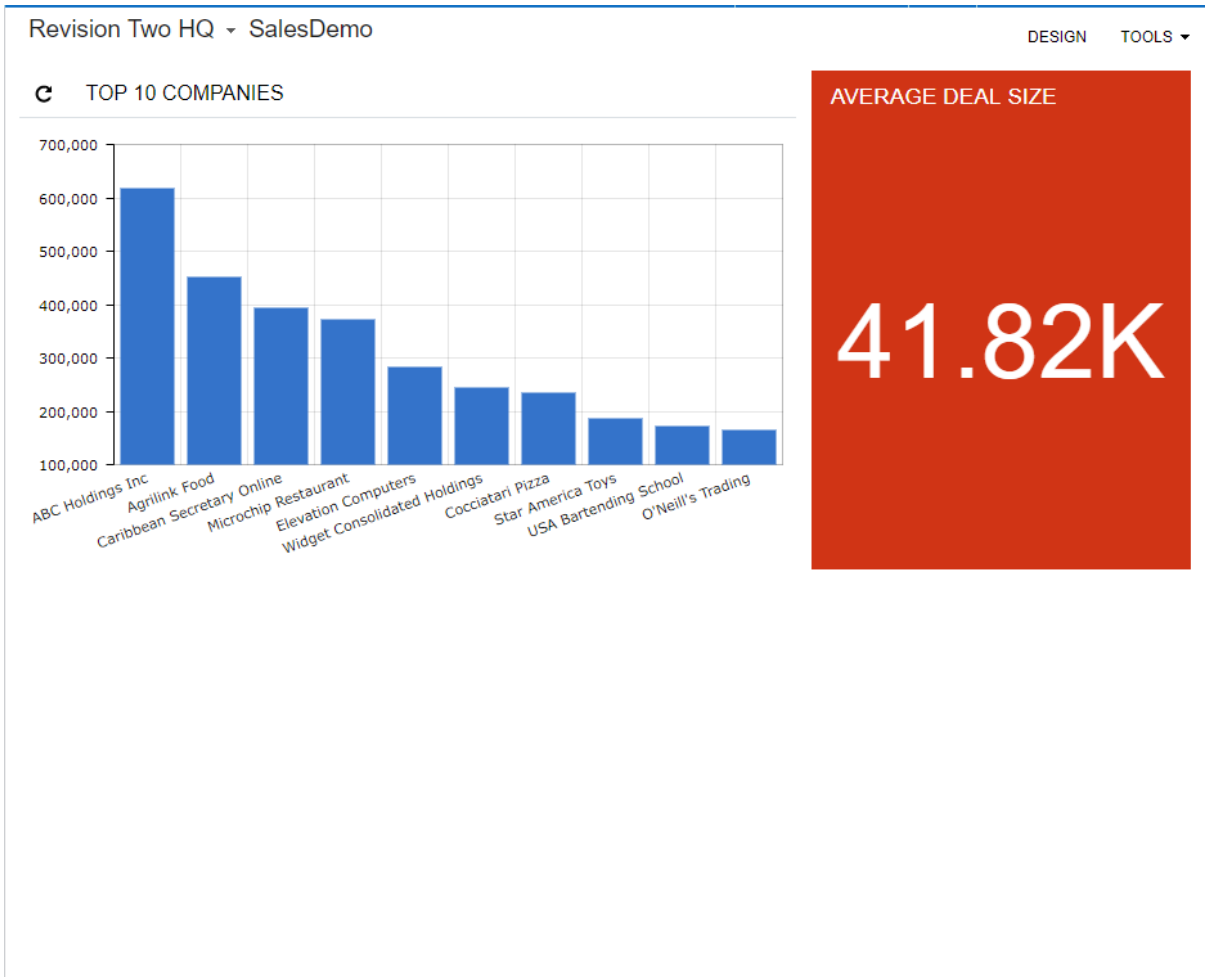


Figure: Reviewing the SalesDemo dashboard with the changed scorecard KPI

Now that you have changed the scorecard KPI on the *SalesDemo* dashboard, you will add a trend card KPI widget to the dashboard in the next step.

Step 13.6: Adding a Trend Card KPI Widget to the SalesDemo Dashboard

Trend card KPI (key performance indicator) widgets provide you with the ability to compare totals, averages, and counts of items between specific time periods, such as years or months. The system counts the time period backward, starting from the current business date. Suppose that the current business date is December 7, 2017, and you want to make a year-to-year comparison of a particular parameter to see if it is trending upward or downward. The system will aggregate the values between December 7, 2017, and December 8, 2016; it will also total the values between December 7, 2016, and December 8, 2015. Then the system will compare the figure for the most current time period (that is, the time period closest to the current business date) with the older figure, and indicate the trend: rising, flat, or falling.

The third widget that you will add to the *SalesDemo* dashboard is a trend card KPI widget that displays the year-to-year trend for the number of reported support cases. Do the following:

1. On the title bar of the *SalesDemo* dashboard, click **Design** to turn on design mode.
2. On the widget placeholder below the *Top 10 Companies* widget, click **add a new widget**.
3. In the **Add Widget** dialog box, which opens, click **Trend Card KPI** and then click **Next**.
4. In the **Widget Properties** dialog box, which opens, do the following:
   a. In the **Inquiry Screen** box, select *DB Cases* (*Company* > *Hidden* > *Hidden Generic Inquiries*), as shown in the following screenshot.

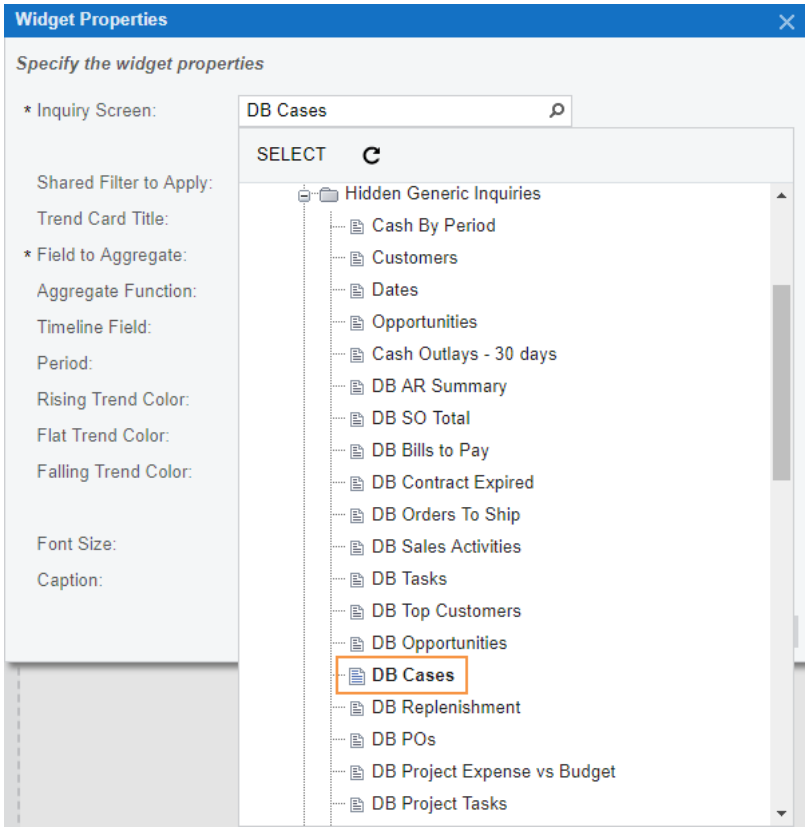


Figure: Selecting the generic inquiry for the trend card KPI widget

   b. Make sure the **Shared Filter to Apply** box contains the default value: *All Records*.
   c. In the **Trend Card Title** box, type `Yearly Dynamics of Support Cases`
   d. In the **Field to Aggregate** box, select *Case ID*.

e. Check to be sure the **Aggregate Function** box contains the default value: *Count*.

With this setting, the system will count the number of unique support cases.

f. In the **Timeline Field** box, select *Date Reported*.

In this box, you select an element of the date type from the selected inquiry. This field is used for calculating trends.

g. In the **Period** box, select *Last Year*.

With this setting, the system will count the support cases created during the year immediately before the current business date and compare it with the number of cases created during the previous year.

h. In the **Rising Trend Color** box, select *Acumatica Red*.

You have selected red in this box to draw employees' attention when the number of support cases is growing. (This may mean that your organization needs to allocate more resources to the support of customers.)

i. In the **Flat Trend Color** box, keep the default value: *Acumatica Yellow*.

You have selected yellow to let employees know when the number of support cases has remained identical in comparison to the previous period.

j. In the **Falling Trend Color** box, select *Acumatica Blue*.

You have selected blue in this box to notify employees when the number of support cases is falling. (This trend might be good for your organization because some of the employees who support customers can be redeployed to other tasks.)

k. Make sure the **Automatically Adjust Font Size** box is selected.

l. Leave the **Caption** box blank.

m. Review the properties of the trend card KPI widget (see the following screenshot).

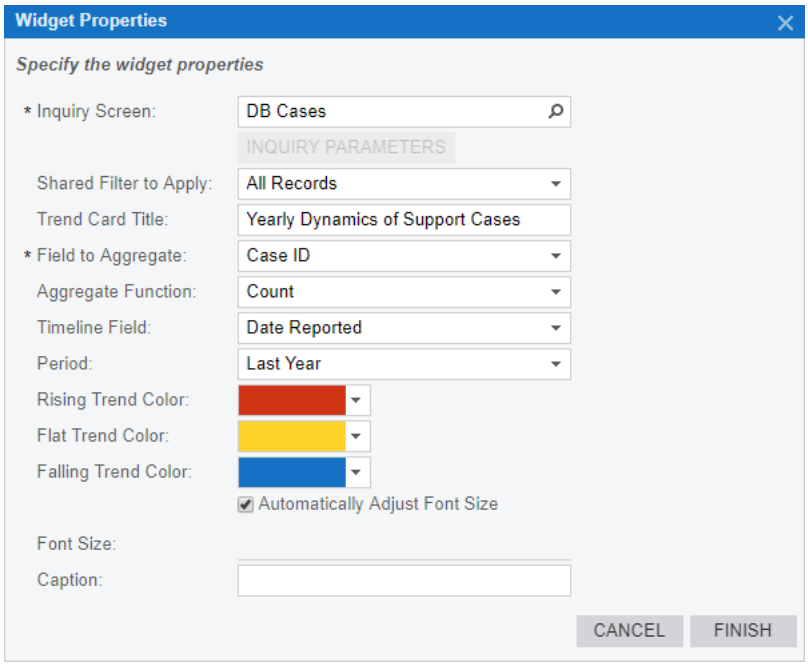


Figure: Reviewing the properties of the widget

n. Click **Finish** to save your changes and close the dialog box.

5. On the dashboard title bar, click **Design** to turn off design mode.

You can see the result in the following screenshot.

The widgets that you see may differ from the widgets on the screenshot below because data in the *SalesDemo* data set is regularly updated.

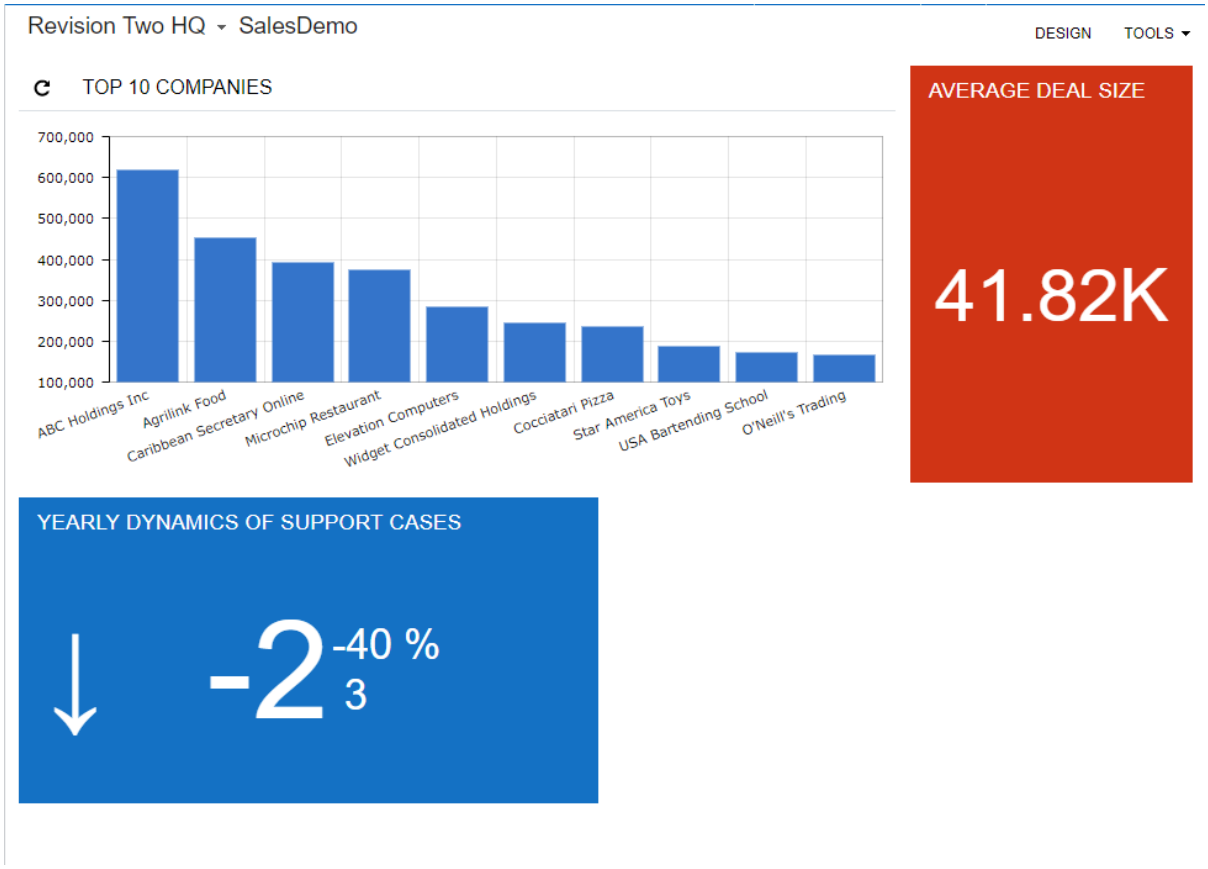


Figure: Reviewing the SalesDemo dashboard with the trend card KPI widget

As you can see, the color of the widget is blue, which means that the year-to-year number of support cases is falling.

Now that you have added the trend card KPI to the *SalesDemo* dashboard, you will embed an external webpage in the same dashboard.

Step 13.7: Adding an Embedded Page Widget to the SalesDemo Dashboard

You can add to the dashboard an external webpage with a useful resource, such as a search engine, currency rates, or financial news.

> You can use the *Embedded Page* widget to place an empty area on your dashboard for design reasons. To do this, in the **Widget Properties** dialog box, you need to type `about:blank` in the **Source** box and leave the **Caption** box empty.

You will embed the Microsoft Bing page in the *SalesDemo* dashboard. Do the following:

1. On the title bar of the *SalesDemo* dashboard, click **Design** to turn on design mode.
2. On the widget placeholder to the right of the **Yearly Dynamics of Support Cases** widget, click **add a new widget**.
3. In the **Add Widget** dialog box, which opens, click **Embedded Page** and then click **Next**.
4. In the **Widget Properties** dialog box, do the following:
   a. In the **Source** box, type `https://www.bing.com`.
   b. In the **Caption** box, type `Bing`.
   c. Review the properties of the embedded page widget (see the following screenshot).

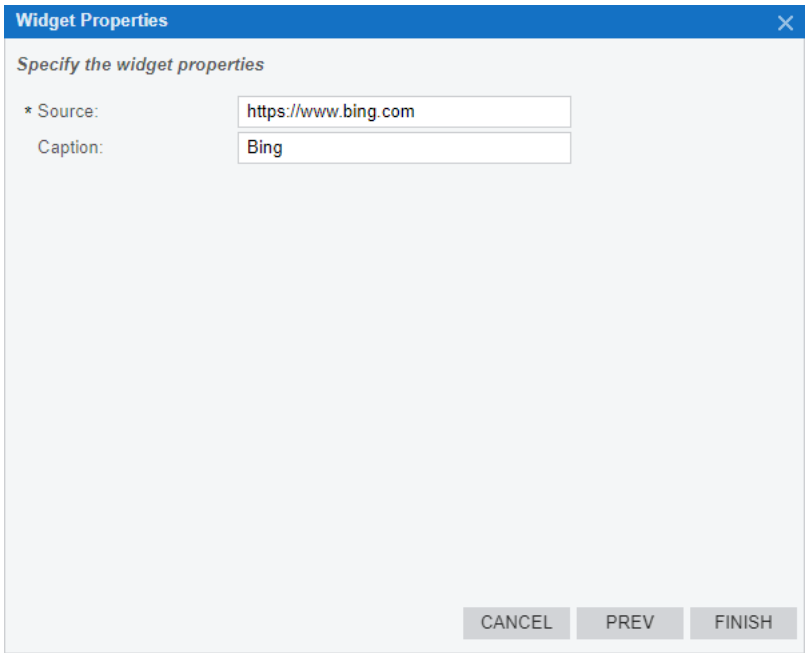


Figure: Reviewing the properties of the widget

   d. Click **Finish** to save your changes and close the dialog box.
5. On the dashboard title bar, click **Design** to turn off design mode.

In the following screenshot, you can see the *SalesDemo* dashboard with the four widgets.

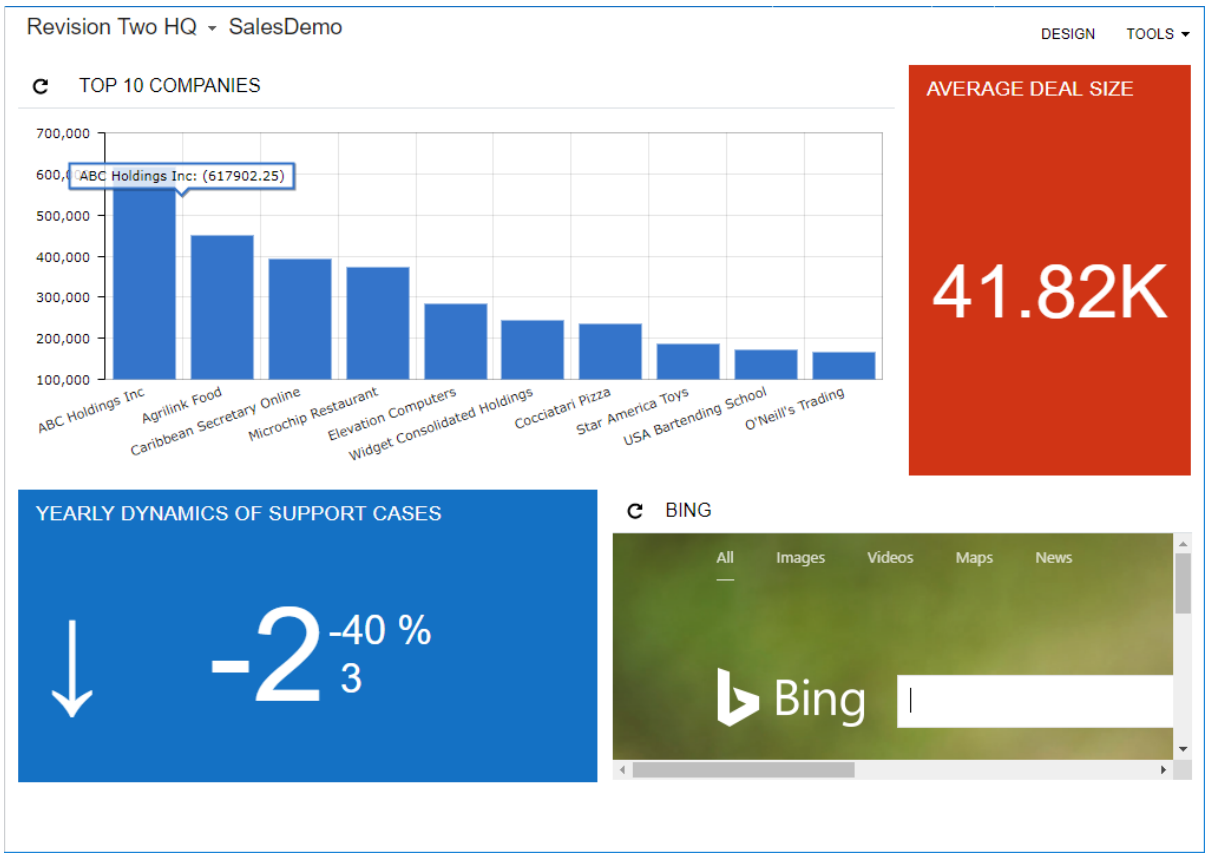


Figure: Viewing the Sales Demo dashboard with the embedded page

Now that you have populated the dashboard with widgets, you will arrange the widgets in the next step.

Step 13.8: Arranging Widgets on a Dashboard

After you have added all the required widgets to the dashboard, you can arrange them in any of the following ways:

- Resize widgets
- Change the order of widgets
- Change the layout of widgets on a dashboard
- Delete widgets

You will arrange widgets on the *SalesDemo* dashboard. Do the following:

1. On the title bar of the *SalesDemo* dashboard, click **Design** to turn on design mode.
2. On the dashboard title bar, click **Edit Layout**.
3. In the **Dashboard Layouts** dialog box, click the fourth layout (see the following screenshot) and click **OK**.

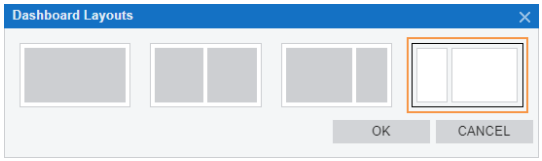


Figure: Selecting the dashboard layout

4. Drag the *Top 10 Companies* chart widget to the right part of the widget.
5. Drag the right border of the *Average Deal Size* widget so that it has the full width of the left part of the dashboard.
6. Drag the bottom right corner of the *Top 10 Companies* widget so that it has the full width of the right part of the dashboard and its height is the same as the height of the *Average Deal Size* widget.
7. On the toolbar of the *Bing* widget, click Delete.
8. Drag the right border of the *Yearly Dynamics of Support Cases* widget so that it has the full width of the left dashboard part.
9. On the dashboard title bar, click **Design** to turn off design mode.

In the following screenshot, you can see the *SalesDemo* dashboard with the rearranged widgets.

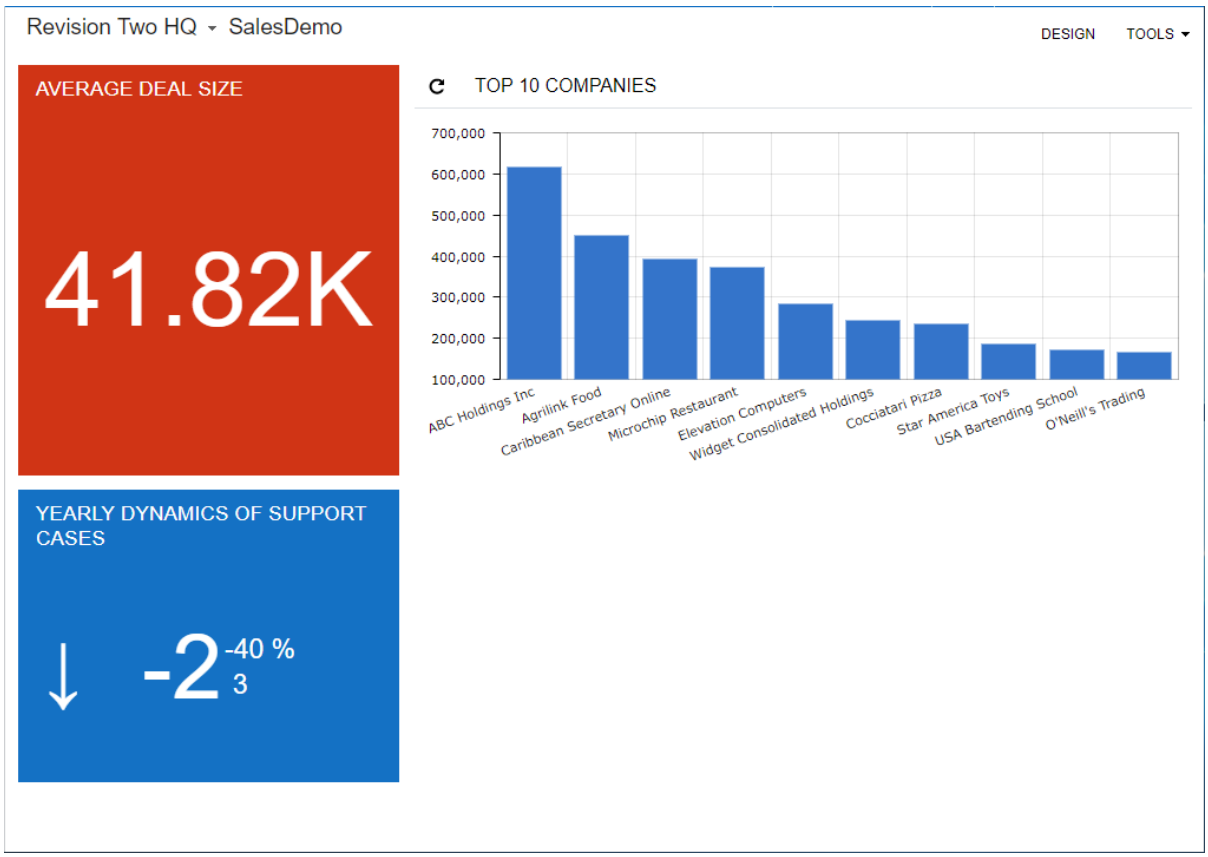


Figure: Viewing the changed SalesDemo dashboard

Now that you have arranged widgets on the dashboard, in the next step, you will set up the dashboard as a default home page so that all employees who sign in to your Acumatica ERP instance will see it.

Step 13.9: Setting Up the SalesDemo Dashboard as the Default Home Page

As an administrator, you can set up any dashboard as the default home page of your Acumatica ERP instance. Users will see this dashboard when they sign in to the system if they did not set up a personal home page.

The home page is the first screen users see when they sign in to the system. To open the home page at any time, users can click the logo in the upper-left corner of the Acumatica ERP screen, as shown in the following screenshot. (In the modern UI, this button is moved to the left of the business date if the main menu is collapsed to the top.)

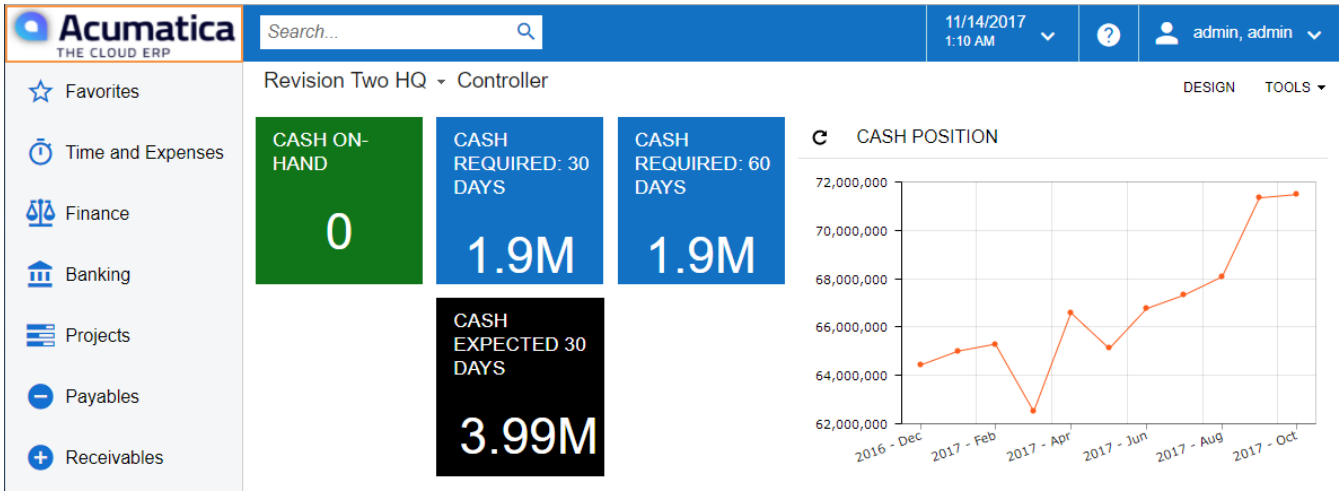


Figure: Viewing the Home button

To set up the *SalesDemo* dashboard as the default home page of your instance, do the following:

1. On the Site Preferences form (SM200505; Configuration > Common Settings > User Settings), in the **Home Page** box of the **General Defaults** group, select *SalesDemo* (*Company* > *Organization* > *Shared Dashboards*), as shown in the following screenshot.

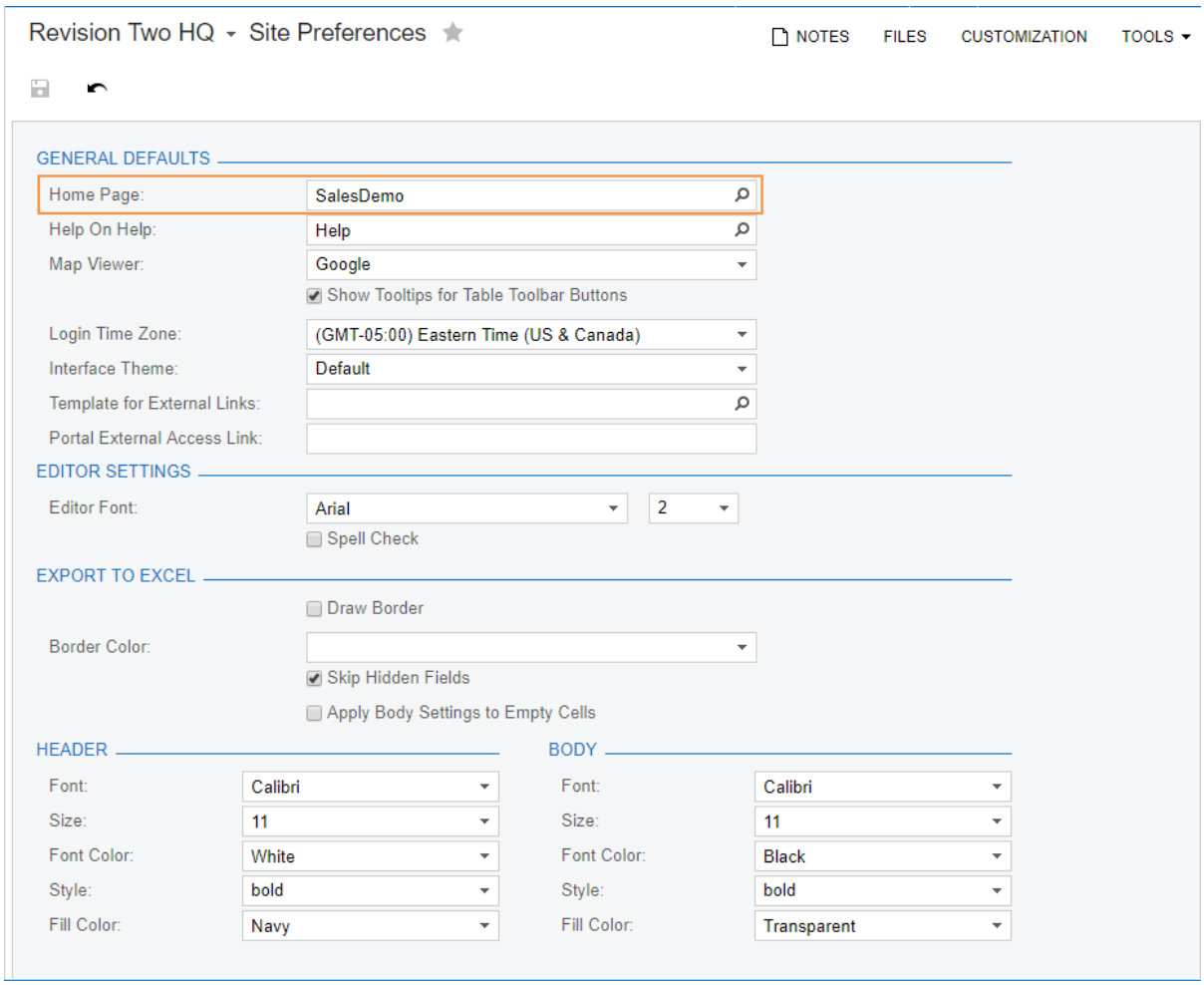


Figure: Setting up the default home page

2. Save your changes.
3. In the top right corner of the screen, click your user name and then click **My Profile** to open the User Profile form (SM203010).
4. On the **General Info** tab, in the **Home Page** box of the **Personal Settings** section, delete the predefined value (see the following screenshot). Save your changes.

   You have deleted the value of the **Home Page** box, which was predefined in your Acumatica ERP instance with the *SalesDemo* data set, so that you can see the default home page when you sign in to the system.

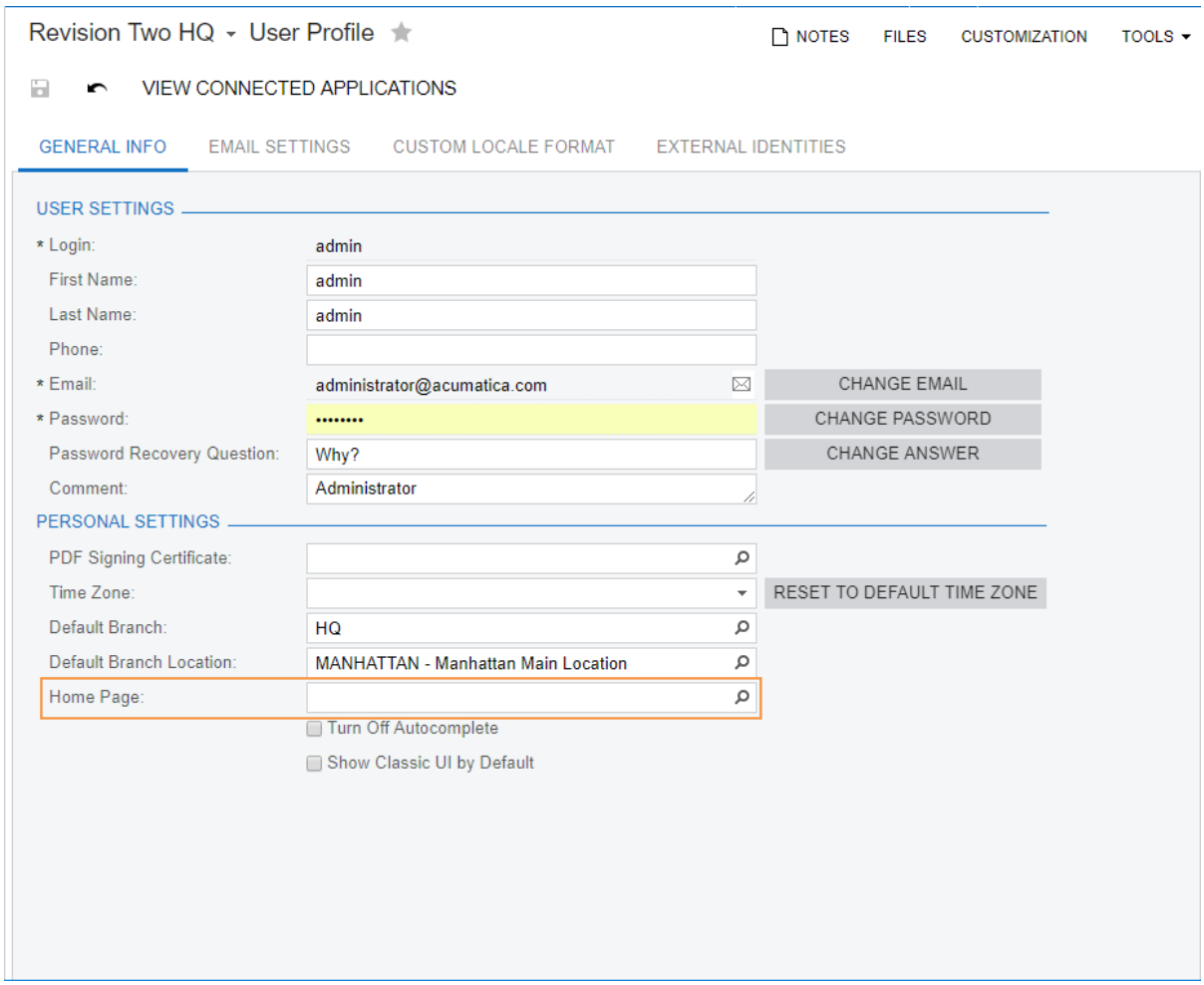


Figure: Deleting the value of the Home Page box

5. In the top left corner of the screen, click the Acumatica logo to open the home page. The *SalesDemo* dashboard opens.

Now that you have created and configured the public dashboard, you will create a dashboard that is visible to only users with a particular role.

Step 13.10: Creating a Dashboard That Is Visible to a Particular Role

In Acumatica ERP, you can create a dashboard that is designed especially for users with a particular functional role, such as accountants or sales managers. This dashboard should display role-specific information and be visible to only users who are assigned this particular role.

Suppose that you need to create a dashboard for accountants who work with Accounts Receivable documents in Acumatica ERP. Do the following:

1. On the Dashboards form (SM208600; System > Customization > Manage), click **Add New Record** and specify the following properties:
   - **Name**: Accounts Receivable
   - **Site Map Location**: Accounts Receivable (Company > Finance)
   - **Owner Role**: DashboardDesigner
   - **Allow Users to Personalize**: Selected
2. In the **Visible to** table, select the unlabeled check boxes for the following roles: *Administrator*, *DashboardDesigner*, and *Finance*.
3. Save your changes to the dashboard.

In the following screenshot, you can see the settings of the *Accounts Receivable* dashboard.

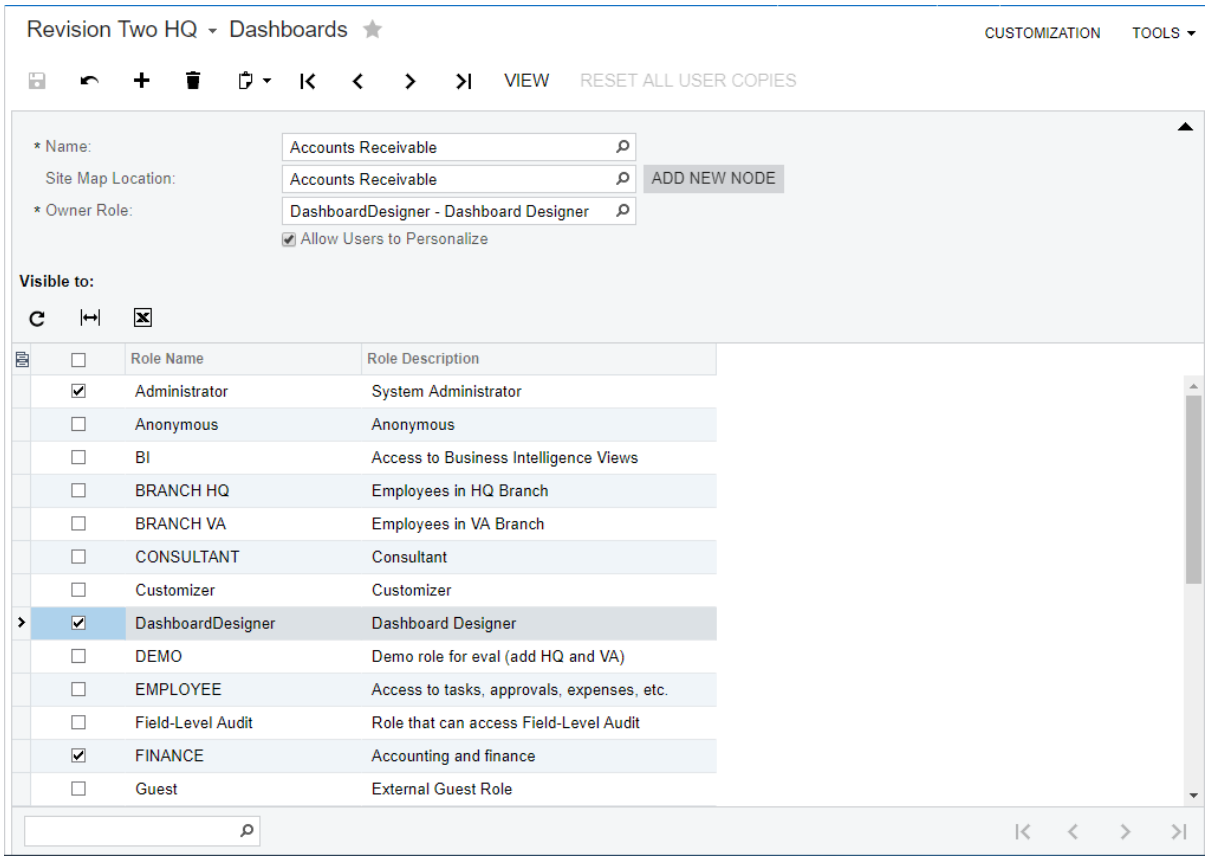


Figure: Creating a dashboard that is visible to users with the Finance role

Now that you have created this dashboard, you need to populate it with widgets, which you will do in the next four steps.

Step 13.11: Adding a Table Widget to the Accounts Receivable Dashboard

Although table widgets are not as eye-catching as charts are, they are often the best way to help the viewer grasp key ideas about the data. A table is often a better choice than a chart when you want to show multiple types (shown as columns) of data.

To add a table that lists the signed-in user's tasks to the *Accounts Receivable* dashboard, do the following:

1. Open the *Accounts Receivable* dashboard.
2. On the dashboard title bar, click **Design** to turn on design mode.
3. On the widget placeholder, click **add a new widget**.
4. In the **Add Widget** dialog box, which opens, click **Data Table** and then click **Next**.
5. In the **Widget Properties** dialog box, which opens, do the following:
   a. In the **Inquiry Screen** box, select *Tasks* (*Company* > *Organization* > *Communication* > *Works Area* > *Tasks*) as shown in the following screenshot.

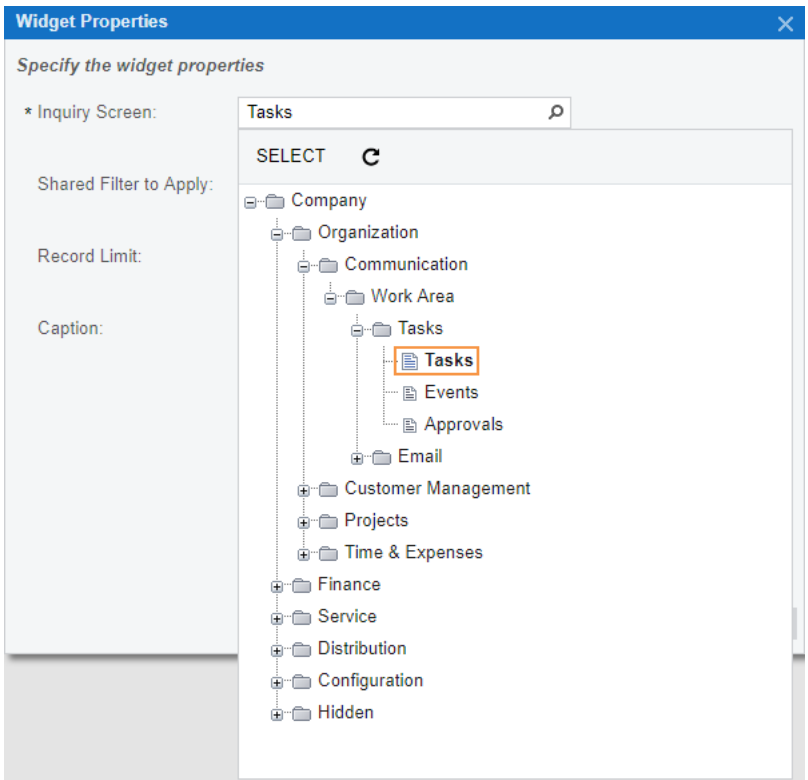


Figure: Selecting the form for the table widget

   b. In the **Shared Filter to Apply** box, select *My Tasks*.

   The **My Tasks** tab is a reusable filter, which you can use to select the data for a widget. You have become familiar with the functionality of these filters in *Lesson 12: Using Reusable Filters*.

   c. Make sure that the **Automatically Adjust Height** check box is cleared.

   With this check box cleared, you can adjust height of the table widget manually.

   d. Click **Column Settings**.

e. In the **Column Settings** dialog box, which opens, click each of the following columns and then click the arrow pointing right to select the column (see the following screenshot):

- **Summary**
- **Status**
- **Due Date**
- **Related Entity Description**

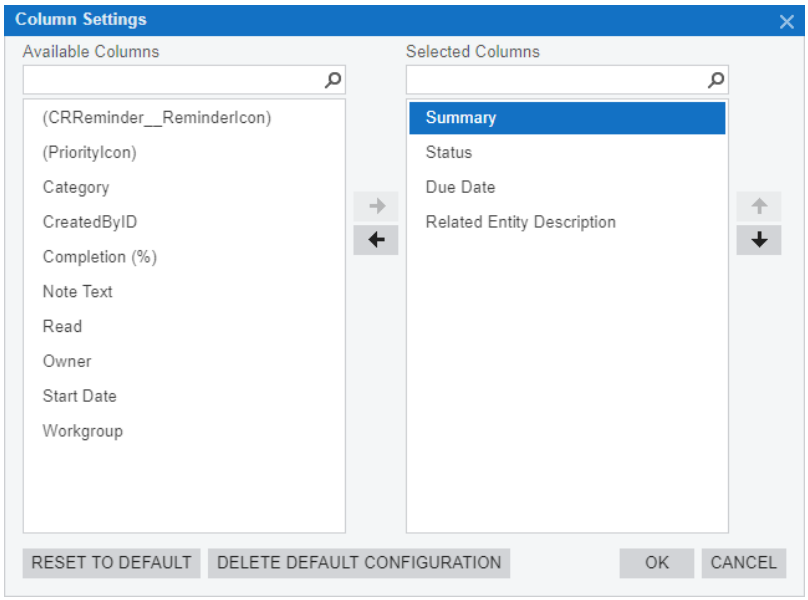


Figure: Selecting the columns for the table widget

f. Click **OK** to save your changes and close the **Column Settings** dialog box.

g. In the **Caption** box, type `My Tasks`.

h. Review the settings of the table widget (see the following screenshot).

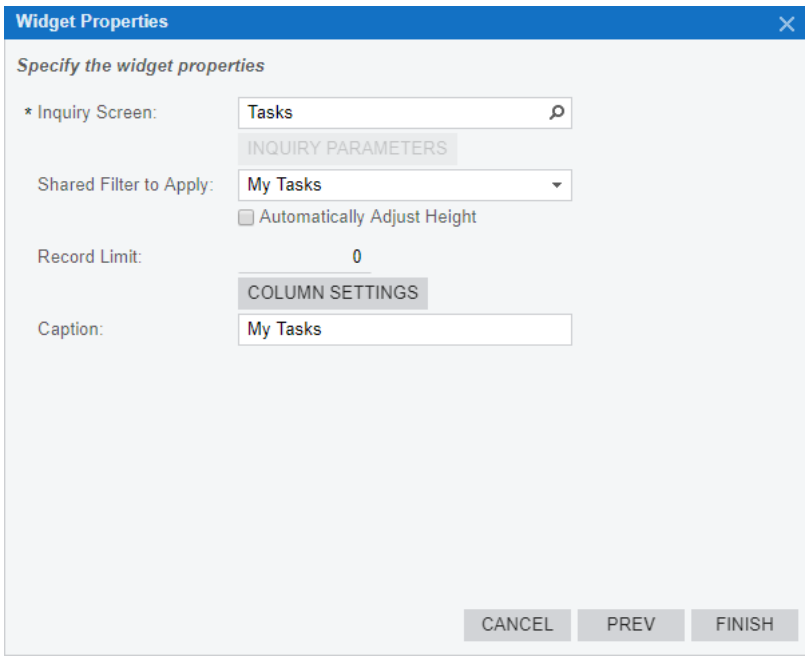


Figure: Reviewing the settings of the widget

i. In the **Widget Properties** dialog box, click **Finish** to save your changes and close the dialog box.

6. Change the size of the *My Tasks* widget as needed by dragging any of its corners or borders.
7. On the dashboard title bar, click **Design** to turn off design mode.

You can see the dashboard with the table widget in the following screenshot. By using this widget, you can add a new task and open an existing one.

Figure: Reviewing the Accounts Receivable dashboard with the table widget

Now that you have added the table widget to the *Accounts Receivable* dashboard, you will add a line chart widget to the dashboard in the next step.

Step 13.12: Adding a Chart Widget to the Accounts Receivable Dashboard

Chart widgets are useful when you need to visualize dynamic changes of particular parameters.

You will create a chart widget of the *Line* type that will display dynamic changes of sales amounts on the *Accounts Receivable* dashboard. Do the following:

1. On the title bar of the *Accounts Receivable* dashboard, click **Design** to turn on design mode.
2. On the widget placeholder to the right of the *My Tasks* widget, click **add a new widget**.
3. In the **Add Widget** dialog box, which opens, click **Chart** and then click **Next**.
4. In the **Widget Properties** dialog box, which opens, do the following:
   a. In the **Inquiry Screen** box, select *Sales Profitability Analysis* (Company > Finance > Accounts Receivable > Work Area > Explore), as shown in the following screenshot.

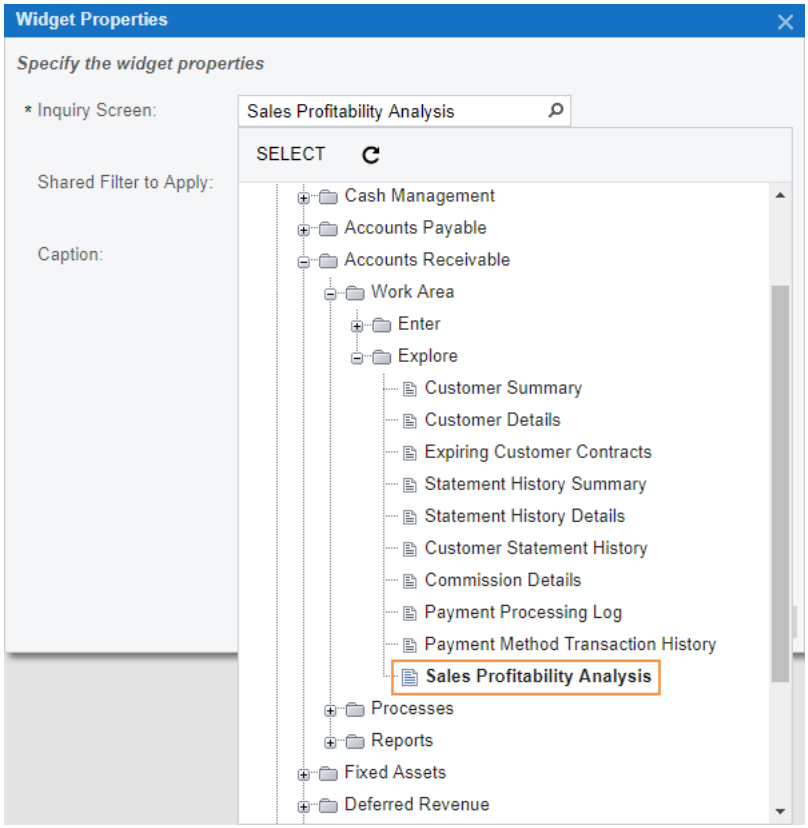


Figure: Selecting the form for the chart widget

   b. Click **Inquiry Parameters**.
   c. In the **Date From** line of the **Inquiry Parameters** dialog box (which opens), type `11/01/2016`.
   d. Click **OK** to save your changes and close the **Inquiry Parameters** dialog box.
   e. Make sure that the **Shared Filter to Apply** contains the default value: *All Records*.
   f. Click **Configure** to specify the settings of the chart.
   g. In the **Chart Settings** dialog box, which opens, do the following:
      a. In the **Chart Type** box, select *Line*.

b. In the **Legend** box of the **Categories** section, select *Date*.

c. In the **Sort By** boxes of the **Categories** section, keep the default values: *Legend* and *Ascending*.

d. In the **Maximum Number of Values Shown** box of the **Categories** section, type `12`.

e. In the **Date Rounding** box, select *Months*.

This box appears only for fields of the date type. In this box, you select the part of the date field that will be displayed on the chart widget.

f. In the **Format** box of the **Categories** section, select *yyyy - MMM*.

In this box, you select the format of the date field to be displayed on the chart.

g. In the **Value** box of the **Values** section, select *Net Sale*.

h. In the **Format** box of the **Values** section, select *0.00*.

i. Review the settings of the line chart (see the following screenshot).

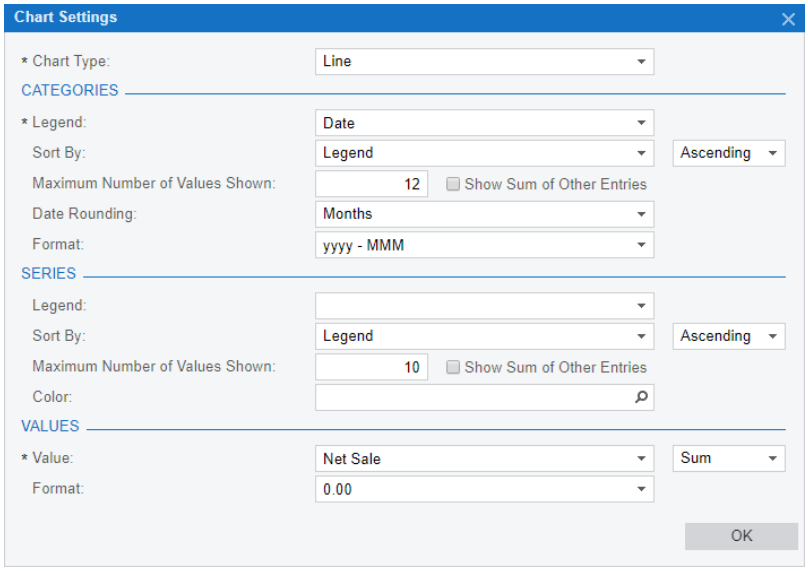


Figure: Reviewing the settings of the chart

j. Click **OK** to save your changes and close the **Chart Settings** dialog box.

h. In the **Caption** box, type `Sales by Month`.

i. Click **Finish** to add the chart to the dashboard and close the **Widget Properties** dialog box.

5. On the dashboard title bar, click **Design** to turn off design mode.

The *Accounts Receivable* dashboard with the table and line chart widgets is shown in the following screenshot.

The widgets that you see may differ from the widgets on the screenshot below because data in the *SalesDemo* data set is regularly updated.

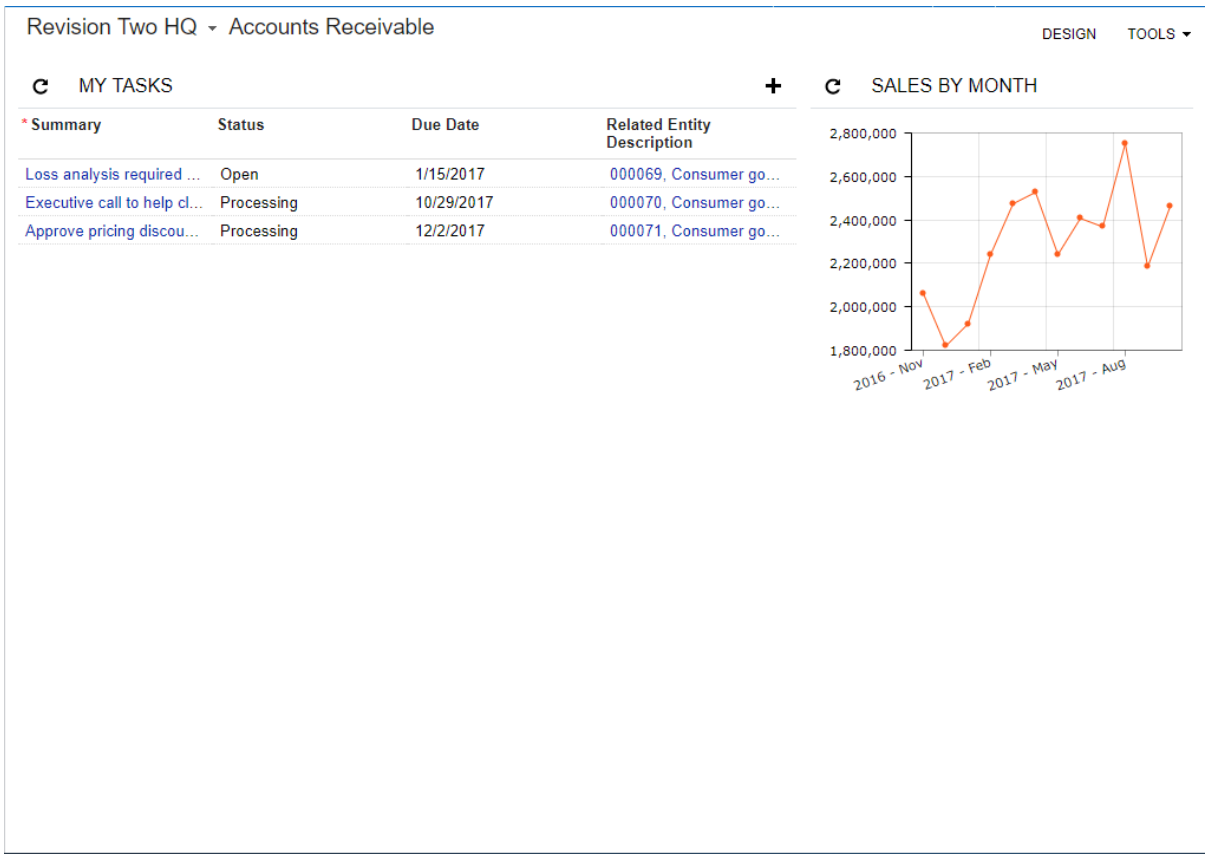


Figure: Reviewing the Accounts Receivable dashboard with the line chart widget

You can click points on the line chart to see detailed data for each month. When you click a point, the system opens the source form with the data filtered by the month.

Now you have added the line chart widget to the *Accounts Receivable* dashboard. In the next step, you will add an article widget to the dashboard.

Step 13.13: Adding an Article Widget to the Accounts Receivable Dashboard

An article widget is a dashboard view of a wiki article, generally one that you need to refer to frequently. You can add to a dashboard any wiki article you have sufficient rights to, and you can create a new article and then add it to the dashboard. For more information on wiki articles, see the link in the Related Links section of this topic.

To add an existing wiki article to the *Accounts Receivable* dashboard, do the following:

1. On the title bar of the *Accounts Receivable* dashboard, click **Design** to turn on design mode.
2. On the widget placeholder below the **My Tasks** widget, click **add a new widget**.
3. In the **Add Widget** dialog box, which opens, click **Wiki Page** and then click **Next**.
4. In the **Widget Properties** dialog box, which opens, do the following:
   a. In the **Wiki Article** box, select *Overview* (Company > Help > User Guide > Accounts Receivable).
   b. In the **Caption** box, type `Accounts Receivable Overview`.
   c. Review the settings of the wiki article widget (shown in the following screenshot).

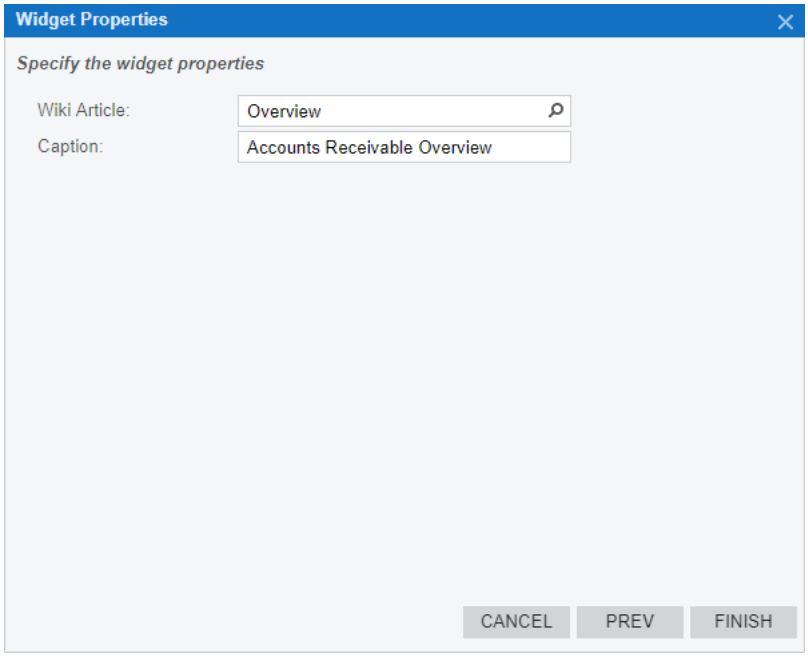


Figure: Reviewing the settings of the widget

   d. Click **Finish** to save your changes and close the dialog box.
5. Change the size of the wiki article widget by dragging its corners or borders.
6. On the dashboard title bar, click **Design** to turn off design mode.

In the following screenshot, you can see the *Accounts Receivable* dashboard with three widgets.

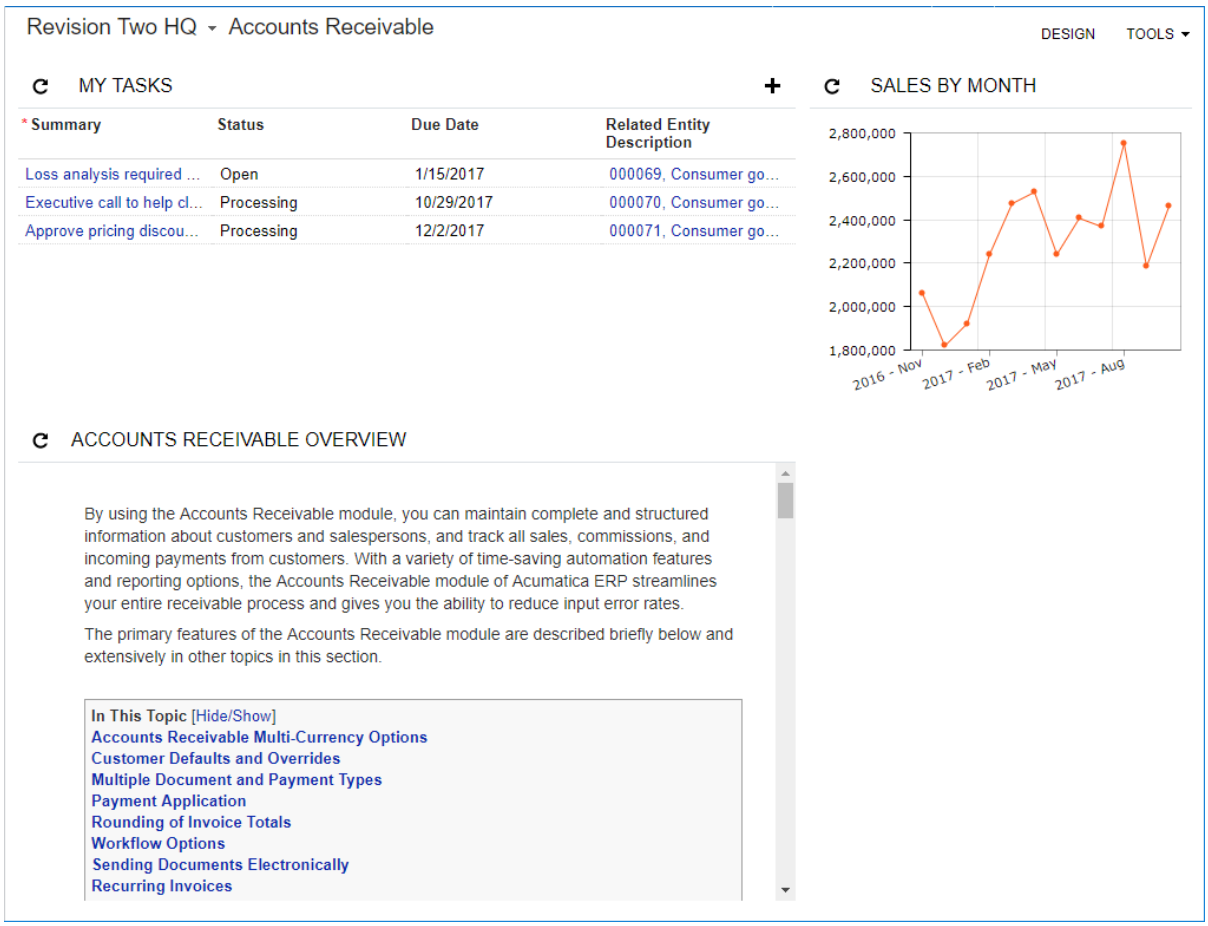


Figure: Reviewing the Accounts Receivable dashboard with the wiki article widget

Now that you have added the wiki article widget to the *Accounts Receivable* dashboard, in the next step, you will create a custom widget and add it to the dashboard.

Related Links

Wiki Overview

Step 13.14: Creating a Custom Widget

You can create a custom widget by using the functionality of wiki articles. You will create a widget that contains an image and links to the most frequently used forms in the Finance module of Acumatica ERP and add this widget to the *Accounts Receivable* dashboard. Do the following:

1. Open the Wiki Editor form as follows:
   a. On the top panel of Acumatica ERP, click Help (the question mark enclosed in a circle), and then click the **Acumatica Educational Resources** link to open the Help dashboard.
   b. On the **Interface Guide** card, click **Explore** to open this guide.
   c. On the toolbar of the Help topic, click **Add New Article** (the plus icon).
2. On the **Content** tab of the Wiki Editor form, specify the following settings:
   - **Article ID**: `S130`
   - **Name**: `AR Links`
   - **Article Type**: *Html*
   - **Hold**: Cleared
3. To upload an image to be used on the widget, do the following:
   a. On the form toolbar, click **Attach**. The **File Upload** dialog box opens.
   b. In the dialog box, click **Choose File**, and select the `invoice.png` file, which is provided with this course.
   c. Click **Upload** to upload the image.
   d. In the **File Link Editor** dialog box, which opens, click **OK** to close the dialog box.
4. In the details area of the **Content** tab, enter the following HTML code:

```
<img src="../Frames/GetFile.ashx?fileID=a5b1c276-5fa1-4cb3-b0cc-4bcb095debab"
 usemap="#flowS130">
<map name="flowS130" id="flowS130">
  <area shape="rect" coords="4,4,114,119" href="../Main.aspx?
ScreenId=AR301000" target="_blank" alt="invoices" />
  <area shape="rect" coords="228,9,329,118" href="../Main.aspx?
ScreenId=AR302000" target="_blank" alt="payments and applications" />
</map>
<br>
<ul>
  <li><a href="../Main.aspx?ScreenId=AR303000" target="_blank"
 style="color:#000000; text-decoration:none">View customers</a></li>
  <li><a href="../Pages/AR/AR402000.aspx" style="color:#000000; text-
decoration:none">View customer details</a></li>
  <li><a href="../Main.aspx?ScreenId=AR651000" target="_blank"
 style="color:#000000; text-decoration:none">Print customer details</a></li>
</ul>
```

   The `<img>` tag is used to display an image on the widget. You should replace the image source (the value of the `src` attribute) with the URL of the image you have uploaded.
5. To get the URL of the uploaded file, do the following:
   a. On the **Attachments** tab, select the image you have uploaded, and on the tab toolbar, click **Get Link**.

      The dialog box, which opens, contains links in the following boxes:

      - **External Link**: The URL to use in the HTML articles (that is, when the **Article Type** of the article is *Html*)

- **Wiki Link**: The URL to use in the wiki articles (that is, when the **Article Type** of the article is *Wiki*)

The URL in the **External Link** box is similar to the following link.

```
http://localhost/InstanceName/Frames/GetFile.ashx?
fileID=a5b1c276-5fa1-4cb3-b0cc-4bcb095debab
```

The first part of the URL, such as `http://localhost/InstanceName`, is the URL of your application. The second part is the URL to the file.

b. In the **External Link** box, replace the URL of the application with two periods, as shown in the following link:

```
../Frames/GetFile.ashx?fileID=a5b1c276-5fa1-4cb3-b0cc-4bcb095debab
```

c. Copy the URL in the **External Link** box.

d. Click **Close** to close the dialog box.

6. In the details area of the **Content** tab, replace the image source, which is inside quotation marks for the `src` attribute of the `<img>` tag, with the URL you have copied, as shown in the screenshot below.

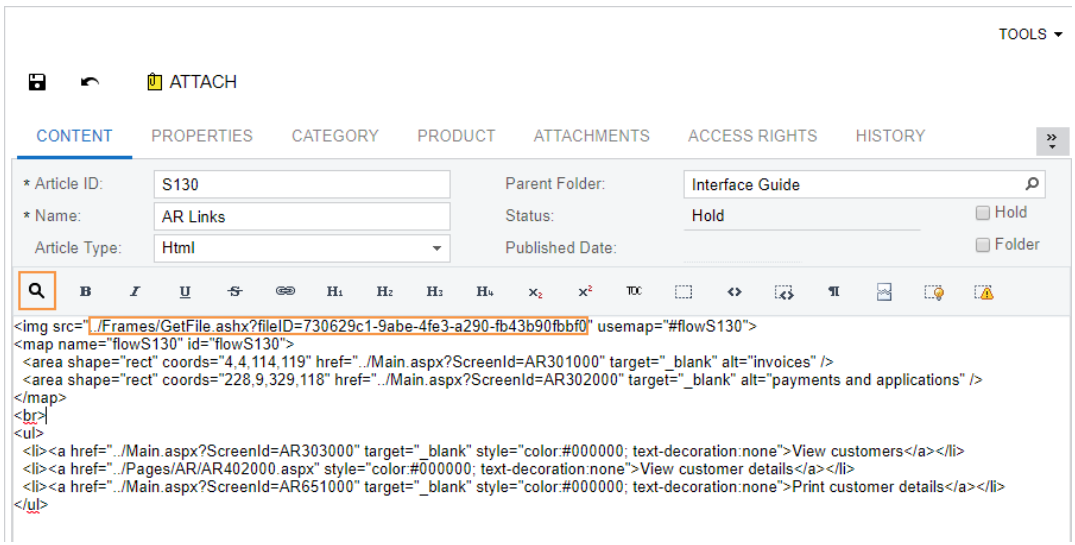


Figure: Configuring the custom widget

You can preview the article by clicking the magnifier icon on the toolbar of the details area (see the screenshot above). Similarly, you can switch back to editing mode.

If you want to get more information on the code used for this article, see the *Reviewing the Code Used for the AR Links Widget* section of this lesson.

7. Save your changes to the article.

8. To add the article you have created as a widget to the dashboard, do the following:

a. Open the *Accounts Receivable* dashboard.

b. On the dashboard title bar, click **Design** to turn on design mode.

c. On the widget placeholder below the **Sales By Month** widget, click **add a new widget**.

d. In the **Add Widget** dialog box, which opens, click **Wiki Page** and then click **Next**.

   e. In the **Widget Properties** dialog box, which opens, do the following:

      a. In the **Wiki Article** box, select *AR Links* (Company > Help > Interface Guide).

      b. In the **Caption** box, type `AR Links`.

      c. In the **Widget Properties** dialog box, click **Finish** to save your changes and close the dialog box.

9. Arrange the widgets on the dashboard so that it is convenient to view the information presented by the widgets.

10. On the dashboard title bar, click **Design** to turn off design mode.

In the following screenshot, you can see the *Accounts Receivable* dashboard with the custom widget.

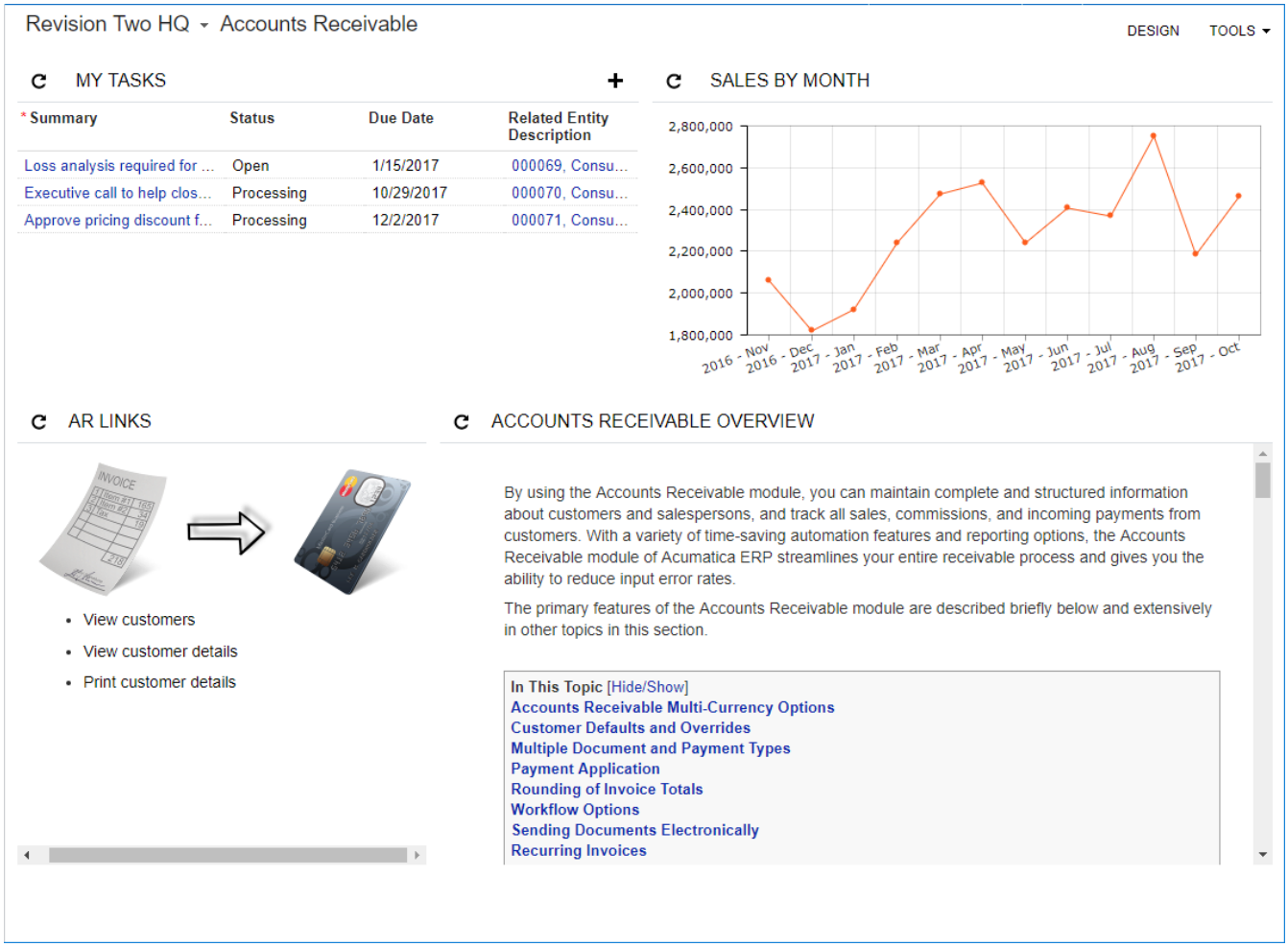


Figure: Viewing the dashboard with the custom widget

Now you have added all necessary widgets to the *Accounts Receivable* dashboard. In the next step, you will set up the dashboard as a personal home page for multiple users.

Step 13.15: Setting Up the Accounts Receivable Dashboard as Your Personal Home Page

You can set up any available dashboard as your personal home page. To set up the *Accounts Receivable* dashboard as your home page, do the following:

1. In the upper-right corner of the Acumatica ERP screen, in the info area, click your user name to open the user menu, as shown in the following screenshot, and select **My Profile**. (If you are using the classic UI, select **User Profile** instead.)

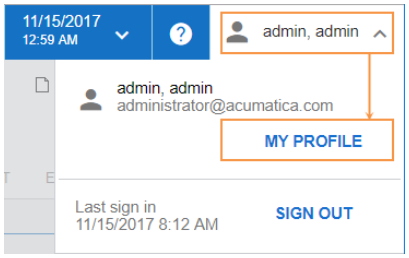


Figure: The My Profile button in the user menu

2. On the **General Info** tab of the User Profile form (SM203010), which opens, in the **Home Page** box of the **Personal Settings** section, select *Accounts Receivable* (*Company* > *Finance*), as shown in the following screenshot.

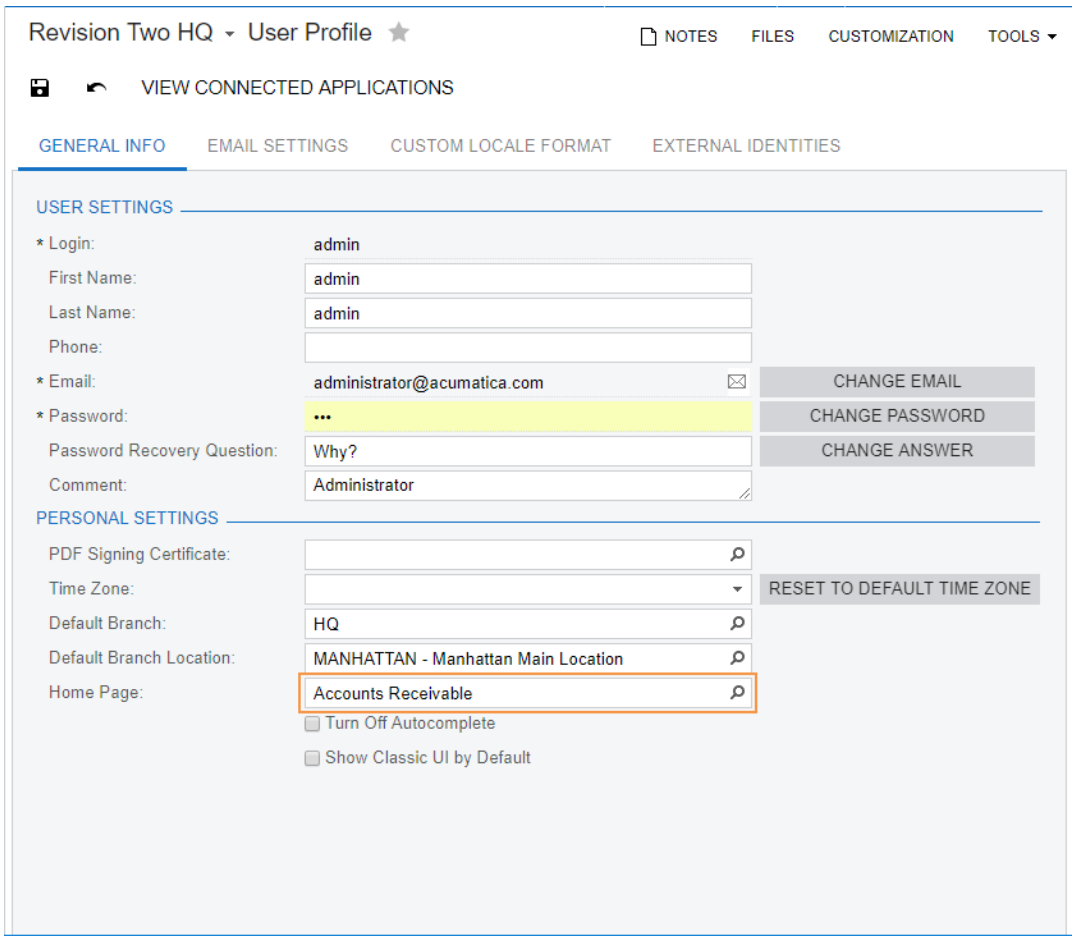


Figure: Specifying the personal home page

3. Save your changes.

4. Click the logo in the upper-left corner of the Acumatica ERP screen to open your home page. The *Accounts Receivable* dashboard, which you have selected as the home page, is opened.
5. Sign out, and then sign in again. The *Accounts Receivable* dashboard is opened by default.

Now that you have set up the *Accounts Receivable* dashboard as your personal home page, you will set up this dashboard as the home page for another user.

Step 13.16: Setting Up the Accounts Receivable Dashboard as a User's Home Page

You can set up a personal home page for not only the user account to which you are signed in but also any user of the system. You will specify the *Accounts Receivable* dashboard as the home page for the *wiley* user account. Proceed as follows:

1. On the Users form (SM201010; Configuration > User Security > Manage), in the **Login** box, select *wiley*.
2. On the **Personal Settings** tab, in the **Home Page** box, select *Accounts Receivable* (*Company* > *Finance*), as shown in the screenshot below.

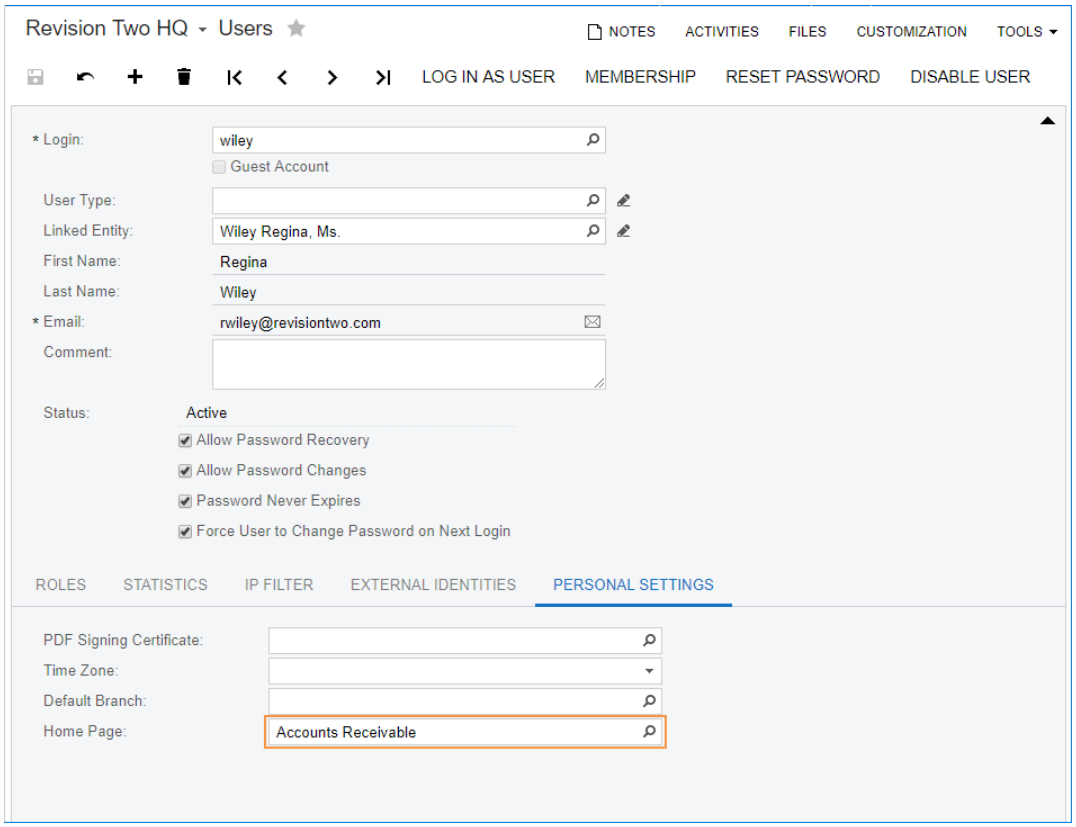


Figure: Specifying the home page for a user

3. Save your changes to the user.
4. On the form toolbar, click **Log In as User**. You will be signed in to the system as *wiley*. Notice that the *Accounts Receivable* dashboard is opened by default.
5. Sign out of the system, and again sign in as *admin*.

Reviewing the Code Used for the AR Links Widget

The information of this section is provided for reference.

You have entered the following code in the *AR Links* article you created. In this section, you can find additional information on how to develop similar code.

```
<img src="../Frames/GetFile.ashx?fileID=a5b1c276-5fa1-4cb3-b0cc-4bcb095debab"
 usemap="#flowS130">
<map name="flowS130" id="flowS130">
  <area shape="rect" coords="4,4,114,119" href="../Main.aspx?ScreenId=AR301000"
 target="_blank" alt="invoices" />
  <area shape="rect" coords="228,9,329,118" href="../Main.aspx?ScreenId=AR302000"
 target="_blank" alt="payments and applications" />
</map>
<br>
<ul>
  <li><a href="../Main.aspx?ScreenId=AR303000" target="_blank" style="color:#000000;
 text-decoration:none">View customers</a></li>
  <li><a href="../Pages/AR/AR402000.aspx" style="color:#000000; text-
decoration:none">View customer details</a></li>
  <li><a href="../Main.aspx?ScreenId=AR651000" target="_blank" style="color:#000000;
 text-decoration:none">Print customer details</a></li>
</ul>
```

You can configure the image of an article so that the image area will contain a link to a form or report in Acumatica ERP or to any external object. The user can click the area of the image to get the appropriate information. For example, this code specifies links for two areas of the uploaded image. That is, the invoice in the left side of the image (see the screenshot below) is a link to the Invoices and Memos form (AR301000), and the credit card in the right side of the image is a link to the Payments and Applications form (AR302000).

In the code, the `usermap` attribute of the `<img>` tag specifies the map with these links, which is applied to the image. This map is enclosed in the `<map>` tag with the appropriate `name` attribute. Each `<area>` tag within the `<map>` tag specifies a link.

The `shape` attribute of the `<area>` tag defines the shape of the image area that will be a link. In the code, the shapes are rectangular. The `coords` attribute of the `<area>` tag defines the borders of the area. Within the quotation marks of the `coords` attribute, the first two numbers are the horizontal and vertical coordinates, in pixels, of the upper-left corner of the rectangular area. The last two numbers are the coordinates of the bottom-right corner of the rectangular area. These coordinates are defined based on the upper-left corner of the image, whose coordinates are 1 and 1.

For example, the coordinates of the upper-left corner of the rectangular area that includes the invoice (item 1 in the screenshot below) are 4 and 4. The coordinates of the bottom-right corner of this area (item 2) are 114 and 119. Similarly, the coordinates of the upper-left corner of the rectangular area that includes the credit card (item 3) are 228 and 9. The coordinates of the bottom-right corner of this area (item 4) are 329 and 118.

The `href` attribute of the `<area>` tag defines the URL assigned to the area. For example, the URL of the Invoices and Memos (AR301000) form is similar to the following link.

```
http://localhost/InstanceName/Main.aspx?ScreenId=AR301000
```

The first part of this URL, `http://localhost/InstanceName`, is the URL of the application. The second part is the URL of the form. You can replace the application URL with two periods and get the same URL as was used in the code.

The `target` attribute of the `<area>` tag, which is equal to `_blank`, directs the system to navigate to the page in a new window.

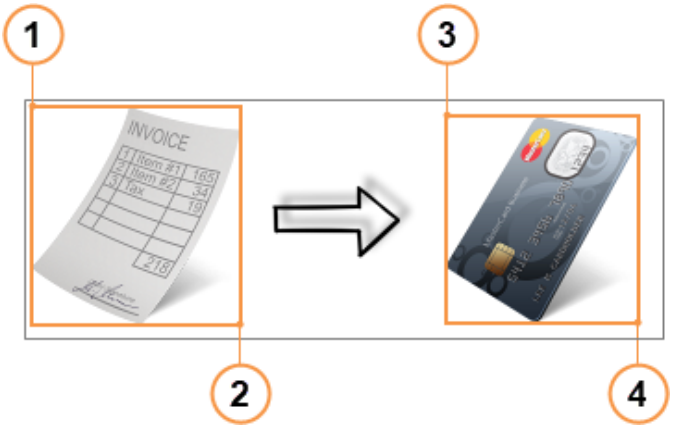


Figure: Previewing the image

You define a bullet list by using the `<ul>` and `</ul>` tags and the `<li>` tags within them. Each `<li>` tag represents one item of the list.

The `<a>` tag is used to show a link. The link description is placed within the `<a>` and `</a>` tags. The `href` attribute of the `<a>` tag defines the URL of the link. The `style` attribute of the `<a>` tag defines the style of the link.

If you want the link to open in a new window, use the `target` attribute of the `<a>` tag with the `_blank` value, such as `target=_blank`, and specify the URL as `../Main.aspx?ScreenId={screen identifier}`. For example, `../Main.aspx?ScreenId=AR301000`.

If you want the link to open in the same window, omit the `target` attribute, and specify the URL as `../Pages/{module name}/{page}`. For example, `../Pages/AR/AR301000.aspx`.

Lesson Summary

In this lesson, you have learned how to create and manage dashboards. In particular, you have done the following:

- Created two dashboards and specified the access rights to each of the dashboards
- Added the following types of widgets to dashboards: chart, scorecard KPI, embedded page, table, and wiki article
- Created a custom widget and added it to a dashboard
- Arranged the added widgets on dashboards
- Changed the site home page, your personal home page, and the home page of a particular user

Review Questions

1. Which of the following are not types of widgets that you can add to a dashboard? Select all correct responses.
   - **A**. Wiki articles
   - **B**. Inquiries
   - **C**. Charts
   - **D**. Forms
   - **E**. Reports
2. How can you create a personal dashboard—that is, a dashboard that only you can view? Select all correct responses.
   - **A**. You can create a dashboard and set it as your personal home page.
   - **B**. You can create a dashboard and configure access rights so that only you can view and edit this dashboard.
   - **C**. You cannot create a personal dashboard. All dashboards are shared among the Acumatica ERP users.
3. Can you delete a dashboard?
   - **A**. Once created, a dashboard cannot be deleted.
   - **B**. You can delete a dashboard on the Dashboards form (SM208600) if you have sufficient access rights.
   - **C**. You can delete only dashboards that are visible to you.
   - **D**. You can delete dashboards that are visible to all Acumatica ERP users.
4. How can you make a dashboard visible to multiple users in Acumatica ERP? Select all correct responses.
   - **A**. On the Dashboards form (SM208600), select the **Allow Users to Personalize** check box.
   - **B**. In the **Visible to** table of the Dashboards form (SM208600), select all user roles that can view the dashboard.
   - **C**. On the Users form (SM201010), specify the dashboard as a personal home page for each user who can see the dashboard.
   - **D**. In design mode for the dashboard, click **Properties**, and in the **Visible to** table, select all user roles that can view the dashboard.
   - **E**. On the Site Preferences form (SM200505), set the dashboard as the site home page.

Answer Key

1 - B, D, E; 2 - B; 3 - B; 4 - B, D.

Part 5: Pivot Tables

In Acumatica ERP, you can use pivot tables to reorganize and summarize data taken from generic inquiries and to analyze it from various perspectives.

In this part, you will learn how to create and configure pivot tables.

Prerequisites

In this part, you will use the *AR-Invoices* inquiry, which you have imported to the system with the S130 customization project ans specified as an entry point for the Invoices and Memos form (AR301000).

You also will use the *Current Year* filter, which you have created in *Lesson 12: Using Reusable Filters* for the Invoices and Memos generic inquiry.

Reviewing Pivot Tables

In Acumatica ERP, you can use pivot tables to reorganize and summarize data from generic inquiries and analyze it from various perspectives. This capability is useful when you have large amounts of data in the generic inquiry and you need to build aggregate reports based on this data. Another way to use pivot tables is to create reports that contain records with row and column totals.

You use the data from generic inquiries to build pivot tables. For a single generic inquiry, you can create multiple pivot tables that will summarize data in different dimensions. You use only one generic inquiry to build each pivot table. If you need to build pivot tables with information stored in multiple generic inquiries, you must first create a single generic inquiry that includes all the necessary data.

Related Links

Pivot Tables in Acumatica ERP

Lesson 14: Creating and Managing Pivot Tables

By using a pivot table, you can aggregate the data provided by a generic inquiry and display totals for each row and column.

In this lesson, you will create and configure a pivot table based on the *AR-Invoice* generic inquiry, which you imported with the *S130* customization project.

Lesson Objectives

In this lesson, you will learn how to do the following:

- Create a pivot table
- Modify a pivot table
- Filter data in a pivot table
- Share a pivot table
- Delete a pivot table

Step 14.1: Creating a Pivot Table

In this step, you will create a pivot table that aggregates invoice totals by quarter for each customer. Do the following:

1. Sign in to the *SalesDemo* company of Acumatica ERP.
2. Open the Pivot Tables form (SM208010; System > Customization > Manage).
3. On the form toolbar, click **Add New Record**.
4. In the **Screen ID** box, select *Invoices and Memos* (*Company* > *Finance* > *Accounts Receivable* > *Work Area* > *Enter* > *Invoices and Memos*), as shown in the following screenshot.

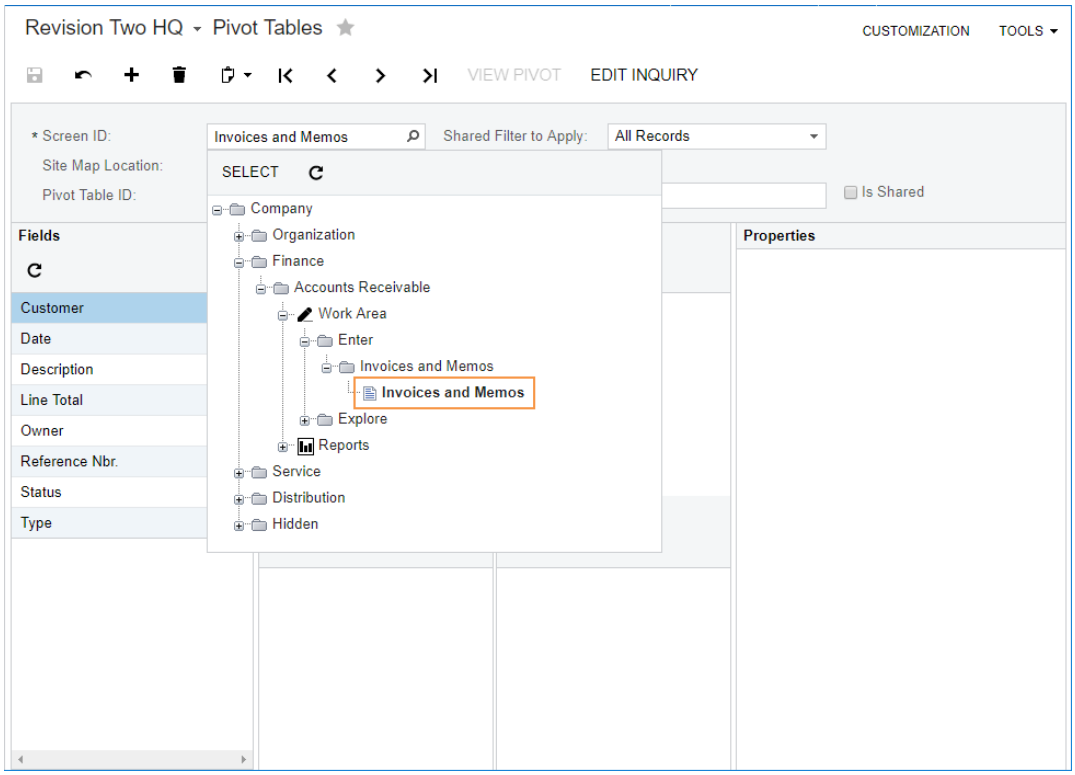


Figure: Selecting the Invoices and Memos generic inquiry

5. In the **Name** box, type `Invoice Totals by Customer`.
6. On the form toolbar, click **Save**. In the **Pivot Table ID** box, notice that the name you have entered is used as the ID of the pivot table.
7. Add fields to the pivot table as follows:
   a. Drag *Customer* from the **Fields** pane to the **Rows** pane.

      The names of customers will be displayed as row headers in the pivot table.

   b. In the **Rows** pane, click *Customer* to display its properties in the **Properties** pane (see the screenshot below).

   c. In the **Properties** pane, make sure that the **Show Total** check box is selected.

      With this setting, the system will add the **Total** row, which will display a total for all customers in each column.

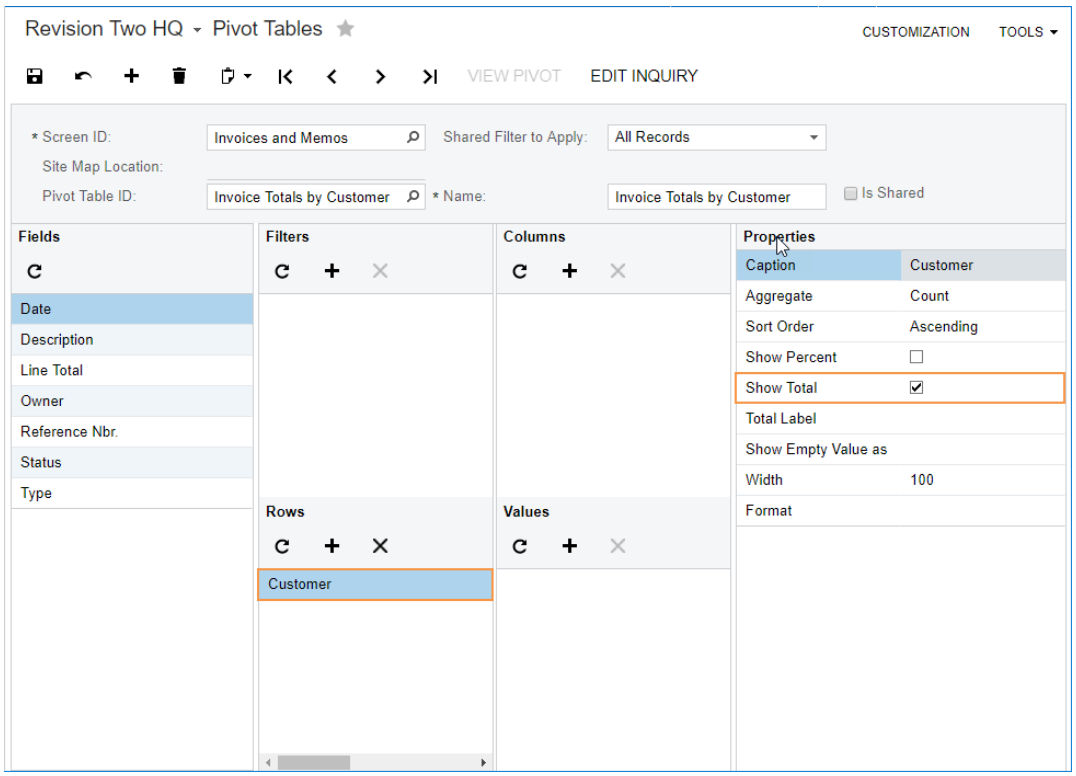


Figure: Reviewing the properties of the Customer field

d. Drag *Date* from the **Fields** pane to the **Columns** pane.

e. In the **Columns** pane, click *Date* (see Item 1 in the screenshot below) to display its properties in the **Properties** pane.

f. In the **Properties** pane, make sure that the **Show Total** check box is selected (Item 2).

With this setting, the system will add the **Total** column, where a total for all dates in each row will be displayed.

g. In the **Round To** box, select *Quarters* to aggregate invoice totals by quarter. Notice that in the **Format** box (Item 3), the format of the date is displayed automatically.

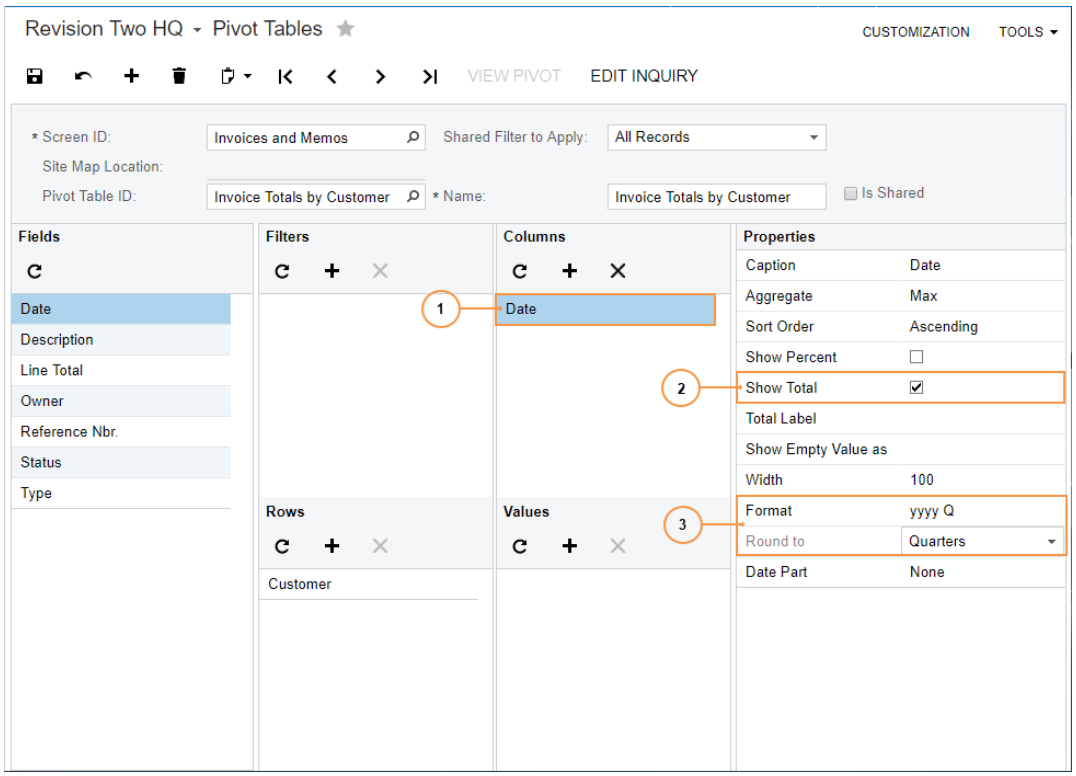


Figure: Reviewing the properties of the Date field

h. Drag *Line Total* from the **Fields** pane to the **Values** pane.

The pivot table will display invoice amounts, aggregated by quarter, for each customer.

8. Save your changes to the pivot table.

9. On the form toolbar, click **View Pivot** to open the pivot table (shown in the following screenshot) in a separate tab.

The pivot table you can see on the screenshot may show different data from the pivot table on your screen because data in the *SalesDemo* data set is updated regularly.

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SAVE AS SAVE CUSTOMIZE TOOLS

INVOICE TOTALS BY CUSTOMER

Inactive Fields

Customer	Date: 2016 Q1	2016 Q2	2016 Q3	2016 Q4	2017 Q1	2017 Q2	2017 Q3	2017 Q4	Total
ROTON Services		7,000.00	44,757.75						58,757.75
Sacramento Industrial Supply	485,216.10	504,480.80	513,965.70	513,916.23	405,610.79	622,221.67	513,916.23	172,556.41	9,014,964.94
Safe Credit Union				2,800.00					28,400.00
Shore Mortgage Inc				2,800.00				2,800.00	26,205.00
Shortstop Sports	145,105.58	179,599.07	173,009.41	189,656.68	252,236.07	217,949.15	244,243.94	149,070.66	2,321,875.64
Silver Springs Water				2,800.00					23,400.00
Southwest Food Distribution				18,988.20	3,740.00	12,528.20	23,649.10		58,905.50
Star America Toys	131,562.14	226,947.50	238,093.10	338,122.78	423,925.14	391,575.40	459,202.69	186,893.60	3,019,255.59
Streamray Inc						7,000.00			8,000.00
Tampa Bay Food Distribution					4,268.00	16,242.00	21,566.20	27,796.90	69,873.10
Texas Video City		7,000.00							14,000.00
Uniforce Staffing Service				7,000.00				7,000.00	14,000.00
Upwardmobility	1,500.00								298,320.00
USA Bartending School	605,098.00	482,394.00	499,551.00	530,038.00	366,261.00	685,656.00	551,899.00	180,633.00	7,862,429.86
Vancouver Supplies					7,000.00				8,399.98
Veracity Credit Consultants									14,000.00
Western Star Trucks	2,800.00				2,800.00				37,220.00
Westin Galleria Houston									1,000.00
Westwood Manor	5,000.00		47,543.00	310,686.80	298,914.60	23,208.50	49,618.00	25,000.00	815,050.90
WFAN Radio	5,000.00	5,000.00	136,786.98	267,589.90	390,061.98		146,200.00		981,117.86
Widget Connection	16,417.20	682,278.80	343,447.50	339,618.30	39,605.00	24,677.50	558,030.90	231,733.40	2,362,224.45
Widget Consolidated Holdings			40,900.00	48,700.00	34,900.00	57,900.00	74,100.00	13,100.00	269,600.00
Widget Credit Card	37,917.70	136,629.98	82,482.45	131,300.00	76,643.00	216,500.00	152,000.00	9,000.00	1,049,282.30
Wright Corner	10,000.00	11,817.20	176,996.98	77,614.98	25,000.00	44,000.00	44,918.00	103,918.00	549,435.16
Total	3,492,616.99	4,848,301.46	5,851,092.66	8,423,941.30	8,209,189.68	9,552,238.44	9,863,925.17	4,015,832.20	78,129,852.58

Figure: Viewing the pivot table

The pivot table you have created is available only to you. You can, however, share a pivot table with other users of Acumatica ERP. (You will do this later in this lesson.)

In the next step, you will configure a hierarchical structure of the column headers to make the table more convenient for analysis.

Step 14.2: Configuring a Hierarchical Structure of Column Headers

For date fields and fields with segmented identifiers (such as item classes), you can configure a hierarchical structure of column headers, which makes the headers more convenient for users to perceive.

In this step, you will set up two-level column headers for the *Invoice Totals by Customer* pivot table. Proceed as follows:

1. On the Pivot Tables form (SM208010; System > Customization > Manage) for the *Invoice Totals by Customer* pivot table, drag the *Date* field from the **Fields** pane to the **Columns** pane. Now this pane contains two copies of the *Date* field.
2. In the **Columns** pane, select the first copy of the *Date* field (the one in the higher row).
3. In the **Properties** pane, specify the following settings (as shown in the following screenshot):
   - **Show Total**: Selected
   - **Round To**: *Years*

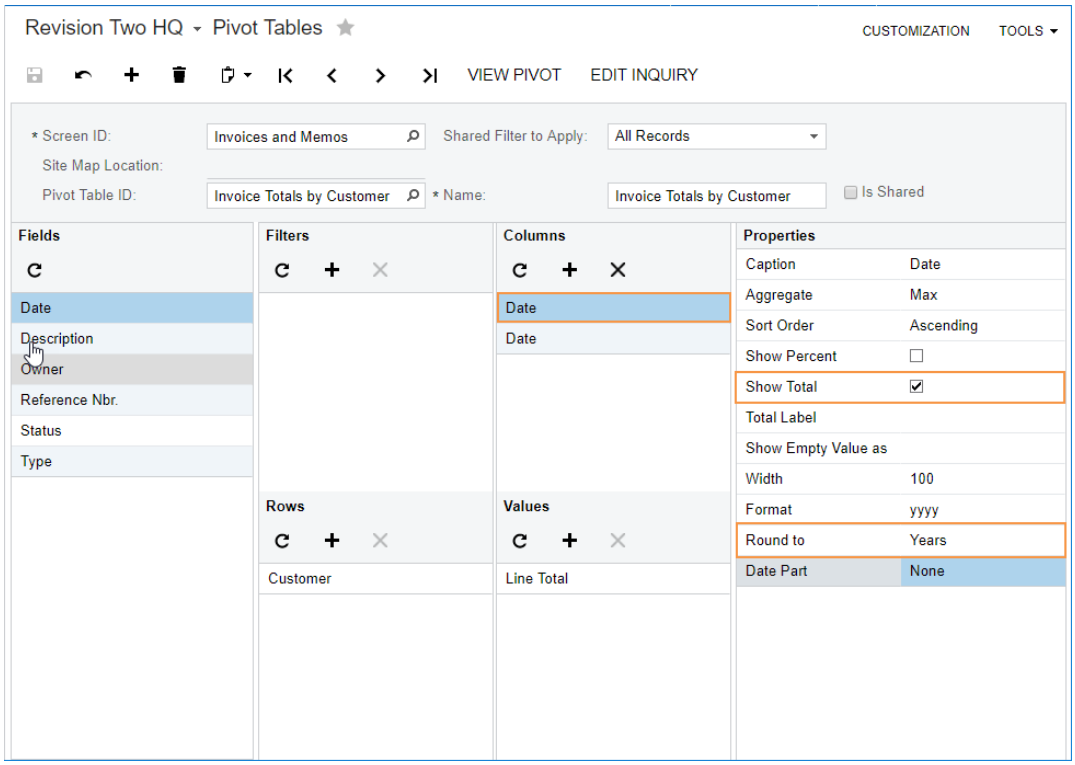

Figure: Reviewing the properties of the first Date field

With the **Show Total** check box selected, the system will display the **Total** column with a cumulative all-year total for each customer.

4. In the **Columns** pane, select the second copy of the *Date* field (the one in the lower row).
5. In the **Properties** pane, specify the following settings (see the following screenshot):
   - **Show Total**: Selected
   - **Date Part**: *Quarter*

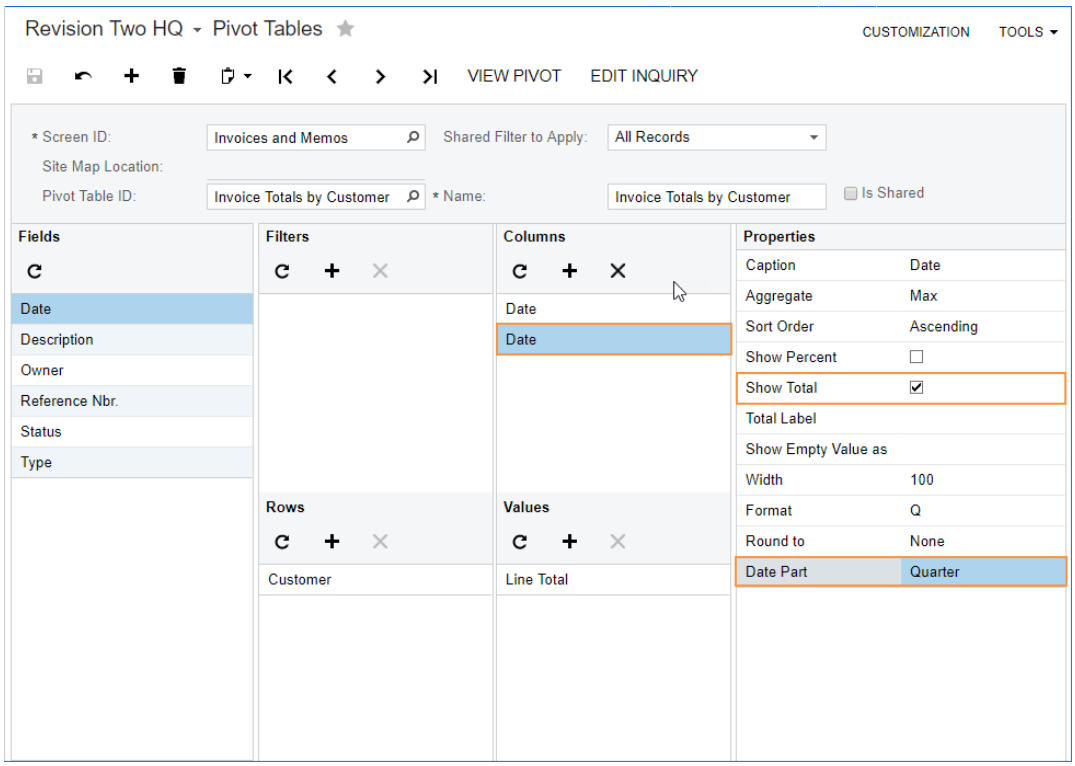

Figure: Reviewing the properties of the second Date field

With the **Show Total** check box selected, the system will display the **Total** column after the **Q4** column for each year.

6. Save your changes to the pivot table.

7. Click **View Pivot** to open the pivot table. As shown in the following screenshot, the column headers have been divided into two levels: the first level displays years, and the second level displays quarters. The **Total** column is displayed after each year. The table also contains the rightmost **Total** column, which sums up all years.

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SAVE AS SAVE CUSTOMIZE TOOLS

INVOICE TOTALS BY CUSTOMER

Inactive Fields

	Date	Date							
	2016			2017					Total
Customer	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total	
Sacramento Industrial Supply	513,965.70	513,916.23	2,017,578.83	405,610.79	622,221.67	513,916.23	172,556.41	1,714,305.10	9,014,964.94
Safe Credit Union		2,800.00	2,800.00						28,400.00
Shore Mortgage Inc		2,800.00	2,800.00				2,800.00	2,800.00	26,205.00
Shortstop Sports	173,009.41	189,656.68	687,370.74	252,236.07	217,949.15	244,243.94	149,070.66	863,499.82	2,321,875.64
Silver Springs Water		2,800.00	2,800.00						23,400.00
Southwest Food Distribution		18,988.20	18,988.20	3,740.00	12,528.20	23,649.10		39,917.30	58,905.50
Star America Toys	238,093.10	338,122.78	934,725.52	423,925.14	391,575.40	459,202.69	186,893.60	1,461,596.83	3,019,255.59
Streamray Inc					7,000.00			7,000.00	8,000.00
Tampa Bay Food Distribution				4,268.00	16,242.00	21,566.20	27,796.90	69,873.10	69,873.10
Texas Video City			7,000.00						14,000.00
Uniforce Staffing Service		7,000.00	7,000.00				7,000.00	7,000.00	14,000.00
Upwardmobility			1,500.00						298,320.00
USA Bartending School	499,551.00	530,038.00	2,117,081.00	366,261.00	685,656.00	551,899.00	180,633.00	1,784,449.00	7,862,429.86
Vancouver Supplies				7,000.00				7,000.00	8,399.98
Veracity Credit Consultants									14,000.00
Western Star Trucks			2,800.00	2,800.00				2,800.00	37,220.00
Westin Galleria Houston									1,000.00
Westwood Manor	47,543.00	310,686.80	363,229.80	298,914.60	23,208.50	49,618.00	25,000.00	396,741.10	815,050.90
WFAN Radio	136,786.98	267,589.90	414,376.88	390,061.98		146,200.00		536,261.98	981,117.86
Widget Connection	343,447.50	339,618.30	1,381,761.80	39,605.00	24,677.50	558,030.90	231,733.40	854,046.80	2,362,224.45
Widget Consolidated Holdings	40,900.00	48,700.00	89,600.00	34,900.00	57,900.00	74,100.00	13,100.00	180,000.00	269,600.00
Widget Credit Card	82,482.45	131,300.00	388,330.13	76,643.00	216,500.00	152,000.00	9,000.00	454,143.00	1,049,282.30
Wright Corner	176,996.98	77,614.98	276,429.16	25,000.00	44,000.00	44,918.00	103,918.00	217,836.00	549,435.16
Total	5,851,092.66	8,423,941.30	22,615,952.41	8,209,189.68	9,552,238.44	9,863,925.17	4,015,832.20	31,641,185.49	78,129,852.58

Figure: Reviewing the pivot table with hierarchical column headers

8. Close the tab with the pivot table and go back to the Pivot Tables form (SM208010).
9. In the **Columns** pane, click the second copy of the *Date* field (that in the lower row).
10. On the pane toolbar of the **Columns** pane, click **Delete Row**.
11. In the **Columns** pane, click *Date*.
12. In the **Round To** box of the **Properties** pane, select *Quarters*.
13. Save your changes to the pivot table. You have returned the plain headers back to simplify filtering.

In the next step, you will filter the data in the pivot table by using a shared filter.

Step 14.3: Filtering Data in a Pivot Table by Using a Shared Filter

When the pivot table contains a lot of data, it can be difficult for users to analyze the data. To reduce the amount of data in the table, you can use shared reusable filters created for a generic inquiry whose data the pivot table displays. By using a shared filter, you can filter data in the pivot table permanently. (The filter actually is applied to the generic inquiry and then the pivot table uses the filtered data.) Users who have no access to the Pivot Tables form (SM208010) cannot apply a shared filter (or clear an applied filter) when they work with the pivot table.

You will apply the *Current Year* filter, which you have created in *Lesson 12: Using Reusable Filters*, to the *Invoice Totals by Customer* pivot table. Do the following:

1. Review the settings of the *Current Year* filter as follows:
   - **a.** Open the Invoices and Memos form (Finance > Accounts Receivable > Work Area).
   - **b.** On the **Current Year** tab, click **Filter Settings** (▼) on the table toolbar. The **Filter Settings** dialog box opens with the *Current Year* filter selected.
   - **c.** Make sure that the **Shared** check box is selected.
   - **d.** Close the dialog box.
2. Apply the *Current Year* filter to the *Invoice Totals by Customer* pivot table. Do the following:
   - **a.** Open the Pivot Tables form (SM208010; System > Customization > Manage).
   - **b.** Select the *Invoice Totals by Customer* pivot table.
   - **c.** In the **Shared Filter to Apply** box (in the upper right of the Summary area), select *Current Year*.
   - **d.** Save your changes.
3. Open the pivot table. In the following screenshot, you can see that the table contains data for only the current year.

Revision Two HQ

SAVE AS SAVE CUSTOMIZE TOOLS

INVOICE TOTALS BY CUSTOMER

Inactive Fields

Customer	Date 2017 Q1	2017 Q2	2017 Q3	2017 Q4	Total
New York International Beauty School Ltd	35,000.00	130,614.98	22,000.00	9,500.00	197,114.98
New York Public Library for the Performing Arts		7,000.00			7,000.00
O'Neill's Trading	304,470.60	300,664.11	347,914.68	165,621.90	1,118,671.29
Precision Photos	99,120.00	87,000.00	43,724.00	11,362.00	241,206.00
Premiere Dermatology and Surgery		2,800.00			2,800.00
Qvik Process GmbH	142,271.52	165,170.73	192,316.39	66,902.45	566,661.09
Real Estate Institute			7,000.00		7,000.00
Revenue Recognition Co	8,000.00				8,000.00
Sacramento Industrial Supply	405,610.79	622,221.67	513,916.23	172,556.41	1,714,305.10
Shore Mortgage Inc				2,800.00	2,800.00
Shortstop Sports	252,236.07	217,949.15	244,243.94	149,070.66	863,499.82
Southwest Food Distribution	3,740.00	12,528.20	23,649.10		39,917.30
Star America Toys	423,925.14	391,575.40	459,202.69	186,893.60	1,461,596.83
Streamray Inc		7,000.00			7,000.00
Tampa Bay Food Distribution	4,268.00	16,242.00	21,566.20	27,796.90	69,873.10
Uniforce Staffing Service				7,000.00	7,000.00
USA Bartending School	366,261.00	685,656.00	551,899.00	180,633.00	1,784,449.00
Vancouver Supplies	7,000.00				7,000.00
Western Star Trucks	2,800.00				2,800.00
Westwood Manor	298,914.60	23,208.50	49,618.00	25,000.00	396,741.10
WFAN Radio	390,061.98		146,200.00		536,261.98
Widget Connection	39,605.00	24,677.50	558,030.90	231,733.40	854,046.80
Widget Consolidated Holdings	34,900.00	57,900.00	74,100.00	13,100.00	180,000.00
Widget Credit Card	76,643.00	216,500.00	152,000.00	9,000.00	454,143.00
Wright Corner	25,000.00	44,000.00	44,918.00	103,918.00	217,836.00
Total	8,209,189.68	9,552,238.44	9,863,925.17	4,015,832.20	31,641,185.49

Figure: Reviewing the pivot table with the shared filter applied

4. Close the tab with the pivot table.
5. In the **Shared Filter to Apply** box, select *All Records* to clear the filter.
6. Save your changes.

In the next section, you will work with the pivot table you have configured.

Step 14.4: Working with a Pivot Table

After you have configured a pivot table, you can use it to analyze data. You can open a pivot table from the Pivot Tables form (SM208010) or from the generic inquiry form on which the pivot table is based.

In this step, you will open the *Invoice Totals by Customer* pivot table, export the data from the table to Microsoft Excel, modify the table on the fly, filter data, create a copy of the pivot table, and delete the copy. Proceed as follows:

1. Open the Invoices and Memos form (Finance > Accounts Receivable > Work Area).
2. On the form title bar, click **Pivot Tables** and then click *Invoice Totals by Customer*. The pivot table opens in a separate browser tab.
3. Export the data from the table to a Microsoft Excel workbook. Do the following:
   - **a.** On the table toolbar, click Export to Excel.
   - **b.** Save the file on the hard disk of your computer. Now you can analyze data in the pivot table by using Microsoft Excel. (This task is beyond the scope of this course.)
4. Customize the pivot table as follows:
   - **a.** On the form title bar, click **Customize**. The Pivot Tables form (SM208010) is opened with this pivot table selected, so you can modify its settings.

     Only users who have access to the Pivot Tables form (SM208010) can see the **Customize** button on a pivot table title bar.
   - **b.** In the **Fields** pane, drag the *Status* field to the **Filters** pane.

     You can add to the **Filters** pane one field or multiple fields whose values you want to use for filtering the data in a pivot table.
   - **c.** On the form toolbar, click **Save & Close** to save your changes to the pivot table and close the form.
   - **d.** On the table toolbar, click Refresh to update the pivot table. Notice that the **Status** button has appeared on the table toolbar.
5. Filter the data in the table as follows:
   - **a.** On the table toolbar, click the filter icon on the **Status** button and select only the *Open* status, as shown in the following screenshot.

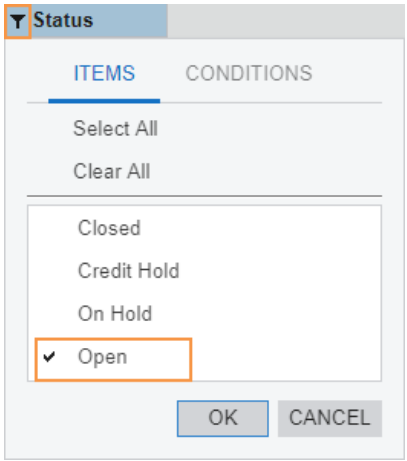
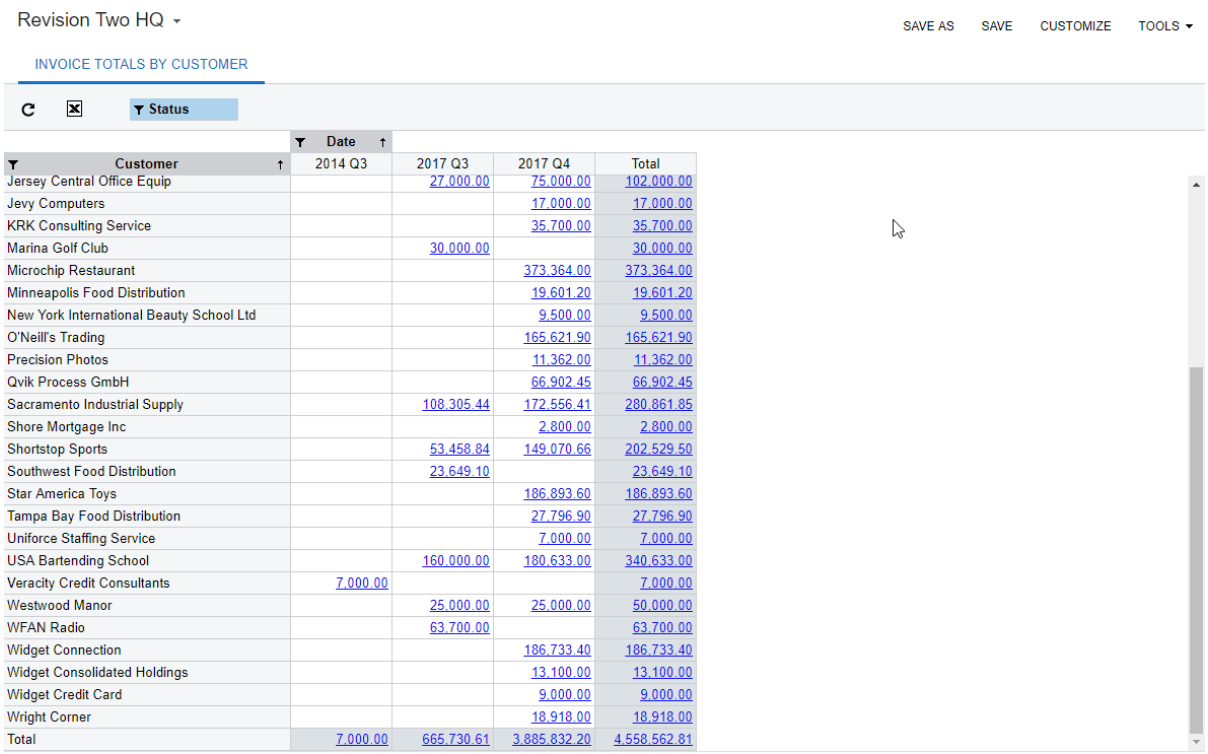


Figure: Configuring a filter by status

   - **b.** Click **OK** in the dialog box to apply the filter. In the following screenshot, you can see the resulting pivot table, which displays the data for open invoices only.



Customer	Date 2014 Q3	2017 Q3	2017 Q4	Total
Jersey Central Office Equip		27,000.00	75,000.00	102,000.00
Jevy Computers			17,000.00	17,000.00
KRK Consulting Service			35,700.00	35,700.00
Marina Golf Club		30,000.00		30,000.00
Microchip Restaurant			373,364.00	373,364.00
Minneapolis Food Distribution			19,601.20	19,601.20
New York International Beauty School Ltd			9,500.00	9,500.00
O'Neill's Trading			165,621.90	165,621.90
Precision Photos			11,362.00	11,362.00
Qvik Process GmbH			66,902.45	66,902.45
Sacramento Industrial Supply		108,305.44	172,556.41	280,861.85
Shore Mortgage Inc			2,800.00	2,800.00
Shortstop Sports		53,458.84	149,070.66	202,529.50
Southwest Food Distribution		23,649.10		23,649.10
Star America Toys			186,893.60	186,893.60
Tampa Bay Food Distribution			27,796.90	27,796.90
Uniforce Staffing Service			7,000.00	7,000.00
USA Bartending School		160,000.00	180,633.00	340,633.00
Veracity Credit Consultants	7,000.00			7,000.00
Westwood Manor		25,000.00	25,000.00	50,000.00
WFAN Radio		63,700.00		63,700.00
Widget Connection			186,733.40	186,733.40
Widget Consolidated Holdings			13,100.00	13,100.00
Widget Credit Card			9,000.00	9,000.00
Wright Corner			18,918.00	18,918.00
Total	7,000.00	665,730.61	3,885,832.20	4,558,562.81

Figure: Viewing the pivot table with data filtered by invoice status

c. On the table toolbar, click the filter icon on the **Status** button and select all check boxes to clear filter by status.

The system clears filter settings by fields automatically after you close a pivot table. If you want to continue working with the full data in the table, you clear the filter settings manually.

6. Create a copy of the pivot table as follows:

a. On the title bar of the pivot table, click **Save As**.

b. In the **Pivot Name** box of the **Save Pivot As** dialog box, type `Copy of Invoice Totals Pivot`.

c. Click **Save**. Notice that the tab with the pivot table name has appeared next to the **Invoice Totals by Customer** tab.

7. Delete the copy of the pivot table as follows:

a. Close the tab with the pivot tables.

b. Open the Pivot Tables form (SM208010; System > Customization > Manage).

c. Find the *Copy of Invoice Totals Pivot* pivot table by using the **Go to Next Record** button on the form toolbar.

d. On the form toolbar, click **Delete**. The *Copy of Invoice Totals Pivot* pivot table is deleted from the system.

In the next step, you will share the pivot table with other users of Acumatica ERP.

Step 14.5: Sharing a Pivot Table

If you want other users to work with the pivot table that you have created, you need to share the table.

You will share the *Invoice Totals by Customer* pivot table, add it to a workspace, and open it acting as a different user. Do the following:

1. Share the *Invoice Totals by Customer* pivot table as follows:
   a. On the Pivot Tables form (SM208010; System > Customization > Manage) for the *Invoice Totals by Customer* pivot table, select the **Is Shared** check box, as shown in the following screenshot. Notice that the **Site Map Location** box becomes available.
   b. In the **Site Map Location** box, select *Accounts Receivable* (*Company* > *Finance*).
   c. Review the settings of the pivot table (see the following screenshot).

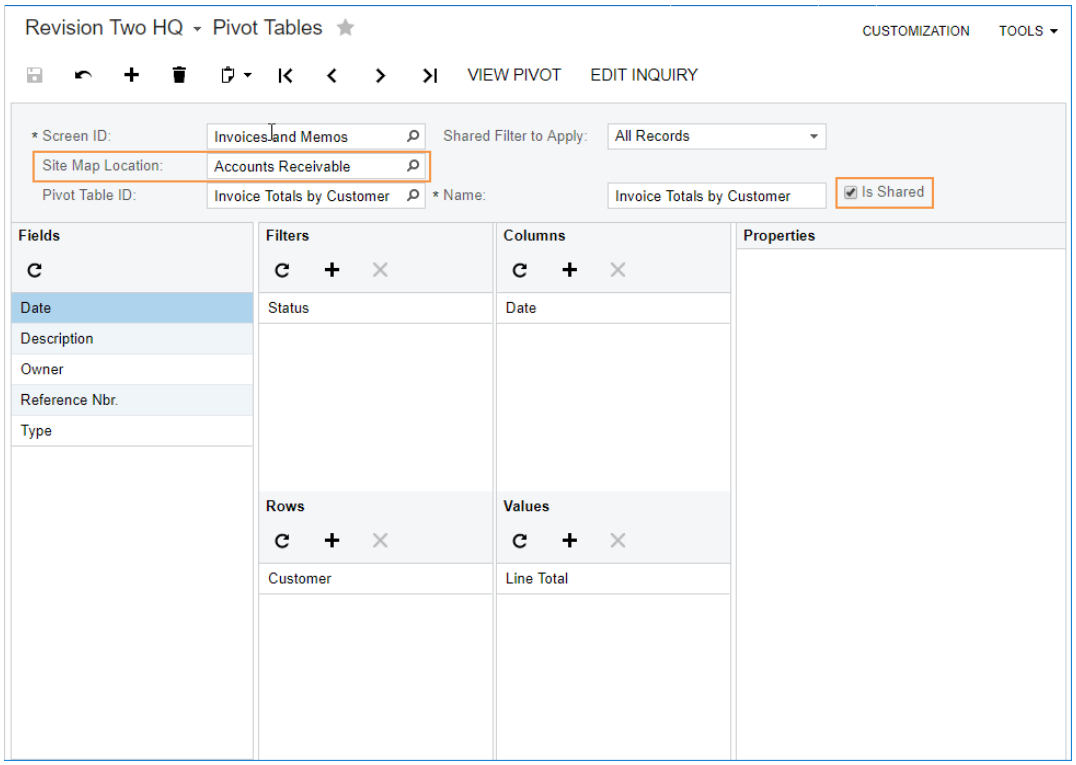


Figure: Reviewing the settings of the pivot table

   d. Save your changes to the form.

2. To add the *Invoice Totals by Customer* pivot table to a workspace, proceed as follows:
   a. In the main menu, click the **Receivables** workspace.
   b. In the main menu, click Configure (the ellipsis in the bottom left corner) and then click **Edit Menu**.
   c. On the top pane, click **Add Menu Item**.
   d. In the Search box of the **Select Forms** dialog box, type `Invoice Totals by Customer`.
   e. Select the check box to the left of the link for **Invoice Totals by Customer**.
   f. Click **Add & Close** to add the pivot table to the workspace and close the dialog box.
   g. Under the **Pivot Tables** category, select the check box to the left of the link for **Invoice Totals by Customer** to add the table to the Quick Menu.

   h. Click **Exit Edit Menu**. Notice that the link to the **Invoice Totals by Customer** pivot table has appeared in the **Receivables** workspace.

3. Open the *Invoice Totals by Customer* pivot table while you are signed in as the *wiley* user, to confirm that it is now shared. Do the following:

   a. Open the Users form (SM201010; Configuration > User Security > Manage).

   b. In the **Login** box, select *wiley*.

   c. On the form toolbar, click **Log In as User**. You will be signed in to the system as *wiley*.

   d. In the main menu, click **Receivables** and then click *Invoice Totals by Customer*. This confirms that *wiley* can open the pivot table.

   e. Sign out of the system and sign in as *admin*.

Lesson Summary

In this lesson, you have learned how to create and configure pivot tables and how to work with them. By using the Pivot Tables form (SM208010), you have created a pivot table, added fields to the table, applied a shared filter to the table, and shared the pivot table with other users of Acumatica ERP. After you opened the pivot table, you added an extra field for filtering data, filtered the data by status, exported the data to a Microsoft Excel workbook, and created a copy of the pivot table.

Review Questions

1. How can you filter data in a pivot table? Select all correct responses.
   - **A.** You specify a shared filter in the settings of a pivot table.
   - **B.** You cannot filter data in a pivot table in Acumatica ERP.
   - **C.** You filter data by the values of a field you add to the **Values** pane of the Pivot Tables form (SM208010).
   - **D.** You filter data by the values of fields you add to the **Rows**, **Columns**, or **Filters** pane of the Pivot Tables form (SM208010) for the pivot table.
2. Can other users open a pivot table created by you if it is not shared?
   - **A.** Yes, they can open the table if they have access to the Pivot Tables form (SM208010).
   - **B.** No, they cannot.
   - **C.** Yes, they can find all pivot tables in the **Data Views** workspace and open any of them.
3. How can you add a column with totals for each row in a pivot table?
   - **A.** Select the **Show Total** check box in the properties of a field listed in the **Rows** pane.
   - **B.** Select the **Show Total** check box in the properties of a field listed in the **Values** pane.
   - **C.** Select the **Show Total** check box in the properties of a field listed in the **Columns** pane.
4. How many pivot tables can you create for the same generic inquiry?
   - **A.** An unlimited number of pivot tables
   - **B.** Only one pivot table
   - **C.** No more than five pivot tables

Answer Key

1 - A, D; 2 - B; 3 - C, 4 - A.

Part 6: Access Rights to Inquiries, Reports, Dashboards, and Pivot Tables

Acumatica ERP was designed with particular attention to the collection, storage, and processing of sensitive corporate data that must be protected against unauthorized access, use, modification, and disclosure. Acumatica ERP uses reasonable security measures, including access control to system resources.

In this part of the course, you will learn how to specify access rights to inquiries, reports, dashboards, and pivot tables.

Lesson 15: Setting Up Access Rights to Inquiries, Reports, Dashboards, and Pivot Tables

In Acumatica ERP, you create user accounts to allow people access the system. Based on users' job responsibilities, you can control their access to forms, entities created through these forms, and operations on these entities based on the user's job responsibilities. Rather than assigning each individual user access rights to each object the user must access, you define roles, which are sets of access rights that fit job responsibilities in your company, and then assign these roles to individual users.

Roles help you easily manage access rights for groups of users in the system. Changing one role alters the access rights for all users to whom this role is assigned.

In this lesson, you will specify access rights to the inquiries, reports, dashboards, and pivot tables you have created in the previous lessons of this course. You will configure the *Administrator* and *DEMO* roles, and assign them to the users with the *admin* and *user* user names, respectively. The levels of access you should specify for the roles are summarized in the following table.

Access Rights to the Reports, Inquiries, and Dashboards

Report, Inquiry, or Dashboard	**Access Rights of the User**	
	admin	**user**
The Invoices Commissionable by Salesperson report (AR670000)	Can view	Can view
The Items Invoiced by Salesperson report (AR680000)	Can view	Cannot view
The Open Sales Orders by Customer inquiry	Can view	Can view
The Sales Orders by Date and Status inquiry	Can view	Cannot view
SalesDemo Dashboard	Can view and edit	Can view
Accounts Receivable Dashboard	Can view and edit	Cannot view
The Invoice Totals by Customer pivot table	Can view and edit	Cannot view

Lesson Objectives

In this lesson, you will learn how to do the following:

- Set up access rights to a report
- Set up access rights to a generic inquiry
- Set up access rights to a dashboard
- Set up access rights to a pivot table
- Set up a user with access rights

Related Links

User Security
Role-Based Access
Access Rights by Role
Levels of Access Rights
Users

Step 15.1: Setting Up Access Rights to Reports

You can grant any role access to any form, including any report form, on the Access Rights by Screen form (SM201020).

> You can also grant a specific role access to any form on the Access Rights by Role form (SM201025). On the Access Rights by Screen form (SM201020), you can select a form (or report form) and then grant any number of roles access to the selected form. On the Access Rights by Role form, you can select a role and grant that role access to forms (including report forms) and other system entities, such as modules, suites, and form elements.

In this step, you will specify the access rights for the Invoices Commissionable by Salesperson (AR670000) and Items Invoiced by Salesperson (AR680000) report forms. Proceed as follows:

1. Sign in to the *SalesDemo* company of Acumatica ERP.
2. On the Access Rights by Screen form (SM201020; Configuration > User Security > Manage), in the left pane, select *Company* > *Finance* > *Accounts Receivable* > *Reports* > *Audit* > *Invoices Commissionable by Salesperson*. You created this report in *Lesson 4: Creating a Report*.
3. In the table in the right pane, which lists all the roles defined in the system, select the following levels of access rights for the specified roles (as shown in the screenshot below):
   - *Administrator*: *Granted*
   - *DEMO*: *Granted*

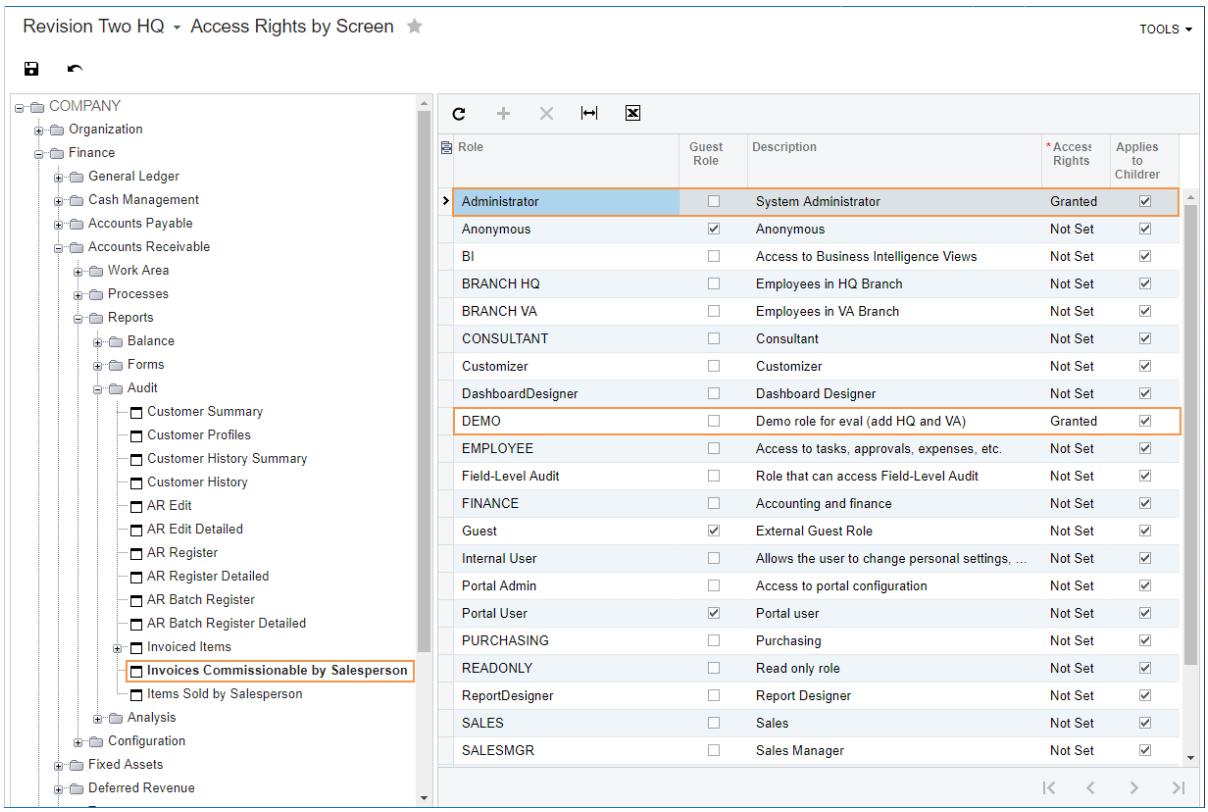


Figure: Roles' access rights to this report form

For each role, you can specify one of the following levels of access rights to this report form (and to any report form):

- *Not Set* (default): If this level of access rights is assigned to all roles for the report form, users with any of these roles have access to the report form. If at least one role is assigned the *Revoked* or *Granted* access rights for the report form, a user with a role

with the *Not Set* level is denied access to the form; for this user, the report form is not displayed in the UI.

- *Revoked*: If this level of access rights is assigned to a role, users with this role are denied access to the report form; for these users, the report form is not displayed in the UI.
- *Granted*: If this level of access rights is assigned to a role, users with the role can access the report form and run the report.

In the classic UI, for a role, you could grant access to the report form but revoke access to the whole module that contains it. A user with such a role could access this form only from forms outside of the module that have commands or links to the report form; the user would not be able to view the form on the navigation pane due to the unavailability of the module.

4. Save your changes to the form.

Based on the settings you have specified, only users with the *Administrator* or *Demo* role (or both roles) can access the Invoices Commissionable by Salesperson report form (AR670000) and run the report.

5. In the left pane, select *Company* > *Finance* > *Accounts Receivable* > *Reports* > *Audit* > *Items Sold by Salesperson*. You created this report in *Lesson 6: Creating Tabular Reports*.

6. In the table in the right pane, for the *Administrator* role, select the *Granted* level of access rights.

7. Save your changes to the form.

Based on the settings you have specified, only users with the *Administrator* role can access the Items Invoiced by Salesperson report form (AR680000) and run the report. Other roles still have the default *Not Set* access rights, which forbid users with these roles to access the report form now that one other role has the *Granted* level of access rights specified.

Step 15.2: Setting Up Access Rights to Generic Inquiries

Now you will specify assess rights for the Open Sales Orders by Customer and Sales Orders by Date and Status inquiry forms. Do the following:

1. On the Access Rights by Screen form (SM201020), in the left pane, select *Company* > *Distribution* > *Sales Orders* > *Reports* > *Audit* > *Open Sales Orders by Customer*. You created this generic inquiry in *Lesson 1: Creating a Generic Inquiry*.

2. In the table in the right pane, select the following levels of access rights for the specified roles:

   - *Administrator*: *View Only*
   - *DEMO*: *View Only*

   For each role, you can specify one of the following levels of access rights to this inquiry form (and to any form):

   - *Not Set* (default): If this level of access rights is assigned to all roles, it allows all roles to have access to the form until access rights are set to any other level for at least one role. After at least one role has been assigned another level of access rights, access to the form is denied for a role with this access level.
   - *Revoked*: If this level of access rights is assigned to a role, users with the role are denied access to the form and its functionality.
   - *View Only*: If this level of access rights is assigned to a role, it gives the role restricted access to the form and its functionality. This level allows users with the role to view the form and any records associated with the form (in drop-down lists on other forms). This level forbids users with the role to edit details about any record, create new records or entities of the type, and delete records.
   - *Edit*: If this level of access rights is assigned to a role, it the role restricted access to the form and its functionality. This level allows users with the role to view the form, select records, and edit details about any record. This level forbids users with the role to create new records or entities of the type, and to delete records.
   - *Insert*: If this level of access rights is assigned to a role, it gives the role restricted access to the form and its functionality. This level allows users with the role to view the form, select records, edit details about any record, and create new records or entities of the type. This level forbids users with the role to delete records.
   - *Delete*: If this level of access rights is assigned to a role, it gives the role complete access to the form and its functionality. This level encompasses the capabilities of the *View Only*, *Edit*, and *Insert* levels, while also giving users with the role the ability to delete records.

   If a generic inquiry form replaces an entry or maintenance form, access rights to the generic inquiry are inherited from this entry or maintenance form.

3. Save your changes to the form.

   Based on the settings you have specified, only users with the *Administrator* or *Demo* role (or both roles) can access the Open Sales Orders by Customer inquiry form.

4. In the left pane, select *Company* > *Distribution* > *Sales Orders* > *Reports* > *Audit* > *Sales Orders by Date and Status*. You created this generic inquiry in *Lesson 1: Creating a Generic Inquiry*.

5. In the table in the right pane, for the *Administrator* role, select the *View Only* level of access rights.

6. Save your changes to the form.

Based on the settings you have specified for this form, only users with the *Administrator* role can access the Sales Orders by Date and Status inquiry form. Other roles have the default *Not Set* access rights, and these users may not access the inquiry form.

Step 15.3: Setting Up Access Rights to Dashboards

When you created dashboards in *Lesson 13: Creating and Managing Dashboards*, you specified access rights to these dashboards on the Dashboards form (SM208600).

In this step, you will configure access to this form and to dashboard widgets, and review access rights to the *SalesDemo* and *Accounts Receivable* dashboards. Proceed as follows:

1. Configure the access rights to the Dashboards form (SM208600) as follows:
   - **a.** Open the Access Rights by Screen form (SM201020; Configuration > User Security > Manage).
   - **b.** In the left pane, select *Company* > *System* > *Management* > *Customization* > *Work Area* > *Manage* > *Dashboards*.
   - **c.** In the table in the right pane, for the *Administrator* role, select the *Delete* level of access rights.
   - **d.** Save your changes to the form.

     With this configuration, only users with the *Administrator* role can access the Dashboards form (SM208600). That is, only these users can create and delete dashboards in the system, in addition to specifying the access rights to all dashboards in the system.

     You were able to access the Dashboards form (SM208600) in *Lesson 13: Creating and Managing Dashboards* without explicitly setting access rights because the *Not Set* level of access rights had been specified to this form for all user roles before your changes in this step.
2. Configure the access rights to the DB SO Total generic inquiry form (on which you based the scorecard KPI widget, *Average Deal Size*, in *Lesson 13: Creating and Managing Dashboards*) as follows:
   - **a.** In the left pane of the Access Rights by Screen form (SM201020), select *Company* > *Hidden* > *Hidden Generic Inquiries* > *DB SO Total*.
   - **b.** In the table in the right pane, for the *Administrator* role, select the *Delete* level of access rights.
   - **c.** Save your changes to the form.

     Based on this configuration, only users with the *Administrator* role assigned can view the *Average Deal Size* widget on the *SalesDemo* dashboard.
3. Review access rights to the *SalesDemo* dashboard as follows:
   - **a.** Open the Dashboards form (SM208600; System > Customization > Manage).
   - **b.** In the **Name** box, select *SalesDemo*.
   - **c.** Make sure that the **Allow Users to Personalize** check box is cleared.

     With this setting, users who can view the dashboard cannot create a personal copy of the dashboard.
   - **d.** In the Granted column of the **Visible To** table, make sure that the check box is selected for the *Administrator* and *DEMO* roles.

     This configuration means that users with these roles assigned can view the *SalesDemo* dashboard.

     If a user can view a dashboard but does not have access to the form or generic inquiry on which one of the dashboard's widgets is based, the user will see a placeholder instead of the widget.
4. Review the access rights to the Accounts Receivable dashboard as follows:

a. In the **Name** box of the Dashboards form (SM208600), select *Accounts Receivable*.

b. Make sure that the **Allow Users to Personalize** check box is selected.

This setting means that users who can view the dashboard can also create a personal copy of the dashboard and edit it (that is, add, edit, arrange, and remove widgets on the dashboard).

c. In the Granted column of the **Visible To** table, make sure the check boxes are set as follows for these roles:

- *Administrator*: Selected
- *DEMO*: Cleared

Based on this configuration, users with the *Administrator* role can view the *Accounts Receivable* dashboard, and users with the *DEMO* role cannot view this dashboard.

Step 15.4: Setting Up Access Rights to Pivot Tables

In *Lesson 14: Creating and Managing Pivot Tables*, you created the Invoice Totals by Customer pivot table, which is shared with other users of the system. In this step, you will restrict access to the table. First, you will configure access to the Pivot Tables form (SM208010) so that only a user with the *Administrator* role could manage pivot tables. Second, you will configure access rights to the Invoice Totals by Customer pivot table.

Do the following:

1. Configure the access rights to the Pivot Tables form (SM208010) as follows:
   a. Open the Access Rights by Screen form (SM201020; Configuration > User Security > Manage).
   b. In the left pane, select *Company* > *System* > *Management* > *Customization* > *Work Area* > *Manage* > *Pivot Tables*.
   c. In the table in the right pane, for the *Administrator* role, select the *Delete* level of access rights.
   d. Save your changes to the form.

      With this configuration, only users with the *Administrator* role can access the Pivot Tables form (SM208010). That is, only these users can create, delete, and modify pivot tables.
2. Configure the access rights to the Invoice Totals by Customer pivot table. Proceed as follows:
   a. On the Access Rights by Screen form (SM201020; Configuration > User Security > Manage), in the left pane, select *Company* > *Finance* > *Accounts Receivable* > *Invoice Totals by Customer*.
   b. In the table in the right pane, for the *Administrator* role, select the *Granted* level of access rights.

      The levels of access rights for pivot tables are the same as those for reports.
   c. Save your changes to the form.

      Based on this configuration, only users with the *Administrator* role can view the *Invoice Totals by Customer* pivot table.

Step 15.5: Providing a User with Access Rights

On the Users form (SM201010), you can create a new user, manage an existing user, and assign any role to a specific user.

> You can also assign a specific role to any user on the User Roles form (SM201005; Configuration > User Security > Manage). On the Users form (SM201010), you can select a user and then assign any number of roles to the selected user. On the User Roles form, you can select a role and assign that role to any number of users.

In this step, you will create a user, assign the appropriate roles to this user, and test the access rights of users by signing in as them. Do the following:

1. On the Users form (SM201010; Configuration > User Security > Manage), in the **Login** box, select *admin* (the user name of the user you are signed in to). On the **Roles** tab, make sure that the check boxes for the *Administrator* and *DashboardDesigner* roles are selected for this user.

   > In *Lesson 13: Creating and Managing Dashboards*, you have specified the *DashboardDesigner* role as the owner role for the *SalesDemo* and *Accounts Receivable* dashboards. Users with this role assigned will be able to edit properties of these dashboards.

2. Create a new user as follows:

   a. On the form toolbar, click **Add New Record**.

   b. Specify the following settings for the new user (shown in the screenshot below):

   - **Login**: `user`
   - **Generate Password**: Cleared
   - **Password**: Any password you want to specify for the user
   - **Email**: `user@acumatica.com`

   c. On the **Roles** tab, in the **Selected** column, select the check boxes for the following roles (also shown in the screenshot below):

   - *BRANCH HQ*
   - *BRANCH VA*
   - *DEMO*

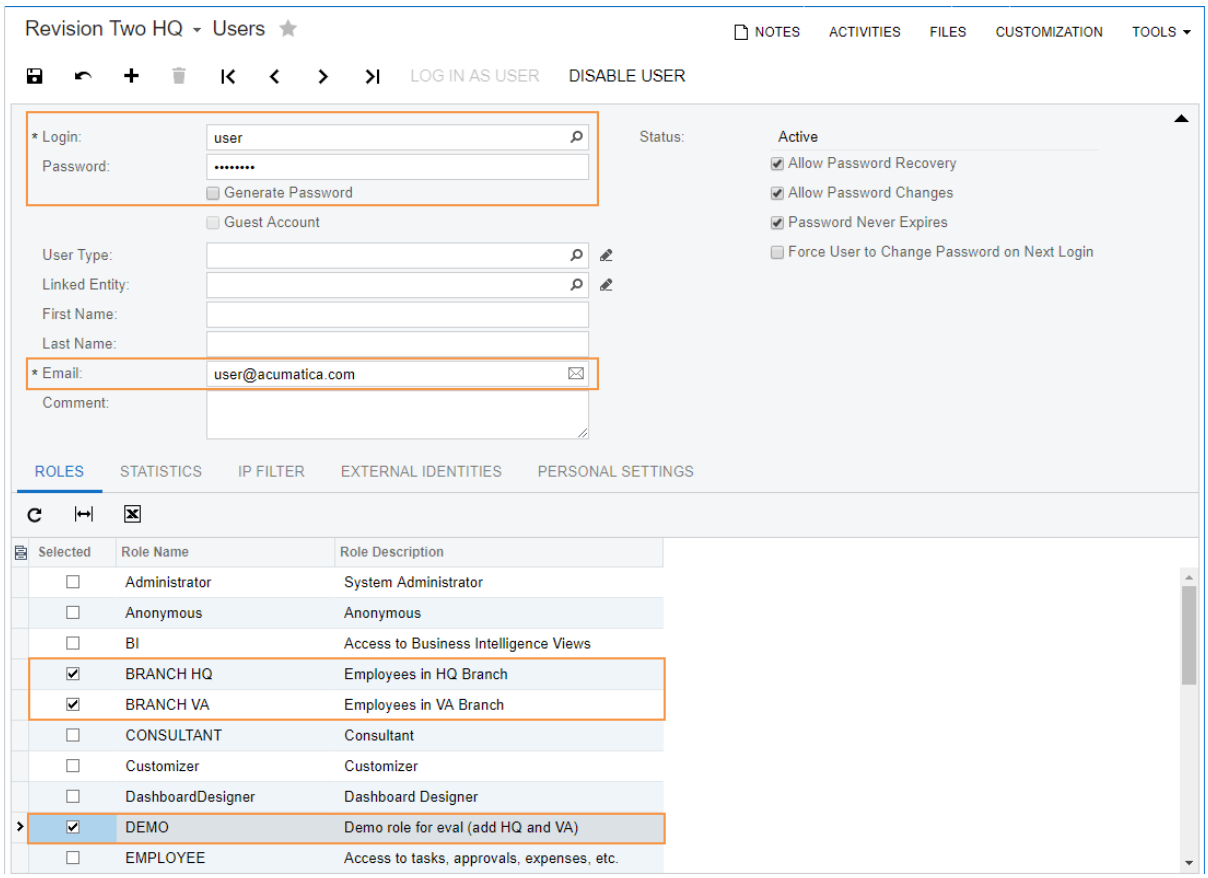


Figure: Creating a new user

d. Save your changes.

3. Test the access rights of *admin* as follows:

a. Make sure that you are signed in as *admin*. You can find this information in the info area in the upper-right corner of the Acumatica ERP screen.

b. Open the **Receivables** workspace by clicking its name on the main menu. Notice that the Invoices Commissionable by Salesperson (AR670000) and Items Invoiced by Salesperson (AR680000) reports are listed in the workspace, and thus available to *admin* (see Item 1 in the screenshot below).

In the classic UI, you can find these reports as follows: *Finance* > *Accounts Receivable* > *Reports* > *Audit*.

c. Notice that the Invoice Totals by Customer pivot table is also visible to *admin* in this workspace (Item 2).

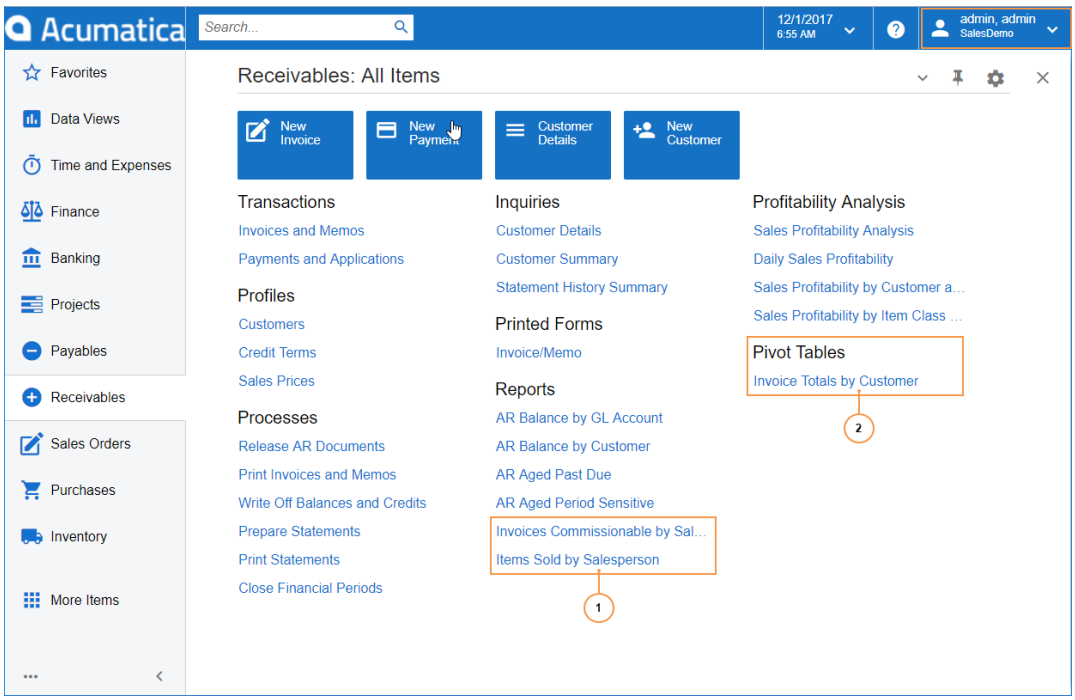


Figure: Checking the reports and pivot tables admin can view

d. Open the **Sales Orders** workspace by clicking its name on the main menu. Notice that the Open Sales Orders by Customer and Sales Orders by Date and Status generic inquiry forms are available to *admin*. (See the following screenshot.)

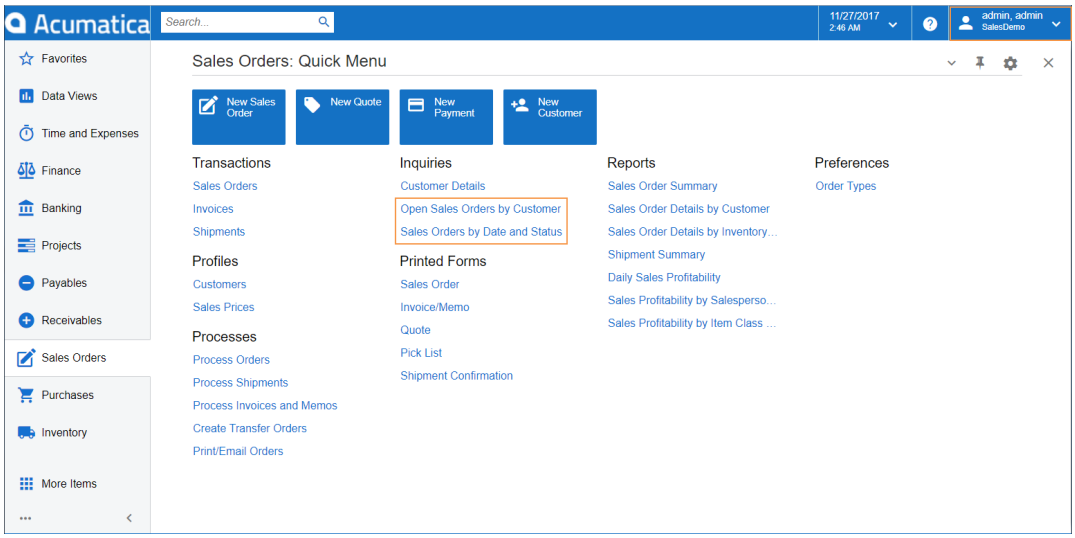


Figure: Reviewing the generic inquiry forms visible to admin

In the classic UI, you can find these generic inquiries as follows: *Distribution* > *Sales Orders* > *Reports* > *Audit*.

e. Open the *SalesDemo* dashboard. Notice that the **Design** button is displayed on the dashboard title bar. This means that *admin* can manage the widgets of the dashboard: add widgets, delete them, arrange them, or change their properties.

f. Open the *Accounts Receivable* dashboard. Again notice that the **Design** button is displayed on the title bar of this dashboard. The *admin* user can manage the widgets of this dashboard also.

4. Verify the access rights of *user* by doing the following:

a. Sign out as *admin*, and then sign in to the *SalesDemo* company of Acumatica ERP as *user*.

b. Open the **Receivables** workspace by clicking its name on the main menu. Notice that the Invoices Commissionable by Salesperson report (AR670000) is listed and thus visible to *user*, but the Items Invoiced by Salesperson report (AR680000) is not listed and thus inaccessible, as shown in the following screenshot. Access rights to this report are not permissive for any of the roles of *user*.

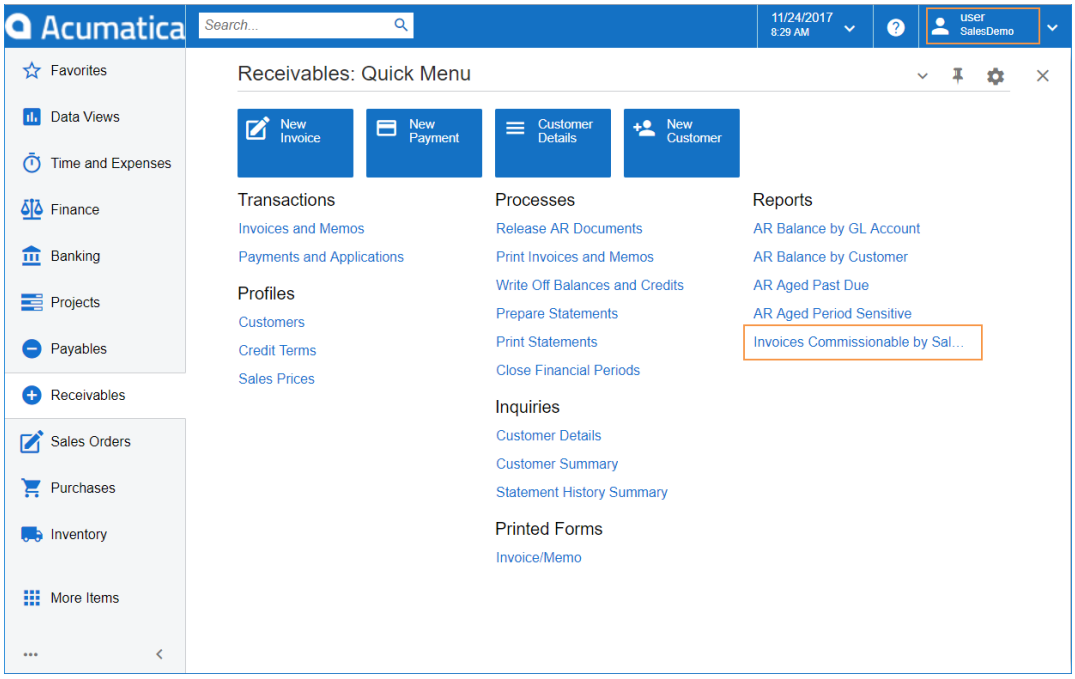


Figure: Reviewing the reports that can be viewed user

In the classic UI, you can find these reports as follows: *Finance* > *Accounts Receivable* > *Reports* > *Audit*.

c. Notice that *user* cannot see the **Pivot Tables** category on this workspace. This means that this user cannot access the Invoice Totals by Customer pivot table, which is the only item in this category.

d. Open the **Sales Orders** workspace by clicking its name on the main menu. Notice that the Open Sales Orders by Customer inquiry is listed, but the Sales Orders by Date and Status inquiry is not. (See the following screenshot.)

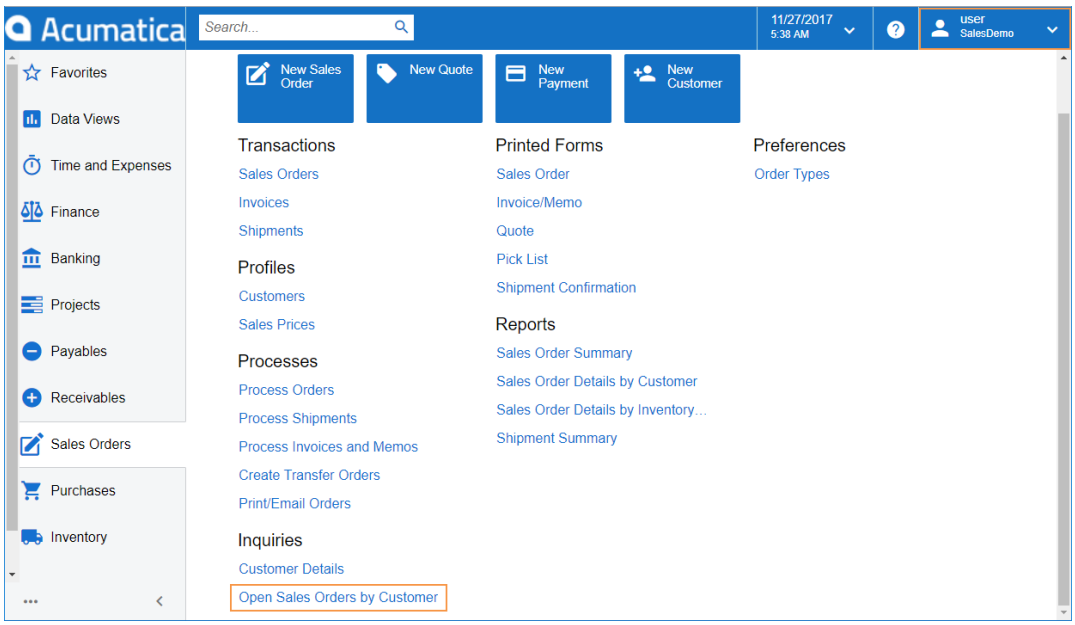


Figure: Reviewing generic inquiries that can be viewed by user

In the classic UI, you can find these generic inquiries as follows: *Distribution* > *Sales Orders* > *Reports* > *Audit*.

e. Open the *SalesDemo* dashboard. Notice that the **Design** button is not shown on the dashboard title bar (see the screenshot below). Thus, *user* cannot manage the widgets of the original dashboard because this user is not assigned the *DashboardDesigner* role. *User* also cannot create a personal copy of the dashboard because you cleared the **Allow Users to Personalize** check box on the Dashboards form (SM208600).

You can see a placeholder with a lock in place of the **Average Deal Size** widget. This widget is based on the DB SO Total generic inquiry, which can be accessed by only users with the *Administrator* role assigned.

Figure: Reviewing the SalesDemo dashboard for user

f. In the **Search** box of the top pane, type `Accounts Receivable`. Notice that nothing is listed on the **Menu Items** tab. This happens because no user roles assigned to *user* can access this dashboard.

You have successfully configured the access rights to the reports, inquiries, dashboards, and pivot tables.

Lesson Summary

In this lesson, you have learned how to specify access rights to inquiries, reports, dashboards, and pivot tables. On the Access Rights By Screen form (SM201020), you granted access for specific roles to the inquiries, reports, dashboards, and pivot tables you have created in the previous lessons of this course. On the Users form (SM201010), you created a new user and set up access rights to this user.

Review Questions

1. Where can you grant a role access to a particular form? Select all that apply.
   - **A**. On the Users form (SM201010)
   - **B**. On the Users Roles form (SM201005)
   - **C**. On the Access Rights by Role form (SM201025)
2. Select the level of access rights to reports that imparts the most privileges.
   - **A**. *Not Set*
   - **B**. *Granted*
   - **C**. *Revoked*
3. Select all statements that correctly describe the *Not Set* level of access rights.
   - **A**. This is the default level of access.
   - **B**. If this level of access is assigned to all roles for the form, users with any of these roles have access to the form.
   - **C**. Once another level of access rights is set to the form for at least one role, a user with a role with the *Not Set* level is granted access to the form.
4. Suppose that you opened a dashboard and see a lock instead of one widget. Why are you seeing the lock?
   - **A**. The widget is under construction
   - **B**. Another user is viewing a source form of this widget
   - **C**. You do not have access to the source form of this widget
   - **D**. The system cannot access an external web page that should be displayed by this widget

Answer Key

1 - C; 2 - B; 3 - A, B; 4 - C.

Appendix: Updating Reports

Any report of Acumatica ERP contains a database schema. In some cases, such as the following, the database schema of any report can become outdated even if no one has changed the reports directly:

- You have installed a new version of Acumatica ERP.
- Acumatica ERP has been customized—for example, a custom field was added to a class.

To make new fields and database columns available in a report, you need to update the database schema in the report.

Updating a Report by Using the Report Designer

In the **Schema Builder** wizard of the Report Designer, load the schema, and update the opened report classes by clicking one of the following buttons (see the screenshot below):

- **Refresh**: To update the class selected in the area above the button
- **Refresh All**: To update all the classes used in the report

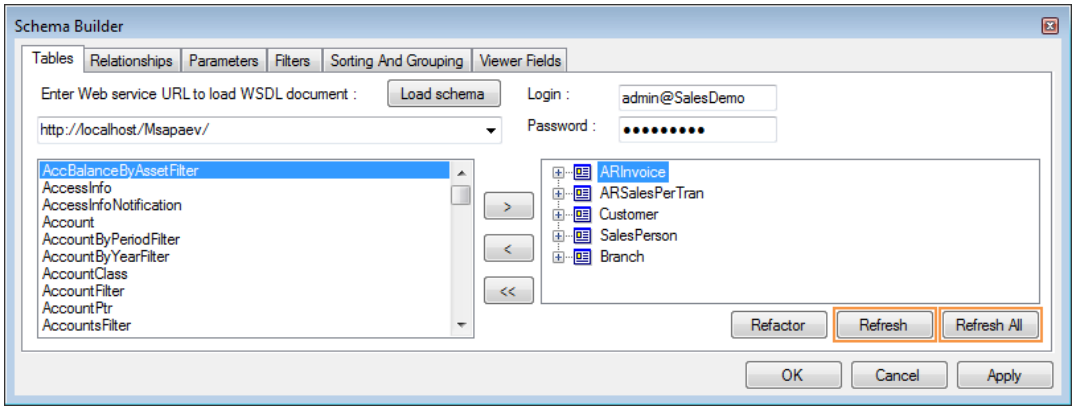


Figure: The buttons to refresh the report schema

If any class name or data field name used in the report is updated by the new names through one of these actions, the new names will be substituted for the old ones automatically wherever they are used: in the relationships, filtering and grouping conditions, text boxes, and expressions.

Updating Multiple Reports by Using the Report Updater Tool

You can use the `ReportUpdater.exe` command-line tool to update the database schema for multiple reports at once.

The *ReportUpdater.exe* tool is the command line utility included in Acumatica Report Designer. It is located in the same folder as the Report Designer.

When you launch the Report Updater, it performs the following actions:

1. On the specified site, loads the database schema
2. For each report from the specified source folder:
   - **a.** Reads the report
   - **b.** Refreshes all the classes used in the report according to the database schema
   - **c.** Writes the updated report file to the specified destination folder

d. Outputs the result of the report update to either the system console or the specified log file

To get the `ReportUpdater.exe` help information, launch the utility in the Command Prompt without parameters, as shown in the screenshot below.

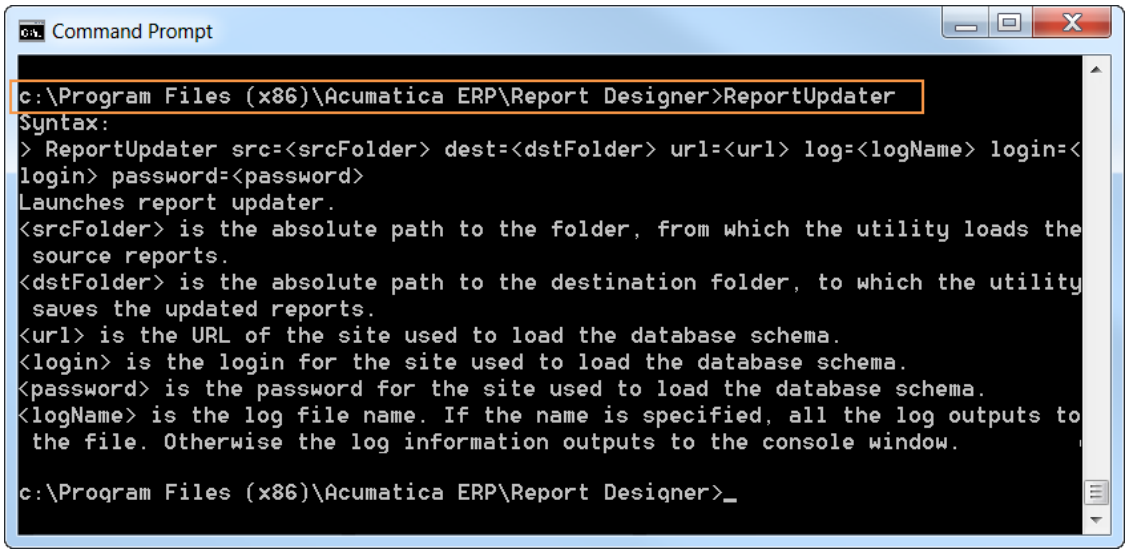


Figure: Report Updater help information

Use the following command line syntax to update multiple reports.

```
>ReportUpdater src=<srcFolder> dest=<dstFolder> url=<url> log=<logName>
 login=<login> password=<password>
```

The Report Updater parameters are listed in the table below.

Parameter	Description
`src`	The absolute path to the folder from which the utility loads the source reports.
`dest`	The absolute path to the destination folder to which the utility saves the updated reports.
`url`	The URL of the site used to load the database schema.
`log`	The log file name (optional). If you specify a name, the entire log is output to the file. Otherwise, the system outputs the log information to the console window.
`login`	The login for the site used to load the database schema.
`password`	The password for the site used to load the database schema.

- If a parameter contains spaces, use quotation marks around the parameter.
- If you need to override existing reports, use the same path for the source and destination folders.

As an example of using the `ReportUpdater.exe` tool, see the following command line for the `Test` application, and the screenshot below.

```
>ReportUpdater.exe src=c:\aaa dest="c:\bbb dest" url=http://localhost/Test
 login=admin password=123
```

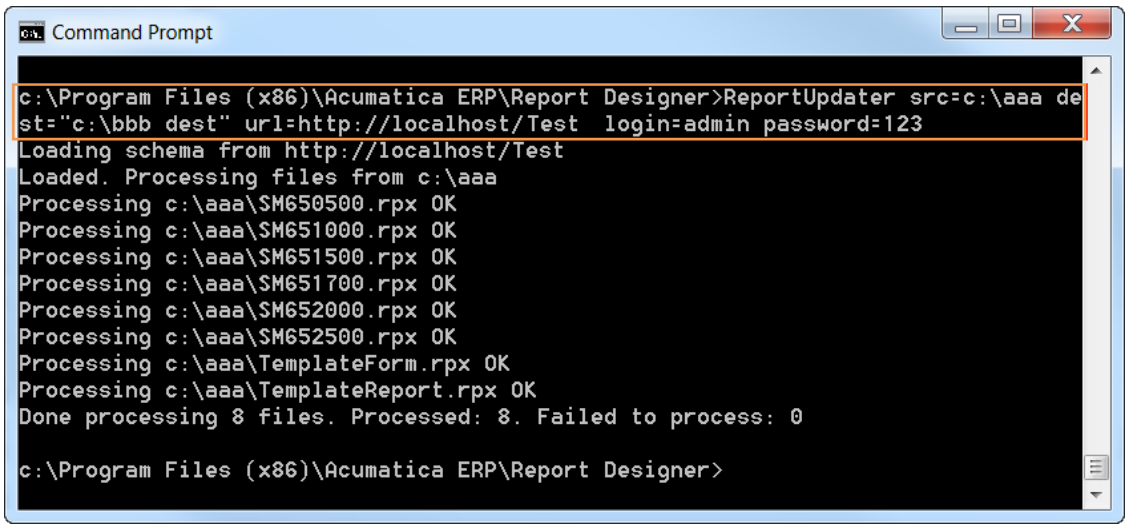


Figure: Example of the ReportUpdater.exe utility in use

In the example, the command line does not contain the `log` parameter; therefore, the `ReportUpdater.exe` tool outputs the log information to the Command Prompt window.

Glossary

Class. See **Data Access Class**.

Data Access Class. In Acumatica ERP, the data is stored in a database. However, users of Acumatica ERP do not access the database tables directly. Instead, they access the data access classes. In many cases, the data access classes directly correspond to the database tables; however, this is not necessarily the case for all the tables.

Data Field. The fields of the **Data Access Classes**. The data field correspond to the database columns, but this is not necessarily the case for all the fields.

Data Class. See **Data Access Class**.

Excel. Microsoft Office Excel.

MS Excel. Microsoft Office Excel.

OData. The Open Data Protocol is a general-purpose data access technology. OData defines an abstract data model and a protocol that can be used to expose any client access information from any data source in Acumatica ERP.

Table. See **Data Access Class**.