

# End-User Course

## **System Administration**

# **S140 System Maintenance 2022 R1**

Revision: 4/21/2022

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# How to Use This Course

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This course introduces you to the maintenance of the Acumatica ERP system. You will learn how to tailor the user interface based on your company's business processes, how to manage tenants and snapshots, set up an automatic processing, and how to manage customization projects. You will also learn how to monitor system performance and troubleshoot the system-related issues, how to maintain database and update the system by using the web interface, and how to build search indexes. The course consists of the lessons that guide you step by step through the examples and explanations of the configuration and maintenance flow in Acumatica ERP.

## Which Training Environment Is Needed

All lessons of the course should be completed in an instance of Acumatica ERP 2022 R1 with the *U100* training dataset preloaded; this dataset provides the predefined settings and entities you will need as you complete the activities of this course.

You or your system administrator prepare an instance of Acumatica ERP 2022 R1, as described in the *How to Create a Tenant with the U100 Dataset* section below.

## What Is in Parts

The course is divided into three major parts that consist of process lessons:

- Part 1 is dedicated to the adjustment of the user interface.
- Part 2 is dedicated to the management of tenants and snapshots, the publishing of customization projects, and the setup of automated scheduled processing.
- Part 3 is dedicated to the monitoring of system health.

In each part, you have to read the topics with system information and complete the process activities in a company with the *U100* dataset to learn how to perform basic system maintenance operations.

## What Is in a Process Lesson

A *process lesson*—that is, a lesson dedicated to the performing of a particular business process—includes a brief user scenario, a description of the process workflow and can include process diagrams that illustrate the user scenario supported by this process. The lesson also provides a brief overview of the settings that need to be specified and the entities that need to be prepared in the system before you start to perform this business process.

Each process lesson includes at least one process activity that you have to complete in your Acumatica ERP instance to learn how to perform the described business process.

## What Is in the Appendices

The following appendices provide additional information related to the lessons:

- Appendix 1 contains materials about the management of tenants and snapshots, the publishing of customization projects, and the implementation checklist that you can use for the setup of automated scheduled processing.
- Appendix 2 lists the recommended operations before applying updates to the system.

## What Are the Documentation Resources

The complete Acumatica ERP documentation is available on <https://help.acumatica.com/> and is included in the Acumatica ERP instance. While viewing any form used in the course, you can click the **Open Help** button in the top pane of the Acumatica ERP screen to bring up a form-specific Help menu; you can use the links on this menu to

quickly access form-related information and activities and to open a reference topic with detailed descriptions of the form elements.

## How to Create a Tenant with the U100 Dataset

Before you complete this course, you need to add a tenant with the *U100* dataset to an existing Acumatica ERP instance. You will then prepare the tenant for completing the activities. To complete this preparation, perform the following instructions:

1. Go to [Amazon Storage](#).
2. Open the folder that corresponds to the version of your Acumatica ERP instance.
3. In this folder, open the `Snapshots` folder, and download the `u100.zip` file.
4. Launch the Acumatica ERP instance, and sign in.
5. Open the [Tenants](#) (SM203520) form, and click **Add New Record** on the form toolbar.
6. In the **Login Name** box, type the name to be used for the tenant.
7. On the form toolbar, click **Save**.
8. On the **Snapshots** tab, click **Import Snapshot**.
9. In the **Upload Snapshot Package** dialog box, select the `u100.zip` file, which you have downloaded, and click **Upload**.

The system uploads the snapshot and lists it on the **Snapshots** tab of the [Tenants](#) form.

10. On the form toolbar, click **Restore Snapshot**.
11. If the **Warning** dialog box appears, click **Yes**.
12. In the **Restore Snapshot** dialog box, make sure that the correct snapshot package is being uploaded, and click **OK**. The system will restore the snapshot and sign you out.

You are now on the Sign-In page, and you can sign in to the tenant you have just created.

## Licensing Information

For the educational purposes of this course, you use Acumatica ERP under the trial license, which does not require activation and provides all available features. For the production use of this functionality, you have to activate the license your organization has purchased. Each particular feature may be subject to additional licensing; please consult the Acumatica ERP sales policy for details.

# Company Story

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This topic explains the organizational structure and operational activity of the company you will work with during this training.

## Company Structure

The SweetLife Fruits & Jams company is a midsize company located in New York City. The company consists of the following branches:

- **SweetLife Head Office and Wholesale Center:** This branch of the company consists of a jam factory and a large warehouse where the company stores fruit (purchased from wholesale vendors) and the jam it produces. Warehouse workers perform warehouse operations by using barcode scanners or mobile devices with barcode scanning support.
- **SweetLife Store:** This branch has a retail shop with a small warehouse to which the goods to be sold are distributed from the company's main warehouse. This branch is also planning on selling goods via a website created on an e-commerce platform to accept orders online. The e-commerce integration project is underway.
- **Service and Equipment Sales Center:** This branch is a service center with a small warehouse where juicers are stored. This branch assembles juicers, sells juicers, installs juicers, trains customers' employees to operate juicers, and provides juicer servicing.

The ToadGreen Building Group is a subsidiary of the SweetLife Fruits & Jams company. ToadGreen Building Group—which is located in New York—is a general contractor coordinating construction projects for governmental and commercial customers. The company has only one branch, ToadGreen Building Group, in which the corresponding projects are being managed and all construction-related tasks are recorded.

The Muffins & Cakes company is a subsidiary SweetLife Fruits & Jams company. Muffins & Cakes—which is located in Denver, Colorado—consists of the following branches:

- **Muffins Head Office and Wholesale Center:** This branch owns a bakery and a wholesale warehouse where products are stored.
- **Muffins Retail Shop:** This branch, which sells products to retail customers, has a retail shop with a small warehouse.

## Operational Activity

The company has been operating starting in the 01-2021 financial period. In November 2021, the company started using Acumatica ERP as an ERP and CRM system and migrated all data of the main office and retail store to Acumatica ERP. The equipment center has begun its operations in 01-2022 in response to the company's growth.

In October 2021, the company received an investment and opened a subsidiary company for construction (ToadGreen). In February 2022, the company started its first construction project.

The Muffins & Cakes company was established in January 2021 and started using Acumatica ERP at the end of the 01-2022 financial period.

The base currency of the company and its subsidiaries is the U.S. dollar (USD). All amounts in documents and reports are expressed in U.S. dollars unless otherwise indicated.

## Company Purchases

The company purchases fruits and spices from large fruit vendors for sale and for jam production. For producing jams and packing jams and fruits, the company purchases jars, labels, and paper bags from various vendors. For the internal needs of the main office and store, the company purchases stationery (printing paper, pens, and pencils), computers, and computer accessories from various vendors. The company also purchases juicers

and juicer parts for sale from a large juicer vendor and either purchases the installation service for the juicers or provides the installation service on its own, depending on the complexity of the installation.

The Muffins & Cakes company also purchases stationery (printing paper, pens, and pencils) and advertising services.

## Company Sales and Services

Each company's branch has its own business processes, as follows:

- SweetLife Head Office and Wholesale Center: In this branch, jams and fruit are sold to wholesale customers, such as restaurants and cafes. The company also conducts home canning training at the customer's location and webinars on the company's website.
- SweetLife Store: In the store, retail customers purchase fresh fruit, berries, and jams, or pick up the goods they have ordered on the website. Some of the goods listed in the website catalog are not stored in the retail warehouse, such as tropical fruits (which are purchased on demand) and tea (which is drop-shipped from a third-party vendor).
- Service and Equipment Sales Center: This branch assembles juicers, sells juicers, provides training on equipment use, and offers equipment installation, including site review and maintenance services. The branch performs one-time endeavors as well as complex projects with their own budgets.

The company has local and international customers. The ordered items are delivered by drivers using the company's own vehicle. Customers can pay for orders by using various payment methods (cash, checks, or credit cards).

The Muffins & Cakes branches have the following business processes:

- Muffins Head Office & Wholesale Center: In this branch, baked goods and products for baking are sold to wholesale customers, such as restaurants and cafes. The company also conducts baking classes at customer locations.
- Muffins Store: In the store, small retail customers purchase baked goods, or pick the goods ordered on the website.



# Part 1: Tailoring the Appearance of the Acumatica ERP Instance

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## Lesson 1.1: Tailoring the User Interface

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### User Interface: General Information

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The user interface of Acumatica ERP provides predefined user interface elements, such as workspaces and workspace tiles and links, which you can configure to adjust the user interface to the business processes of your organization.

#### Learning Objectives

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

- Modify the set of workspace menu items on the main menu by using Menu Editing mode
- Modify the contents of a workspace by using Menu Editing mode
- Change a form location on the main menu by modifying the system site map

#### Applicable Scenarios

You tailor the user interface if the predefined configuration does not suit the business processes of your organization. You may want to tailor the UI if you encounter the following scenarios:

- The predefined set of workspaces does not correspond to the business processes of your organization. You can add new workspaces and populate them with items (tiles and links that provide access to forms, reports, and dashboards), delete existing menu items for workspaces that do not align with your business processes, and rename existing workspaces.
- At least one workspace contains workspace items that your users do not need or otherwise is not organized to fit your business processes. In this case, you can tailor the workspace so that it contains only the workspace items that your employees use in their work. You can regroup the links to forms and reports in a workspace, reorder the links to forms and reports in a category, and reorder tiles in a workspace. You can also change the tiles and links to forms, reports, and dashboards in a workspace, and remove any unneeded workspace items.
- Your employees frequently create an entity with a particular set of settings. In the applicable workspace, you can add a tile that includes the needed settings, which gives users the ability to create entities more quickly.
- A title of a form is not optimal for your users. In this case, you can change it to align with your terminology and business processes.

#### User Role for the Tailoring of the User Interface

In the **Menu Editor Role** box of the [Security Preferences](#) (SM201060) form, you can specify any available user role. A user with this role can use Menu Editing mode to tailor the user interface (in particular, the main menu and workspace menu items). The changes this user makes in this mode are applied to all users of Acumatica ERP.




We recommend that you create a dedicated role for editing the main menu and assign it to those users who should have the ability to modify the UI.

## Menu Editing Mode

To modify the main menu, you switch to Menu Editing mode by clicking the **Open Configuration Menu** button



() in the lower left corner of the screen. In the menu that opens, you click **Edit Menu**. The system switches to Menu Editing mode, as the following screenshot demonstrates.

Module	Batch Number	Status	Ledger	Transaction Date	Post Period	Description
AP	AP000001	Posted	ACTUAL	12/11/2020	12-2020	Log
AP	AP000002	Posted	ACTUAL	12/3/2020	12-2020	X-M
AP	AP000003	Posted	ACTUAL	12/15/2020	12-2020	Log
AP	AP000004	Posted	ACTUAL	1/10/2021	01-2021	Adv
AP	AP000005	Posted	ACTUAL	1/8/2021	01-2021	Pur
AP	AP000006	Posted	ACTUAL	1/11/2021	01-2021	Pur
AP	AP000007	Posted	ACTUAL	1/17/2021	01-2021	Pur
AP	AP000008	Posted	ACTUAL	1/8/2021	01-2021	Jar
AP	AP000009	Posted	ACTUAL	1/8/2021	01-2021	Gla
AP	AP000010	Posted	ACTUAL	1/9/2021	01-2021	Cor
AP	AP000011	Posted	ACTUAL	1/10/2021	01-2021	Cor
AP	AP000012	Posted	ACTUAL	1/18/2021	01-2021	Lab

*Figure: The system in Menu Editing mode*

When you have completed the modification of the menu, you click **Exit Menu Editing** to save your changes and exit Menu Editing mode.



If your changes are not applied immediately after you refresh the webpage, we recommend clearing your browser cache and loading the page again.

## Resetting of the Menu to the Default Settings

If you tailor the user interface in Menu Editing mode and then decide to revert to the initial state of the main menu and all workspaces, you can revert to the default settings. You click **Menu Settings** in the upper right corner of the screen and select **Reset to Default Menu Settings**.

The system rolls back the changes to the following menu elements:


- The list of workspaces that are menu items on the main menu and the **More Items** menu
- The items in each workspace, including categories, tiles, and links to forms, reports, and dashboards
- The items in the quick menu of each workspace for all users of the system
- Workspaces pinned to the main menu and unpinned from the main menu for all users of the system

## User Interface: Workspaces

The main menu is the primary navigation tool for users when they start working in Acumatica ERP. The system provides a predefined list of workspaces whose menu items are displayed on the main menu. The list of workspaces that a user sees by default is determined by the features enabled based on the Acumatica ERP license and the access rights of the user roles assigned to the particular user account.

### Renaming a Workspace

If a title of any existing workspace is not optimal for your company's users, you can change the title to help users easily find the forms, reports, and dashboards they need. To do this, you switch to Menu Editing mode; you

then point at the workspace and click **Edit Workspace Parameters** (  ) to open the **Workspace Parameters** dialog box. In the **Title** box of the dialog box, you type the new title of the workspace, as shown in the following screenshot, and click **OK**.

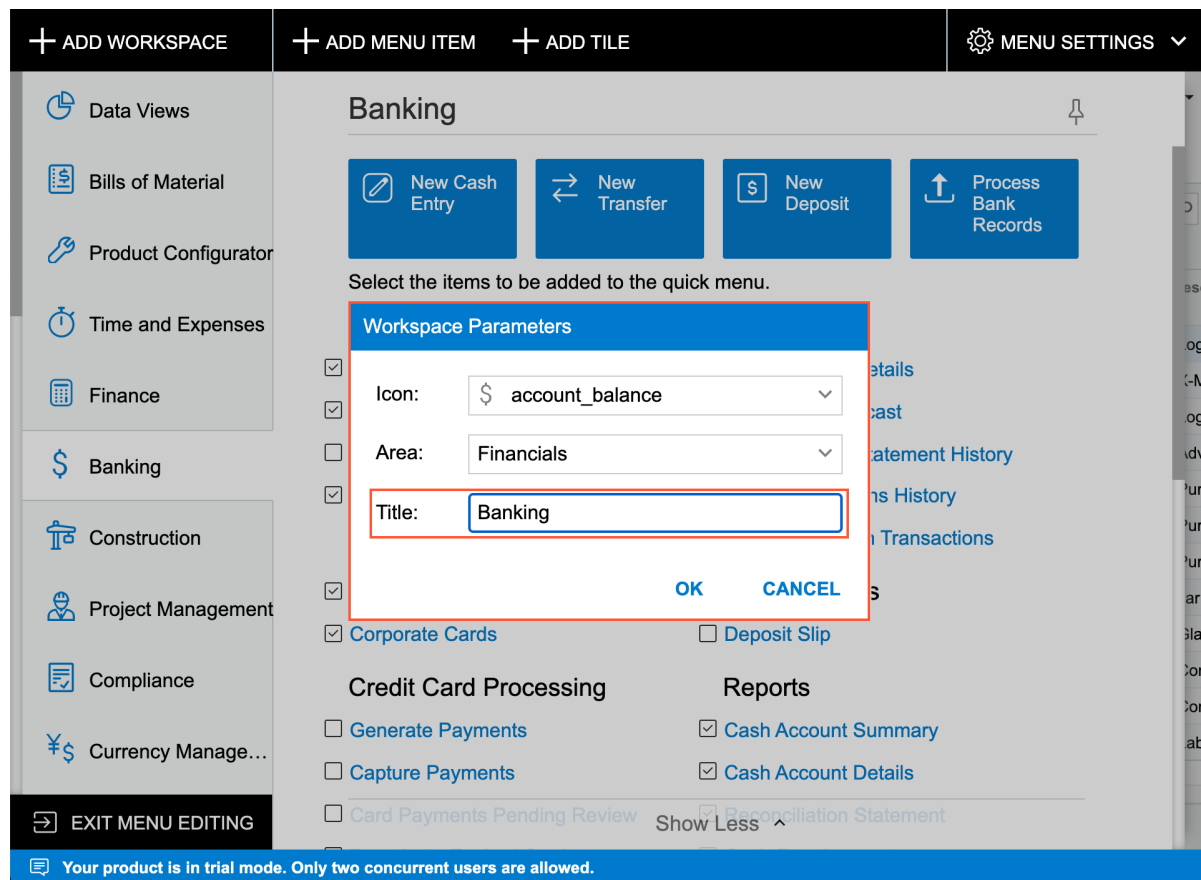


Figure: The Workspace Parameters dialog box

## Deleting a Workspace

If a predefined workspace does not fit the business processes of your organization and will never be needed by system users, you can completely delete it from the system. When you delete a workspace, the system completely deletes the tiles that belonged to the workspace, but the forms, reports, and dashboards that belonged to the workspace remain in the system. You can add to other workspaces links to these forms, reports, and dashboards.

To delete a workspace, you switch to Menu Editing mode, point at the workspace, and click **Delete Workspace**, as shown in the following screenshot.

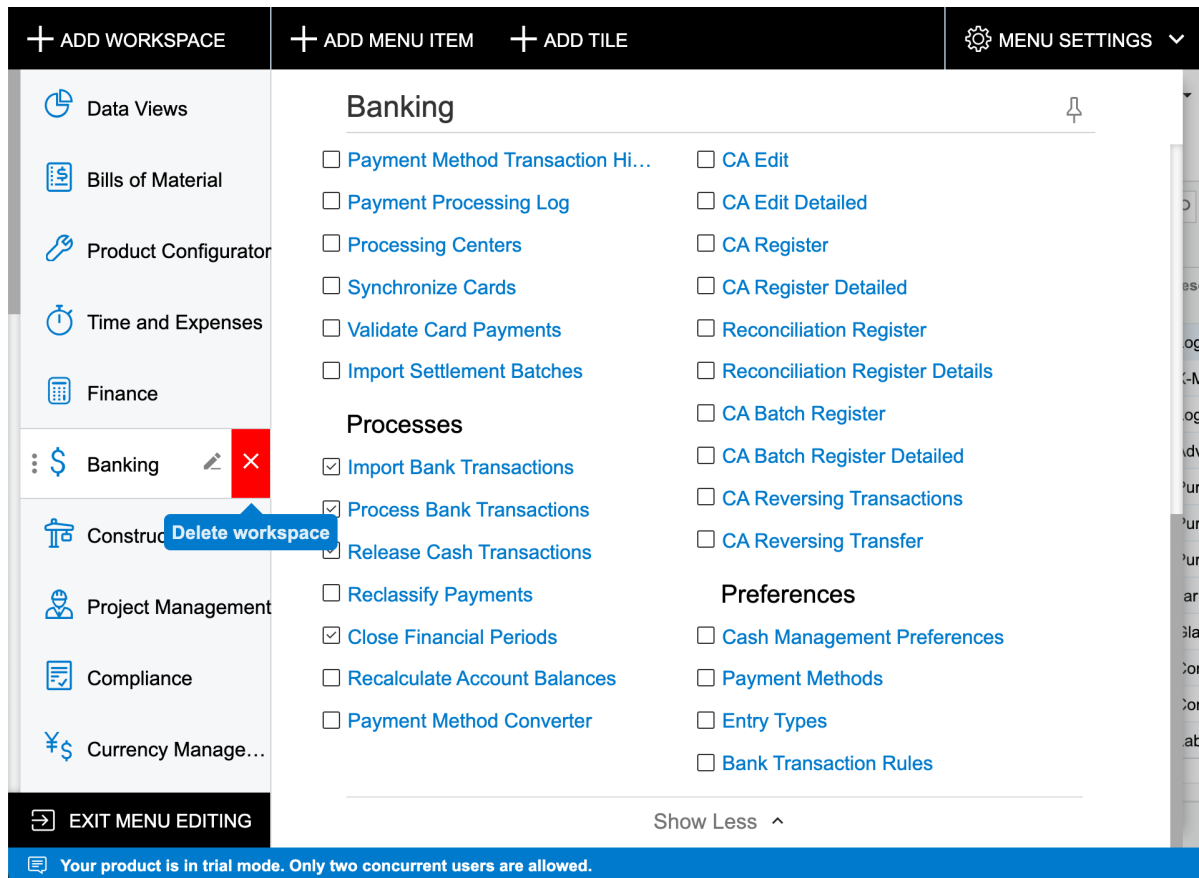


Figure: The deletion of a workspace from the main menu

## Pinning Workspace Menu Items

The pinned workspaces have corresponding menu items in the main menu panel (so that users can quickly access them), and the unpinned workspaces do not have corresponding menu items but can be found on the **More Items** menu.

You define for all users whether a workspace is displayed as menu item in the main menu panel or can be found on the **More Items** menu.

If you need to pin a workspace, you switch to Menu Editing mode, open the workspace and click the **Pin to Main**

**Menu Panel** (  ) button.

If you need to move a workspace to **More Items** menu you switch to Menu Editing mode, open the workspace, and

click the **Unpin from Main Menu Panel** (  ) button.

The users of your system may personalize the list of the workspaces displayed for their user account by pinning and unpinning workspaces by themselves.

## Reordering the List of Pinned Workspace Menu Items

If the predefined order of the pinned workspace menu items does not work for your company processes, you reorder the workspaces.

You switch to Menu Editing mode and drag the menu items to the needed order, as the following screenshot demonstrates.

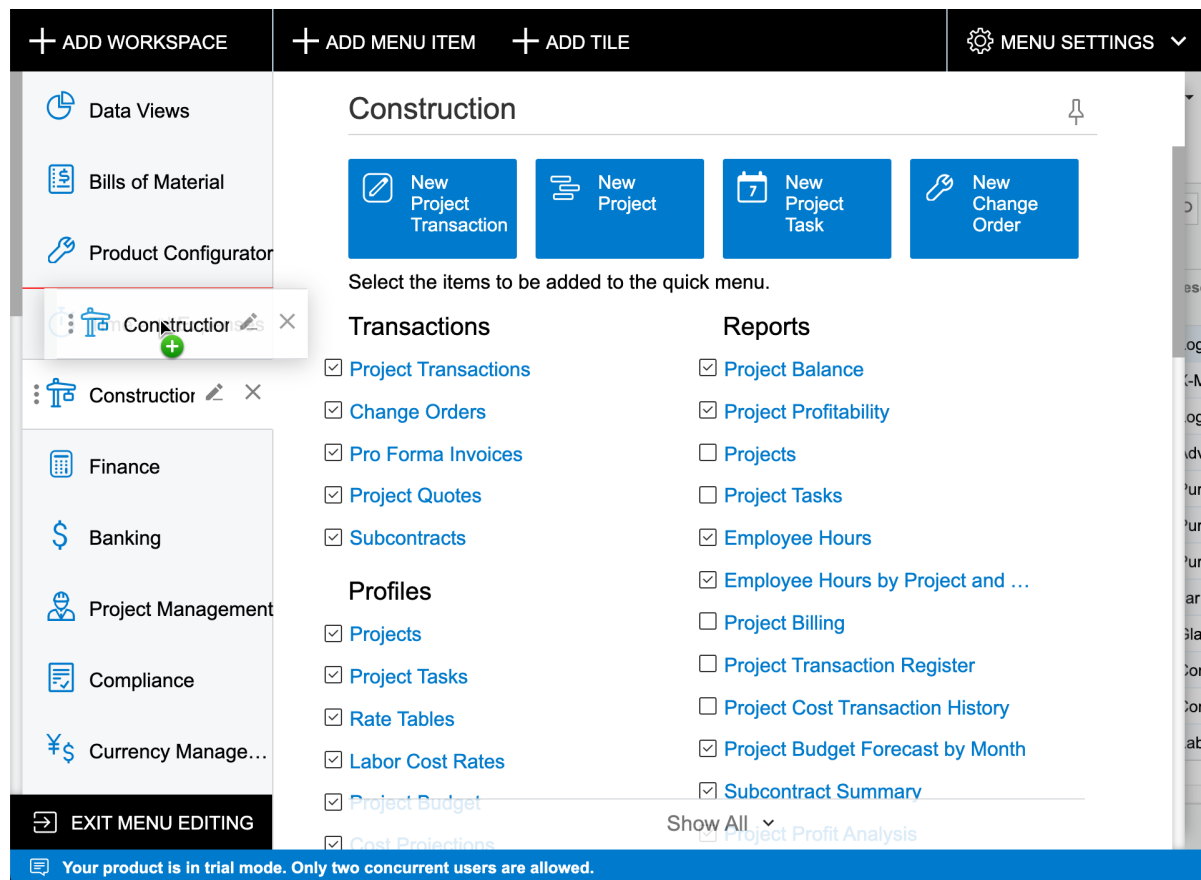


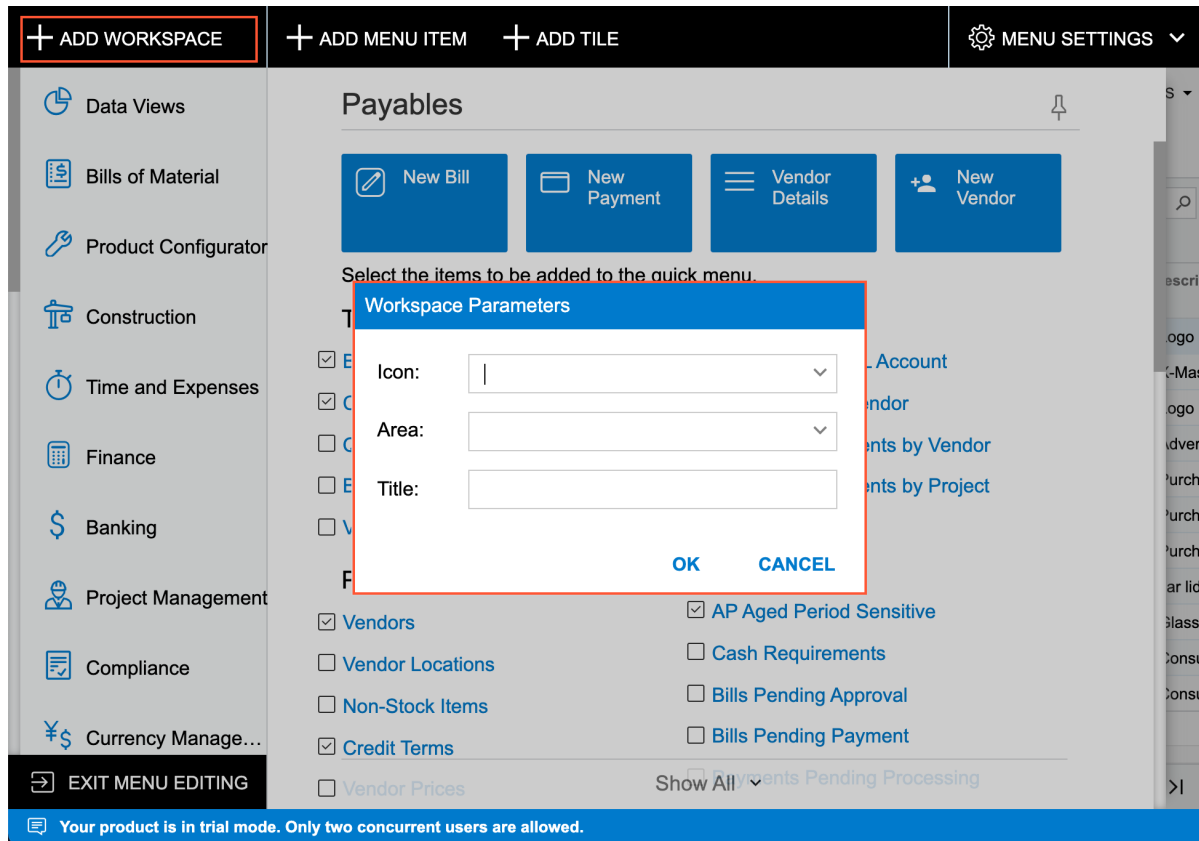
Figure: The changing of the Construction workspace location

## Adding a Custom Workspace

If your organization has a specific business process that requires forms, reports, and dashboards from different functional areas to be gathered on one menu for employees' convenience, you can create a custom workspace and pin it to the main menu panel.

In Menu Editing mode, you click **Add Workspace** in the upper left corner of the screen (see the screenshot below). In the **Workspace Parameters** dialog box, which opens, you do the following:

- From the set of predefined icons, you select the icon to be displayed next to the workspace.
- From the set of predefined areas, you select the area under which the system will display the workspace on the **More Items** menu.
- You type in the title of the workspace.
- You click **OK** to save the parameters and close the dialog box.



*Figure: The addition of a custom workspace*

After you have added the workspace, you proceed with populating it with links to forms, reports, and dashboards. Also, if you want to display a menu item for the workspace on the main menu, on the workspace title bar, click the **Pin to Main Menu Panel** button.

## User Interface: Tiles and Links to Forms in a Workspace

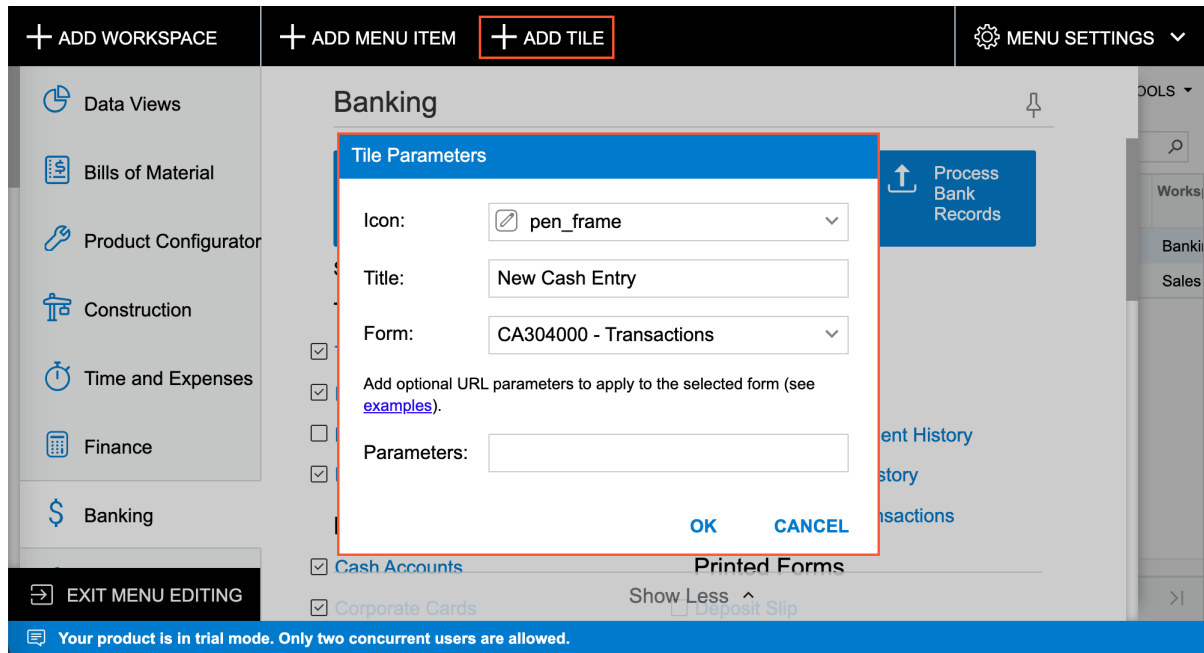
Workspaces are used in the system to organize links to forms, reports, and dashboards in a way that is convenient to users. By default, each workspace contains tiles (buttons that provide users with quick access to frequently used forms) and links to forms, reports, and dashboards; these links are grouped by categories (such as **Profiles**, **Reports**, and **Preferences**).

Because each organization has its own business processes, Acumatica ERP gives the ability to change the sets of Acumatica ERP forms, reports, and dashboards in workspaces, so that they optimally support these processes.

### Adding a Tile

A tile is a special button on a workspace that you click to open a form or report with predefined settings (or, for a data entry form, with most settings blank so you can define a new record). For example, a tile could be added that a user can click to open the [Transactions](#) (CA304000) form to create a new cash entry.

To create a tile, you switch to Menu Editing mode and open the needed workspace. You click **Add Tile** on the top toolbar, and the system opens the **Tile Parameters** dialog box. In the dialog box, you specify the icon and title to be displayed on the tile, as well as the form that the system should open when a user clicks the tile (see the following screenshot). You can also add tile parameters, as described in the next section. You then click **OK** to close the dialog box and add the tile.



*Figure: The creation of a new tile*

## Adding Parameters to a Tile

If the employees of your organization frequently create records with a particular set of settings, you can make this operation faster by adding a tile that includes the needed settings. For example, a tile could be added that a user can click to open the [Vendor Details](#) (AP402000) form with a particular vendor selected in the **Vendor** box.

To indicate the elements and values that need to be provided to the system when a user clicks the tile, you specify fields and their values as URL parameters in the **Tile Parameters** dialog box for the tile. You can add multiple parameters separated by &.

To determine the URL parameters, for some boxes located in the Summary or Selection area of a form, you can open the form, select the box value in the area, and look at the form URL. The system adds to the URL the parameter that corresponds to the box on a form with the selected value. (See the following screenshot.)

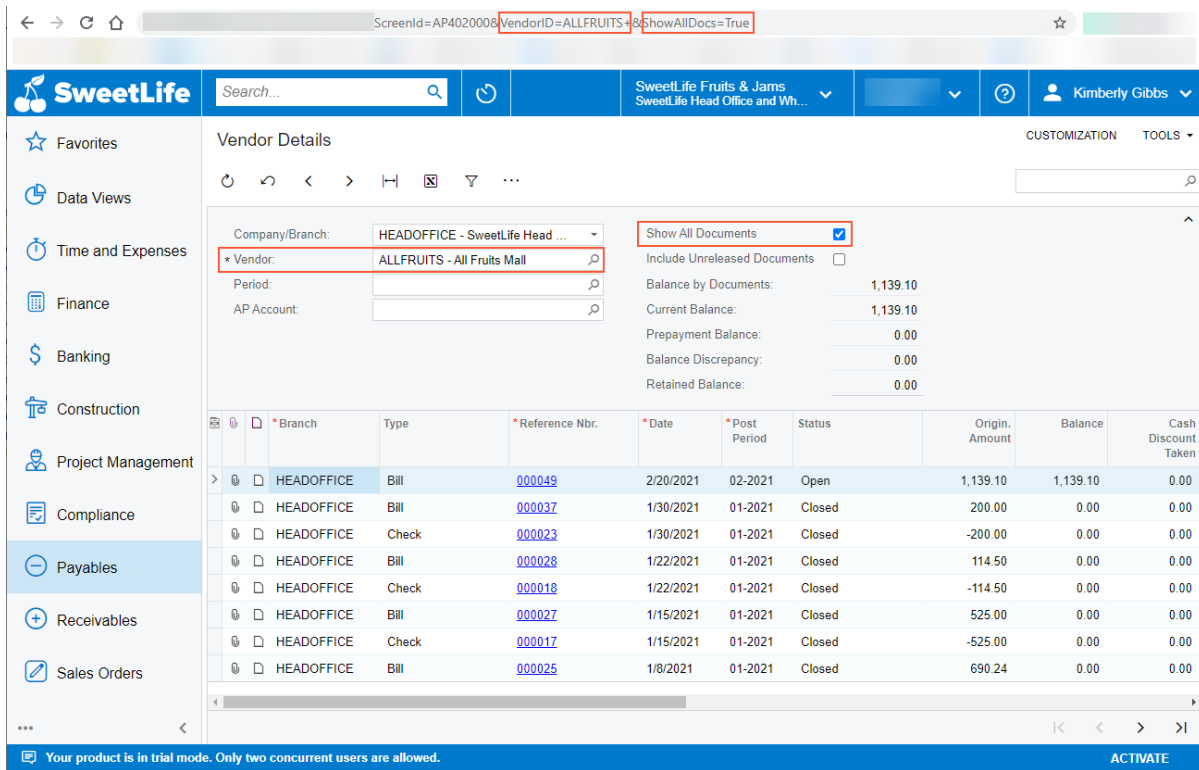


Figure: The correspondence of form UI elements with the URL parameters

Alternatively, to determine the URL parameters for the UI elements that the system does not add as URL parameters, you can inspect each form element and find out what data field corresponds to the element. You open the form to be opened in the tile, press Ctrl+Alt, and click the needed element on the form. The **Element Properties** dialog box opens. In the dialog box, you copy the value specified in the **Data Field** box, as the following screenshot demonstrates for the **Vendor** box of the **Bills and Adjustments** (AP301000) form. In the URL shown in the screenshot, notice that the system added to the URL only document type and its reference number, because these two values explicitly identify the document and adding other parameters to the URL is not needed.

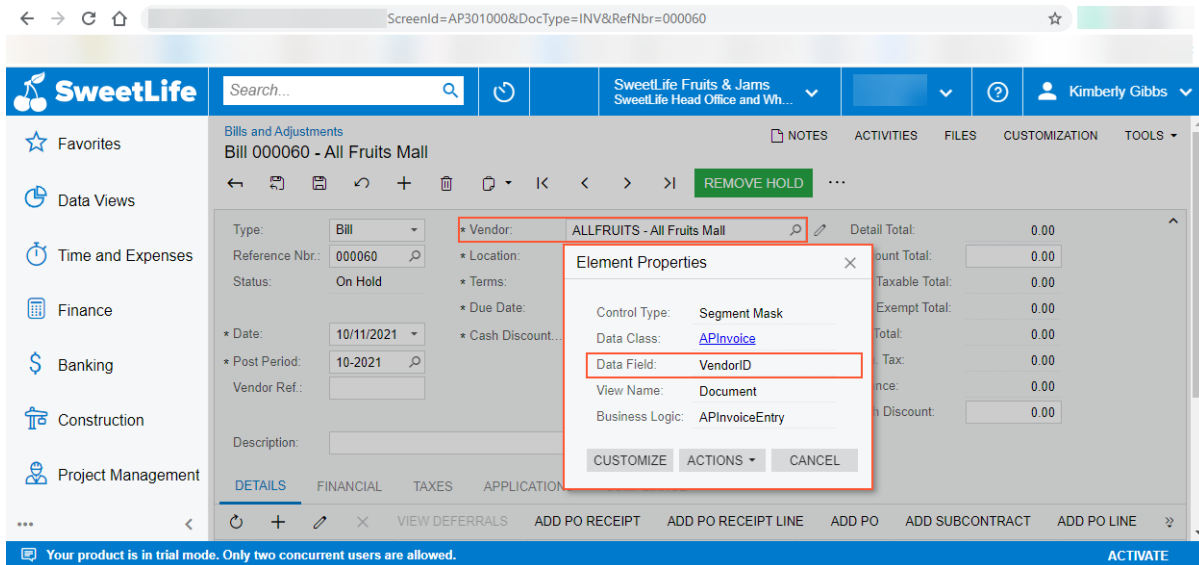



Figure: The inspection of a form element

After you find out which data fields correspond to all the elements whose settings you want to provide to the system when a user clicks the tile, you add the parameters for the tile. In Menu Editing mode with the workspace



open, you point to the tile and click **Edit Tile Parameters**  on the pop-up toolbar for the tile. In the **Tile Parameters** dialog box, which opens, you specify these parameters in the **Parameters** box (see the following screenshot) and click **OK**.

Tile Parameters

Icon:

Title:

Form:

Add optional URL parameters to apply to the selected form (see [examples](#)).


Parameters:


OK
CANCEL

*Figure: The specification of parameters for a tile*

## Deleting Unnecessary Tiles

If the employees of your organization do not use the functions in the predefined tiles, you can delete any tile from a workspace to have more space in the workspace.

To delete a tile, you switch to Menu Editing mode, open the needed workspace, and point at the tile. On the pop-up toolbar of the tile, click **Delete Tile** ; see the following screenshot.

 After you delete a predefined tile, you will be able to restore it only if you restore the default menu settings.

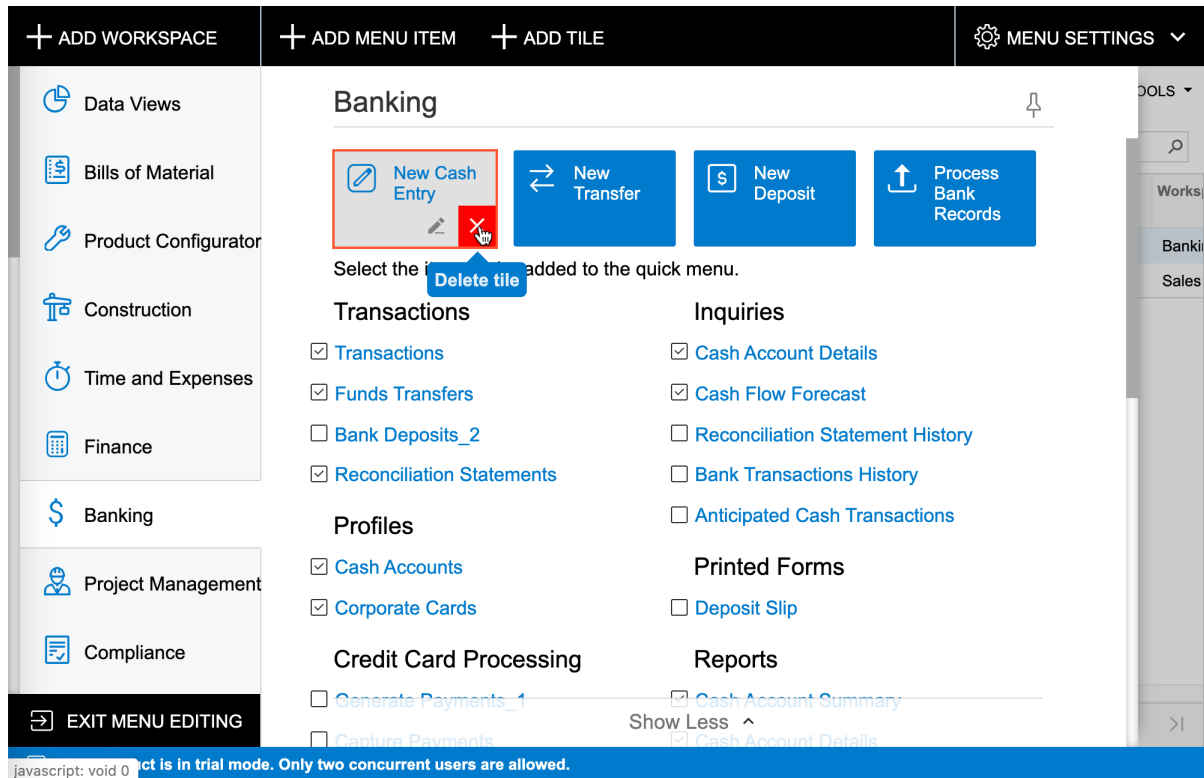


Figure: The deletion of a tile from a workspace

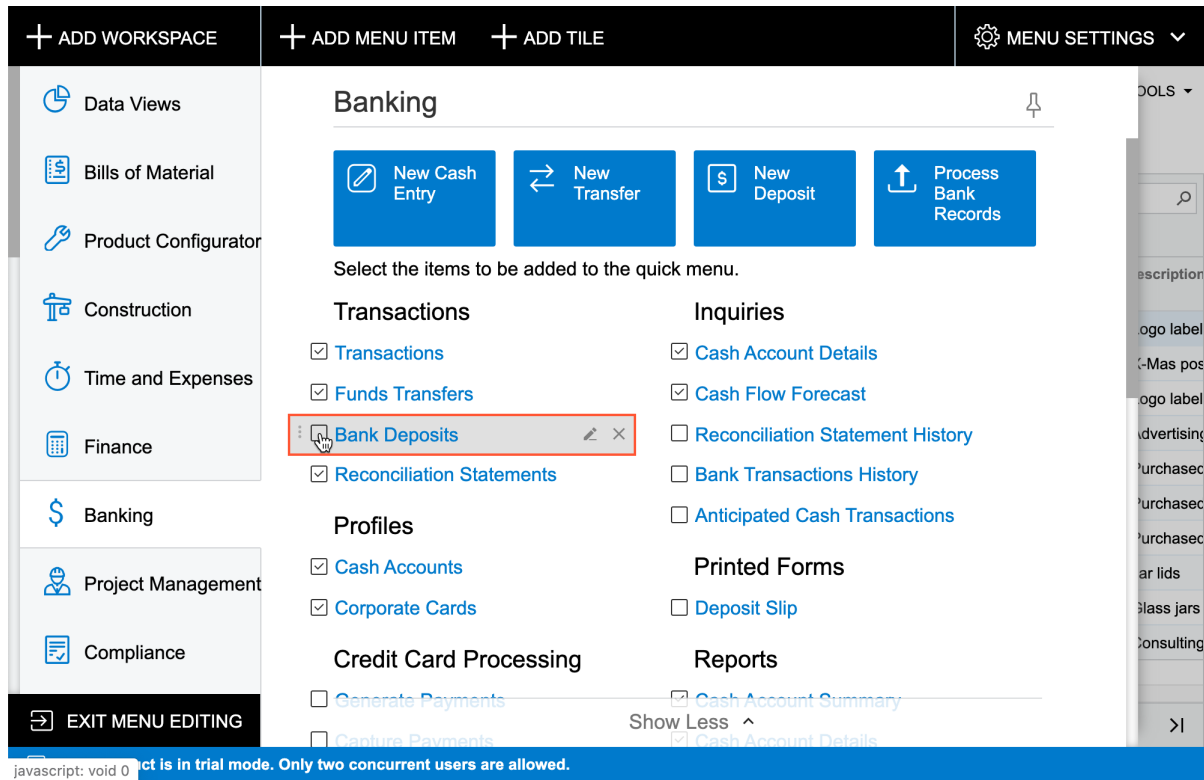
## Reordering Tiles

In Menu Editing mode, you can reorder the tiles in a workspace by dragging each tile to the necessary position.


## Configuring a Quick Menu

When you open a workspace, the system displays the quick menu, which consists of only those links to the forms, reports, and dashboards that were configured to be displayed on this menu, which includes the most frequently accessed items users need. To view the rest of the forms, reports, and dashboards, you click **Show All** in the workspace footer.

When you tailor the user interface, you can configure the default set of the links to be available in the quick menu. You switch to Menu Editing mode and open the needed workspace. In the workspace, you select the check boxes next to the forms that should be displayed on the quick menu. (See the following screenshot.) Also, you can clear the check boxes for those forms that are not displayed on the quick menu; they should be displayed only when a user clicks **Show All**.




*Figure: The selection of a check box for adding the link to the quick menu*

Users of your system can configure their own set of links on the quick menu of a workspace if the quick menu configured in the system does not meet their needs. On the workspace title bar, they click **Configure Quick Menu** (  ) to switch to Configuration mode. In this mode, they can select check boxes for the forms, reports, and dashboards whose links will be displayed on the quick menu (and clear check boxes for items to not be displayed).

## Removing Links to Forms, Reports, and Dashboards

If you are sure that users will not need a particular link to a form, report, or dashboard in a workspace, you can remove this link from the workspace. The form, report, or dashboard will remain in the system and can be added to a workspace.

To remove a link, you switch to Menu Editing mode and open the needed workspace. In the workspace, you point

to the form, report, or dashboard to be deleted; on the pop-up toolbar of the item, you click **Delete Link** (  ), as shown in the following screenshot, and confirm your action.

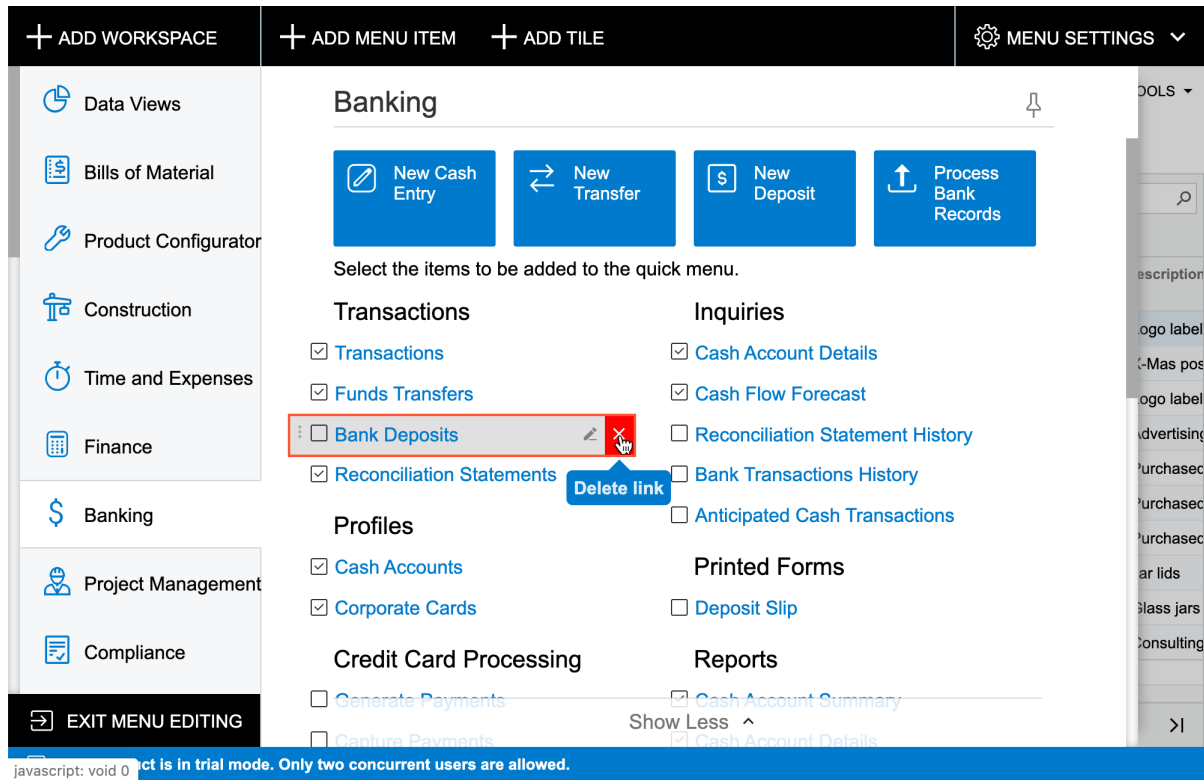


Figure: The removal of a link to a form from a workspace

## Adding Links to Forms, Reports, and Dashboards

If a link to an Acumatica ERP form, report, and dashboard is not in a workspace by default but the employees of your organization want to have it in this workspace, you can add the required link to the workspace.



If a link to a form, report, or dashboard has not been added to any workspace, you cannot find this form or report by using the **Search** box in the top pane of the Acumatica ERP screen.

In Menu Editing mode, you open the needed workspace. You click **Add Menu Item** on the top toolbar; in the **Select Forms** dialog box, which opens, you search for the needed form, report, or dashboard by typing its name or identifier in the **Search** box. To add the item, you select the check box next to it and click **Add and Close** to exit the dialog box (see the following screenshot).

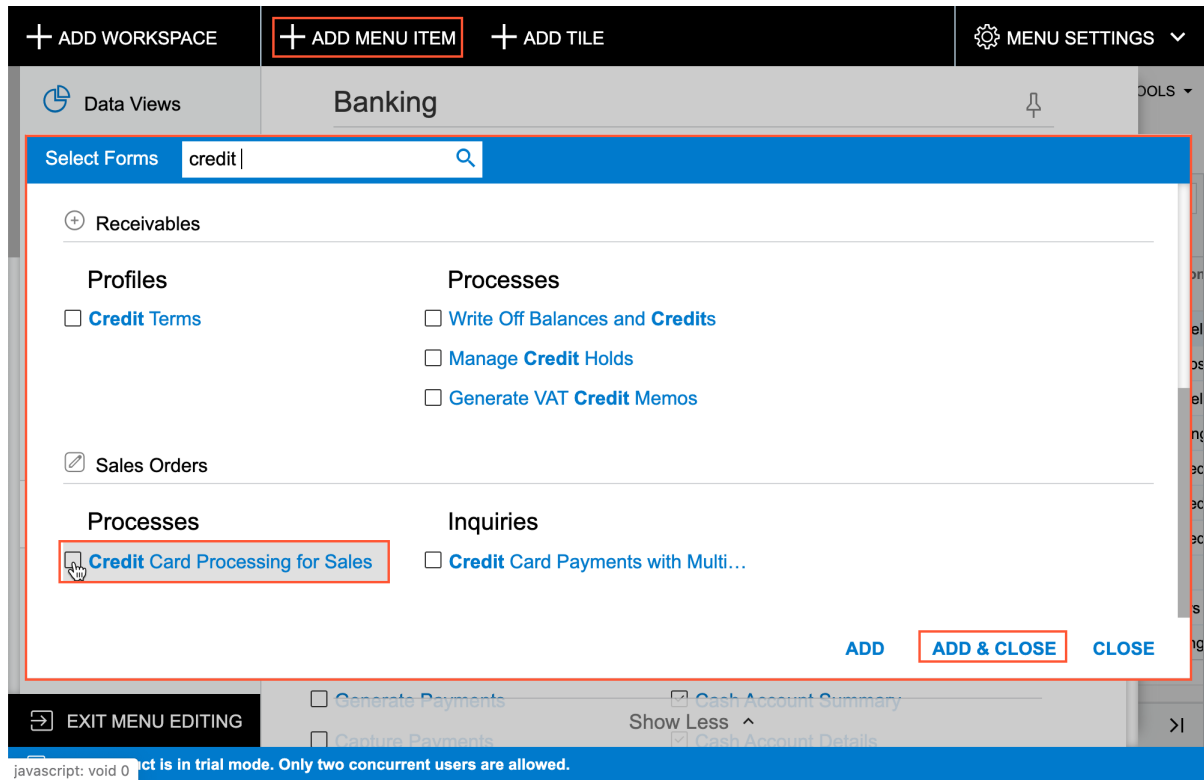


Figure: The addition of a link to the form to a workspace

## Managing Categories

In a workspace, the links to the forms, reports, and dashboards are grouped by categories. In Menu Editing mode, you can review the list of available categories by clicking **Menu Settings** in the upper right corner to open the **Workspaces Categories** menu. Because categories are shared among workspaces, changes to categories are applied to all workspaces. The order in which categories are displayed in workspaces is defined in this list. You can drag categories to change their order. A category is displayed in a workspace if at least one link to a form or report has been added to the category in this workspace.

If the available set of categories does not work for your employees, you can create a category that fits the terminology used by your company. To do this, in the **Workspaces Categories** menu, you click **Add Category**, and in the **Category Parameters** dialog box, you type the category name and click **OK**. (See the following screenshot.)

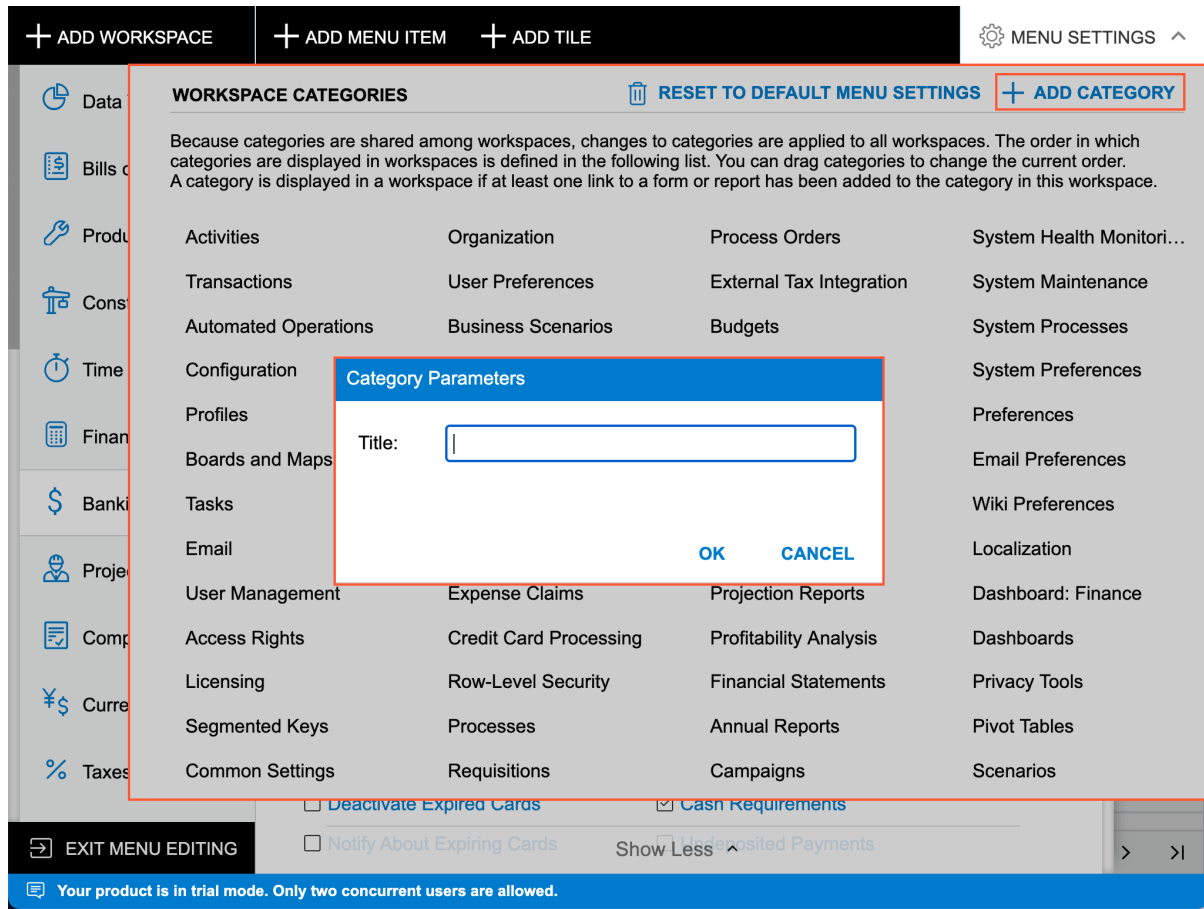


Figure: The addition of a new category


## Moving Links Between Categories

If the default grouping of links to forms, reports, and dashboards in a workspace is inconvenient for the employees of your organization, you can move these links to other existing categories.



Changes to grouping settings affect only the workspace in which they are changed.

If you need to move a link to an existing category that is displayed in a workspace, in Menu Editing mode with the workspace open, you can simply drag the link to the category. Alternatively, you can change a category, by editing the link parameters. You point at the form, report, or dashboard to be moved to another category; on the pop-up

toolbar of the item, you click **Edit Link Parameters** (  ) next to the link. The system opens the **Item Parameters** dialog box, where you can select another category for the link in the **Category** box (see the following screenshot) and then click **OK**.

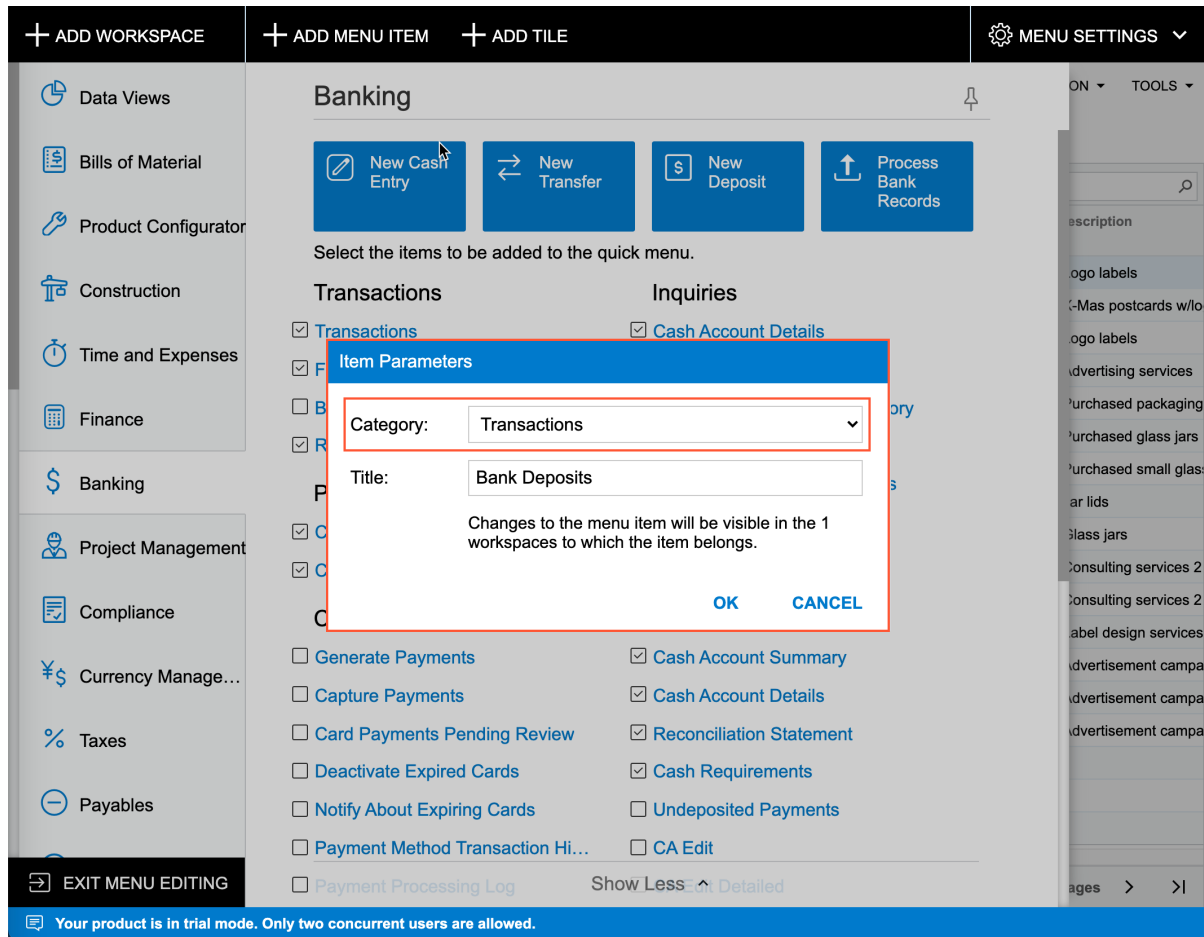


Figure: Changing of the category for a link to a form


## Reordering Links to Forms Within a Category

In Menu Editing mode with a workspace open, you can reorder links to forms, reports, and dashboards in a category by dragging each link to the necessary position.

## Changing a Form Title

If a title of a form is not optimal for your company's users, you can change the title to one your users are used to. The new title of the form will be used throughout the whole system.

To do this, in Menu Editing mode, you open the needed workspace. You point to the form, report, or dashboard to

be deleted; on the pop-up toolbar of the item, you click **Edit Link Parameters** (  ) next to the link to a form. The system opens the **Item Parameters** dialog box, where you can type the new name of the form in the **Title** box and click **OK** to close the dialog box.

## User Interface: Site Map

The system main menu is represented in tabular format on the [Site Map](#) (SM200520) form. The table lists all the forms available in the system. Sometimes it may be quicker to modify form details by using this form, instead of switching to Menu Editing mode.

## Modification of Form Details

On the [Site Map](#) (SM200520) form, you can make modifications to the organization of forms that are similar to those you can make in the Menu Editing mode. Specifically, you can do the following on this form:

- Rename a form by typing a new name in the **Title** column for the form
- Move a form to a different workspace by modifying the selection of workspaces in the **Workspaces** column for the form
- Make a form available in multiple workspaces by selecting the check boxes for multiple workspaces in the **Workspaces** column for the form
- Make a form hidden by clearing all selected check boxes in the **Workspace** column for the form
- Move a form to a different category within a workspace by selecting another category in the **Category** column for the form

## Addition of Custom Forms

Additionally, on the [Site Map](#) (SM200520) form, you can add to the site map custom forms that have been introduced by a customization project applied to the tenant. In most cases, a customization project contains the modification to the site map, and the form is added to the list when the project is published. If a developer has missed this step, you can add the custom form manually by entering its screen identifier.



The system adds a newly created generic inquiry, dashboard, or analytical report to the list of forms on the [Site Map](#) form when you save a new entity with the **Make Visible on the UI** check box selected on the [Generic Inquiry](#) (SM208000), [Dashboards](#) (SM208600), or [Report Definitions](#) (CS206000) form, respectively.

## User Interface: To Configure a Workspace

In Acumatica ERP, a workspace is a menu that a user can access by clicking a menu item on the main menu of the user interface. The workspace contains links to the forms, reports, and dashboards of a particular area of the product.

The following activity will walk you through the process of creating and configuring a workspace.



The following activity is based on the *U100* dataset. If you are using another dataset, or if any system settings have been changed in *U100*, these changes can affect the workflow of the activity and the results of the processing. To avoid any issues, restore the *U100* dataset to its initial state.

## Story

Suppose that a customer support manager of the Muffins & Cakes company has asked you, the system administrator, to create a new workspace for quick access to customer support representatives' most used forms. You have been asked to initially include the Customers (AR3030PL) and Cases (CR3060PL) forms in this workspace. The workspace should be pinned to the main menu panel by default.

Also, the manager requested that you add a new tile for the quick creation of cases from Allen's Bakery, the company's highest-priority customer, for juicer repair.



## Configuration Overview

For the purposes of this activity, in the *U100* dataset, the following tasks have been performed:

- On the [Companies](#) (CS101500) form, the Muffins & Cakes (*MUFFINS*) company has been configured.
- On the [Case Classes](#) (CR206000) form, the *JREPAIR* case class has been configured.
- On the [Customers](#) (AR303000) form, the *ABAKERY* customer account has been configured.

## Process Overview

You will inspect the **Business Account** and **Class ID** elements on the [Cases](#) (CR306000) form to find the corresponding data fields. On the [Case Classes](#) (CR206000) form, you will note the identifier of the *JREPAIR* case class. On the [Customers](#) (AR303000) form, you will note the identifier of the Allen's Bakery account.

You will switch to Menu Editing mode and will create the **Quick Access** workspace. You will add the **New Allen's Bakery Case** tile to the workspace. Then you will add links to the Customers (AR3030PL) and Cases (CR3060PL) forms to this workspace.

## System Preparation

Before you begin configuring a workspace, do the following:

1. Launch the Acumatica ERP website with the *U100* dataset preloaded, and sign in to the system as system administrator Kimberly Gibbs by using the following credentials:
  - **Username:** *gibbs*
  - **Password:** *123*
2. On the Company and Branch Selection menu in the top pane of the Acumatica ERP screen, make sure that the *Muffins Head Office and Wholesale Center* branch is selected. If it is not selected, click the Company and Branch Selection menu button to view the list of branches that you have access to, and then click *Muffins Head Office and Wholesale Center*.

## Step 1: Preparation for Configuration of the Tile

To gather the data you will need for tile configuration, do the following:

1. Open the [Cases](#) (CR306000) form.
2. Press Ctrl+Alt and click the **Class ID** element on the form.



As an alternative, you can click **Customization > Inspect Element** on the form title bar and then click the needed UI element.

3. In the **Element Properties** dialog box, which opens, note the value in the **Data Field** box, which is `CaseClassID`; close the dialog box.
4. Press Ctrl+Alt and click the **Business Account** element on the form.
5. In the **Element Properties** dialog box, which opens, note the value in the **Data Field** box, which is `CustomerID`; close the dialog box.
6. Open the [Case Classes](#) (CR2060PL) form.
7. In the **Case Class ID** column, click *JREPAIR*.

The system opens the [Case Classes](#) (CR206000) form with the *JREPAIR* class selected.

8. In the address bar of your browser window, note the value of the `CaseClassID` URL parameter, which is `JREPAIR`.
9. Open the *Customers (AR3030PL)* form.
10. In the **Customer ID** column, click *ABAKERY*.  
The system opens the *Customers (AR303000)* form with the Allen's Bakery account selected.
11. In the address bar of your browser window, note the value of the `AcctCD` URL parameter, which is `ABAKERY+++`.



The identifiers of customer accounts have a fixed length. If an identifier's length is less than the fixed one, the system replaces the missing symbols with spaces, which are transformed to `+` in a URL address.

You have collected the information needed for adding the requested parameter to the new tile, which is `CaseClassID=JREPAIR&CustomerID=ABAKERY+++`.

## Step 2: Adding the Workspace

To create the new workspace, do the following:

1. On the main menu of Acumatica ERP (lower left), click the **Open Configuration Menu** button, and then click **Edit Menu** to switch to Menu Editing mode.
2. On the top toolbar (upper left), click **Add Workspace**.
3. In the **Workspace Parameters** dialog box, which opens, specify the following settings:
  - **Icon:** `phone_iphone`
  - **Area:** `Other`
  - **Title:** `Quick Access`
4. Click **OK** to save your changes and close the dialog box.
5. In the upper right corner of the workspace title bar, click the **Pin to Main Menu Panel** button. Notice that the **Quick Access** menu item has been added to the main menu, as shown in the following screenshot.

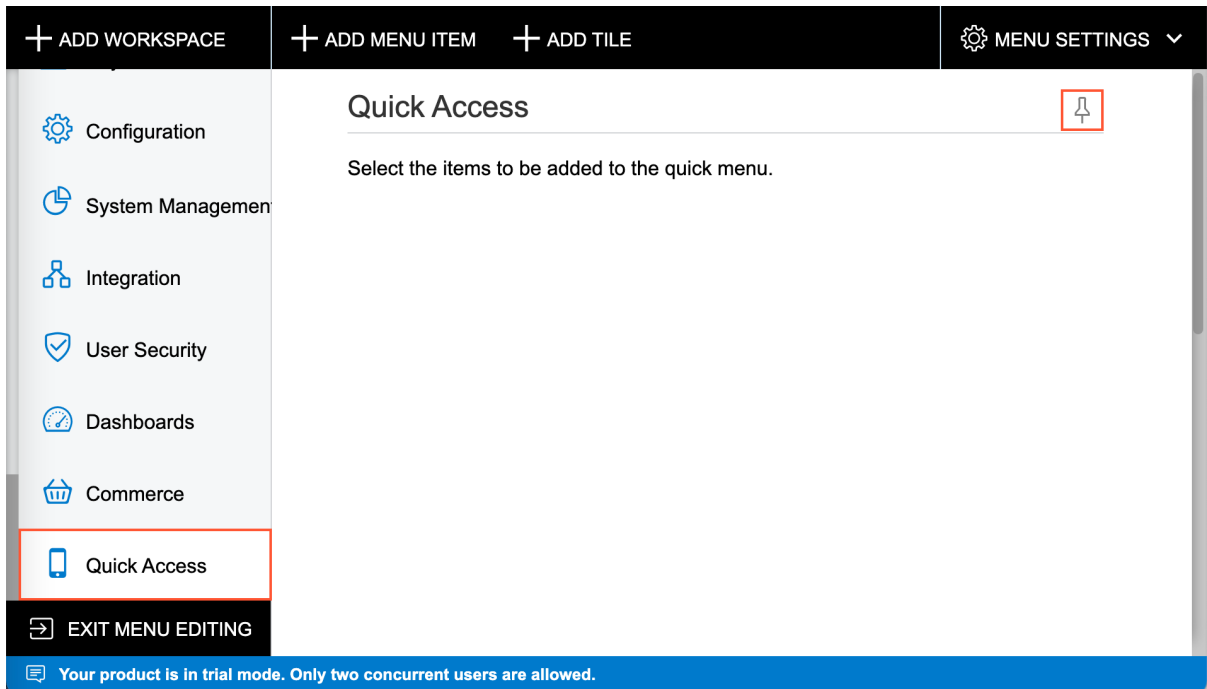


Figure: The Quick Access workspace in Menu Editing mode

### Step 3: Adding the Tile with Parameters

Now you will add the new tile for users to quickly create cases for juicer repair from Allen's Bakery. To add the requested tile with specific parameters to the workspace, do the following:

1. In Menu Editing mode of Acumatica ERP, while you are still reviewing the **Quick Access** workspace, on the top toolbar, click **Add Tile**.
2. In the **Tile Parameters** dialog box, which opens, specify the following settings:
  - a. **Icon:** *add*
  - b. **Title:** *New Allen's Bakery Case*
  - c. **Form:** *CR306000 - Cases*
  - d. **Parameters:** *CaseClassID=JREPAIR&CustomerID=ABAKERY+++*
3. Click **OK** to save your changes and close the dialog box.

The workspace with the newly added tile looks as shown in the following screenshot.

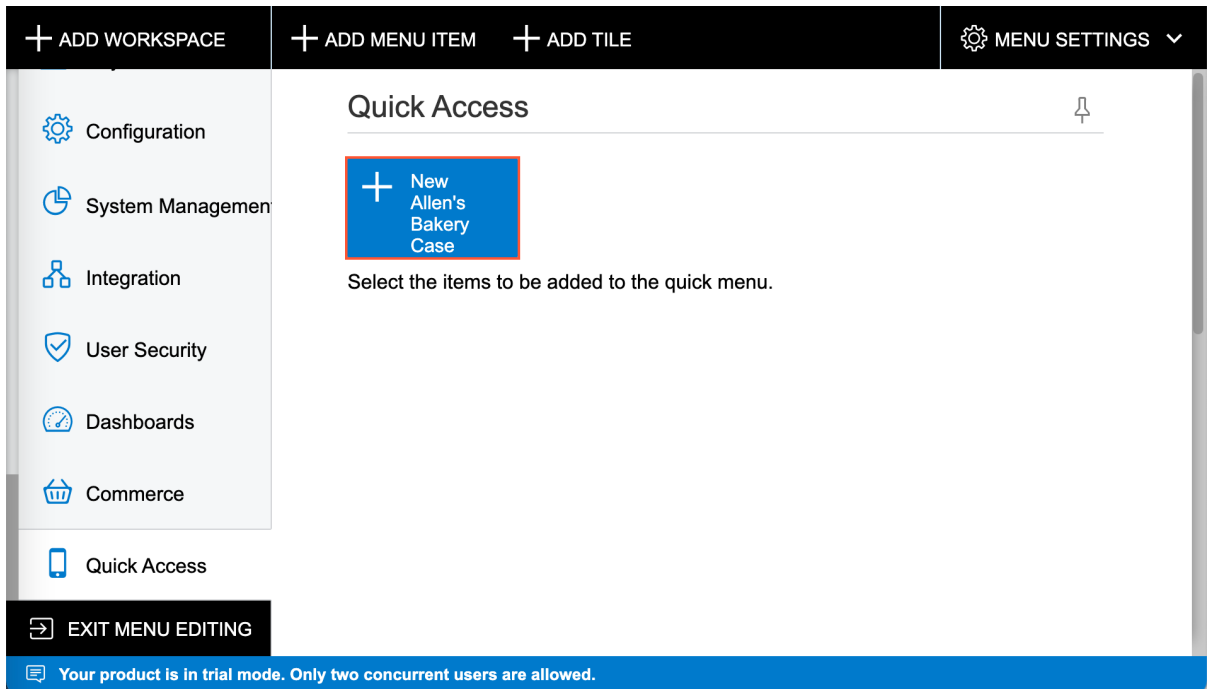


Figure: The new tile on the Quick Access workspace in Menu Editing mode

## Step 4: Adding Links to the Workspace

To add links to the forms to the **Quick Access** workspace, do the following:

1. In Menu Editing mode of Acumatica ERP, while you are still reviewing the **Quick Access** workspace, on the top toolbar, click **Add Menu Item**.
2. In the **Select Forms** dialog box, which opens, search for the *Customers (AR3030PL - Customers)* item in the **Profiles** category of the **Receivables** workspace, and select the unlabeled check box for it, as shown in the following screenshot.

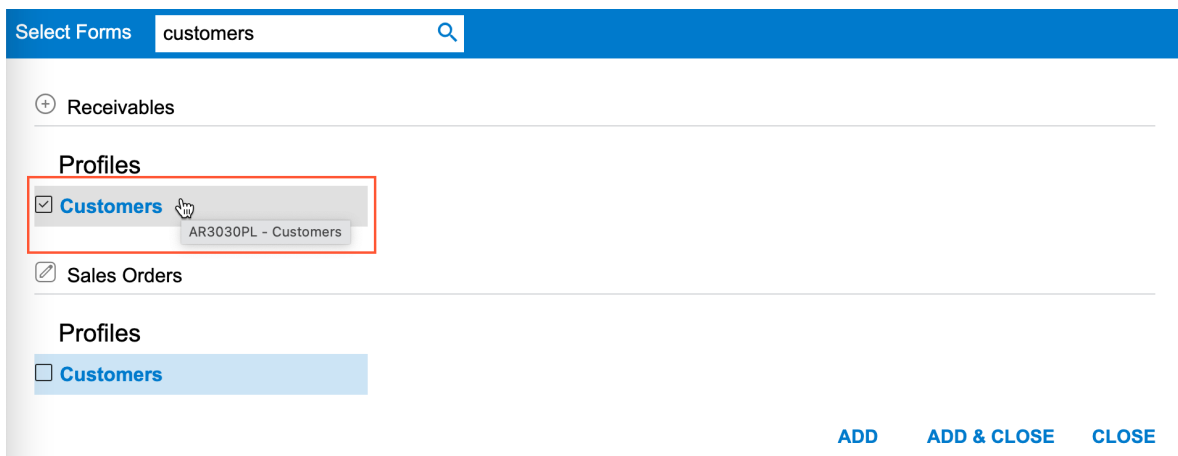
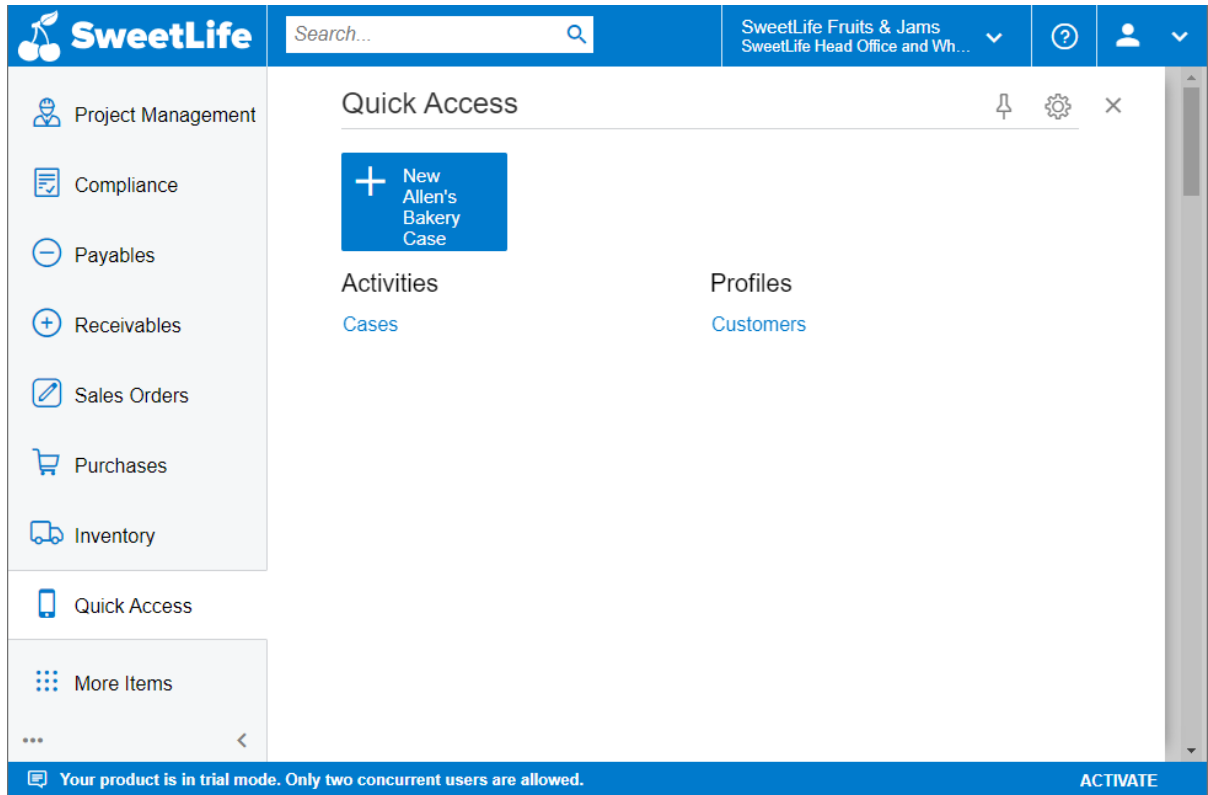


Figure: The selection of the Customers item in the Select Forms dialog box

3. Click **Add** to add the link to the form.
4. While you are still viewing the **Select Forms** dialog box, search for the *Cases (CR3060PL - Cases)* item in the **Activities** category of the **Support** workspace, and select the unlabeled check box for it.

5. Click **Add & Close**.
6. In the lower left corner of the screen, click **Exit Menu Editing** to save your changes and exit Menu Editing mode.

The **Quick Access** workspace should look as shown in the following screenshot.



*Figure: The Quick Access workspace*

7. While you are still viewing the **Quick Access** workspace, click the tile.
8. Verify that the system opens the **Cases** (CR306000) form, ready for submitting a new case with the following settings filled in:
  - **Class ID:** *JREPAIR - Repair of juicers*
  - **Business Account:** *ABAKERY - Allen's Bakery*

In this activity, you have added a new workspace, pinned it to the main menu panel, and populated it with a tile and links to the frequently accessed forms.

## Lesson 1.2: Using Company Logos

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### Company Logo Usage: General Information

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A logo is a unique graphical symbol of the company that makes this company recognizable among others. In Acumatica ERP, the company logo is displayed in the upper left corner. (In the out-of-the-box system, the Acumatica logo is displayed here.)

## Learning Objectives

In this chapter, you will learn how to display a company logo on the UI for your Acumatica ERP company or a company branch.

## Applicable Scenarios

You might need to configure the system to display a company or branch logo in the following cases:

- There are brand guidelines in your company, and the Acumatica ERP website needs to comply with those guidelines.
- There are multiple branches in your company, and each of them is a separate organization with a particular logo. Multiple employees have access to multiple branches. The branch logo in the upper left corner of the screen will help them easily recognize what branch they are currently signed in.

## Logo Requirements

We recommend that you upload the logo image in the SVG or PNG format. The recommended size of the logo image is 210 by 50 pixels.

## Company Logo

You use the [Companies](#) (CS101500) form to specify the logo for the company, including any of its branches. On this form, you select a particular company in your system, and on the **Visual Appearance** tab, you upload the logo image in the **Site Logo** section.

The system displays the uploaded image in the upper left corner of the screen. This logo is displayed for each branch of the company unless the branch has its own logo specified.

## Branch Logo

In some cases, you may need to specify a logo for an individual branch of the company. On the [Branches](#) (CS102000) form, you select the branch, and on the **Visual Appearance** tab, you upload the logo image in the **Site Logo** section.

The system displays the uploaded image in the upper left corner of the screen whenever you are signed in to the branch.

## Company Logo Usage: To Set Up a Logo

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The following activity will walk you through the process of configuring the UI to display a company logo.



The following activity is based on the *U100* dataset. If you are using another dataset, or if any system settings have been changed in *U100*, these changes can affect the workflow of the activity and the results of the processing. To avoid any issues, restore the *U100* dataset to its initial state.

## Story

Suppose that you are a system administrator at the Muffins & Cakes company. You need to configure the user interface to have a specific look and feel for the company, so you are starting with adding to the UI the company logo the designer has prepared for you.

## Configuration Overview

For the purposes of this activity, in the *U100* dataset, on the [Companies](#) (CS101500) form, the Muffins & Cakes (*MUFFINS*) company has been configured.

## Process Overview

In this activity, on the [Companies](#) (CS101500) form, you will specify the company logo of the Muffins & Cakes company that will be displayed in the upper left corner of Acumatica ERP for all branches of the company.

## System Preparation

Before you begin adding the company logo, do the following:

1. Download the [Muffins\\_logo.png](#) file.
2. On the Company and Branch Selection menu in the top pane of the Acumatica ERP screen, make sure that the *Muffins Head Office & Wholesale Center* branch is selected. If it is not selected, click the Company and Branch Selection menu button to view the list of branches that you have access to, and then click *Muffins Head Office and Wholesale Center*.

## Step: Setting up the Company Logo

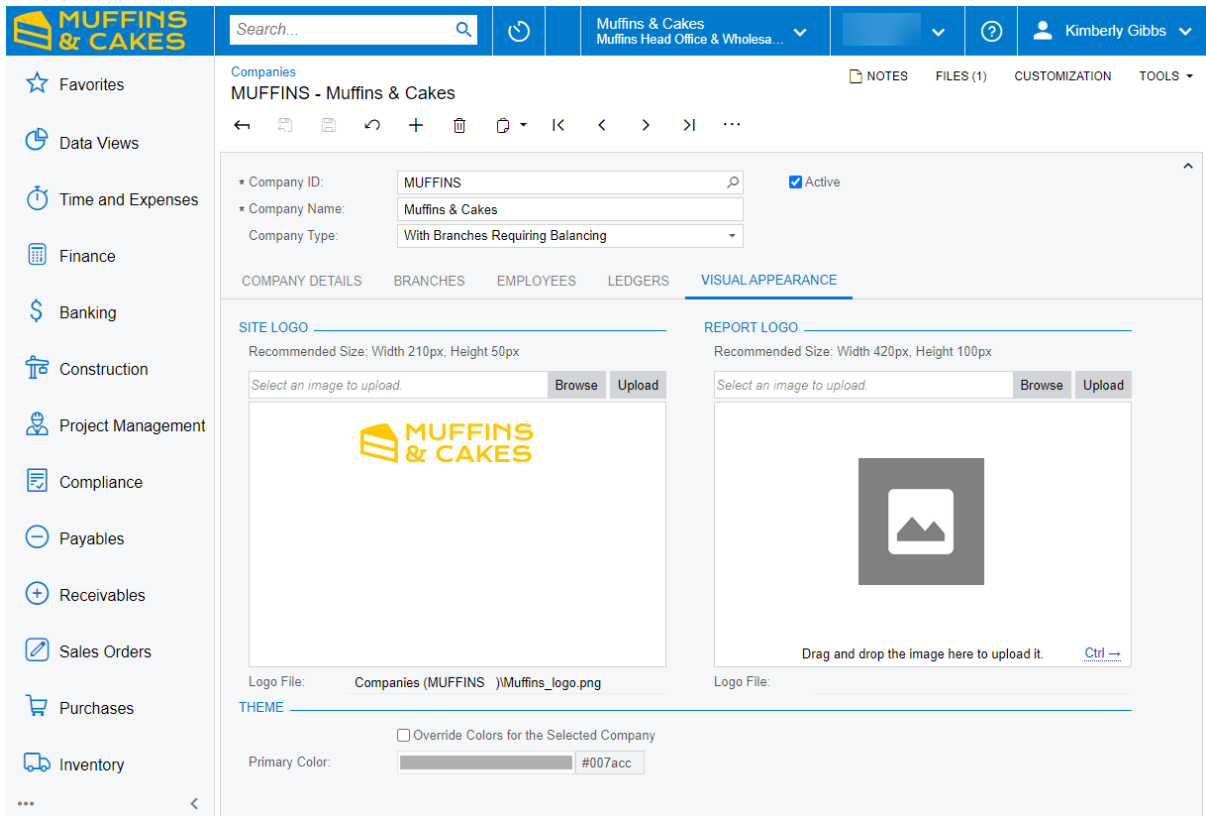
To set up the UI to display the company logo, do the following:

1. Open the Companies (CS1015PL) form.
2. In the **Company ID** column, click the *MUFFINS* link to open the [Companies](#) (CS101500) form with the *MUFFINS* company selected.
3. On the **Visual Appearance** tab, in the **Site Logo** section, click **Browse**.
4. In the dialog box that opens, browse to the folder where you have downloaded the course material files and select the [Muffins\\_logo.png](#) file.
5. In the **Site Logo** section, click **Upload**.

The preview of the new logo appears in the **Site Logo** section.

6. On the form toolbar, click **Save**.

The Acumatica ERP screen should look as shown in the following screenshot.



*Figure: New logo on the screen*

In this activity, you have set up the Muffins & Cakes company logo.

## Lesson 1.3: Modifying the Color Theme

### Color Theme: General Information

In Acumatica ERP, one of the facets of the interface style is the theme of the user interface: the color selections of different parts of the screen. You can select one of the predefined themes or a custom theme created for the tenant. The theme represents the package of the files that work together to determine the appearance of the system.

### Learning Objectives

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

- Change the primary color of the color theme selected for your Acumatica ERP tenant
- Override the primary color of the color theme selected for your Acumatica ERP tenant on the company and branch level

### Applicable Scenarios

You might need to change a color theme in the following cases:



- There are brand guidelines in your company, and the Acumatica ERP website needs to comply with those guidelines.
- There are multiple tenants in your Acumatica ERP instance, and some employees have access to multiple tenants. An individual color theme for each tenant will help those employees easily recognize to which tenant they are currently signed in.
- There are multiple companies on a tenant of your Acumatica ERP instance, and some employees have access to multiple companies. An individual color theme for each company will help those employees easily recognize what company they are working with.
- There are multiple branches in your company and each of them is a separate organization. Multiple employees have access to multiple branches. An individual color theme for a branch will help them easily recognize what branch they are currently working with.

## Predefined Color Themes

In Acumatica ERP, there are two predefined themes available in the system:

- *Default*: This theme, which is applied by default, consists primarily of warmer blue, light gray, and white colors.
- *Indigo*: This theme consists primarily of cooler blue, cold gray, and white colors.

The color theme is specified for a tenant in the **Interface Theme** box in the **General Defaults** section of the [Site Preferences](#) (SM200505) form.

## The Primary Color of the Default Theme

When you select the *Default* theme on the [Site Preferences](#) (SM200505) form, the **Primary Color** box appears under the **Interface Theme** box. You can leave the default color defined in the theme or select a different primary color to be used for the user interface of the tenant.



You can reset the changed primary color to the default color by clicking the **Reset to Default Colors** button next to the **Interface Theme** box on the [Site Preferences](#) form. The system will revert to the primary color for all companies and branches of the tenant.

## Specific Primary Color for a Company or a Branch

You change the color palette of the user interface by using the **Primary Color** box on the [Site Preferences](#) (SM200505) form. The selected color palette is applied to all companies and branches unless the settings of a specific company or branch provide the ability to override the site color and another color is selected. To change the color for a specific company or a branch, you do the following:

- For a company: In the **Theme** section of the **Visual Appearance** tab of the [Companies](#) (CS101500) form, you first select the **Override Colors for the Selected Company** check box, and then select the needed color in the **Primary Color** box or specify the hexadecimal number of the color in the box next to the **Primary Color** box.
- For a branch: In the **Theme** section of the **Visual Appearance** tab of the [Branches](#) (CS102000) form, you first select the **Override Colors for the Selected Branch** check box, and then select the needed color in the **Primary Color** box or specify the hexadecimal number of the color in the box next to the **Primary Color** box.

## Color Theme: To Change the Primary Color

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The following activity will walk you through the process of modifying the color theme for the Muffins & Cakes company.

### Story

Suppose that a manager of the Muffins & Cakes company has asked you to change the default color theme for the company's user interface so that it complies with the Muffins & Cakes company's style guidelines and corporate colors. Acting as a system administrator, you will change the primary color.

### Configuration Overview

For the purposes of this activity, in the *U100* dataset, on the [Companies](#) (CS101500) form, the Muffins & Cakes (*MUFFINS*) company has been configured.

### Process Overview

In this activity, you will change the primary color of the Muffins & Cakes company's UI by using the [Companies](#) (CS101500) form.

### System Preparation

Before you begin changing the color theme for the Muffins & Cakes company, do the following:

1. On the Company and Branch Selection menu on the top pane of the Acumatica ERP screen, make sure that the *Muffins Head Office & Wholesale Center* branch is selected. If it is not selected, click the Company and Branch Selection menu button to view the list of branches that you have access to, and then click *Muffins Head Office & Wholesale Center*.
2. Make sure that you have set up the company logo, as described in [Company Logo Usage: To Set Up a Logo](#).

### Step: To Change the Primary Color for a Company

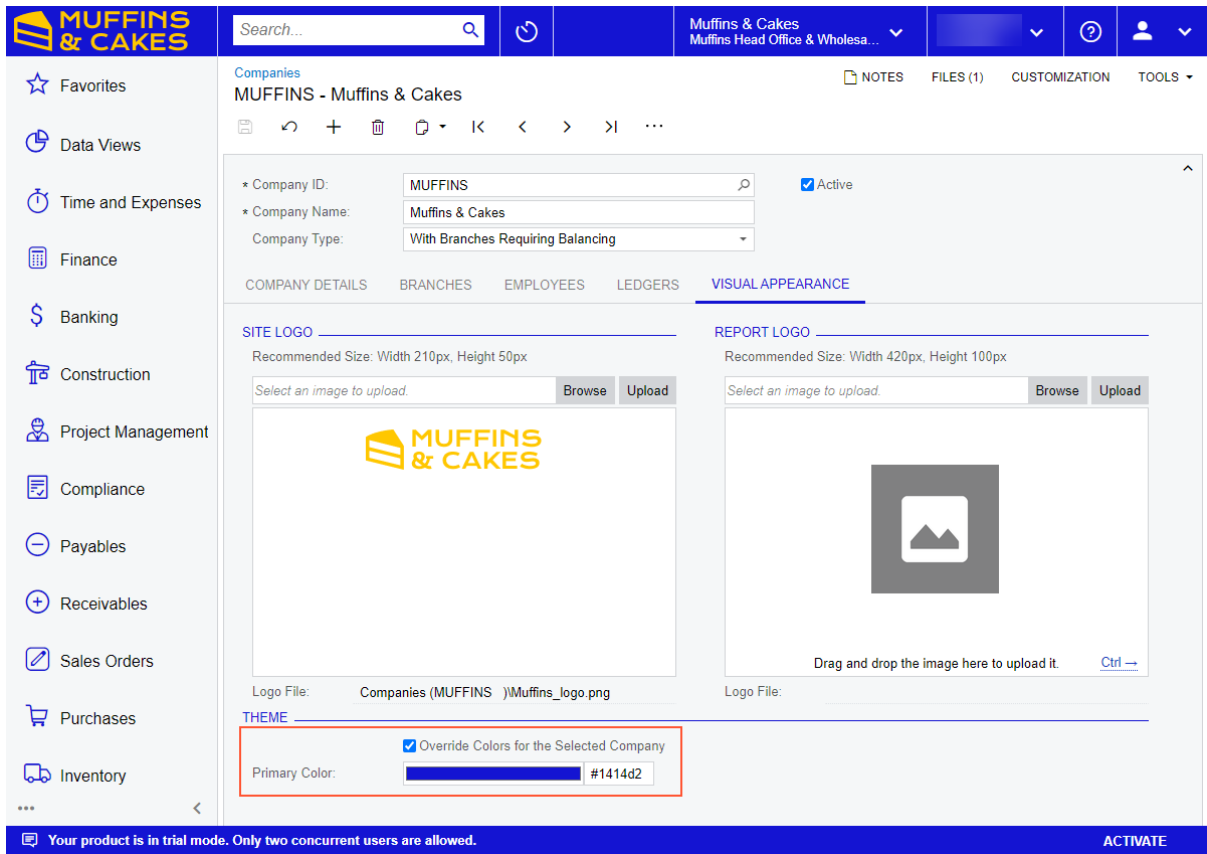
To change the color theme for your company, do the following:

1. Open the [Site Preferences](#) (SM200505) form.
2. Make sure that *Default* is selected in the **Interface Theme** box.
3. Open the Companies (CS1015PL) form.
4. In the **Company ID** column, click the *MUFFINS* link to open the [Companies](#) (CS101500) form with the *MUFFINS* company selected.
5. On the **Visual Appearance** tab, in the **Theme** section, specify the following settings:
  - a. **Override Colors for the Selected Company:** Selected
  - b. **Primary Color:** #1414d2

In the box on the left, review the color based on which the system will calculate the updated color theme.

6. On the form toolbar, click **Save**.

The system updates the color theme. It should look as shown in the following screenshot.



**Figure: The company color theme after the change of the primary color**

7. Switch to the SweetLife Head Office and Wholesale Center branch by using the Company and Branch Selection menu in the top pane to verify that the color theme is used for only the Muffins & Cakes company.

In this activity, you have changed the color theme for the company.

# Part 2: Managing Tenants, Snapshots, Customization Projects, and Scheduled Processing

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## Lesson 2.1: Managing Tenants by Using the Web Interface

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### Tenants: General Information

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In Acumatica ERP, a single instance of the application can serve multiple tenants, which represent separate companies. When you create an application instance, you create at least one tenant. Multiple tenants can use the same application instance with each having completely isolated data. The application looks identical to all tenants, but each tenant has exclusive access to only its data.

In this topic you will read about working with the tenants by using the web interface.



This topic provides information about managing tenants that have been created on a licensed instance. For details on trial and license modes, see [Preparing an Instance: Activation and Licensing](#).

### Learning Objectives

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

- Create a tenant for testing purposes
- Copy an existing tenant for testing purposes
- Convert a production tenant to a test tenant
- Delete a tenant

### Applicable Scenarios

You create a new tenant or multiple tenants in the following cases:

- When you are an implementation consultant and your client has businesses in different countries and thus needs companies with different base currencies. In this case, you create multiple production tenants: one for each company that uses a particular base currency.
- When you are an implementation consultant and your client runs separate lines of businesses that have different structures of their charts of accounts and preferences that cannot be shared, but also needs consolidated financial information. In this case, you create multiple production tenants for each business line and a tenant to be used for the consolidation.
- When you are an implementation consultant who has been tasked by your client with making some significant configuration changes or performing an irreversible operation. In this scenario, you should perform the required changes in a test environment—that is, a sandbox (an instance of Acumatica ERP that has no production tenants) with a test tenant that contains the full or partial data of the tenant in which the changes will occur. If you have applied the changes to the test tenant successfully, only then you should apply them to your live tenant.

- When you are a system administrator, and you have been asked to provide a learning environment for a new accountant. The new hire needs to be trained to perform all operations on the test tenant without affecting the live tenant.

## The System Tenant

When you install Acumatica ERP, the System tenant (which has a **Tenant ID** of 1) is always created automatically on the [Tenants](#) (SM203520) form.

The System tenant contains the predefined system data, such as roles, numbering sequences, and the wiki-based documentation. The system data is used by all tenants of the same application instance.

By default, the System tenant is hidden on all end-user forms. All other user-created tenants inherit the initial configuration and system data from the System tenant. That is, all the data available in the System tenant is visible to other tenants in the same database. During an application update or upgrade, all the data available in the System tenant is replaced, while the data created by users in user-created tenants remains unchanged.

A snapshot created for a user-defined tenant includes all custom data available in the database for the tenant account, but does not include any data contained in the System tenant. When a snapshot is being restored in the same database or another database, it uses the system data from the System tenant available in that database.

## Active and Test Tenants

You use the [Tenant List](#) (SM203530) form to view the list of tenants and their statuses (that is, if the tenant's status is *Active*, *Test Tenant*, or *Unlicensed*) and the [Tenants](#) (SM203520) form to add, delete, and manage a particular tenant.

Active tenants are the tenants that have the *Active* status and are used in the production environment. Your license determines the number of active tenants you can add to the instance, the number of concurrent users allowed, and the set of features you can activate for the instance.

Test tenants are the tenants that have the *Test Tenant* status. Test tenants are used to set up test environments that can be used for training purposes or for testing the system before performing potentially hazardous operations.

By default, a newly created tenant is assigned the *Active* status if the creation of this tenant is allowed by the applied license. When you exceed the license limit, the system starts creating tenants with the *Unlicensed* status. In this case, if you need an instance for testing purposes, you need to convert an active or unlicensed tenant to a test one by using the **Change to Test Tenant** command on the More menu.



If you are working with an unlicensed instance of Acumatica ERP, you can create only tenants with the *Test Tenant* status. The system applies limitations of the trial mode to these tenants. For details, see [Preparing an Instance: Activation and Licensing](#).

## Limitations to a Test Tenant on a Licensed Instance

You can create a virtually unlimited number of test tenants because the test tenants do not count toward the maximum number of tenants that your license allows; this is true regardless of the type of license you have.

Test tenants have the following limitations:

- The available features are limited by the license applied to the instance
- A test tenant cannot be converted back to an active tenant
- The watermark is added to all printed forms and reports
- An informational strip is displayed at the bottom of the screen: *You are currently using a test tenant that is not intended for production use.*

Also, a user will need to confirm their understanding of the limitations of a test tenant when the user signs in to the tenant for the first time, as demonstrated in the following screenshot.

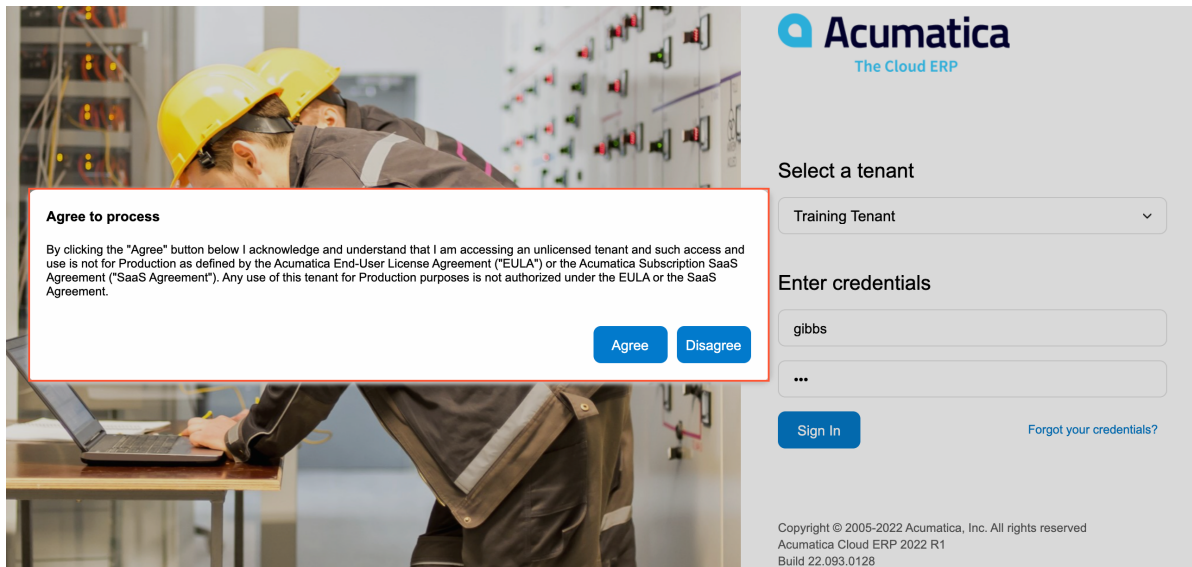


Figure: Confirmation dialog box for signing in to a test tenant

## Tenant Creation

When you install the Acumatica ERP application, you create at least one tenant. You can create more tenants by using the Acumatica ERP Configuration Wizard, or directly from the Acumatica ERP application by using the [Tenants](#) (SM203520) form.



We recommend that before you create the second tenant (excluding the System tenant) and all subsequent tenants, make sure that you have enough free space in the Acumatica ERP database. You can use the **View Space Usage** command on the More menu to open the [Space Usage](#) (SM203525) form and review the available space.

Alternatively, you can initiate the creation of a tenant by clicking the **Insert Tenant** button on the form toolbar of the [Tenant List](#) (SM203530) form. The system opens the [Tenants](#) form in a new window.

After the system adds the second non-System tenant, it signs you out automatically and switches to multitenant mode. It opens the Sign-In page with the updated list of tenants available. You can sign in to an already-configured tenant and copy the tenant data to the new one or restore a snapshot for the new tenant. Alternatively, you can sign in the new tenant and configure it from scratch.

With the system in multitenant mode, it will not sign you out every time you add a new tenant. You will remain on the [Tenants](#) form with the new tenant selected in the **Tenant ID** box. You can copy the data from other tenants or restore a snapshot for the new tenant right away.

You can delete unnecessary tenants on the [Tenants](#) form. The system will not sign you out after the deletion, until you have two available non-System tenants and delete one of them. In this case, the system signs you out automatically and switches to single-tenant mode.

## Tenant Users and the First Sign-In

When you create a tenant by using the web interface, you cannot specify a dataset to be inserted to the tenant as you can do when using the Acumatica ERP Configuration Wizard. The system creates a tenant with the data from the System tenant and adds a user with the same credentials as the user you used to create the tenant. You can sign in to the new tenant with the *admin* user account, which comes from the System tenant, or with the user that you used to create the tenant.

To quickly add data to the new tenant, you can restore a snapshot with the needed data without signing in the new tenant. After the snapshot is restored, you can sign in by using the credentials of any user added by the snapshot.

If you create a tenant by copying a configured tenant (for example, a production tenant)—that is, if you click **Copy Tenant** on the More menu of the *Tenants* (SM203520) form—the system inserts its configuration settings and entered data into the destination tenant. In this case, all users of the source tenant will have access to the destination tenant until you delete these users or change their passwords in the destination tenant.

You can review the list of the users who have access to a tenant on the **Users** tab of the *Tenants* form.

## Order of Tenants on the Sign-In Page

The system displays the list of available tenants on the Sign-In page in the same order as in the list displayed on the *Tenant List* (SM203530) form. To change the order of the tenants, you click the tenant you want to move and use the **Move Up** and **Move Down** buttons on the form toolbar.

## Creation of a Test Environment

To create an environment to be used for testing or learning purposes, you create a tenant either by copying your production tenant or creating a new empty tenant. We strongly recommend that you explicitly state the purpose of the test tenant in the **Login Name** box of the *Tenants* (SM203520) form, so that your users will not confuse it with the production tenants. The name specified in this box is displayed in the list of tenants on the Sign-In page.

Then you convert the newly created tenant to the test one. If the tenant has no data, you can configure it from scratch or restore a snapshot of an existing tenant to the new tenant.

## Recommendations for the Creation of Tenants with Similar Configurations

If you need to create multiple related tenants with similar configurations, first configure the most typical one (which you will use as a prototype). At each stage of implementation, create a snapshot that includes the full data of the prototype tenant. If the tenants are related businesses, you can enter the business accounts that are used by more than one tenant and add them to another snapshot, which can be used for each tenant.

When you create a snapshot, it appears on the list of available snapshots for the tenant on the **Snapshots** tab of the *Tenants* (SM203520) form. Snapshots of a specific tenant, by default, are visible to (and can be restored in) only this tenant. However, if needed, you can change the visibility of the snapshots to allow these snapshots to be visible to (and restored in) other tenants in the same database.

When you create another related tenant, select the snapshot to be used as a template for the new tenant by following these guidelines:

- Select a snapshot of a later stage of implementation if the new tenant is very similar to the prototype.
- Select a snapshot that features an earlier implementation stage if the new tenant is similar to the prototype only to some extent (to include only the configuration settings that are present in the new tenant).

## Tenants: To Create a Test Environment

The following activity will walk you through the process of creating a test environment with the data of an out-of-the-box company and the data of your production tenant.



The following activity is based on the *U100* dataset. If you are using another dataset, or if any system settings have been changed in *U100*, these changes can affect the workflow of the activity and the results of the processing. To avoid any issues, restore the *U100* dataset to its initial state.

## Story

Suppose that SweetLife Fruits & Jams has a new hire (a system administrator) who should complete training during their probation period. To complete the training, the new system administrator needs an empty tenant and a copy of the production tenant. Acting as the system administrator, you will create two test tenants, one with an out-of-the-box company and another with all the data of production tenant. When the new system administrator completes the training, you will delete the empty tenant.

## Process Overview

In this activity, you will do the following on the [Tenants](#) (SM203520) form:

1. Create a new tenant with an out-of-the-box company (*TrainingEmptyCompany*) and convert it to a test tenant.
2. Create another tenant with an out-of-the-box company (*TrainingU100*) and copy the tenant with the *U100* dataset preloaded to which you are currently signed in to the newly created test tenant.
3. Delete the *TrainingEmptyCompany* tenant.

## System Preparation

Before you start creating a test environment, you should do the following:

1. Make sure that on the Company and Branch Selection menu, in the top pane of the Acumatica ERP screen, the *SweetLife Head Office and Wholesale Center* branch is selected. If it is not selected, click the Company and Branch Selection menu button to view the list of branches that you have access to, and then click *SweetLife Head Office and Wholesale Center*.

## Step 1: Creating an Empty Tenant

To create a tenant that you will later convert to a test tenant, do the following:

1. Open the [Tenants](#) (SM203520) form.
2. On the form toolbar, click **Add New Record**.
3. In the **Tenant Name** box, type *TrainingEmptyCompany*.
4. In the **Login Name** box, type *TrainingEmptyCompany*.
5. On the form toolbar, click **Save**. Wait for the system to complete the operation.



If your Acumatica ERP instance had only one non-System tenant (the one created for performing the activities of this course), which means that the system was in single-tenant mode, the system now signs you out to switch to multitenant mode. You created the second non-System tenant in addition to the one to which you have been signed in.

If the website had more than one non-System tenant (which means that the system was already in multitenant mode), wait until the system completes the operation.

6. If you have been signed out, sign in to the tenant with the *U100* dataset preloaded (that is, the tenant that has been created for performing the activities of this course) by using the *gibbs* username and the *123* password.
7. If you have not been signed out, reload the webpage.
8. Switch to the *TrainingEmptyCompany* tenant by using the User menu in the right corner of the top pane. On the main menu, notice the list of the default workspaces.



- Switch to the *U100* tenant by using the User menu in the right corner of the top pane.

## Step 2 (Optional): Converting the Tenant to Be a Test Tenant

If you are working with an unlicensed instance of Acumatica ERP, you can skip this step, because you already created a test tenant in Step 1.

To convert the tenant you have just created to be a test tenant, do the following:

- Open the [Tenants](#) (SM203520) form.
- In the **Tenant ID** box, select *TrainingEmptyCompany*.
- On the More menu, click **Change to Test Tenant**.
- In the **Warning** dialog box, which opens, confirm the operation by clicking **OK**.
- In the Summary area, verify that the status is *Test Tenant*.

## Step 3: Creating a Tenant To Be a Copy of the Production Tenant

To create a tenant that you will later make a copy of the production tenant, do the following:

- While you are still on the [Tenants](#) (SM203520) form, on the form toolbar, click **Add New Record**.
- In the **Tenant Name** box, type *TrainingU100*.
- In the **Login Name** box, type *TrainingU100*.
- On the form toolbar, click **Save**. Wait for the system to complete the operation.
- Reload the webpage.
- Switch to the *TrainingU100* tenant by using the User menu in the right corner of the top pane. On the main menu, notice the list of the default workspaces.
- Switch to the *U100* tenant by using the User menu in the right corner of the top pane.

## Step 4: Copying the Tenant

To create yet another tenant by copying the tenant with the *U100* dataset preloaded (which you created for performing the activities of the course), do the following:

- While you are still on the [Tenants](#) (SM203520) form, in the **Tenant ID** box, select the tenant with the *U100* dataset preloaded.
- On the More menu, click **Copy Tenant**.
- In the **Copy Company** dialog box, which opens, select *TrainingU100* in the **Destination Tenant ID** box, and click **OK**.
- In the **Warning** dialog box, which opens, confirm the operation by clicking **OK**. Wait for the system to complete the operation.
- Notice the list of workspaces in the source tenant (the one to which you are currently signed in).
- Switch to the *TrainingU100* tenant by using the User menu in the right corner of the top pane.
- Verify that the tenant has the same set of workspaces as the source tenant has.

## Step 5: Deleting the Test Tenant

Suppose that the new hire no longer needs the tenant with an out-of-the-box company (*TrainingEmptyCompany*) you have created to train this employee.

To delete the tenant, do the following:

1. While you are still on the [Tenants](#) (SM203520) form, switch to the source *U100* tenant by using the User menu in the right corner of the top pane.
2. In the **Tenant ID** box, select *TrainingEmptyCompany*.
3. On the form toolbar, click **Delete**.
4. In the Warning dialog box that opens, confirm the operation by clicking **OK**. Wait for the system to complete the operation.



If after the deletion of the test tenant, only one more non-System tenant remains, the system now signs you out to switch to single-tenant mode.

5. If you have not been signed out, reload the webpage.
6. If you have been signed out, sign in to the system by using the *gibbs* username and the *123* password.
7. Open the User menu. Notice that the *TrainingEmptyCompany* is no longer listed on the menu.

You have created a training environment for a new hire. You have created a tenant with an out-of-the-box company and converted the tenant to be a test tenant. You have also created another tenant and then copied production data to this test tenant. When the new employee completed the training, you have deleted the test tenant with an out-of-the-box company.

## Self-Test Exercise

Now that you have learned about creation of tenants, try to apply this knowledge. Create at least two more tenants by using the [Tenants](#) (SM203520) form. Then by using the [Tenant List](#) (SM203530) form, change the order in which these tenants are listed on the Sign-In page.

## Lesson 2.2: Working with Snapshots

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### Snapshots: General Information

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A snapshot is the full or partial data of an Acumatica ERP tenant saved locally in the database of the instance to which the tenant belongs, or in a specified location. Snapshots can also be used as tenant templates when you need to add to an Acumatica ERP instance new tenants that are similar in configuration. Additionally, you can use snapshots to set up a test environment for your company where you test the configuration changes required for your company before you apply them to your production tenant.

A tenant used to take a snapshot is called a *source tenant*, and a tenant where you plan to restore a snapshot is called a *destination tenant*. Source and destination tenants may belong to the same instance or to different instances.

### Learning Objectives

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

- Take a snapshot of tenant-specific content
- Export a snapshot to external storage
- Review the `manifest.xml` file of the snapshot to find out its details
- Import a snapshot

- Restore a snapshot in a destination tenant

## Applicable Scenarios

You use snapshots in the following cases:

- You are an implementation consultant, and before starting the user acceptance testing (UAT) phase of an implementation, you need to prepare a test instance to perform UAT. The test instance should be identical to the one you have configured for production. You take a snapshot of the production tenant and restore it on the test instance dedicated to UAT.
- Your company has decided to test a new Acumatica ERP feature in a copy of your production tenant. Because you are a system administrator, you have been asked to create a test instance and import production data to it. You take a snapshot of the production tenant and restore it on a test instance dedicated to testing.
- You, as a system administrator, have been tasked with creating a tenant with a training dataset for a new employee of your company. You download a snapshot with a training dataset and restore it on the test tenant dedicated to the employee training.

## Snapshot Contents

When you take a snapshot on the [Tenants](#) (SM203520) form, the contents of the snapshot are the data from the SQL database tables included in the snapshot. The set of tables to be included in a snapshot is defined by the export mode that you select in the **Export Mode** box of the **Create Snapshot** dialog box. The following predefined export modes are available:

- *Full*: All data related to the tenant
- *Full except Attachments and Wiki*: The full data related to the tenant, excluding attachments and wiki articles
- *Full except Attachments*: The full data related to the tenant, excluding attachments
- *Settings and Business Accounts*: The tenant's complete set of configuration settings and business accounts, including attachments
- *Settings and Business Accounts except Attachments*: The tenant's complete set of configuration settings and business accounts, excluding attachments
- *Settings except Attachments*: The tenant's configuration settings, excluding attachments
- *Settings only*: The tenant's configuration settings, including attachments

You select the export mode based on the intended use of the snapshot. If you need a snapshot for testing purposes or for making a tenant template, configuration settings may be enough for you. If you need a complete copy of a tenant, you should select an option that includes full tenant data.



The table that stores data related to AP documents recognition (dbo.RecognizedRecord) is excluded from the snapshot process.

You can add a custom export mode if the predefined set does not suit your needs (for example, for data security reasons). For details, see [Snapshots: Custom Snapshot Configurations](#).

## Snapshot Creation

You take a snapshot of the configuration and data of a tenant by using the [Tenants](#) (SM203520) form. For a snapshot, you specify which data you want to include by selecting one of the available export modes. Data from published customizations is a part of the database and is always included in snapshots. When you take a snapshot, any previously taken snapshots are not included in the new snapshot.



You can have a virtually unlimited number of snapshots. The only limitation is disk space: Snapshots are stored in the database, thus occupying disk space. We recommend that before you take or import a snapshot, you make sure that you have enough free space in the Acumatica ERP database. You can use the **View Space Usage** command on the More menu of the *Tenants* (SM203520) form to open the *Space Usage* (SM203525) form and review the available space.

The process of creating a snapshot may take a significant amount of time because the database tables are copied one by one for a snapshot, and this process sometimes results in errors. For example, a user may save changes to documents that have been partially copied; consequently, the data in the snapshot would be corrupted. Therefore, if you intend to restore the snapshot in a production system, we strongly recommend that you create snapshots in maintenance mode (that is, when the system is locked out for maintenance, as described in *To Schedule the System Lockout*).

For testing purposes, you can create snapshots without first locking out the system. In this case, a warning message will appear, and the system will mark this snapshot as unsafe. (The **Is Safe** column on the **Snapshots** tab of the *Tenants* form reflects whether the snapshot is safe.)



Because the process of taking a snapshot could result in errors, we do not recommend that you use snapshots to back up data. We recommend that you instead use database management applications to back up the database of your Acumatica ERP instance.

## Snapshot Storage, Update, and Deletion

Once a snapshot is created, it appears on the **Snapshots** tab of the *Tenants* (SM203520) form. Tenant snapshots are stored in the database as tenants with special tenant IDs (negative integers). When you update the application and the database, the stored snapshots are updated as well.

To free disk space, you can export snapshots to store them in external storage, and then delete snapshots that are obsolete or stored externally. Exported snapshots can later be imported back into the system. For details, see *Snapshots: Export and Import*.



Snapshots stored in external storage are not updated when you update your application instance. If a snapshot has a version older than the version of the system, you cannot import the snapshot to the system.

Deleting a snapshot is a permanent operation—you will not be able to recover a deleted snapshot.

## Snapshot Visibility Across Tenants

In a multitenant configuration, you can sign in to one tenant and then take a snapshot of any tenant available to you, whether it is the tenant you signed in to or another tenant that you can access. The snapshots you take are stored within the tenant you are signed in to when you take them; you will not be able to access them if you sign in to another tenant.

Within the base tenant, when a snapshot is taken, it is associated with its source tenant. That is, to see the snapshot in the list on the **Snapshots** tab, you should select its source tenant in the **Tenant ID** box of the Summary area of the *Tenants* (SM203520) form. While a snapshot is associated with a tenant (that is, while the associated tenant is displayed for the snapshot in the **Tenant ID** column on the **Snapshots** tab), you can export or restore the snapshot only for the associated tenant.

To make the snapshot available for export or restoration regardless of the selected tenant, you can select a particular snapshot on the **Snapshots** tab and change its visibility by clicking **Change Visibility** on the table toolbar. The system removes the association and clears the **Tenant ID** column for the snapshot. Then the snapshot is available on the **Snapshots** tab, regardless of the tenant you have selected in the **Tenant ID** box of the Summary area. You can export or restore the snapshot for any tenant selected in the **Tenant ID** box of the Summary area.

Also, you can move a snapshot between tenants (for security reasons, for example). You take a snapshot of the source tenant, remove the association, select the destination tenant in the **Tenant ID** box of the Summary area, and click **Change Visibility** on the table toolbar of the **Snapshots** tab for the selected snapshot. The system associates the snapshot with the destination tenant, and the snapshot is not available for other tenants of the system, even its source tenant.

## Snapshot Restoration

When you take a snapshot, it is saved to the tenant to which you are currently signed in. In a multitenant configuration, you can sign in to one tenant and move or share snapshots between other tenants that you can access by changing snapshot visibility. Alternatively, you can export a snapshot, store it in an external location, and import it to the needed tenant. For details on exporting and importing snapshots, see [Snapshots: Export and Import](#).

In the **Tenant ID** box of the Summary area of the [Tenants](#) (SM203520) form, you select the tenant for which you want to restore a snapshot. The system displays the snapshots available for the selected tenant on the **Snapshots** tab. These snapshots can be imported, moved from another tenant, or shared by all tenants of the instance. By restoring a snapshot, you set the data of the selected tenant to the state of the source tenant when the snapshot was taken.



You can have a virtually unlimited number of snapshots. The only limitation is disk space: Snapshots are stored in the database, thus occupying disk space. We recommend that before you take or import a snapshot, you make sure that you have enough free space in the Acumatica ERP database. You can use the **View Space Usage** command on the More menu of the [Tenants](#) (SM203520) form to open the [Space Usage](#) (SM203525) form and review the available space.

If you restore an unsafe snapshot (one that was not taken in maintenance mode), the system displays a warning message and adds a warning that a user can view in the **About Acumatica** dialog box by clicking **Tools > About...** on the form title bar.



We recommend that you avoid restoring unsafe snapshots in a production system, because these snapshots can create corrupted data.

## Snapshots: Export and Import

Snapshots are stored in the database. To free disk space, you can export snapshots to store them in external storage, and then delete obsolete and already-exported snapshots. Exported snapshots can later be imported back into the instance.

Also, to move a snapshot to another instance, you export the snapshot from the source instance and import it to the destination instance.

In this topic, you will read about the details of snapshot export and import.

### Snapshot Export

Before it can be exported to external storage, a snapshot should be *prepared*—that is, the snapshot's data should be saved to a file. You can save it in binary or XML format. A snapshot in binary format takes less space. Saving the snapshot in XML format may be useful if you need to compare snapshot contents line by line.

When you export a snapshot, the system copies the prepared file to external storage; the snapshot itself remains in the database.

An exported snapshot is saved as a ZIP archive. It contains the exported data in a collection of files with the `.adb` or `.xml` extension and the description of the snapshot in the `manifest.xml` file.

## Validation of the Snapshot Before Import

The `Manifest.xml` file includes the snapshot details that were generated when the snapshot was created. If you need to import the data of a snapshot to a tenant from an instance that is different from the instance of a source tenant, you need to determine whether the destination instance is compatible with the snapshot. In the `manifest.xml` file, you can find the following information, which can help you understand whether your instance is compatible with a snapshot:

- The Acumatica ERP version of the instance that has been used to prepare the snapshot (that is, the instance of the source tenant).
- The snapshot contents—that is, the export mode selected during the creation of the snapshot.
- An indicator of whether the snapshot was created in system maintenance mode. If it was, the snapshot is marked as safe.
- The list of customization packages that were applied to the instance of the source tenant and whose custom data was included in the snapshot. These packages will be added to the destination tenant. You will specify whether to include custom data during snapshot import.

## Snapshot Import

You can restore snapshots that are saved in the database of the instance of a destination tenant.

To do this, you import a snapshot to a selected tenant on the [Tenants](#) (SM203520) form. The version of the snapshot (that is, the version of the instance used to take the snapshot) must match the version of the application instance in the destination.



You can have a virtually unlimited number of snapshots. The only limitation is disk space: Snapshots are stored in the database, thus occupying disk space. We recommend that before you take or import a snapshot, you make sure that you have enough free space in the Acumatica ERP database. You can use the **View Space Usage** command on the More menu of the [Tenants](#) (SM203520) form to open the [Space Usage](#) (SM203525) form and review the available space.

When you import a snapshot, you need to specify whether the system should import custom data from the snapshot. Custom data is data entered into the elements that were added by customization packages applied to the instance where the snapshot was taken. This operation is controlled with the **Include Data From Custom Columns** check box in the **Upload Snapshot Package** dialog box.

Also, you need to specify whether the system should preliminarily match the data from the snapshot with the database structure in your current Acumatica ERP instance, to reveal any conflicts before the system imports the snapshot. To enable this checking, you select the **Check Database Structure Before Import** check box in the **Upload Snapshot Package** dialog box.

Customization projects may include changes in the database structure (such as changing a field length). These changes may cause conflicts during the insertion of data from the snapshot to your current Acumatica ERP instance (for example, if the length of the inserted field exceeds the maximum length in the database of your current Acumatica ERP instance). When this check is performed and there are conflicts, the system returns an error message that lists all fields from the snapshot that have caused conflicts. You can resolve these conflicts by changing the database structure in your current Acumatica ERP instance.



If you have access to the destination instance database, you can resolve conflicts directly in the database management studio; otherwise, you can develop a customization package with a script that resolves the conflicts.

The following table summarizes our recommendations regarding the selection of operations during the import of a snapshot. These recommendations depend on the set of customization packages applied to the source instance when a snapshot was taken and the set applied to the destination instance when a snapshot is to be imported.

**Table: Recommended Settings for the Import of the Snapshot**

Instance of the Source Tenant	Instance of the Destination Tenant	Settings	Source and Destination Tenants Belong to the Same Instance	Source and Destination Tenants Belong to Different Instances
No customization packages had been applied when the snapshot was taken.	No customization packages are applied when the snapshot is to be imported.	<b>Include Data From Custom Columns</b>	The system ignores the value.	The system ignores the value.
		<b>Check Database Structure Before Import</b>	The system ignores the value.	The system ignores the value.
No customization packages had been applied when the snapshot was taken.	Some customization packages are applied when the snapshot is to be imported.	<b>Include Data From Custom Columns</b>	The system ignores the value.	Cleared
		<b>Check Database Structure Before Import</b>	Cleared	Selected
Some customization packages had been applied when a snapshot was taken.	No customization packages are applied when the snapshot is to be imported.	<b>Include Data From Custom Columns</b>	Cleared	Cleared
		<b>Check Database Structure Before Import</b>	Cleared	Selected
The set of customization packages applied to the source instance when a snapshot was taken is the same as the set of packages applied to the destination instance when the snapshot is to be imported.		<b>Include Data From Custom Columns</b>	Selected, if want to share custom data between tenants.	Selected, if want to share custom data between tenants.
		<b>Check Database Structure Before Import</b>	Cleared	Cleared
The set of customization packages applied to the source instance when a snapshot was taken is different from the set of packages applied to the destination instance when the snapshot is to be imported.		<b>Include Data From Custom Columns</b>	The scenario is not applicable.	Cleared
		<b>Check Database Structure Before Import</b>	The scenario is not applicable.	Selected

An imported snapshot is stored in the database, and you can restore the data from the snapshot whenever you want.

## Snapshots: To Take, Restore, and Delete a Snapshot

The following activity will walk you through the process of taking, restoring, and deleting a snapshot for the tenants of an instance.



The following activity is based on the *U100* dataset. If you are using another dataset, or if any system settings have been changed in *U100*, these changes can affect the workflow of the activity and the results of the processing. To avoid any issues, restore the *U100* dataset to its initial state.

## Story

Suppose that SweetLife Fruits & Jams has a new hire, Alberto Jimenez, who should complete a training course during his probation period. To complete the training, the new employee needs a copy of the production tenant. Acting as a system administrator, you need to create a test tenant for the new employee. To save space, you will take a snapshot whose content is limited to settings and business accounts of the production tenant, instead of copying all production tenant data. You will toggle the snapshot visibility and restore this snapshot for the test tenant. Then you will delete the snapshot.

## Process Overview

You will use the [Tenants](#) (SM203520) form to create a test tenant. Then you will create a snapshot whose content is limited to settings and business accounts. You will toggle the snapshot visibility and restore it to the test tenant.

On the same form, you will then delete the snapshot.

## Step 1: Creating a New Tenant

To create a new tenant, do the following:

1. Open the [Tenants](#) (SM203520) form.
2. On the form toolbar, click **Add New Record**.
3. In the **Tenant Name** box of the Summary area, type `JimenezF100`.
4. In the **Login Name** box, type `JimenezF100`.
5. On the form toolbar, click **Save**. Wait for the system to complete the operation.



If your Acumatica ERP instance had only one non-System tenant (the one created for performing the activities of this course), which means that the system was in single-tenant mode, the system now signs you out to switch to multitenant mode. You created the second non-System tenant in addition to the one to which you have been signed in.

If the website had more than one non-System tenant (which means that the system was already in multitenant mode), wait until the system completes the operation.

6. If you have been signed out, sign in to the tenant with the *U100* dataset preloaded (that is, the tenant you created to perform the activities of this course) by using the *gibbs* username and the *123* password.
7. If you have not been signed out, reload the webpage.
8. Switch to the *JimenezF100* tenant by using the User menu in the right corner of the top pane.
9. Verify that a few default workspaces are available in the tenant, as shown in the following screenshot.



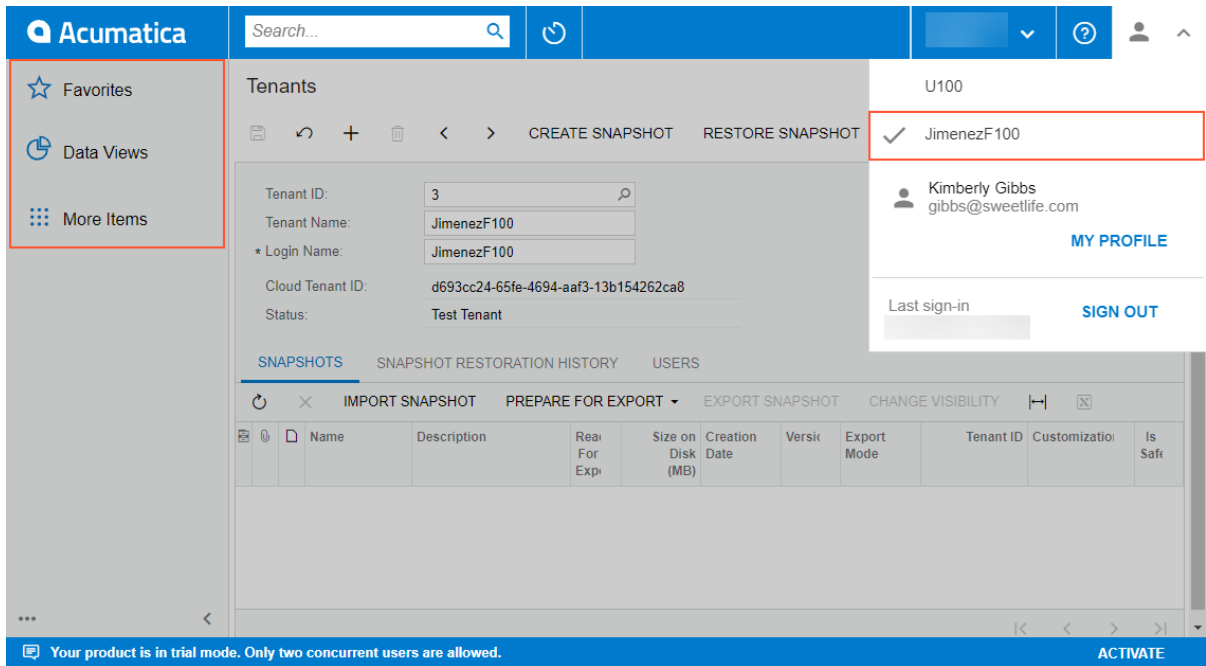


Figure: The new tenant with the default workspaces

## Step 2: Creating a Snapshot and Toggling Its Visibility

To create a snapshot for the new employee, do the following:

1. While you are remaining on the **Tenants** (SM203520) form, switch to the **U100** tenant by using the User menu in the right corner of the top pane.
2. In the **Tenant ID** box of the Summary area, select the tenant with the **U100** dataset preloaded (that is, the tenant you have created for performing the activities of this course).
3. On the form toolbar, click **Create Snapshot**.
4. In the **Warning** dialog box, which opens, click **OK**.
5. In the **Create Snapshot** dialog box, specify the following settings:
  - **Description:** Snapshot for Jimenez
  - **Export Mode:** Settings and Business Accounts
6. Click **OK**. Wait for the system to complete the operation. The system adds the record with the summary information of the snapshot to the **Snapshots** tab. Notice that the tenant name in the **Tenant ID** column is the name of the tenant used as the source (see the following screenshot).

The screenshot shows the 'Tenants' interface. At the top right, there are tabs for 'CUSTOMIZATION' and 'TOOLS'. Below the title bar, there are navigation icons and buttons for 'CREATE SNAPSHOT' and 'RESTORE SNAPSHOT'. The main area is divided into a 'Summary' section and a 'Snapshots' table. In the Summary section, the 'Tenant ID' field is highlighted with a red box and contains the value '2'. Other fields include 'Tenant Name' (U100), 'Login Name' (U100), 'Cloud Tenant ID' (0466d3b6-4883-4a2a-b678-927ac9135a5a), and 'Status' (Test Tenant). The Snapshots table has columns for Name, Description, Ready For Export, Size on Disk (MB), Creation Date, Version, Export Mode, Tenant ID, Customization, and Is Safe. The first row in the table is highlighted, showing a snapshot named 'U100\_20...' with a description 'Snapshot for Jimenez' and a 'Tenant ID' of 'U100 (2)'. The 'Tenant ID' column in the table is also highlighted with a red box.

**Figure:** Name of the source tenant specified for the snapshot

7. On the table toolbar of the **Snapshots** tab, click **Change Visibility**, and verify that the **Tenant ID** column is cleared for the snapshot.



If the tenant is not specified in the **Tenant ID** column on the **Snapshots** tab, the snapshot is available for export or restoration regardless of the tenant that you select in the **Tenant ID** box of the Summary area.

### Step 3: Restoring the Snapshot

To restore the snapshot, do the following:

1. While you are still on the [Tenants](#) (SM203520) form, in the **Tenant ID** box, select the *JimenezF100* tenant.
2. Verify that the snapshot with the *Snapshot for Jimenez* description is displayed for this tenant on the **Snapshots** tab.
3. On the form toolbar, click **Restore Snapshot**.
4. In the **Warning** dialog box, which opens, click **Yes**.
5. In the **Restore Snapshot** dialog box, which opens, click **OK**. Wait until the system completes the snapshot restoration.
6. Notice the list of workspaces in the source tenant (the one to which you are currently signed in).
7. Switch to the *JimenezF100* tenant by using the User menu in the right corner of the top pane.
8. Verify that the tenant has the same set of workspaces as the source tenant does, as shown in the following screenshot.

*Figure: A test tenant with the data from the restored snapshot*

## Step 4: Deleting the Snapshot

To delete the snapshot, do the following:

1. Switch to the tenant with the *U100* dataset preloaded (the tenant you have created for this course) by using the User menu in the right corner of the top pane.



When you switch tenants with the [Tenants](#) (SM203520) form open, the system automatically selects the current tenant in the **Tenant ID** box of the form.

2. While you are still on the [Tenants](#) (SM203520) form, on the **Snapshots** tab, select the row for the snapshot with the *Snapshot for Jimenez* description.
3. On the table toolbar, click **Delete Row**.
4. On the form toolbar, click **Save**. Wait for the system to complete the operation.

In this activity, you have created a snapshot with its content limited to settings and business accounts. Then you toggled the snapshot visibility, restored it to the test tenant, and deleted the snapshot.

## Snapshots: To Export and Import a Snapshot

The following activity will walk you through the process of exporting and importing a snapshot for tenants of an instance.



The following activity is based on the *U100* dataset. If you are using another dataset, or if any system settings have been changed in *U100*, these changes can affect the workflow of the activity and the results of the processing. To avoid any issues, restore the *U100* dataset to its initial state.

## Story

Suppose that SweetLife Fruits & Jams has a new hire, Peter Lai, who should complete training during his probation period. To complete the training, the new employee needs a copy of the production tenant. Acting as a system administrator, you need to create a tenant in a sandbox (an instance of Acumatica ERP that has no production tenants) for the new employee. To move data between instances, you export a snapshot of the production tenant and import it to the test tenant. To save space, you take a snapshot with content limited to the settings and business accounts of the production tenant, and you prepare this snapshot for export.

## Process Overview

For the purposes of this activity, you can use tenants of the same instance.

You will use the [Tenants](#) (SM203520) form to create a snapshot with content limited to settings and business accounts and prepare the snapshot for export.

By using the same form, you will export the snapshot and then import it to the test tenant.

## Step 1: Creating a New Tenant

To create the test tenant, do the following:

1. Open the [Tenants](#) (SM203520) form.
2. On the form toolbar, click **Add New Record**.
3. In the **Tenant Name** box, type `LaiF100`.
4. In the **Login Name** box, type `LaiF100`.
5. On the form toolbar, click **Save**. Wait for the system to complete the operation.



If your Acumatica ERP instance had only one non-System tenant (the one created for performing the activities of this course), which means that the system was in single-tenant mode, the system now signs you out to switch to multitenant mode. You created the second non-System tenant in addition to the one to which you have been signed in.

If the website had more than one non-System tenant (which means that the system was already in multitenant mode), wait until the system completes the operation.

6. If you have been signed out, sign in to the tenant with the `U100` dataset preloaded (that is, the tenant you created to perform the activities of this course) by using the `gibbs` username and the `123` password. You can see the new `LaiF100` tenant if you open the User menu in the right corner of the top pane.
7. If you have not been signed out, reload the webpage.

## Step 2: Creating a Snapshot and Preparing It for Export

To create a snapshot to be used for moving data, do the following:

1. Open the [Tenants](#) (SM203520) form.
2. In the **Tenant ID** box of the Summary area, select the tenant with the `U100` dataset preloaded (that is, the tenant you created to perform the activities of this course).
3. On the form toolbar, click **Create Snapshot**.
4. In the **Warning** dialog box, which opens, click **OK**.
5. In the **Create Snapshot** dialog box, which opens, specify the following settings:
  - **Description:** `Snapshot for Lai`

- **Export Mode:** *Settings and Business Accounts*
  - **Prepare for Export:** *Selected*
  - **Export Format:** *Binary*
6. Click **OK**. Wait for the system to complete the operation. The system adds the record with the summary information of the snapshot to the **Snapshots** tab.
  7. Verify that the **Ready for Export** check box is selected in the table for the snapshot with the *Snapshot for Lai* description.

### Step 3: Exporting the Snapshot

To export the snapshot that you have created, do the following:

1. While you are still on the *Tenants* (SM203520) form, on the **Snapshots** tab, select the snapshot with the *Snapshot for Lai* description.
2. On the table toolbar, click **Export Snapshot**.
3. Perform the necessary steps (which depend on your browser and settings) to locally save the snapshot. While you are saving it, change its name to `Snapshot_for_Lai`.

### Step 4: Importing the Snapshot

To import the snapshot, do the following:

1. While you are still on the *Tenants* (SM203520) form, in the **Tenant ID** box of the Summary area, select the *LaiF100* tenant.
2. On the table toolbar of the **Snapshots** tab, click **Import Snapshot**.
3. In the **Upload Snapshot Package** dialog box, which opens, do the following:
  - a. Click **Choose File** and select the *Snapshot\_for\_Lai.zip* snapshot.
  - b. Click **Upload**. Wait until the system completes the operation.

The system adds the record with the snapshot's summary information to the **Snapshots** tab.

In this activity, you have created a snapshot whose content is limited to settings and business accounts and have prepared the snapshot for export. Then you have exported the snapshot and imported it to the test tenant.

## Lesson 2.3: Scheduling Automated Processing

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### Automated Processing: General Information

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In any ERP system, such tasks as the processing of documents require significant time and system resources. As such, the tasks should be processed at times when there are no employees at work, such as weekends or nights. Other processing, such as releasing or posting documents, takes less time but also should be performed regularly, with a frequency determined by your business needs.

Scheduling this processing to be performed automatically relieves you and your employees of remembering this processing while ensuring that the processing is performed regularly at times that will not affect users' work.

When you set up an automatic processing, you'll have to create separate schedules for each set of documents you generally process (or for the most time-consuming ones) and manually process the rest of the documents.

## Learning Objectives

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

- Schedule automatic processing
- View the history of executions
- Delete the history of scheduled processes

## Applicable Scenarios

You schedule automated processing in the following cases:

- If the processing of records requires significant time and system resources, for example, the validation of accounts
- If there are regular operations that need to be performed frequently, such as releasing or posting documents

## Configuration of Scheduled Execution

In Acumatica ERP, there are multiple forms specifically designed to perform mass-processing operations. For the most tasks that involve the processing of multiple records at once, you can schedule the automatic execution of a specific operation for the records that match certain conditions.

You can configure a scheduled execution of a specific operation from scratch by using the settings on the [Automation Schedules](#) (SM205020) form. On the form, you specify the mass-processing form for which you will configure a schedule, the operation to execute, the execution and frequency details, and the conditions for the records.

Alternatively, from the target processing form, you can ease the configuration by opening the [Automation Schedules](#) form. This approach can be useful if you need to configure a specific selection of records for the processing. Multiple mass-processing forms have a Selection area with elements that allow filtering of the records or selection of a specific operation to perform on the records. Additionally, you can apply simple or advanced filters to the table records to form the needed set of records. When you then open the [Automation Schedules](#) form by using **Schedules > Add** on the form toolbar, the system populates the newly created schedule with the form identifier and the settings of the configured conditions, and you need to specify only the execution and frequency details of the schedule.



The system uses the *admin* user account to run scheduled processes. This account uses the first available system locale, which is specified on the [System Locales](#) (SM200550) form for the company with the schedule.

## Selection of an Operation

When you configure a scheduled execution on the [Automation Schedules](#) form, you need to select an operation to execute in the **Action Name**. The system suggests for selection the operations that are available on the form toolbar of the form specified in the **Screen ID** box.

In most cases processing forms have two commands *<Operation>* and *<Operation> All*, for example *Process* and *Process All*. If a processing form is selected in the **Screen ID** box, you select the *<Operation> All* option in the **Action Name** box. The *<Operation>* option works only when you manually select records on the respective processing form, but the system cannot do this while executing scheduled processing.

If an inquiry form is selected in the **Screen ID** box, the value in this box is always *Raise Business Event*, which means that the system should raise and process the business events configured for this inquiry form on the [Business Events](#) (SM302050) form.

## Expiration of a Schedule

You can specify the duration of the schedule's life on the **Details** tab of the [Automation Schedules](#) (SM205020) form. By using the **Starts On** and **Expires On** boxes, you define the period of time during which the system should execute the schedule.

If you need the system to run the schedule forever, you select the **No Expiration Date** check box on the tab.

## Execution Limit

You can limit the number of schedule executions by using the **Execution Limit** box on the **Details** tab of the [Automation Schedules](#) (SM205020) form. The system will stop executing the schedule if the limit is reached, even if a schedule has not expired yet.

If there is no need to limit the number of executions, you select the **No Execution Limit** check box on the tab.

## History Retention

Keeping the history of schedule executions can be useful when you investigate any issues with the processed records. On the other hand, history records can take up a lot of space in the database. You can limit the number of executions to keep in the history by using the **Executions to Keep in History** box on the **Details** tab of the [Automation Schedules](#) (SM205020) form. The system will keep history records only for the specified number of the most recently performed executions.

If you need to keep all the schedule executions for some reason, you select the **Keep Full History** check box on the tab.

## Frequency Specification

On the **Schedule** tab of the [Automation Schedules](#) (SM205020) form, you can specify the execution schedule to the minute. For details, see [Automated Processing: Schedule Types](#).

## Specification of Filter Values

Multiple mass-processing forms have a Selection area with elements that allow filtering of the records or selection of a specific operation to perform on the records, as shown in the following screenshot.

Print Invoices and Memos CUSTOMIZATION TOOLS ▾

↻ ↶ PROCESS PROCESS ALL ⏸ ⏪ ⏩ 🗑 🔍

Action: Print ▾  Show All  
 Assigned To: <SELECT>  Me Start Date: 5/13/2021 ▾  
 Workgroup: Print  My End Date: 6/13/2021 ▾  
Mark as Do not Email  
Email

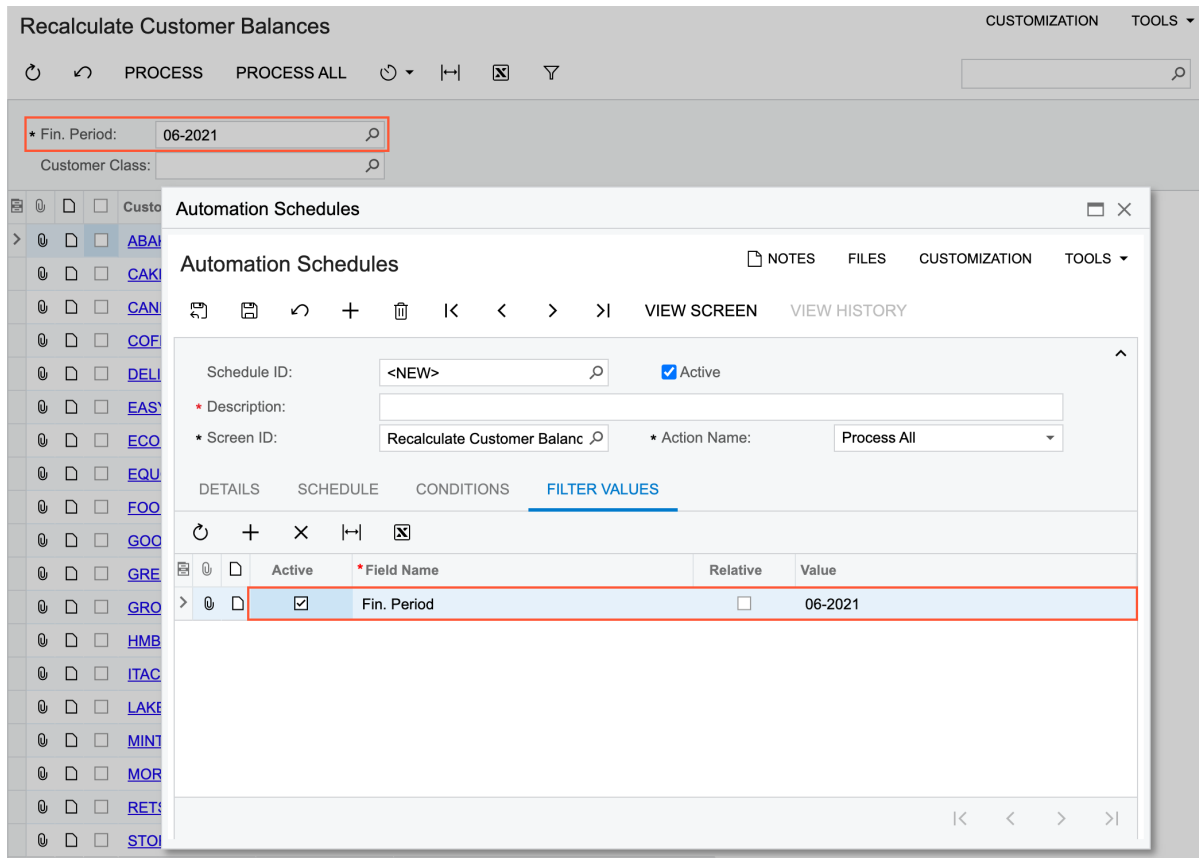
			Type	Reference Nbr.	Status	Date	Post Period	Customer
>	🔍	📄	<input type="checkbox"/> Credit Memo	<a href="#">000068</a>	Open	1/23/2021	01-2021	COFFEESHOP
	🔍	📄	<input type="checkbox"/> Credit Memo	<a href="#">000071</a>	Open	1/24/2021	01-2021	HMBAKERY
	🔍	📄	<input type="checkbox"/> Credit Memo	<a href="#">000081</a>	Open	1/24/2021	01-2021	MORNINGCAF

**Figure:** The Selection area of a form with the ability to select a specific operation

We strongly recommend that you configure the settings of the Selection area on the target processing form, because this form has a validation mechanism behind the elements. The elements can be required for processing or can depend on other elements of the area. The business logic behind the elements is not validated on the [Automation Schedules](#) (SM205020) form.

If you specify the values for the elements in the Selection area and then open the [Automation Schedules](#) form by using the **Schedules > Add** action on the form toolbar, the system adds only the elements for which a value was specified on the **Filter Values** tab, as the following screenshot demonstrates.





**Figure:** The condition specified in the Selection area being copied to the Filter Values tab of a schedule

When you create a schedule for this type of form directly on the [Automation Schedules](#) (SM205020) form, the system displays only the elements of the Selection area that have a default value on the **Filter Values** tab of the form. If you need to add other elements to the schedule, we recommend at least testing the configuration on the target processing form and then proceeding with the schedule configuration.

When the system executes the processing, it first inserts the values specified for the filters in the corresponding elements of the Selection area and then proceeds with the execution.

### Condition Specification

In addition to the ability to filter the records for processing by using elements in the Selection area of a mass-processing form, you can apply simple and advanced filters (if available) to the records.

You can filter the list of records by any column available in the table by setting up a simple filter, as shown in the following screenshot.

Print Invoices and Memos CUSTOMIZATION TOOLS ▾

Action:   Show All  
 Assigned To:   Me Start Date:   
 Workgroup:   My End Date:

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Type	Reference Nbr.	Customer	Customer Name	Amount
>	<input type="checkbox"/>	<input type="checkbox"/>	Credit Memo	<a href="#">000068</a>	COFFEESHOP	FourStar Coffee & S	
	<input type="checkbox"/>	<input type="checkbox"/>	Credit Memo	<a href="#">000071</a>	HMBAKERY	HM's Bakery & Cafe	
	<input type="checkbox"/>	<input type="checkbox"/>	Credit Memo	<a href="#">000081</a>	MORNINGCAF	Morning Cafe	
	<input type="checkbox"/>	<input type="checkbox"/>	Invoice	<a href="#">000001</a>	COFFEESHOP	FourStar Coffee & S	
	<input type="checkbox"/>	<input type="checkbox"/>	Invoice	<a href="#">000002</a>	GOODFOOD	GoodFood One Res	
	<input type="checkbox"/>	<input type="checkbox"/>	Invoice	<a href="#">000003</a>	COFFEESHOP	FourStar Coffee & S	
	<input type="checkbox"/>	<input type="checkbox"/>	Invoice	<a href="#">000004</a>	COFFEESHOP	FourStar Coffee & S	
	<input type="checkbox"/>	<input type="checkbox"/>	Invoice	<a href="#">000005</a>	GOODFOOD	GoodFood One Res	
	<input type="checkbox"/>	<input type="checkbox"/>	Invoice	<a href="#">000006</a>	HMBAKERY	HM's Bakery & Cafe	
	<input type="checkbox"/>	<input type="checkbox"/>	Invoice	<a href="#">000007</a>	HMBAKERY	HM's Bakery & Cafe	
	<input type="checkbox"/>	<input type="checkbox"/>	Invoice	<a href="#">000008</a>	GOODFOOD	GoodFood One Res	
	<input type="checkbox"/>	<input type="checkbox"/>	Invoice	<a href="#">000009</a>	HMBAKERY	HM's Bakery & Cafe	
	<input type="checkbox"/>	<input type="checkbox"/>	Invoice	<a href="#">000010</a>	GOODFOOD	GoodFood One Res	
	<input type="checkbox"/>	<input type="checkbox"/>	Invoice	<a href="#">000011</a>	HMBAKERY	HM's Bakery & Cafe	
	<input type="checkbox"/>	<input type="checkbox"/>	Invoice	<a href="#">000012</a>	GOODFOOD	GoodFood One Restaurant	316.57

Sort Ascending

Sort Descending

---

Clear Filter

---

Equals

Does Not Equal

Is Greater Than

Is Greater Than or Equal To

Is Less Than

Is Less Than or Equal To

Is Between

From:

To:

**Figure: Application of a simple filter to the Amount column**

If you apply a simple or advanced filter to the records on a processing form and then open the [Automation Schedules](#) form by using **Schedules > Add** on the form toolbar, the system copies the specified conditions to the **Conditions** tab of the schedule, as the following screenshot demonstrates. You can manually add other conditions or adjust existing ones on the tab, if needed.

The screenshot shows the 'Print Invoices and Memos' form with a table of records. The 'Amount' column is highlighted with a red box. An 'Automation Schedules' dialog box is open, showing the 'CONDITIONS' tab. The dialog box has a table with the following data:

Active	* Field Name	* Condit	Relativ	Value	Value 2
<input checked="" type="checkbox"/>	Amount	Is Between	<input type="checkbox"/>	50.00	250.00

**Figure:** The copied condition of a simple filter applied to the Amount column

When you create a schedule directly on the [Automation Schedules](#) form, you can specify the needed conditions manually on the **Conditions** tab of the schedule.

## Monitoring of Schedule Execution

Once you have assigned the processing to the schedule, the processing of the form will be performed automatically, in accordance with the assigned schedule.

To view all scheduled processes configured in the system and their details, you use the [Automation Schedule Statuses](#) (SM205030) form. You can click the following buttons on the form toolbar of this form:

- **View History** to view the history of a selected schedule on the [Automation Schedule History](#) (SM205035) form
- **View Screen** to open the form for which the schedule was configured

Alternatively, on the target processing form, you can click **Schedules > History** on the form toolbar, and the system opens the [Automation Schedule History](#) form, which allows you to view the history of schedule execution in a specified date range.

Also, you can use the [Automation Schedule History](#) form to clear the history of a scheduled processing as a part of database maintenance routines. For each scheduled processing, you can delete historical records of all executions by clicking **Delete All** on the form toolbar. Also, you can delete particular records, by selecting the records in the table and clicking **Delete** on the form toolbar.

## Automated Processing: Schedule Types

In Acumatica ERP, you can configure various types of schedules with the frequency determined by your business needs.

You use the settings on the **Schedule** tab of the *Automation Schedules* (SM205020) form to specify the frequency and time of a particular schedule's execution. First you select a type in the **Schedule Type** section, and then you specify additional configuration for the selected type in the **Schedule Details** section. Finally, in the **Execution Time** section, you configure the timing of the schedule.

### Calculation of the Next Schedule Execution Date

When you save your selection of a schedule's type, details, and time on the *Automation Schedules* (SM205020) form, the system calculates the next execution date for the schedule and updates the value of the **Next Execution Date** box in the **Schedule Details** section.

The calculation of a schedule's next execution date is performed based on the date specified in the **Starts On** box on the **Details** tab for a newly created schedule. If a schedule was run previously and you adjust the settings, the system calculates the next execution date based on the date in the **Last Executed** box on the **Details** tab. Also, you can manually specify a date in the **Next Execution Date** box, if needed.

### Daily Schedule Execution

With the *Daily* option selected in the **Schedule Type** section of the *Automation Schedules* (SM205020) form, you specify recurrence of execution in days by using the **Every x Day(s)** box in the **Schedule Details** section. The following screenshot shows the configuration of a schedule that will be executed every two days.

Automation Schedules NOTES FILES CUSTOMIZATION TOOLS ▾

📄 ↶ + 🗑️ ⏪ < > ⏩ VIEW SCREEN VIEW HISTORY

---

Schedule ID:   Active

\* Description:

\* Screen ID:  \* Action Name:

DETAILS **SCHEDULE** CONDITIONS

---

**SCHEDULE TYPE** **SCHEDULE DETAILS**

Daily  
 Weekly  
 Monthly  
 By Financial Period

\* Next Execution Date:

Every:  Day(s)

---

**EXECUTION TIME**

Starts On:  \* Next Execution Time:

Stops On:

Every:   Exact Time

*Figure: Schedule execution based on days*

When you save the configuration of the recurrence, the system automatically adjusts the date in the **Next Execution Date** box.

## Weekly Schedule Execution

With the *Weekly* option selected in the **Schedule Type** section of the *Automation Schedules* (SM205020) form, you specify recurrence of execution in weeks by using the **Every x Week(s)** box in the **Schedule Details** section and specify the exact weekdays when the processing should be run. For the schedule configured in the following screenshot, execution will occur every three weeks, on Monday and Friday.

Automation Schedules NOTES FILES CUSTOMIZATION TOOLS ▾

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---

Schedule ID:   Active

\* Description:

\* Screen ID:  \* Action Name:

DETAILS **SCHEDULE** CONDITIONS

---

**SCHEDULE TYPE** **SCHEDULE DETAILS**

Daily

Weekly

Monthly

By Financial Period

\* Next Execution Date:

Every:  Week(s)

Sunday  Wednesday  Saturday

Monday  Thursday

Tuesday  Friday

---

**EXECUTION TIME**

Starts On:  \* Next Execution Time:

Stops On:

Every:   Exact Time

**Figure: Schedule execution based on weeks**

When you save the configuration of the recurrence, the system automatically adjusts the date in the **Next Execution Date** box.

## Monthly Schedule Execution

With the *Monthly* option selected in the **Schedule Type** section of the *Automation Schedules* (SM205020) form, you specify the recurrence of execution in months by using the **Every x Month(s)** box in the **Schedule Details** section. Also, you can specify the exact day of month when the system should run the processing by selecting the *On Day* option and specifying the day number in a month. Alternatively, you can select the *On the* option; in the first adjacent box, you specify the ordinal number representing the week of the month (*1st*, *2nd*, *3rd*, *4th*, or *Last*), and in the second box, you select *Weekday*, *Weekend*, or the exact weekday of schedule execution. For the *Weekday* or *Weekend* option, the system will automatically calculate the date for each month, regardless of its duration. For example, in the following screenshot, *Last* and *Weekday* are selected, indicating that the system will execute the schedule on the last weekend day of each month.

## Automation Schedules

NOTES FILES CUSTOMIZATION TOOLS ▾

Schedule ID:   Active

\* Description:

\* Screen ID:  \* Action Name:

DETAILS **SCHEDULE** CONDITIONS

**SCHEDULE TYPE**

Daily

Weekly

Monthly

By Financial Period

**SCHEDULE DETAILS**

\* Next Execution Date:

Every:

On Day

On the

**EXECUTION TIME**

Starts On:  \* Next Execution Time:

Stops On:

Every:   Exact Time

**Figure: Schedule execution based on months**

When you save the configuration of the recurrence, the system automatically adjusts the date in the **Next Execution Date** box.

## Schedule Execution by Financial Period

With the *By Financial Period* option selected in the **Schedule Type** section of the [Automation Schedules](#) (SM205020) form, you specify the recurrence of execution in financial periods by using the **Every x Period(s)** box in the **Schedule Details** section.

Also, you specify when during the period the system should execute the processing by selecting one of the following options:

- *End of the Period*
- *Start of the Period*
- *Fixed Day of the Period* (for this option, you also specify the day)

The following screenshot demonstrates a sample configuration of a schedule executed with a frequency calculated by the dates of financial periods; in this case, the schedule is executed every other period, on the first day of the period.

Automation Schedules NOTES FILES CUSTOMIZATION TOOLS ▾

📄 ↶ + 🗑️ ⏪ < > ⏩ VIEW SCREEN VIEW HISTORY

---

Schedule ID:   Active

\* Description:

\* Screen ID:  \* Action Name:

DETAILS **SCHEDULE** CONDITIONS

---

**SCHEDULE TYPE** **SCHEDULE DETAILS**

Daily
  Weekly
  Monthly
  **By Financial Period**

\* Next Execution Date:

Every:  Period(s)

End of the Period
  **Start of the Period**
 Fixed Day of the Period

---

**EXECUTION TIME**

Starts On:  \* Next Execution Time:

Stops On:   Exact Time

Every:

**Figure: Schedule execution based on the dates of financial periods**

The system will calculate the schedule dates according to the periods generated in the system on the [Master Financial Calendar](#) (GL201000) form, in addition to the start date of the schedule or its last execution date.

When you save the configuration of the recurrence, the system automatically adjusts the date in the **Next Execution Date** box.

## Schedule Execution Time

With Acumatica ERP you can configure the execution of scheduled processing to the minute. This capability can be useful when you schedule the processing of operations that should be run in a particular order.

For each schedule, you can specify the particular time zone whose times will be used in the **Time Zone** box on the **Details** tab of the [Automation Schedules](#) (SM205020) form. By default, the system inserts a time zone specified in the profile of the user who creates the schedule. If a time zone is not specified for the user, then the system inserts the time zone specified for the application server.

When you create a schedule, you need to specify the time when the system should start the execution of the processing in the **Starts On** box of the **Execution Time** section. The system inserts the same time in the **Next Execution Time** box. You can manually adjust the execution time, if needed, and the system will change the next execution time accordingly.

Also, if you select the **Exact Time** check box, the system will execute the schedule at exactly the time specified in the **Next Execution Time** box. If the check box is cleared, the system may shift the next execution time of the schedule by multiple minutes. We recommend that you select this check box if another schedule that depends on the current schedule should be executed after the current schedule.

## Multiple Successive Executions

In some cases, you may need to run processing multiple times during a particular period of time in a day. To configure this, after you have selected the schedule type and specified the schedule details on the **Schedule** tab of the form, in the **Next Execution Date** box, you specify the same date that is set in the **Starts On** box on the **Details**

tab. Also, you should either limit the number of executions to the number of times you expect the system to run the processing or clear the execution limit by selecting the **No Execution Limit** check box on the same tab.

Then you specify the hour and minute of the first execution in the **Starts On** box in the **Execution Time** section of the **Schedule** tab. In the **Stops On** box, you specify the hour and minute when the last session of the schedule should stop. When the specified time comes, the system finishes the processing of the current record (if the processing is in mid-record at the stop time) and proceeds with the remaining records during the next session.

For the specified execution duration, in the **Every** box, you specify the interval in hours and minutes between successive sessions of the execution.

The following screenshot demonstrates a sample configuration of a schedule that the system runs every other day, starting at exactly 1:00 AM; the system repeats the execution every two minutes for one hour.

Automation Schedules NOTES FILES CUSTOMIZATION TOOLS ▾

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---

Schedule ID: <NEW> 🔍  Active

\* Description: Release AP bills less than 300

\* Screen ID: Release AP Documents 🔍 \* Action Name: Release All ▾

DETAILS **SCHEDULE** CONDITIONS

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**SCHEDULE TYPE** **SCHEDULE DETAILS**

Daily \* Next Execution Date: 6/6/2021 ▾

Weekly

Monthly

By Financial Period

Every: 2 Day(s)

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**EXECUTION TIME**

Starts On: 1:00 AM ▾ \* Next Execution Time: 1:00 AM ▾

Stops On: 2:00 AM ▾  Exact Time

Every: 00:02

Figure: Schedule execution in successive sessions

## Automated Processing: To Configure Scheduled Processing

The following activity will walk you through the process of scheduling automated processing for a particular form.



The following activity is based on the *U100* dataset. If you are using another dataset, or if any system settings have been changed in *U100*, these changes can affect the workflow of the activity and the results of the processing. To avoid any issues, restore the *U100* dataset to its initial state.

### Story

Suppose that in the SweetLife Fruits & Jams company, AP clerks enter the bills into the system on a daily basis. The accountant does not need to manually release bills for the Karn Design Inc. vendor with amounts more than \$1000 USD and less than or equal to \$5000 USD. These bills should be released automatically to free up the accountant's time. You, as the system administrator, need to schedule this processing—that is, automate the release of AP



documents that have the *Balanced* status, *KADESIGN* vendor, and amounts equal to or more than \$1000 USD and less than or equal to \$5000 USD.



The details of the processes of releasing and posting of AP documents are outside of the scope of this activity. For details, see [Processing AP Bills](#).

## Configuration Overview

For the purposes of this activity, in the *U100* dataset, the following tasks have been performed:

- The *Scheduled Processing* feature has been enabled on the [Enable/Disable Features](#) (CS100000) form in the *U100* dataset.
- On the [Vendors](#) (AP303000) form, the *KADESIGN* vendor has been created.
- On the [Bills and Adjustments](#) (AP301000) form, a few AP bills for the *KADESIGN* vendor have been created.

## Process Overview

You will use the [Release AP Documents](#) (AP501000) form to filter documents by amount. Then you will open the [Automation Schedules](#) (SM205020) form by using **Schedules > Add** on the form toolbar and specify the settings of the schedule.

On the [Automation Schedules](#) form, you will adjust the settings of the schedule. You will add the condition to make the system process AP bills for the *KADESIGN* vendor and execute the schedule every two minutes daily.

You will review successive executions of the processing and clear the history of the executions on the [Automation Schedule History](#) (SM205035) form.

Finally, you will switch off the schedule execution on the [Automation Schedules](#) form.

## System Preparation

Before you start scheduling automated processing, you should do the following:

1. Make sure that on the Company and Branch Selection menu, in the top pane of the Acumatica ERP screen, the *SweetLife Head Office and Wholesale Center* branch is selected.
2. Make sure that the business date in your system is set to 1/30/2022. If a different date is displayed, click the Business Date menu button in the top pane of the Acumatica ERP screen, and select 1/30/2022 in the calendar.

## Step 1: Filtering Documents by Amount

To apply a filter to a table column, do the following:

1. Open the [Release AP Documents](#) (AP501000) form.
2. In the list of bills, click the header of the **Amount** column.
3. In the Sorting and Filtering Settings dialog box, which opens, do the following:
  - a. Select **Is Between** in the list of filter conditions.
  - b. In the **From** box, type 1000.
  - c. In the **To** box, type 5000.
  - d. At the bottom of the dialog box, click **OK**.

The system is now displaying only documents with amounts more than \$1000 USD and less than or equal to \$5000 USD.

## Step 2: Scheduling Automated Release of AP Documents

To schedule automated release of AP documents, do the following:

1. While you are still on the [Release AP Documents](#) (AP501000) form with the filter applied to the **Amount** column, click **Schedules > Add** on the form toolbar.
2. On the [Automation Schedules](#) (SM205020) form, which opens in a pop-up window, specify the following settings in the Summary area, and leave the default settings in the other elements:
  - **Description:** Release AP bills with amounts between \$1000 and \$5000
  - **Action Name:** *Release All*
3. On the **Details** tab of the schedule, specify the following settings, and leave the default settings in the other elements:
  - **No Expiration Date:** Selected
  - **No Execution Limit:** Selected
  - **Keep Full History:** Selected
4. On the **Schedule** tab of the schedule, specify the following settings, and leave the default settings in the other elements:
  - **Daily:** Selected
  - **Starts On:** *11:00 PM*
5. On the **Conditions** tab of the schedule, verify that the system has copied the condition specified in the filter. That is, the settings of the row are filled in as follows:
  - **Active:** Selected
  - **Field Name:** *Amount*
  - **Condition:** *Is Between*
  - **From:** *1,000.00*
  - **To:** *5,000.00*
6. On the form toolbar, click Save & Close.

## Step 3: Modifying the Scheduled Release of AP Documents

Now you will change schedule so that the system processes AP bills with amounts equal to or more than \$1000 USD and less than or equal to \$5000 USD for the *KADESIGN* vendor and executes the schedule every two minutes for one hour daily. To modify the scheduled release of the AP documents, do the following:

1. While you are still viewing the AP documents on the [Release AP Documents](#) (AP501000) form, click **Schedules > View** on the form toolbar.



If the command is not displayed, reload the browser page.

2. On the [Automation Schedules](#) (SM205020) form, which opens in a pop-up window, specify the following settings on the **Schedule** tab:
  - **Starts On:** The current time plus one minute
  - **Stops On:** The current time plus one hour
  - **Every:** *00:02*
3. On the **Conditions** tab of the schedule, add a row with the following settings:
  - **Active:** Selected
  - **Field Name:** *Vendor*

- **Condition:** *Equals*
  - **Value:** *KADESIGN*
4. In the **Description** column, change the description as follows: Release AP bills with amounts between \$1000 and \$5000 for KADESIGN.
  5. On the form toolbar, click Save & Close.

## Step 4: Viewing and Deleting the History of the Schedule

To view the history of the schedule and then delete the history, do the following:

1. While you are still on the [Release AP Documents](#) (AP501000) form, click **Schedules > History** on the form toolbar.
2. On the [Automation Schedule History](#) (SM205035) form, which opens in a new browser tab, the system displays the history of all schedules configured for this form. In the **Schedule** box of the Selection area, select the schedule with the *Release AP bills with amounts between \$1000 and \$5000 for KADESIGN* description.
3. Verify that the system executed the processing at least once since you modified the schedule in the previous step.



If no records are displayed, click **Refresh** on the form toolbar.

4. In the **Total Records** column, click the link that holds the number of the processed records that does not equal to zero (see Item 1 in the following screenshot).
5. In the **Processing Results** dialog box, which opens, review the processing results (Item 2).

The screenshot shows the 'Automation Schedule History' form. The table below lists the schedule executions:

Stat	Screen ID	Schedule	Execution Date	Total Records	Process	Warning	Errors	Execution Result
✓	AP_50_10_00	Release AP bills with amounts between...	11/23/2021 9:58 AM	<a href="#">0</a>	0	0	0	Processing completed
✓	AP_50_10_00	Release AP bills with amounts between...	11/23/2021 9:56 AM	<a href="#">4</a>	4	0	0	Processing completed

The 'Processing Results' dialog box is open, showing the following data:

		Nbr.	
✓	The record has been processed successfully.	<a href="#">Bill</a>	000060 KADESIGN
✓	The record has been processed successfully.	<a href="#">Bill</a>	000061 KADESIGN
✓	The record has been processed successfully.	<a href="#">Bill</a>	000062 KADESIGN
✓	The record has been processed successfully.	<a href="#">Bill</a>	000063 KADESIGN

Figure: The processing results of a particular schedule execution

6. Close the **Processing Results** dialog box.
7. On the form toolbar, click **Delete All** to clear the execution history of the selected schedule.
8. In the Warning dialog box that opens, click **OK**. The system clears the data in the table on the form.

## Step 5: Switching Off the Schedule

To switch off the *Release AP bills with amounts between \$1000 and \$5000 for KADESIGN* schedule, do the following:

1. Open the [Automation Schedules](#) (SM205020) form.
2. In the **Schedule ID** box, select *Release AP bills with amounts between \$1000 and \$5000 for KADESIGN*.
3. In the Summary area, clear the **Active** check box.
4. Click **Save** on the form toolbar.

In this activity, you have configured a scheduled release of AP documents by opening the [Automation Schedules](#) form in a pop-up window on the [Release AP Documents](#) (AP501000) form.

Then you have modified the schedule settings to review the successive executions of the processing and cleared the history of the executions on the [Automation Schedule History](#) (SM205035) form.

Finally, you switched off the schedule execution on the [Automation Schedules](#) form.

## Lesson 2.4: Publishing Customization Projects

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### Customization Projects: General Information

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A customization project is a set of changes to the user interface, configuration data, and functionality of Acumatica ERP. An instance of Acumatica ERP consists of the website and the database, and you can use the platform to customize both of these components.

#### Learning Objectives

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

- Import deployment packages to a tenant
- Publish multiple customization projects to an instance
- Unpublish the projects

#### Applicable Scenarios

You may need to manage customization projects if your company requires changes to the user interface, configuration data, or functionality of Acumatica ERP. These projects can be customizations developed in-house or purchased from a third-party vendor who produces complementary solutions for Acumatica ERP.

#### Development of Customization Projects

To perform any customization of the user interface or to extend the business logic, a developer creates and maintains customization projects by using the tools and capabilities of the Acumatica Customization Platform. This

platform provides the mechanisms to develop, upgrade, publish, unpublish (that is, cancel publication), export, and import a customization project.

After the customization project is ready, it is exported as a deployment package. A deployment package is a redistributable zip file that includes the full content of a customization project. The deployment package can then be imported and published as a customization project on the systems.

## Import of Deployment Packages

You import a deployment package to get access to the project data by clicking the **Import** button on the form toolbar of the [Customization Projects](#) (SM204505) form. The system uploads the package, creates the corresponding customization project, and saves the project in the database. You can view the list of available customization projects on this form.

## Update of Imported Packages

You may receive an updated version of a deployment package that you have already imported into the system. In this case, you import the new version by clicking the **Replace Highlighted Project Content** command on the More menu (under **Import**) of the [Customization Projects](#) (SM204505) form. The system replaces the package and the customization project, and saves the updated project in the database.

To apply the updated project to the system, you need to perform the publication process for all projects that need to be published.

## Publication of Customization Projects

It is common to have multiple customization projects applied to an Acumatica ERP application instance. Multiple customization projects may address multiple specific customization tasks for your company. The information about the published customization projects is displayed in the lower right corner of the Sign-In page and in the **About Acumatica** dialog box.



We recommend that you back up the database before you publish customization projects, because canceling a publication does not revert the changes made to the database. Also, it is safer to perform the publication outside the business hours. If a customization project changes the application code, after the publication is complete, the system will restart the application.

On the [Customization Projects](#) (SM204505) form, you select the projects that you would like to apply to the instance and click **Publish** on the form toolbar.

If you want to publish a new customization project in addition to the previously published projects and you would like to keep these projects published, you should select them as well. The published projects have the **Published** check box selected in the table on the form.

During the publication process, the system unpublishes all previously published projects and merges the code of the projects selected for publication into a single customization project. Then the system validates and compiles the customization code included in the project. If there are any validation errors, the system displays the error messages on the webpage and stops the publication process. If the compilation completes successfully, you click **Publish** in the **Compilation** dialog box to apply the changes contained in the project to the website. The system will warn you if active users will be signed out after publication completes. Wait for the *Website updated* message (in green type), and close the **Compilation** dialog box.



If validation fails, contact the support service of the customization vendor.

During the publication, the system applies the changes to the application and database objects of the tenant you are currently sign-in and updates the files in the website folder as follows:

- The custom layout is applied to the forms of Acumatica ERP.

- Files with custom code are generated and placed in the file system.
- The custom files of the project (for example, new icons or other images) are added to the website folder.
- The custom tables are created in the database, and the custom SQL scripts are executed.
- The custom generic inquiries, reports, workspaces, forms, system locales, integration scenarios, shared reusable filters, access rights, wikis, web-service endpoints, user-defined fields, and analytical reports are added to the database.

After the customization project has been published, users see the modified Acumatica ERP.

## Execution of Custom SQL Scripts

A customization project may include custom SQL scripts that introduce changes to the database. When the system publishes a project that contains a database script, it executes the script and tries to avoid the execution of the script at every publication of the project for optimization purposes. Therefore, the system keeps information about each script that has been executed one time and has not yet been changed in the database, and omits the repeated execution of these scripts.

If the changes introduced by the scripts have been manually deleted or modified, you can force the system to run the previously executed scripts again to restore the initial changes. On the [Customization Projects](#) (SM204505) form, you select all the customization projects you need to publish and click **Publish to Multiple Tenants** on the More menu (under **Publish**). In the **Publish to Multiple Tenants** dialog box, which opens, you select the tenant of the instance, select the **Execute All Database Scripts (Including Previously Executed)** check box, and then click **OK**. The system removes all the information about previously executed scripts of the customization project and executes each script while publishing the selected projects.

## Rollback of Customization Projects

Each time you publish a customization project, the system unpublishes all previously published projects that were not selected for publication.

You can unpublish all published customization projects at once by clicking **Unpublish All** on the form toolbar of the [Customization Projects](#) (SM204505) form. You can unpublish a set of selected projects or only one project. To unpublish unneeded projects, you publish all other projects without the projects that are not needed.

During the unpublishing of customization projects, the system reverses the changes introduced by the customization as follows:

- The forms of Acumatica ERP return to their original layout.
- The files of the project with customization code are removed from the website folder in the file system.
- The custom files of these projects are removed from the website folder on the file system.

The following changes are not reversed during the unpublishing of customization projects:

- Database changes remain in the database. Thus, the generic inquiries, reports, changes to the site map, custom tables, custom database objects, and custom data remain in the database. Changes to the site map remain in the navigation menu of Acumatica ERP. If you need to remove these changes, you must do so manually.
- The SLN file of the integrated Microsoft Visual Studio solution and its projects (if any) remain in the file system. However, the customization code of the unpublished customization project and the external files added to the customization project are removed from the solution.

For example, if a customization project introduces a new report, after you publish and unpublish the project, the report stays in the database and remains available in the application, so you need to remove it manually.

There is no difference in the unpublishing process for a single-tenant site and a multitenant site: The platform deletes the same files in the file system and keeps all the changes in the database.

## Customization Projects: Publication to a Multitenant Website

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The data of each tenant that uses the same instance of Acumatica ERP is isolated in the database, but website files are shared by tenants. When you publish a customization, it may affect both the website files and the database.

You can publish a customization to a tenant or to multiple tenants at once. Website changes are applied to all tenants, even if you publish a project to one tenant only, but the tenant specific changes are applied to only the tenants of your choice.

In this topic, you will read how to publish customization projects to multiple tenants at once and how customizations are applied to a multitenant site.

### Publication to Multiple Tenants

To apply database changes introduced by a customization project to multiple tenants, you can publish multiple customization projects for multiple tenants at once. On the [Customization Projects](#) (SM204505) form, you can select the customization projects that you need to publish for multiple tenants and use the **Publish to Multiple Tenants** command on the More menu (under **Publish**) to open the **Publish to Multiple Tenants** dialog box. You then select the required tenants and apply the selected customization projects to the selected tenants. If you have published all the selected customization projects in the website for a single tenant at least once, you do not need to update the website files. You can apply only the database changes.

### Application of Customizations to a Multitenant Website

A customization may introduce changes to the layout and business logic of forms, add new database tables or fields, and add metadata to the database.

If you publish a customization project that only adds metadata to the database, this customization does not affect the website files or the database schema. This data is stored only in the database. Because this data is tenant-specific, it is available in only the tenant where it was published. The following objects fall into the metadata category:

- Access rights
- Analytical reports
- Business events
- Conditions
- Dashboards
- Generic inquiries
- Import and export scenarios
- Non-programmable actions
- Push notifications
- Reports
- Shared filters
- Site map nodes
- System locales
- User-defined fields
- Web service endpoints
- Webhooks
- Wiki articles
- Workflow

Changes to form layout, custom tables, custom code, and files introduced by the customization are added to the website files and therefore are available to other tenants.

When you publish a customization project to a tenant on a multitenant website, the changes introduced by custom code of the project are available to all tenants; the changes to database data are available to only the tenant where the project was published.

Moreover, for all tenants that use the same website, on the Sign-In page and in the **About Acumatica** box, you can see that the website is customized, but you will not see any published project on the [Customization Projects](#) (SM204505) form. This form displays the customization projects that have been uploaded to the current tenant; therefore, no projects are displayed if they have been uploaded and published under another tenant.



If you publish a customization project to a tenant, the system unpublishes all the previously published customizations in all the tenants of the website. We recommend that you use only one tenant for uploading packages and publishing customizations. The website changes will be available to all tenants anyway, and if you need to share database data, you can publish the customizations to multiple tenants at once.

## Customization Projects: To Publish Projects

The following activity will walk you through the process of publishing customization projects.



The following activity is based on the *U100* dataset. If you are using another dataset, or if any system settings have been changed in *U100*, these changes can affect the workflow of the activity and the results of the processing. To avoid any issues, restore the *U100* dataset to its initial state.

### Story

Suppose that SweetLife Fruits & Jams has decided to investigate new business opportunities. For this purpose, the company has received the *PhoneRepairShop* and *Yogifon* customization projects from a third-party vendor for a trial run. Acting as the system administrator, you need to apply these customizations to a sandbox (an instance of Acumatica ERP that has no production tenants).

The customization projects will introduce the following functionality.

Customization Project	Website Changes	Metadata
<i>Yogifon</i>	Adds a predefined field ( <b>Type</b> ) to the <b>General</b> tab ( <b>Account Address</b> section) of the <a href="#">Customers</a> (AR303000) form.	<ul style="list-style-type: none"> <li>Adds the Open Sales Orders by Customers (GI400001) generic inquiry to the database and to the site map</li> <li>Adds a user-defined field (<b>Network Type</b>) to the <a href="#">Customers</a> form</li> <li>Adds the <b>SO Open by Customers</b> non-programmable command, which a user clicks to open the corresponding generic inquiry</li> </ul>



Customization Project	Website Changes	Metadata
<i>PhoneRepairShop</i>	Adds two forms: Repair Services (RS201000) and Serviced Devices (RS202000). The company will use these forms to manage the lists of repair services that are provided and devices that can be serviced, respectively.	<ul style="list-style-type: none"> <li>• Adds the <b>Phone Repair Shop</b> workspace</li> <li>• Adds the Serviced Devices (RS2020PL) generic inquiry, which is configured as the entry-point form for the Serviced Devices (RS202000) form</li> <li>• Adds the forms and generic inquiry to the site map</li> <li>• Adds test data—that is, predefined services and devices</li> </ul>

## Process Overview

You will import the deployment packages (each of which is a file with the content of a customization project) and then publish the customization projects by using the [Customization Projects](#) (SM204505) form. Then you will review how the applied customization projects have affected the system.

On the same form, you will unpublish all the projects. Then you will restore the user interface of the tenant to its previous state as follows:

- On the [Site Map](#) (SM200520) form, you will clear the values in the **Workspaces** column for the forms and inquiries that have been introduced by the customization projects.
- You will remove the **Phone Repair Shop** menu item from the main menu.

## System Preparation

Before you start scheduling automated processing, you should do the following:

1. In the **Training Materials** section of the course page, download the *PhoneRepairShop* and *Yogifon* deployment packages.

## Step 1: Uploading Deployment Packages

To upload the *PhoneRepairShop* and *Yogifon* deployment packages, do the following:

1. Open the [Customization Projects](#) (SM204505) form.
2. On the form toolbar, click **Import**.
3. In the **Open Package** dialog box, which opens, click **Choose File**, and select the *PhoneRepairShop.zip* deployment package.
4. Click **Upload**.

The system adds a new record to the table with the imported *PhoneRepairShop* customization project.

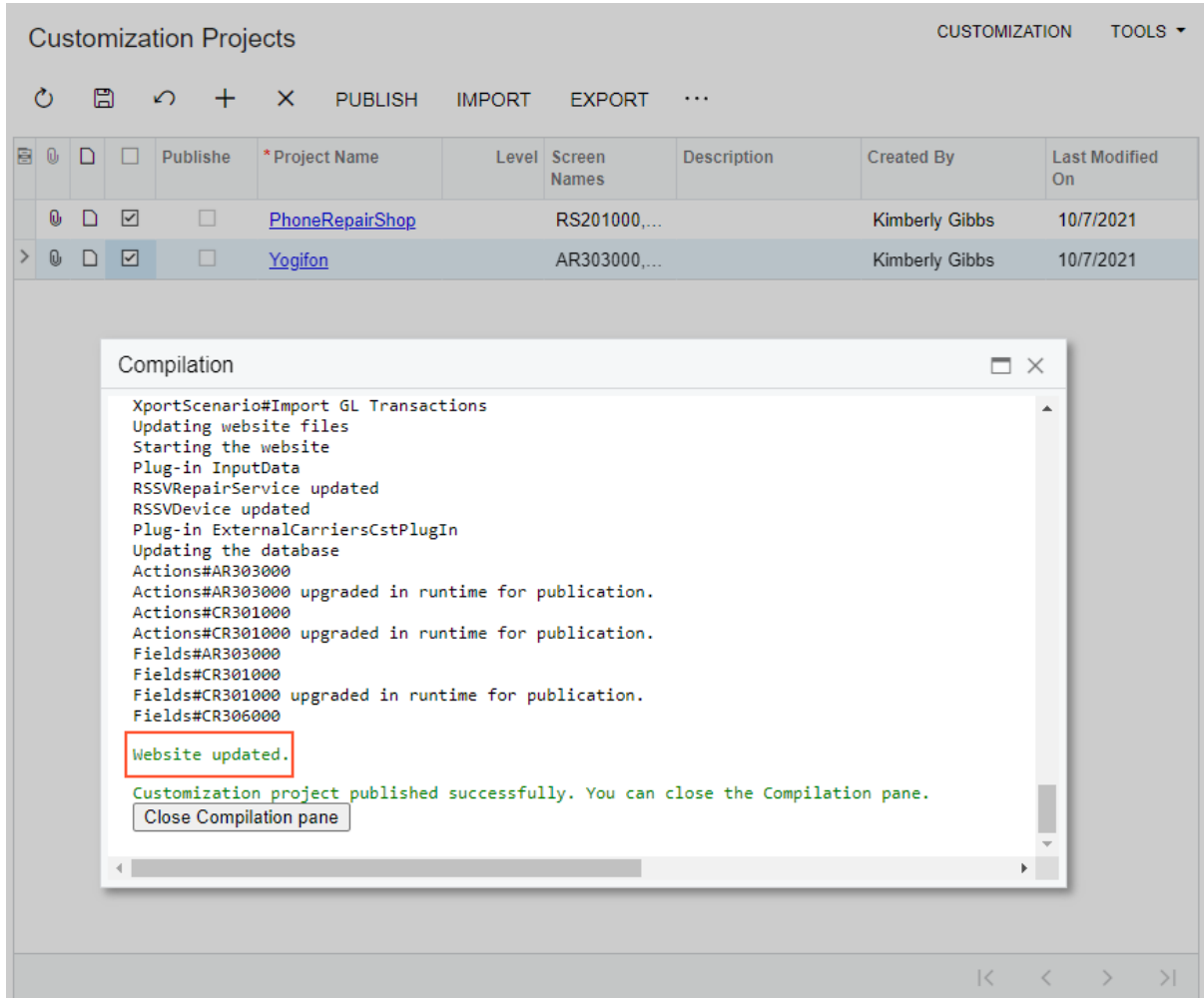
5. On the form toolbar, click **Import**.
6. In the **Open Package** dialog box, which opens, click **Choose File** and select the *Yogifon.zip* deployment package.
7. Click **Upload**.

The system adds a new record to the table with the imported *Yogifon* customization project.

## Step 2: Publishing the Customization Projects

To publish the customization projects, do the following:

1. While you are still on the *Customization Projects* (SM204505) form, select the unlabeled check boxes in the *PhoneRepairShop* and *Yogifon* rows, and click **Publish** on the form toolbar.
2. In the **Compilation** dialog box, which opens, wait for the validation to finish successfully, and click **Publish**.
3. When the system displays the *Website updated* message in the **Compilation** dialog box (shown in the following screenshot), close the dialog box.



**Figure: The Compilation dialog box**

The system applies the packages and reloads the website. Notice that the **Published** check box is now selected for both customization projects in the table.

### Step 3: Reviewing the Changes Introduced by the Customization Projects

To review the changes that have been introduced by the publication of the customization projects, do the following:

1. Open the Customers (AR3030PL) form.
2. In the **Customer ID** column, click *ABAKERY*.
3. On the *Customers* (AR303000) form, notice the following changes, which have appeared on the form as a result of the *Yogifon* customization project being published:
  - The **User-Defined Fields** tab has appeared in the Summary area and contains the **Network Type** box (see Item 1 in the following screenshot).

- The new **Type** box can be seen in the **Account Address** section of the **General** tab of the form (Item 2).
- The **SO Open by Customers** command appears on the More menu (Item 3).

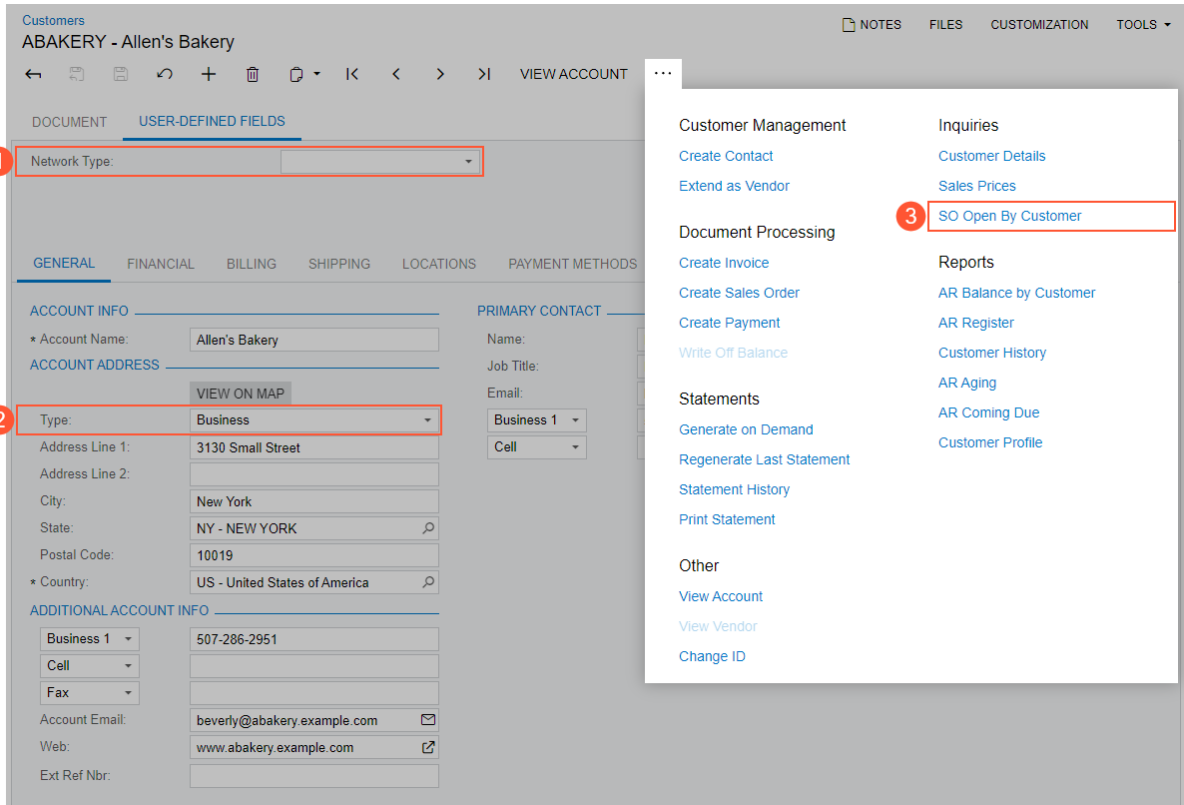


Figure: The changes introduced by the Yogifon customization project on the Customers form

4. To review the changes introduced by the *PhoneRepairShop* customization project, on the main menu, click the new **Phone Repair Shop** menu item to open the workspace, which has been added. The workspace includes two forms from the customization project, as the following screenshot demonstrates.

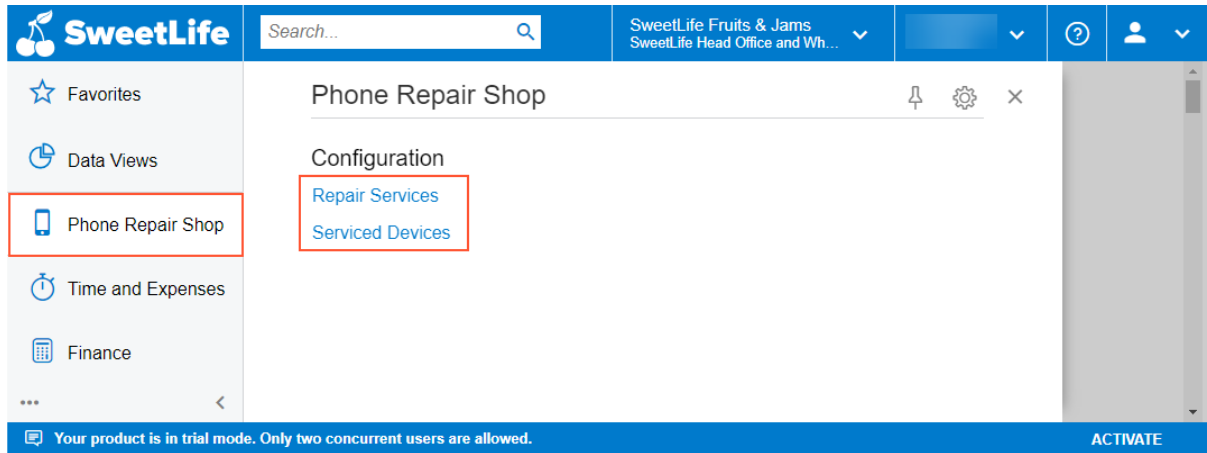


Figure: The new Phone Repair Shop workspace

5. Open the Repair Services (RS201000) form. The system opens the form with the list of services defined in the test data, as shown in the following screenshot.

Repair Services CUSTOMIZATION TOOLS ▾

		*Service ID	*Description	Active	Walk-In Service	Requires Prepayment	Requires Preliminary Check
>		BATTERYREPLACE	Battery Replacement	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		LIQUIDDAMAGE	Liquid Damage	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		SCREENREPAIR	Screen Repair	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Figure:** The new Repair Services form with the test data

- In the **Phone Repair Shop** workspace, click the *Serviced Devices* link. Notice that the system opens the Serviced Devices (RS2020PL) generic inquiry form, which is configured as the data entry form for the Serviced Devices (RS202000) form.
- Click *IPHONE6* in the **Device Code** column to see the settings of this device on the Serviced Devices (RS202000) form.

## Step 4: Unpublishing the Customization Projects

To unpublish the customization projects, do the following:

- Open the [Customization Projects](#) (SM204505) form.
- On the form toolbar, click **Unpublish All**. Wait for the system to complete the operation.

Notice that the **Published** check box is cleared for all customization projects in the table (as shown in the following screenshot).

Customization Projects CUSTOMIZATION TOOLS ▾

			Published	*Project Name	Level	Screen Names	Description	Created By	Last Modified On
>			<input type="checkbox"/>	<a href="#">PhoneRepairShop</a>		RS201000,...		Kimberly Gibbs	10/12/2021
			<input type="checkbox"/>	<a href="#">Yogifon</a>		AR303000,...		Kimberly Gibbs	10/12/2021

**Figure:** Unpublished customization packages

## Step 5: Restoring the Initial User Interface

To remove the changes to the user interface that the system could not revert while unpublishing the customization projects, do the following:

- Open the [Site Map](#) (SM200520) form.
- In the **Workspaces** column, clear the selected check boxes in the rows with the following identifiers in the **Screen ID** column (see the following screenshot):



To quickly find the needed forms, type RS . 20 in the Search box on the form toolbar.

- RS.20.10.00
- RS.20.20.00
- RS.20.20.PL

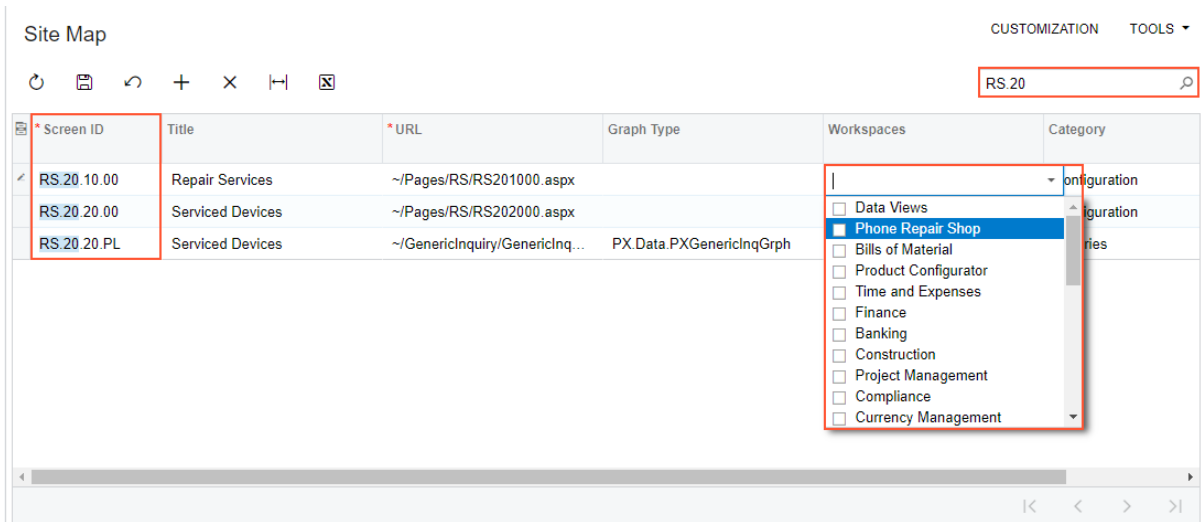


Figure: The forms for which you have cleared the check boxes in the Workspaces column

- On the form toolbar, click **Save**.
- In the lower left corner of the screen, click the **Open Configuration Menu** button, and then click **Edit Menu**.
- On the main menu, point at the **Phone Repair Shop** menu item, and on the pop-up toolbar, click Delete Workspace, as the following screenshot demonstrates.

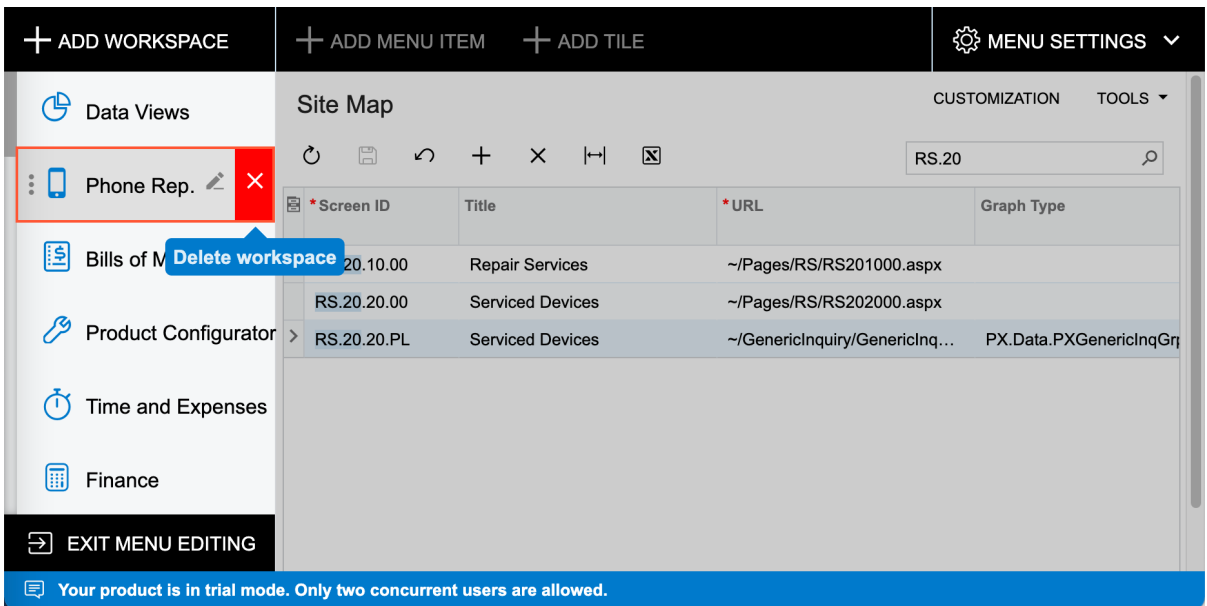


Figure: Deletion of a workspace

- Click **OK** in the warning dialog box.
- Click **Exit Menu Editing**.

You applied the *Yogifon* and *PhoneRepairShop* customization projects to a tenant on your instance. Then you reviewed how the publication of the projects affected the tenants. You have unpublished the customization projects and cleaned up the user interface.

# Part 3: Maintaining System Health

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## Lesson 3.1: Monitoring System Health

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### System Health: General Information

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You use the [System Monitor](#) (SM201530) form for monitoring current application operational data and statistics, as well as for investigating any potential or existing performance issues.

If Acumatica ERP is used on the premises of your company or in your own data center, you can correlate the limitations of the environment in which the system is operating to the data that is shown on this form.

### Learning Objectives

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

- Monitor currently running processes, and discover and analyze any threads that are currently frozen or no longer responding
- Review the list of active users
- Track memory and CPU utilization
- Analyze a log of system events
- Monitor the statuses of push notifications and business event queues
- Use the Request Profiler tool
- Use the Developer Tools of the browser

### Applicable Scenarios

You monitor system health in the following cases:

- You are a system administrator and monitoring system health is a part of your regular duties.
- Users of the system have reported that the site performance has been slow.
- Users of the system have reported that some tasks have failed to complete. For example, scheduled operations have failed or at least one record has not been processed successfully.

### Monitoring Running Processes

On the **Running Processes** tab of the [System Monitor](#) (SM201530) form, you can monitor all batch processing operations that are currently being performed in the system, such as the release of multiple transactions at once, preparation of dunning letters, generation of a report, creation of a tenant snapshot, or use of an import or export scenario. Your server may be slow because of a large number of such operations running simultaneously.

By default, the table displays only the processes of the current user. To view the processes run by all users, you select the **Show All Users** check box on the tab toolbar.

You can navigate to a form where a user has launched a process by selecting the process in the table and clicking **View Screen** on the table toolbar. The system navigates to the form, where you can stop the operation or review any errors that have occurred. For details on mass processing, see [Processing Pop-Up Window](#).

On the **Running Processes** tab, you can abort any process that is running by selecting the process in the list and clicking **Abort** on the table toolbar.

For long operations, Acumatica ERP runs threads. You can discover and analyze the threads that are currently frozen or no longer responding by clicking **Active Threads** on the table toolbar and viewing details in the pop-up panel. If there is at least one active thread, the panel contains information about the currently running threads.

## Reviewing the List of Active Users

You use the **Active Users** tab of the [System Monitor](#) (SM201530) form to review the list of currently active users. You can filter users by the way they have accessed the system, which can be one of the following:

- *User Interface*: The user has signed in by using their username and password on the Acumatica ERP Sign-In page, through the mobile application, or through the single sign-on page if SSO with Google or Microsoft Account has been set up.
- *API*: The user is a client application that has signed in by using the sign-in method of the contract-based SOAP API, contract-based REST API, or screen-based SOAP API, or by using the OAuth 2.0 mechanism of authorization for applications.

You can select a user in the list and click **View User** on the table toolbar, and the system navigates to the [Users](#) (SM201010) form, where it displays information about the currently selected user.

## Tracking Resource Usage

You use the **Resource Usage** tab of the [System Monitor](#) (SM201530) form to monitor how an Acumatica ERP instance is using memory and CPU in the application server where the instance is installed.

At the bottom of the form, you can view charts that illustrate the current CPU and memory usage of the application server by the Acumatica ERP instance. You can switch off the Java script that automatically updates the charts by modifying the value for the `EnableResourceUsageAutoUpdate` key in the `web.config` file.

## Analyzing System Event Log

You use the **System Events** tab of the [System Monitor](#) (SM201530) form to analyze the log of system events. The tab lists log records for multiple system events. You can explore the log for errors, warnings, or operations that consume excessive resources. For details, see [System Health: System Event Log](#).

## Monitoring System Queues

You use the [System Queues Monitor](#) (SM302010) form to monitor the statuses of push notifications and business event queues. By using this form, you can clear queues and restart dispatchers for both push notification and business events.



In a cluster environment, you should access this form by node.

## Using Request Profiler

The Request Profiler is an embedded tool you can use to troubleshoot performance-related issues in Acumatica ERP or an Acumatica Framework-based application. For details, see [System Health: Request Profiler](#).

## Using the Developer Tools

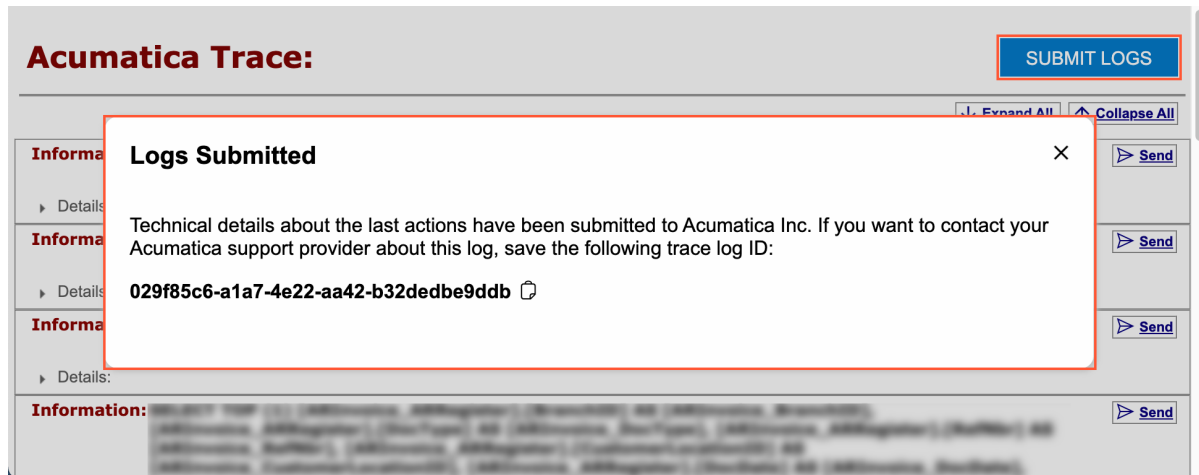
Each browser has a set of web development and debugging tools called Developer Tools. You can use these browser Developer Tools to see all performance metrics of a request-response cycle. For details, see [System Health: To Monitor Performance](#).

## Submitting Performance Logs to Acumatica

In Acumatica ERP, you can enable collection of the diagnostic information and submission of it to Acumatica by selecting the the **Send Diagnostics & Usage Data to Acumatica** check box on the [Site Preferences](#) (SM200505) form. With the check box selected, the diagnostic information is collected and sent to Acumatica. The collected data is used to improve the customer experience, as well as to enhance the products and services of Acumatica. This data transmission takes place in the background without affecting current tasks or the performance of Acumatica ERP instance.

Also, for licensed instances where the collection of diagnostic information is enabled, a user who is experiencing a performance issue can make the system collect more detailed information about the last ten actions.

This user opens the **Acumatica Trace** page by clicking **Tools > Trace...** on the title bar of the form on which the issue is occurring. In the upper right corner of the page, the user clicks **Submit Logs**. The system collects SQL requests and exceptions for the last ten actions of the user and marks this collection with a unique tag. The system sends the information to Acumatica and displays the tag to the user so that the user can save it (see the following screenshot).



*Figure: The submission of performance logs*

If an administrator of the company decides to report the issue to its Acumatica support provider, they can specify the tag in the support request. The tag will help to identify the diagnostic information related to the case.

## System Health: System Event Log

By using the elements in the Selection area of the **System Events** tab of the [System Monitor](#) (SM201530) form, you can narrow the list of events by the sources of the event, the severity level of the event, and the date range.

To view the details of an event, you select the event in the table and the system displays these details in the bottom pane of the form.

### Event Sources

On the **System Events** tab of the [System Monitor](#) (SM201530) form, the system logs events triggered by the following sources:

- Customization
- License
- Push notifications



- Resource governor
- Scheduler
- System

By using the **Source** multiselect drop-down box in the Selection area of the tab, you can narrow the list of events by selecting one source or multiple sources. By default, the *All* option is selected.

## Event Severity Levels

By selecting an option in the **Level** in the Selection area of the **System Events** tab of the *System Monitor* (SM201530) form, you can narrow the list of events by severity level. When you select any severity level, the system narrows the list to only events with the selected level and higher (that is, more severe) severity levels. The box contains the following options, which are listed from the least to most severe:

- *Information* (default): Events of all levels are shown in the table; this is the least severe level.
- *Warning*: The table displays events with the selected severity and with the higher levels, which are *Error* and *Fatal*.
- *Error*: Events of only the *Error* and *Fatal* levels are listed in the table.
- *Fatal*: The table shows only events with the *Fatal* level.

## Logged System Events

In the table below, you can find a list of the events that are logged by the system.

*Table: Logged System Events*

Source	Severity Level	Event
Business Events	Warning	Business event queue dispatcher has been restarted
		Processing of a business event took longer than expected
	Error	Business event queue dispatcher failed
		Business event queue has issues
		Processing of a business event has failed
Customization	Information	A customization project has been published
		A customization project has been unpublished
	Error	Publishing of a customization project failed with an error
License	Information	License has been activated
		License has been deleted
	Warning	Sign-In limit exceeded
		An API request has been throttled
Push Notifications	Warning	Push notification queue dispatcher has been restarted

Source	Severity Level	Event
		Processing of a push notification took longer than expected
	Error	Push notification queue dispatcher failed
		Push notification queue has issues
		Sending of push notification has failed
		Processing of a push notification has failed
ResourceGovernor	Warning	Memory working set exceeded threshold
	Error	A request has been terminated
		An API request has been terminated
Scheduler	Information	Automation Scheduler has been initialized
	Warning	Automation Scheduler has been aborted
		At least one record has not been processed successfully
		Automation Schedule scenario has not been performed due to the database lockout
	Error	Automation Scheduler has failed with an exception
System	Information	The site has started
		The site is shutting down
		Site upgrade has started
		Site upgrade has been applied successfully
		Database upgrade has started
		Database upgrade has been applied successfully
		New tenant has been created
		A snapshot has been successfully restored
		A snapshot has been created
		A tenant copy has been created
		A time-consuming task has finished
	Warning	Database upgrade completed with errors
		A time-consuming task has started

Source	Severity Level	Event
	Error	Site upgrade failed with exception
		Database upgrade failed with exception
		Snapshot restoration failed
		Failed to create a snapshot
		Creating of a tenant copy has failed

## Storage of Event Logs

Logged event details are stored in the database. By default, all events older than 30 days are removed from the database. The built-in removal process launches automatically every day and when a website is restarted.

You can change the default frequency of event log deletion by modifying the value for the `SystemEventDBSink:CleansingPeriod` key in the `web.config` file. The value should be set in the `TimeSpan` format; for example, `0.1:0:0` stands for cleaning the database every hour.

Also, if there are performance issues, you can turn off the logging of the events by changing the value for the `SystemEventsDbSink:Enabled` key to `false` in the `web.config` file.

## System Health: Request Profiler

The [Request Profiler](#) (SM205070) is an embedded tool you can use to troubleshoot performance-related issues in Acumatica ERP or an Acumatica Framework-based application.

You use the [Request Profiler](#) to do the following:

- Monitor the time and memory needed for any URL request performed in Acumatica ERP
- Analyze the time needed for any SQL query of the selected URL request
- Obtain information about the exceptions that have occurred in the Acumatica ERP instance, and view its traces

## Default Monitoring

By default, only expensive requests and important exceptions are monitored in the system—that is, the **Default Logging (Expensive Requests and Requests with Important Exceptions)** check box is selected on the [Request Profiler](#) (SM205070) form, and the following check boxes are cleared:

- **Log Requests (Apply Filter)**
- **Log SQL (Apply Filter)**
- **Log Exceptions**
- **Log Events (Apply Filter)**

You may choose not to perform manual tuning of requirements and to leave these default settings on the [Request Profiler](#) form.

If the default settings are selected, the system logs a request if it meets any of the following criteria:

- The request has a server time of more than 20 seconds, and the request type (shown in the **Request Type** column on the **Requests** tab) is *Screen*, *UI*, *UI-GI*, or *UI-Reports*.

- The request is of any type with a server time of more than 60 seconds.
- The execution of the request has caused any of the following exceptions:
  - `NullReferenceException`
  - `ThreadAbortException`
  - `ArgumentNullException`
  - `ArgumentOutOfRangeException`
  - `IndexOutOfRangeException`

If the default settings are selected, the logged information is displayed on the **Requests**, **SQL**, and **Exceptions** tabs; the **Event Log** tab remains empty.

With the settings in the Summary area of the [Request Profiler](#) form, you can configure the logging requirements more precisely.

## Troubleshooting of a Particular Process

If a particular process, such as the release of a document or the import of a document, takes more time than usual, you can troubleshoot the process by turning on the logging of URL requests, SQL queries, exceptions, and warnings and errors; this is done directly on the form where the process is initiated.

To turn on the logging, you click **Tools > Profiler** on the form title bar and click **Start Logging** in the **Profiler** dialog box. The Request Profiler starts logging URL requests, SQL queries, exceptions, and warnings and errors.

You then reproduce the issue and click **Stop and Export** in the **Profiler** dialog box. (You can close the **Profiler** dialog box, reproduce the issue in the current tab of the browser, and then reopen the dialog box, or do not close the **Profiler** dialog box, reproduce the issue in another tab of the browser, and proceed in the **Profiler** dialog box, which is open.) The Request Profiler returns to the default monitoring and exports a ZIP archive with the log files that contain information in JSON format about the URL requests, SQL queries, and stack trace.



If you have turned on the logging in the **Profiler** dialog box, the Request Profiler automatically returns to the default monitoring when the current user's session is closed or after 30 minutes of logging.

You can import the ZIP archive to another Acumatica ERP instance by clicking **Import** on the form toolbar of the [Request Profiler](#) (SM205070) form and then review the logged information.

For an issue that has just occurred, you can click **Export Last** in the **Profiler** dialog box to export the most recent requests for the current user's session, even if you did not specify the settings of the Request Profiler before the issue occurred.

## Analysis of URL Requests

In the **Request Logging** section of the [Request Profiler](#) (SM205070) form, you can turn on the monitoring of URL requests by selecting the **Log Requests (Apply Filter)** check box. If only specific URL requests should be monitored, you can specify additional filtering criteria by using the other settings of this section in addition to selecting the check box. For example, to monitor only the long URL requests that need more than 1000 milliseconds to run, enter 1000 in the **Server Time Threshold** box of the **Request Logging** section of the Summary area. To monitor URL requests with 500 or more SQL requests, enter 500 in the **SQL Count Threshold** box of this section.

The system displays the list of the logged requests on the **Requests** tab of the [Request Profiler](#) form. You can work with logged requests on this tab as follows:

- Review detailed information about the SQL queries within the particular URL request that is currently selected in the table: To do this, you select a request on this tab and then click **View SQL** on the table toolbar.
- Review detailed information about the events that occurred within the particular URL request that is currently selected in the table: You do this by selecting a request on this tab and then clicking **View Event Log** on the table toolbar.

- Open the Acumatica ERP form specified in the **URL** column of the selected request: You do this by selecting a particular request on this tab and then clicking **Open URL** on the table toolbar.
- Pin particular requests to keep them for further review: To do this, you select a request to be pinned on this tab and then click **Pin/Unpin** on the table toolbar). If you clear the log by clicking **Clear Log** on the form toolbar, the pinned requests remain in the list, while the other requests are cleared.
- Export all requests from the **Requests** tab to an Excel file: To do this, click **Export to Excel** on the table toolbar.

On the **Requests** tab, you can see only the completed requests. To view the requests that are currently executing, you can open the **Requests in Progress** tab of the [System Monitor](#) (SM201530) form. For the requests in progress, the same information is available as the information for the completed request on the **Requests** tab of the [Request Profiler](#) form.

Also, you can see all performance metrics related to a request-response cycle in a single and familiar place, such as the Developer Tools of the browser. For example, in Google Chrome, by using the Chrome Developer Tools, the developer can view the timing of Acumatica ERP processes. On the **Network** tab of Chrome Developer Tools, after an Acumatica ERP form is selected, the **Timing** tab of the panel contains the server times, as shown in the following screenshot.

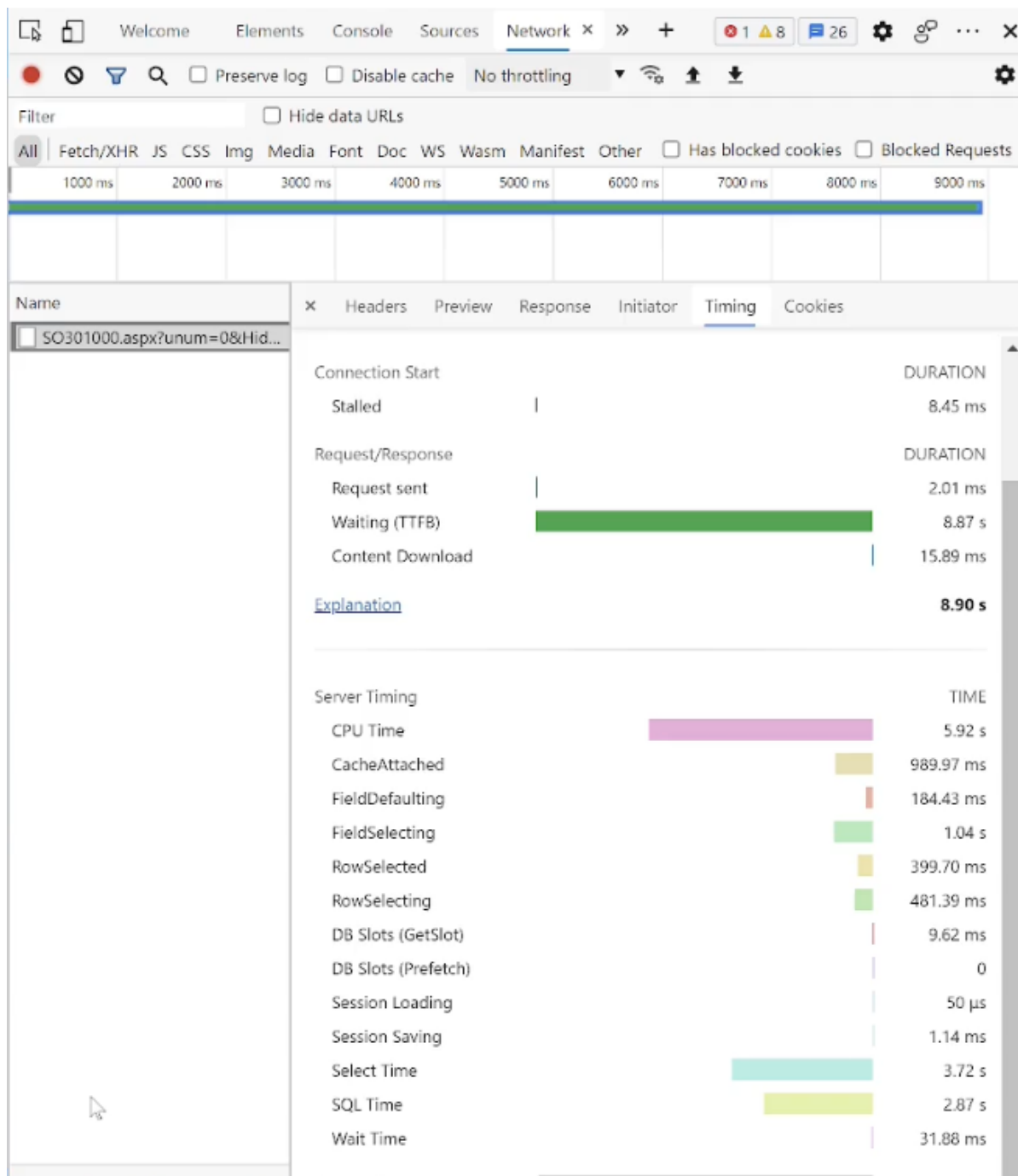


Figure: Chrome Developer Tools with server times

## Analysis of SQL Queries

If on the [Request Profiler](#) (SM205070) form, the **Log Requests (Apply Filter)** check box is selected in the **Request Logging** section, then in the **SQL Logging** section of the Summary area of the form, you can also turn on the monitoring of SQL queries within the monitored URL requests by selecting the **Log SQL (Apply Filter)** check box.

If only specific SQL queries should be monitored, you can specify additional requirements by using the filtering settings of this section. For example, if the **Include Cached SQL Results** check box is selected, the system will include in the log SQL queries that obtain results from a query cache (that is, not from the database). If a keyword (such as a method name) is specified in the **Executed by Method** box, the system will include in the log only the SQL queries for which the stack trace includes the specified keyword.



We recommend that you activate the logging of SQL queries by selecting the **Log SQL (Apply Filter)** check box for only a limited period, because leaving this check box selected can degrade system performance.

The system displays the list of the logged SQL queries on the **SQL** tab of the form. On this tab, you can review the logged SQL queries that comply with the specified filters. The same SQL query may be triggered by multiple URL requests with different parameters. The table displays aggregated information for each query.

When you click a link in the **Statement ID** column for an SQL query listed on this tab, the system opens the **SQL Details** dialog box with detailed information about each execution of the SQL query.

You can export all SQL queries from the **SQL** tab to an Excel file by clicking **Export to Excel** on the table toolbar.

You can also analyze SQL queries in depth on the *SQL Analysis (SM405000)* inquiry form. You can use this form to review all information about executed SQL queries, export data to an Excel file, and build pivot tables and diagrams based on this data. The **All Records** tab of the form displays all information about executed SQL queries. For each record in the table, you can view SQL details and stack traces on the side panels.

On the **Pivot** tab of the inquiry form, for each URL request, you can review detailed information about the execution of SQL requests, such as the following:

- The total number of SQL requests
- The text of SQL requests
- The number of executions of each SQL request
- The percentage of the URL request time that the execution of SQL request takes

## Analysis of Exceptions

By selecting the **Log Exceptions** check box in the **Exception Logging** section of the *Request Profiler (SM205070)* form, you can turn on the logging of exceptions. The system displays the list of the logged exceptions on the **Exceptions** tab of the form. By using this tab, you can review the list of exceptions that have occurred during the processing of requests.

When you click a particular exception on this tab and then click **View Exception Details** on the table toolbar, the system opens the **View Exception Details** dialog box with detailed information about the selected exception.

You can export all exceptions from the **Exceptions** tab to an Excel file by clicking **Export to Excel** on the table toolbar.

## Analysis of Events

By selecting the **Log Events (Apply Filter)** check box in the **Event Logging** section of the Summary area of the *Request Profiler (SM205070)* form, you can turn on the logging of events. You can specify a specific severity level of events by selecting the level in the **Log Level** box. (By default, Warning is selected, but this setting is not applied unless the **Log Events (Apply Filter)** check box is selected.) You can filter the events that the system should log by category by selecting one option or multiple options in the **Category** box. The system displays the list of the logged events on the **Event Log** tab of the form. By using this tab, you can review the list of events that occurred during request processing.



We recommend that you activate the logging of events by selecting the **Log Events (Apply Filter)** check box for only a limited period, because leaving this check box selected can degrade system performance.

When you click an event on the tab and then click **View Event Details** on the table toolbar, the system opens the **View Event Details** dialog box with detailed information about the selected event.

You can export all events from the **Event Log** tab to an Excel file by clicking **Export to Excel** on the table toolbar.

## Cluster Mode

The Request Profiler works in cluster mode. When you run the profiler on a cluster, it launches on all nodes of the cluster. The profiler settings apply to each cluster node.

To specify the identifier of the cluster node, you can use one of the following approaches:

- In the `appSettings` tag of the `web.config` file of the node, specify a string value for the `ClusterNodeId` attribute, such as the following.

```
<add key="ClusterNodeId" value="MyClusterNodeName" />
```

- Create the `...\App_Data\WebsiteHeaders.txt` file, which contains the identifier in the application folder of the node.
- Do not specify the identifier; the system will automatically create a GUID for the cluster node.

If you need to identify a cluster node for the URL request on the [Request Profiler](#) (SM205070) form, use the **Headers** column (which is hidden by default) of the **Requests** tab. In cluster mode, the column contains the GUID or the identifier of the cluster node.

## System Health: To Monitor Performance

The following activity will walk you through the process of viewing and aborting running processes, as well as the use of the [Request Profiler](#) (SM205070) form in Acumatica ERP and the Developer Tools of the browser.



The following activity is based on the *U100* dataset. If you are using another dataset, or if any system settings have been changed in *U100*, these changes can affect the workflow of the activity and the results of the processing. To avoid any issues, restore the *U100* dataset to its initial state.

### Story

Suppose that your colleague complains that the Acumatica ERP instance sometimes has slow progress during the creation of a snapshot and when the colleague works with the [Journal Transactions](#) (GL301000) form. You need to find out what is going wrong and perform the needed actions to restore system performance.

### Process Overview

You will monitor a running process during the creation of a snapshot on the [Tenants](#) (SM203520) form, abort this process by using the [System Monitor](#) (SM201530) form, and then use the [Request Profiler](#) (SM205070) form to find the SQL request with the longest execution time for the [Journal Transactions](#) (GL301000) form.

### Step 1: Viewing and Aborting a Process

Your colleague mentioned performance being quite slow during the creation of a snapshot, so you will view and abort this process to learn more about the source of the problem. Do the following:

1. Open the [System Monitor](#) (SM201530) form.
2. In a new browser tab, open the [Tenants](#) (SM203520) form.
3. In the **Tenant ID** box of the Summary area, leave the default value.
4. On the form toolbar, click **Create Snapshot**, and in the **Warning** dialog box, click **OK**.
5. In the **Description** box of the **Create Snapshot** dialog box, type `Test`.



6. In the **Export Mode** box, leave *Full*.
7. Select the **Prepare for Export** check box.
8. In the **Export Format** box, leave *Binary*.
9. Click **OK**.

This starts the process of creating a snapshot. Depending on the volume of data entered for the company, the process may take a significant amount of time.

10. Open the tab with the [System Monitor](#) form, and refresh the webpage.

On the **Running Processes** tab, you can see the snapshot creation process displayed in the list of currently running processes. For each running process, you can see the user who has started the process, and the screen from which this process has been started. The **Time** column shows how long this process has been running so far.



On this form, you can also monitor all batch processing operations that are currently being performed in the system, such as the release of multiple transactions at once, the preparation of dunning letters, the generation of a report, the creation of a company snapshot, or the use of an import or export scenario. Your server may be slow because of a large number of these operations running simultaneously.

11. On the table toolbar, click **Abort**.

This stops the selected running process (which is also the only running process).

## Step 2: Using the Request Profiler

Your colleague also noticed poor performance of the [Journal Transactions](#) (GL301000) form. In this step, you will use the Request Profiler to find the SQL request with the longest execution time. Perform the following instructions:

1. Navigate to the [Journal Transactions](#) (GL3010PL) form.
2. Click **Tools > Profiler** on the form title bar, and click **Start Logging** in the **Profiler** dialog box, which opens. The Request Profiler starts logging URL requests, SQL queries, exceptions, and warnings and errors.
3. Close the **Profiler** dialog box.
4. Optional: Open the browser Developer Tools.
5. Refresh the [Journal Transactions](#) form, and open the *AP000001* batch.
6. If the browser Developer Tools are open, go to the **Network** tab. In the list of URLs, click the URL that corresponds to the *AP000001* journal transaction, and in the pane that opens, go to the **Timing** tab. In the **Server Timing** table, you can view the time spent on every action and on event handling.
7. Click **Tools > Profiler** on the form title bar, and click **Stop and Export** in the **Profiler** dialog box. The Request Profiler returns to the default monitoring and exports a ZIP archive with the log files that contain information in JSON format about the performed URL requests, SQL requests, and stack trace.
8. In the **Profiler** dialog box, click **Open Request Profiler**. The system opens the [Request Profiler](#) (SM205070) form.
9. On the form toolbar, click **Refresh Results**.
10. Review the requests on the **Requests** tab of the form, and find the request with the longest execution time in the **SQL Time, ms** column.
11. Click this request, and click **View SQL** on the table toolbar.
12. In the table on the **View SQL** dialog box, which is opened, find the line with the highest value in the **SQL Time, ms** column, double-click it, and review the text of the SQL query and stack trace.
13. Close the **View SQL** dialog box.

14. On the form toolbar, click **Clear Log** to erase the logged data.

## Lesson 3.2: Maintaining Database by Using the Web Interface

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### Database: General Information

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In Acumatica ERP, the data for all tenants and snapshots is stored in the database and may take a lot of space. To prevent uncontrolled growth of the database (for example, if you have created many snapshots), the database size available for your Acumatica ERP instance is limited in your license.

#### Learning Objectives

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

- Monitor the size of a database
- Optimize a database
- Clean up a database

#### Applicable Scenarios

You, as a system administrator, monitor and clean up database on a regular basis so that it has sufficient space for users to perform needed operations.

#### Monitoring the Database Size

You use the [Space Usage](#) (SM203525) form to view the system calculations of the used space and the space limit defined by your license. Also, you can review the list of all tenants and snapshots, and view the tables that are consuming a lot of database space. This can help you to identify the actions you should take to reduce the size of the database, if needed.



The statistics of using database space, which are displayed on the [Space Usage](#) form, do not include data related to the System tenant. The statistics includes size of indexes.

Also, we recommend that before you copy a tenant or take, import, or restore a snapshot, you make sure that you have enough database space available for your instance by using the **View Space Usage** action on the toolbar of the [Tenants](#) (SM203520) form.

#### Cleaning Up a Database

To clean up the database so that it has sufficient space for users to perform the needed operations, you can remove the unnecessary tenants (unlicensed or test tenants) and snapshots by using the [Tenants](#) (SM203520) form. Also, on this form, you can click the **Optimize Database** command on the More menu to trigger the validation of the orphaned snapshots and their deletion by the system.

On the **Tables** tab of the [Space Usage](#) (SM203525) form, you can view the list of tables with data related to all tenants and snapshots in your instance, including the size of each table in the Acumatica ERP database. The following tables generally use most of the database space of the Acumatica ERP instance:

- *UploadFileRevision*: Contains information about the database size used for attachments. To find the unused attachments (so that you can delete them), you use the [Search in Files](#) (SM202520) form. For more information, see [Attachments: File Maintenance](#).
- *AUScheduleHistory*: Contains information about the database size used for saving the history of the schedules. To review the forms where the automatic processes are scheduled, you use the [Automation Schedule Statuses](#) (SM205030) form. To delete the history of a particular scheduled process, you use the [Automation Schedule History](#) (SM205035) form. For details, see [Automated Processing: General Information](#).
- *AuditHistory*: Contains information about the database size used for saving the audit history. To review the audit history, you use the [Audit History](#) (SM205530) form. You cannot delete the audit history, so we recommend that you turn on the field-level audit for no more than few forms. For details, see [Managing Field-Level Auditing](#).

## Database: To Monitor the Database Size

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The following activity will walk you through the process of monitoring the size of a database.



The following activity is based on the *U100* dataset. If you are using another dataset, or if any system settings have been changed in *U100*, these changes can affect the workflow of the activity and the results of the processing. To avoid any issues, restore the *U100* dataset to its initial state.

### Story

Suppose that as the number of employees of SweetLife Fruits & Jams has grown and more users perform operations in Acumatica ERP, the database has significantly grown too. System administrators perform a regular review of the database. Now, acting as a system administrator, you need to review the database usage and pay special attention to the space used by the database.

### Process Overview

You will use the [Space Usage](#) (SM203525) form to perform the following operations:

- Calculate the used space of a database
- Review the list existing tenants and snapshots, and identify tenants that are not necessary
- Review the list of tables that take up most of the space and decide what you can do to reduce the space usage

Also, you will use the [Tenants](#) (SM203520) form to run a procedure that removes orphaned snapshots.

### Step 1: Calculating the Used Space

To calculate the used space of the database, do the following:

1. Open the [Space Usage](#) (SM203525) form.
2. On the form toolbar, click **Calculate Used Space**. Wait for the system to complete the operation.
3. After the space usage calculation is finished, review the data on the following tabs:
  - **Tenants**: The table lists all tenants that are used in the system. Review the size of each tenant in the system.
  - **Snapshots**: The table lists the snapshots that are stored in the database. Review the size of each snapshot.

- **Tables:** Review the tables with data related to all tenants and snapshots in your instance. Filter the list of the tables according to the record quantity or the size to detect the tables consuming the most space.

## Step 2: Cleaning Up the Database

To optimize the Acumatica ERP database, do the following:

1. Open the [Tenants](#) (SM203520) form.
2. On the More menu, click **Optimize Database**.
3. In the warning dialog box that opens, click **Yes**. The system detects and removes the unnecessary tenants or the orphaned snapshots automatically.
4. On the More menu, click **View Space Usage**.
5. On the form toolbar of the [Space Usage](#) (SM203525) form, which opens, click **Calculate Used Space** to recalculate the space usage and review the updated amount of the database space.

## Lesson 3.3: Building Search Indexes

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### Search Indexes: General Information

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Within Acumatica ERP, users can perform searches in Help topics, wikis, and various entities, such as vendors, customers, invoices, and contracts. To make the process quick and accurate, Acumatica ERP uses semantic search and search indexes.

### Learning Objectives

In this chapter, you will learn how to build search indexes.

### Applicable Scenarios

You need to rebuild the search indexes in the following cases:

- You receive complaints from the users of the system on the quality of search results. You rebuild the search indexes as the first step of the investigation process of the reported issue.
- You have upgraded your Acumatica ERP system from a version that did not include the search indexes.

### Semantic Search in Acumatica ERP

Acumatica ERP uses semantic search through SQL databases, which allows the system to identify the key phrases in text or documents, discover similar or related documents, and provide information to explain how documents are similar or related.

To employ semantic search in your Acumatica ERP instance, make sure that semantic search functionality is enabled, which depends on your SQL server as follows:

- In Microsoft SQL Server, the semantic search functionality is disabled by default. Enable the functionality, as described in [Enabling Semantic Search for Microsoft SQL Server](#) in Acumatica ERP Installation Guide.
- In MySQL Server, the semantic search functionality is enabled by default.

## Search Indexes

The search indexes are used to accelerate searching in Acumatica ERP. When users perform day-to-day operations, such as adding new documents or updating customer accounts, new information is added to the appropriate search indexes automatically.

The list of indexed entities, excluding the wikis, is available on the [Rebuild Full-Text Entity Index](#) (SM209500) form. By using this form, you can rebuild selected search indexes or all of them at once.



We strongly recommend rebuilding search indexes after upgrading Acumatica ERP to the next version.

The indexing of the data may take some time. In the **Processing** dialog box, the green check mark appears for the indexes after their successful creation. The red check mark appears for the indexes that could not be built.

## Recreation of Search Indexes

If the system failed to rebuild some search indexes, you can recreate all the indexes. On the More menu of the [Rebuild Full-Text Entity Index](#) (SM209500) form, you click **Clear All Indexes** to remove all the indexes. Then on the form toolbar you click **Process All** to build all the indexes anew.

## Wiki Search Indexes

The built-in Help wikis are indexed automatically. The wikis created in your system are not indexed automatically; you need to build indexes for such wikis manually. On the More menu of the [Rebuild Full-Text Entity Index](#) (SM209500) form, you click **Index Custom Articles** to initiate indexing of your custom articles. Wiki search indexes are not displayed on the [Rebuild Full-Text Entity Index](#) form.

## Known Limitations to Search Queries

A semantic search does not find related entities if the search query includes word breakers, such as `AND` or `FOR`.

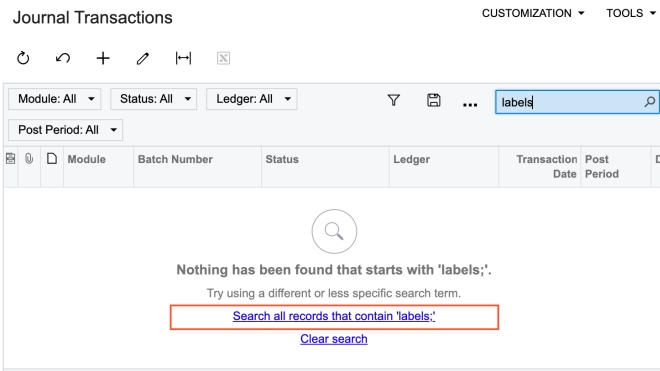
For example, suppose that you want to find related entities by using a description as a search query. The description includes at least one word breaker, so in this case, the search returns no results.

## Configuration of a Search Condition

You can control which condition the system uses by default for the searches performed with the search box in tables. You select a condition in the **Search Condition** box on the [Site Preferences](#) (SM200505) form. The following options are available:

- *Contains* (default): The system converts the *Contains* condition to the `LIKE ' %X% '` inquiry in MS SQL; the search may take some time and cause performance issues. This option is offered to preserve backward compatibility.
- *Starts With*: The *Starts With* condition (`LIKE 'X%'` in MS SQL) works quicker when a user is searching for a record in a table.

If the *Starts With* option is selected, the system uses this condition by default for these searches. If a search returns no results, the system notifies the user and provides a link the user can click to perform the search with the *Contains* condition instead; see the following screenshot.



**Figure:** The system offers the link to perform the search with the Contains condition



The system applies the configured search condition only to the Search box of the tables.

## Search Indexes: To Rebuild Search Indexes

The following activity will walk you through the process of rebuilding search indexes.



The following activity is based on the *U100* dataset. If you are using another dataset, or if any system settings have been changed in *U100*, these changes can affect the workflow of the activity and the results of the processing. To avoid any issues, restore the *U100* dataset to its initial state.

### Story

Suppose that the users of the system have started complaining that the system does not return any search results when users search for a customer profile. Acting as the system administrator, you need to investigate the issue, and the first step you plan to take is rebuilding the search index for customer profiles.

### Process Overview

You will use the [Rebuild Full-Text Entity Index](#) (SM209500) form to rebuild the search index for customer profiles.

### Step: Rebuilding a Search Index

To rebuild a search index, do the following:

1. Open the [Rebuild Full-Text Entity Index](#) (SM209500) form.
2. In the **Name** column, search for the *Customer* record, and select the unlabeled check box in the row with this record.
3. On the form toolbar, click **Process**. The **Processing** dialog box opens, showing the progress and, as soon as the processing has completed, the results of rebuilding search indexes.
4. Click **Close** to close the dialog box.

In this activity, you have rebuilt the search index for the customer profiles.

## Lesson 3.4: Updating Acumatica ERP by Using the Web Interface

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### Update of Acumatica ERP: General Information

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Updates to Acumatica ERP provide functional enhancements and new functionality. Updates are distributed in builds (as installation packages), which include fixes to issues that have been reported and may also contain functionality improvements. Builds are cumulative—each new build contains everything from previous builds, along with any new fixes. Thus, you do not have to install any previous builds before you install the latest build.

You can use the Acumatica ERP web interface to remotely update Acumatica ERP (which is installed on the premises of your organization or on Amazon EC2) to a newer version or build.



The ability to update an instance by using the web interface is not available for SAAS customers of Acumatica Business Cloud. For details, contact your Acumatica support provider.

### Learning Objectives

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

- Configure update preferences
- Prepare for update
- Schedule the system lockout and unlock the system afterward
- Install a minor update

### Applicable Scenarios

You use the web interface only for minor updates to Acumatica ERP (that is, updates released between major versions of the product).



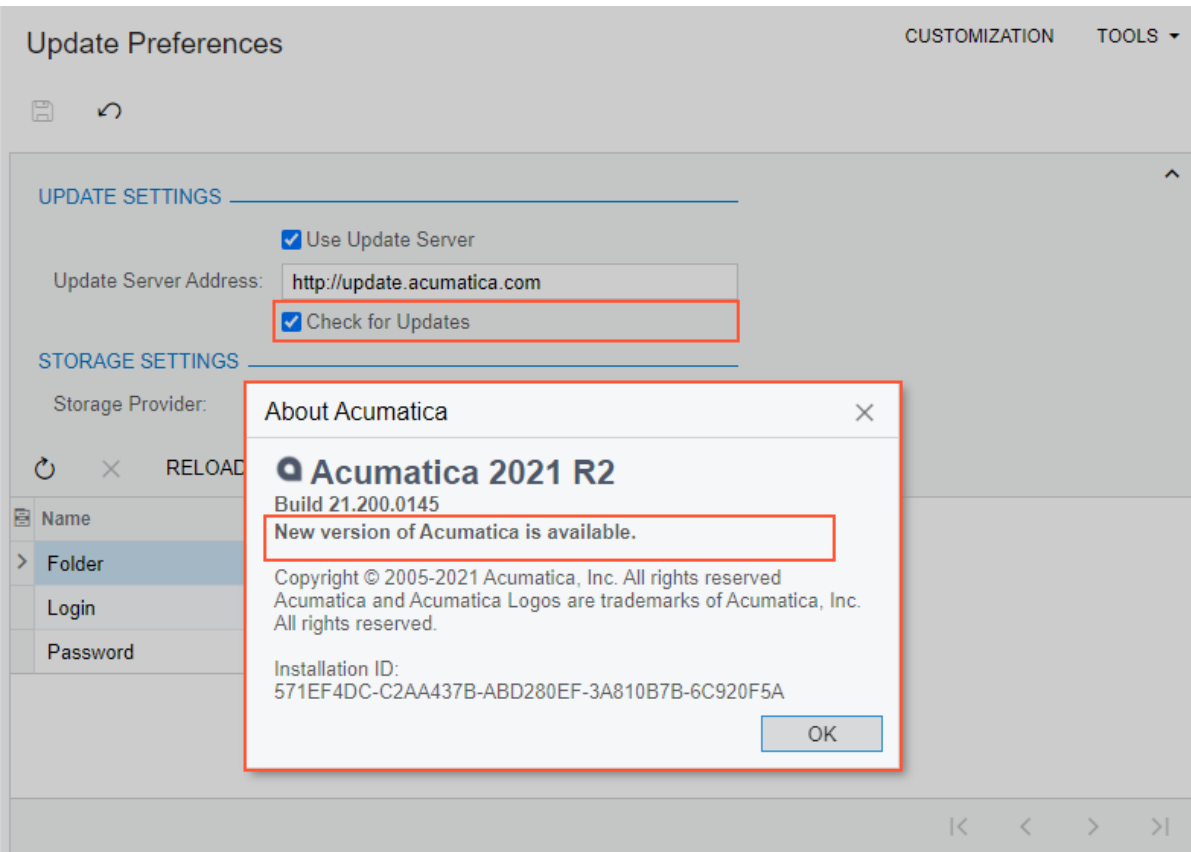
Upgrading between major versions by using the web interface is not supported due to significant changes in customization projects. You should use the Acumatica ERP Configuration Wizard instead.

### Download of Updates from the Acumatica Update Server

If a server with Acumatica ERP is connected to the Internet, you can download installation packages directly from the Acumatica update server before installation. You use the [Update Preferences](#) (SM203505) form to configure the connection to the Acumatica update server. By default, the address of the server (<http://update.acumatica.com>) is specified in the **Update Server Address** box on the form.

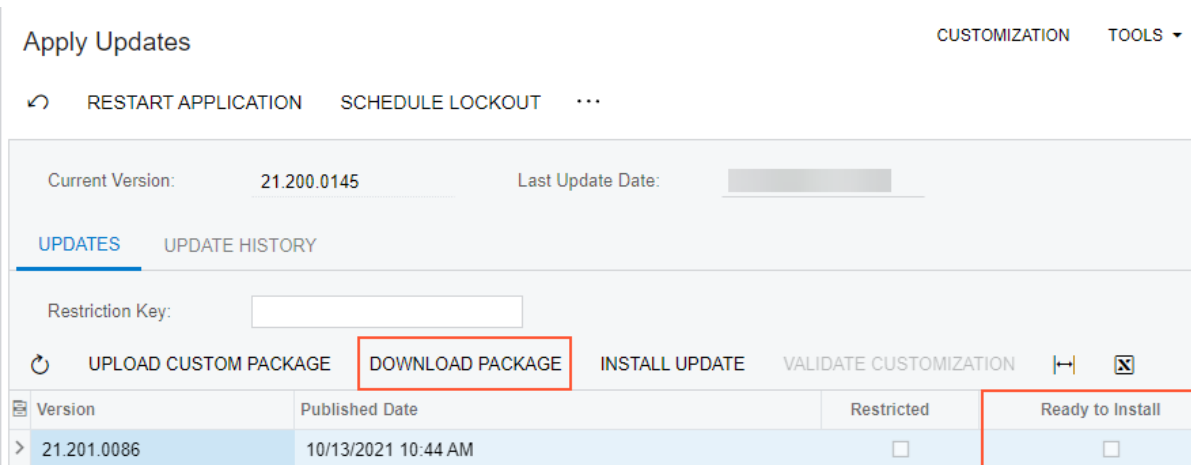
To make the system download installation packages from the update server, you select the **Use Update Server** check box on this form.

To make the system automatically check for new updates, you select the **Check for Updates** check box. When a new product update (a major version or a minor update) has been approved and released by the Acumatica Quality Assurance team, a notification appears in the **About Acumatica** dialog box; see the following screenshot. (To open this dialog box, sign in to the system, and on the form title toolbar, click **Tools > About**.)



**Figure: Notification about a new version**

Available product updates are listed on the **Updates** tab of the [Apply Updates](#) (SM203510) form. The check box in the **Ready to Install** column indicates whether an installation package has been downloaded and thus is ready to be installed. To download the package from the update server, you click **Download Package** on the table toolbar (see the following screenshot).



**Figure: An update available for download from the Acumatica update server**

After the system downloads the package, it selects the check box in the **Ready to Install** column for the update. You click **Install Update** to initiate the installation of the new build.



## Manual Download of Updates and Use of Custom Packages

In some cases, you might not want to configure a connection to Acumatica update server. You can download a needed installation package on the [builds.acumatica.com](https://builds.acumatica.com) website. A path to an installation package is as follows: `builds/<major_version>/<build_number>/Packages/ErpPackage.zip`. Also, you may receive a custom installation package issued specifically for your company.

On the [Apply Updates](#) (SM203510) form, you can upload an installation package from your local computer to the system by clicking the **Upload Custom Package** button on the table toolbar of the **Updates** tab. On the same tab, when the download is complete, the **Ready to Install** check box is automatically selected for the uploaded package in the table.

## Preparation to Update

In most cases, you do not need to perform any preparations before the upgrade of the system, except for switching on maintenance mode by locking the system. For the list of recommended preparations, see [Update of Acumatica ERP: Preparation Checklist](#).

## Lockout of the System

We recommend that you switch on maintenance mode when you are updating the system. In this mode, users cannot access the system and process documents; therefore, it is safe to apply updates. When the lockout is in effect, non-administrative users will see a message on the Sign-In page indicating that the site is under maintenance, as the following screenshot demonstrates.



The site is under maintenance. Only administrators can log in.

Reason: Maintenance

Select a tenant

01\_U100

Enter credentials

Username

Password

Sign In

[Forgot your credentials?](#)

*Figure: A lockout message on the Sign-In page*



When the lockout is in effect, the following happens in the system:

- Only users that have the *Administrator* role can sign in to the system.
- The system stops all processes that were run by schedule.

To switch on maintenance mode, you click **Schedule Lockout** on the form toolbar of the [Apply Updates](#) (SM203510) form. In the **Schedule Lockout** dialog box, which opens, you specify the date and time when the system will be locked out and the reason for the lockout.

## Post-Update Operations

When you update Acumatica ERP by using the web interface, both the site and the database of the application are updated at the same time.

After you have updated the system, you need to build the search indexes by using the [Rebuild Full-Text Entity Index](#) (SM209500) form.



- We strongly recommend rebuilding the search indexes by using the [Rebuild Full-Text Entity Index](#) form after the system has been updated.
- The indexing of the data may be a time-consuming process if a very large number of records has been created in the system.

You can check if the system has the search indexes that were built before the update by performing a search—such as searching for a particular document or transaction by its reference number or ID, or searching for a customer by its name.

After finishing the update, you need to manually switch off maintenance mode (that is, unlock the system) by clicking **Stop Lockout** on the form toolbar of the [Apply Updates](#) (SM203510) form.

## Update of Acumatica ERP: To Update an Instance by Using the Web Interface

The following activity will walk you through the process of updating an Acumatica ERP instance by using the web interface.



The following activity is based on the *U100* dataset. If you are using another dataset, or if any system settings have been changed in *U100*, these changes can affect the workflow of the activity and the results of the processing. To avoid any issues, restore the *U100* dataset to its initial state.

### Story

Suppose that your company deployed Acumatica ERP on-premises. Acting as the system administrator, you have received notification that a new minor update is available and approved the update installation with your manager.

### Process Overview

You will download an installation package at the [builds.acumatica.com](https://builds.acumatica.com) website.

In your Acumatica ERP instance, you will use the [Apply Updates](#) (SM203510) form to perform the following operations:

1. Uploading the package with the update.
2. Scheduling system lockout.
3. Unlocking the system.

For the purposes of this activity, you will not actually install the update. This is because system updates may take some time, and the instance and all its tenants will not be available during this time.

### Step 1: Downloading an Installation Package

To download an installation package from the [builds.acumatica.com](https://builds.acumatica.com) website, do the following:

1. Go to [Amazon Storage](#).
2. Open the `Packages` folder from the latest build number of the current Acumatica ERP version (for example, `builds/22.1/22.102.0054/Packages`).
3. Perform the necessary steps, which depend on your browser and settings, to locally save the `ErpPackage.zip` file.

## Step 2: Uploading the Custom Package

To upload an Acumatica ERP custom package, do the following:

1. Launch the Acumatica ERP website, and sign in to a company with the *U100* dataset preloaded. You should sign in as the system administrator by using the *gibbs* username and the *123* password.
2. Open the [Apply Updates](#) (SM203510) form.
3. On the **Updates** tab, click **Upload Custom Package** on the table toolbar.
4. In the **Upload file** dialog box, click **Choose File** and select the installation package that you have downloaded from the [builds.acumatica.com](https://builds.acumatica.com) website.
5. Click **Upload**.

The system adds a new record to the table with the uploaded installation package with the check box in the **Ready to Install** column selected (see the following screenshot).

The screenshot shows the 'Apply Updates' form in Acumatica ERP. At the top, there are tabs for 'CUSTOMIZATION' and 'TOOLS'. Below the form title, there are buttons for 'RESTART APPLICATION', 'SCHEDULE LOCKOUT', and a menu icon. The main area displays 'Current Version: 22.10' and 'Last Update Date:'. Below this, there are tabs for 'UPDATES' and 'UPDATE HISTORY'. A 'Restriction Key' input field is present. A toolbar contains buttons for 'UPLOAD CUSTOM PACKAGE', 'DOWNLOAD PACKAGE', 'INSTALL UPDATE', and 'VALIDATE CUSTOMIZATION'. Below the toolbar is a table with the following data:

Version	Published Date	Restricted	Ready to Install
22.10		<input type="checkbox"/>	<input checked="" type="checkbox"/>
22.10		<input type="checkbox"/>	<input type="checkbox"/>

*Figure: Uploaded installation package that is ready for installation*

## Step 3: Scheduling System Lockout

To switch on maintenance mode and lock the system, do the following:

1. While you are still on the [Apply Updates](#) (SM203510) form, click **Schedule Lockout** on the form toolbar.
2. In the **Schedule Lockout** dialog box, leave the default settings and click **OK**.
3. Sign out of the system.
4. On the Sign-In page, observe the maintenance warning.
5. Open a new browser window in private mode.
6. Launch the Acumatica ERP website and sign in to the system as a company accountant by using the *pasic* username and the *123* password.
7. Notice that the system redirects you to the Maintenance page with the warning, as the following screenshot demonstrates.

**Site is under maintenance and can not be accessed at this time.  
Reason: Maintenance**

*Figure: The Maintenance page with the warning*

8. On the browser tab that you used to sign in to the system as the system administrator, sign in by using the *gibbs* username and the *123* password. Notice that the home page of your Acumatica ERP instance opens.

#### Step 4: Unlocking the System

To stop the lockout of the system, do the following:

1. Open the [Apply Updates](#) (SM203510) form.
2. On the form toolbar, click **Stop Lockout**.
3. Sign out of the system.
4. On the Sign-In page, observe that the maintenance warning is not displayed.

In this activity, you have downloaded an installation package and uploaded it to the system. You scheduled the system lockout and then stopped it.

# Additional Materials

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## Appendix 1: Managing Tenants, Snapshots, Customization Projects, and Scheduled Processing

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### Snapshots: Custom Snapshot Configurations

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A snapshot consists of the data from the SQL database tables that are included in the snapshot. The list of tables to be included in a snapshot is defined by the export mode that you select when you use the [Tenants](#) (SM203520) form to take a snapshot. A predefined set of options is available for selection in the **Export Mode** box of the **Create Snapshot** dialog box. If the predefined options do not suit your needs—for example, for data security reasons—you can configure and add custom options.

In this topic, you will read about how snapshot configuration is stored and can be modified.

#### Snapshot Configuration Storage

The contents of a snapshot that does not include all data—that is, a snapshot with any export mode except the *Full* option selected in the **Export Mode** box of the **Create Snapshot** dialog box of the [Tenants](#) (SM203520) form—are defined by a corresponding snapshot configuration file with the `.esc` extension. Usually these files can be located in `%Program Files%\Acumatica ERP\<instance name>\App_Data\SnapshotConfigs`, where *<instance name>* is the name of the application instance website.

#### Creation of Custom Configurations

When the system is creating a snapshot, it goes through all tables specified in the configuration file and copies all data with no restrictions or validation. If you want to preserve some data that you consider sensitive—for example, user passwords and settings for connecting with third-party applications—we recommend that you create your own snapshot configuration files to preserve this data, down to SQL table fields. You can either exclude tables and table fields from snapshots or replace data in table fields with predefined values. For examples of configuration settings, see [Snapshots: Examples of Sensitive Data Being Excluded from Snapshots](#).



We do not recommend modifying predefined snapshot configuration files, because during upgrade, these files will be replaced with the next predefined version.

You can save a copy of the predefined configuration file with a custom name to the same location where the other configuration files are stored and modify its contents to suit your needs. When you are ready with the modifications, you click **Restart Application** on the [Apply Updates](#) (SM203510) form, which makes your custom export mode available for the creation of a snapshot on the [Tenants](#) (SM203520) form.



Make sure that all users of your website are warned about the site restart so that they can save all documents.

## Snapshots: Examples of Sensitive Data Being Excluded from Snapshots

The protection of sensitive data is critical to organizations and to users. Which data must be protected depends on many factors, including regulation (which is often mandatory), organization policy, contractual obligations, and user expectations.

Because snapshots may copy data you identify as sensitive, Acumatica ERP provides a way to exclude this data from the snapshots. You can preserve the data from particular SQL tables down to particular table fields by configuring snapshot configuration files. Use the following examples to better understand and configure snapshot configuration files.

### Prohibiting the Export of User Records

If you want to export the *Baker* user record but no other user records, add the following section to the snapshot content file.

```
<Include table="Users" preserve="true"
condition ="where Username = 'Baker'">
</Include>
```

### Exporting User Records with a Predefined Password

If you want to export user records but change users' passwords to a predefined value (*password* in this example), add the following section to the snapshot content file.

```
<Include table="Users" preserve="true"
<ResetColumn name="Password" value="password" />
</Include>
```

### Prohibiting the Export of the BLOB Provider Settings

If you don't want to export binary large object (BLOB) provider settings, add the following section to the snapshot content file.

```
<Exclude table="BlobStorageConfig" preserve="true"/>
<Exclude table="BlobProviderSettings" preserve="true"/>
```

### Prohibiting the Export of the Key of the BLOB Provider Settings

To export all BLOB provider settings except for the provider key, add the following section to the snapshot content file.

```
<Include table="BlobStorageConfig" preserve="true"/>
<Include table="BlobProviderSettings" preserve="true"
condition="where Name <> 'Key'"/>
```

### Replacing the Key of the BLOB Provider Settings on Export

To export all settings of the BLOB provider but empty the provider key value, add the following section to the snapshot content file.

```
<Include table="BlobStorageConfig" preserve="true"/>
<Include table="BlobProviderSettings" preserve="true"
  condition="where Name = 'Key'">
  <ResetColumn name="Value" value=""/>
</Include>
```

## Automated Processing: Implementation Checklist

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The following sections provide details you can use to ensure that the system is configured properly for scheduling automated processing.

### Implementation Checklist

We recommend that before you initially schedule automated processing, you make sure the needed features have been enabled, settings have been specified, and entities have been created, as summarized in the following checklist.

Form	Criteria to Check
Multiple forms	Make sure that the minimum configuration of the company has been performed, as described in <a href="#">Preparing a Company for Implementation</a> .
Multiple forms	Make sure that the minimum configuration of the standard financial functionality has been performed, as described in <a href="#">Implementing Basic Financials</a> .
<a href="#">Enable/Disable Features</a> (CS100000)	The <i>Scheduled Processing</i> feature has been enabled.

### Validation of Configuration

To make sure that all configuration has been performed correctly, we recommend that in your system, you perform instructions similar to those described in [Automated Processing: To Configure Scheduled Processing](#).

## Appendix 2: Maintaining System Health

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### Update of Acumatica ERP: Preparation Checklist

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The following section provides details you can use to ensure that the system is properly prepared for applying an update to the system.

#### Preparation Checklist

We strongly recommend that before you apply an update to your instance of Acumatica ERP, you perform preparation operations, as summarized in the following checklist.



Form	Operation
Not applicable	Back up all configuration files and databases used by the application instances.
Not applicable	If you have created any custom views with the <code>SCHEMABINDING</code> clause in the Acumatica ERP database, remove them. (You can create these views anew after update.)
Not applicable	If you have been replicating the Acumatica ERP database, turn off the replication. (Otherwise, the system cannot be updated.)
Not applicable	If you developed a client application by using the screen-based SOAP API, follow the procedure described in <a href="#">To Update a Client Application that Uses Screen-Based Web Services</a> to prevent a failure of your application that can happen because of the UI changes in the system.
Not applicable	<p>The system deletes all custom files from the Acumatica ERP site folders during an update. You can keep custom files in the <code>Bin</code> folder by doing one of the following:</p> <ul style="list-style-type: none"> <li>• Including all custom files in a customization package and publishing this customization package on the site</li> <li>• Adding the file names to the file with the <code>.preserve</code> extension in the same folder</li> </ul>
<a href="#">Automation Schedule Statuses</a> (SM205030)	Make sure that no processes are scheduled for the update time. If you find any scheduled processes, reschedule them so that they start after the update.
<a href="#">Tenants</a> (SM203520)	On the form toolbar, click <b>Optimize Database</b> to check your Acumatica ERP database for orphaned snapshots and delete them if the system finds any orphaned snapshots.
<a href="#">Apply Updates</a> (SM203510)	Schedule the system lockout before the upgrade.
<a href="#">Apply Updates</a> (SM203510)	If you have published customization code in your Acumatica ERP instance, we recommend validating the compatibility of the currently published customization code with the code of the selected product version. To start the validation, on the <b>Updates</b> tab of the form, select the product update in the table and click <b>Validate Customization</b> on the table toolbar. For details, see <a href="#">To Resolve Issues While Upgrading a Customized Website</a> .