Contents

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Software Version: 2019 R1

Last updated: March 11, 2019

Introduction

This document provides important information about fixes, enhancements, and key features that are available in Acumatica ERP 2019 R1. The document is designed particularly for to those who install Acumatica ERP. All users can benefit from reviewing this content to determine how they may benefit from the changes in this release.

The document with information fixes, enhancements, and key features for those who customize Acumatica ERP or develop applications for it can be found in the separate *Release Notes for Developers* document.

To try new features and improvements, you can use the demo company, which you can easily deploy by selecting the *SalesDemo* item in the Acumatica ERP Configuration Wizard. For detailed information on deploying the demo company and working with the demo data, see *Demo Materials* on the Acumatica partner portal.

Installation and Upgrade Notes

For a detailed description of the general procedure of updating Acumatica ERP, see *Updating Acumatica ERP* in the Installation Guide.

We strongly recommend that before you update Acumatica ERP to a newer product version, you back up all configuration files and databases used by the application instances. An upgrade to Acumatica ERP 2019 R1 from previous major versions (such as Version 2018 R2) may cause issues with customizations and dashboards.

Multiple changes have been made in Acumatica ERP 2019 R1 in comparison to Version 2018 R2 that may affect customizations and integrations. For details, see *Release Notes for Developers*

If your Acumatica ERP instance was integrated with software provided by an independent software vendor (ISV) partner, we recommend that you consult with your partner about the compatibility of its products with Acumatica ERP 2019 R1.

Upgrade Policy

On the *Apply Updates* (SM203510) form, only minor updates for your current version of Acumatica ERP are available. You should upgrade your Acumatica ERP instance from previous major versions of the system to Version 2019 R1 manually on the server. (An upgrade through the web interface is not supported because the customization of your Acumatica ERP instance may be incompatible with Version 2019 R1 due to changes in Version 2019 R1.)

Prerequisite Steps

Before administrators install or upgrade Acumatica ERP 2019 R1 locally, they need to do the following:

1. Switch the Internet Information Services application pool where your Acumatica ERP 2019 R1 instance will be installed to Integrated mode. (Classic mode is not supported.)

2. Install Microsoft .NET Frameworks 4.7.1 on the server where your Acumatica ERP 2019 R1 instance will be installed.

Upgrade Notes

The upgrade to Acumatica ERP 2019 R1 must be performed as described in the following table. The upgrade process depends on the version from which you are upgrading.

> **Important:** For customers who use Acumatica add-in for Microsoft Outlook, administrators must do the following after upgrade: On the *Access Rights by Screen* (SM201020) form, set up access rights for the Outlook Add-In (OU201000) form for needed roles or reset access rights by selecting *Not Set* for the *Administrator* role.

From Version	Upgrade Path
2019 R1 Beta	An upgrade to later builds of Acumatica ERP 2019 R1 is supported.
2019 R1 Preview 2	An upgrade to later builds of Acumatica ERP 2019 R1 is not supported. You must completely remove all components of the system and install the later build from scratch.
2019 R1 Preview 1	An upgrade to later builds of Acumatica ERP 2019 R1 is not supported. You must completely remove all components of the system and install the later build from scratch.
2018 R2	A direct upgrade to Acumatica ERP 2019 R1 is supported.
2018 R1	A direct upgrade to Acumatica ERP 2019 R1 is supported.

From Version	Upgrade Path
2017 R2	A direct upgrade to Acumatica ERP 2019 R1 is supported.
6.2	A direct upgrade to Acumatica ERP 2019 R1 is supported.
6.1	A direct upgrade to Acumatica ERP 2019 R1 is supported.
6	Incremental upgrade is required. The following steps must be performed in the listed order: 1. Upgrade to the latest 2017 R2 X build available 2. Upgrade to Version 2019 R1
5.3	Incremental upgrade is required. The following steps must be performed in the listed order: 1. Upgrade to the latest 2017 R2 X build available 2. Upgrade to Version 2019 R1

Acumatica ERP 2019 R1 can be upgraded from the following particular versions:

- 2018 R2 Update 10 (18.210.0010) and earlier
- 2018 R1 Update 17 (18.117.0016) and earlier
- 2017 R2 Update 17 (17.217.0007) and earlier
- 6.1 Update 27 (6.10.2717) and earlier

Finance: Ability to Process Payments from New Credit Cards

In previous versions of Acumatica ERP, to be able to accept payments from new credit cards, a user had to first define a customer payment profile for the customer with this credit card. In Acumatica ERP 2019 R1, information about a new credit card can be entered when a user processes a payment on the *Payments and Applications* (AR302000) form. This functionality is also supported on mobile devices running the Acumatica ERP mobile app.

When a user needs to accept a payment from a customer's credit card that is not stored in the system, the system now supports the following workflow:

1. The user creates a payment or prepayment on the *Payments and Applications* form.

2. The user initiates the processing of a credit card payment by clicking **Actions** > **Capture CC Payment** or **Actions** > **Authorize CC Payment**.

3. The system displays the form provided by the processing center, with the payment amount, payment ID, and customer address filled in.

4. The user enters the new credit card data and initiates the payment.

5. The system sends the payment data to the processing center.

6. The system receives a response from the processing center; it then saves the transaction data, customer profile ID, and customer payment profile ID for further reference.

For details on entering new credit card information when processing a payment, see *To Enter a Payment from a New Credit Card*.

Processing of Transactions Held for Review by the Processing Center

The workflow of processing suspicious transactions has been changed. If a user enters a suspicious transaction, the system displays a warning message and assigns the *Held for Review (Authorize)* or *Held for Review (Capture)* status to this transaction, which should then be approved. Users can view these statuses on the *Sales Orders* (SO301000), *Invoices* (SO303000), *Payments and Applications* (AR302000), and *Cash Sales* (AR304000). The conditions defining which transactions should be held for review are defined in the Fraud Detection Suite of the processing center.

If a credit card transaction receives the *Held for Review (Authorize)* or *Held for Review (Capture)* status, a user should go to *https://www.authorize.net/*, click **Transaction Search** > **Suspicious Transactions**, and approve or void the transaction.

After the transaction has been processed in Authorize.Net, the user should click **Actions** > **Validate CC Payment** on an appropriate form in Acumatica ERP. As a result, the system performs the following actions:

1. Updates the processing status of the transaction on the appropriate form.

2. On the **Credit Card Processing Info** tab of the appropriate form, adds an appropriate transaction record.

3. One of the following, depending on the transaction type and whether the transaction has been approved or voided:

    • For approved capture transactions: The system will release the payment and, for a payment from a new card, will create a customer payment method and assign it to this payment.

- For approved authorization transactions: The system will create a customer payment method for a payment from a new card and assign it to this payment.

Changes to the Processing Centers (CA205000) Form

On the *Processing Centers* (CA205000) form, in the Summary area, the **Accept Payments From New Card** check box has been added. This check box is available for the processing centers that use the Authorize.Net API plug-in. To use the new functionality to process payments from a new credit card, a user should select this check box for the processing centers that use the *Authorize.Net API* plug-in and that can be selected when a user processes a payment on the *Payments and Applications* (AR302000) form.

> **:** To continue using the old functionality, a user should first add a new card on the *Customer Payment Methods* (AR303010) form and leave the **Accept Payments from New Card** check box cleared on the *Processing Centers* form.

Additionally, the **Your Signature Key** row has been added to the table on the **Settings** tab, as shown in the following screenshot.

Figure: The Processing Centers form

The value in this row is provided by Authorize.Net and is entered by a user. This value is used by the web hooks by which Acumatica ERP gets a response from the processing center.

Changes to the Payments and Applications (AR302000) Form

On the *Payments and Applications* (AR302000) form, the **New Card** check box has been added to the Summary area, as shown in the screenshot below. The check box becomes available for selection when the user selects a payment method associated with credit card payments that has a processing center allowing payments from new cards.

Payments and Applications

⬅	SAVE & CLOSE	🖫	↶	+	🗑	🗋 ▾	I<	<	>	>I	RELEASE	VOID	ACTIONS ▾	INQUIRIES ▾	REPORTS ▾

Type:	Payment ▾	* Customer:	ABARTENDE - USA Bartending Scho 🔍 ✎	Payment Amo...	230.00
Reference Nbr.:	<NEW> 🔍	* Location:	MAIN - Primary Location 🔍	Applied to Doc...	0.00
Status:	Balanced	Payment Meth...	MASTERCARD - Mastercard tokenize 🔍	Applied to Ord...	0.00
	☐ Hold	Proc. Center ID:	ANTOKENAPI - Authorize.Net tokeniz 🔍	Available Bala...	230.00
* Application Date:	1/11/2019 ▾	☑ New card		Write-Off Amo...	0.00
* Application Pe...	01-2019 🔍	* Cash Account:	10600 - Credit Card Account 🔍	Finance Charg...	0.00
* Payment Ref.:	PMT01480	Currency:	USD 1.00 ▾ VIEW BASE	Deducted Cha...	0.00
		Description:			
		Processing St...			

DOCUMENTS TO APPLY	APPLICATION HISTORY	ORDERS TO APPLY	FINANCIAL DETAILS	APPROVAL DETAILS	CREDIT CARD PROCESSING INFO

↻	+	✕	LOAD DOCUMENTS	|↤|	⊠

🖹 🔗 🗋	Branch	Doc. Type	*Reference Nbr.	Customer	Amount Paid	Cash Discount Taken	Balance Write-Off	Write-Off Reason Code	Date	Due Date	Cash Discount Date	Cross Rate	Balance

Figure: The Payments and Applications form

The dialog box provided by the processing center, which is shown in the following screenshot, is displayed when the **New Card** check box is selected and the user clicks **Actions** > **Authorize CC Payment** or **Actions** > **Capture CC Payment** on the form toolbar to initiate a payment by credit card.

Add Payment ◻ ✕

Order Summary

Invoice Number	PMT001778
Total	$230.00

● Credit Card   ○ Bank Account   (USA Only)

Card Number ·
VISA 4111 1111 1111 1111

Exp. Date ·
01/23

Card Code
905

Billing Address

First Name
USA Bartending School

Last Name

USA ▾

Zip
07424

Street Address
203 Lower Notch Rd

City
Little Falls

State
NJ

Phone Number
+1 (908) 532-9522

[Pay] [Cancel]

Figure: The Add Payment dialog box

When the user clicks **Pay** in the dialog box, the system saves the transaction data, along with the customer payment method.

On the *Payments and Applications* form, the **Validate CC Payment** menu command has been added to the **Actions** menu. The user clicks this menu command to synchronize the payment with its processing center transactions.

Upgrade Notes

After the system has been upgraded to Acumatica ERP 2019 R1, the **Accept Payments From New Card** check box in the Summary area of the *Processing Centers* (CA205000) form will be cleared by default. To use this functionality, the user needs to select the check box.

> **Important:** If Acumatica ERP has multiple tenants, a separate processing center account must be configured for each tenant; otherwise, credit card payments from customers in different tenants may be assigned the same payment reference numbers in the same processing center account, causing data inconsistency.

Finance: Ability to Override Shipping Address in Documents

In previous versions of Acumatica ERP, users could not override the shipping address in AR documents, SO invoices, and pro forma invoices on the *Invoices and Memos* (AR301000), *Invoices* (SO303000), and the *Pro Forma Invoices* (PM307000) forms. This limitation caused issues with taxes calculated based on the shipping address by Avalara AvaTax or another tax calculation provider.

Now the default shipping address in documents (AR invoices, credit memos, debit memos, overdue charges, cash sales, SO invoices, and pro forma invoices) on the *Invoices and Memos* (AR301000), *Invoices* (SO303000), and the *Pro Forma Invoices* (PM307000) forms is copied from the location address specified for the customer location selected for this document. For reversed AR documents, the shipping address is copied from the original document and can be changed if needed.

When a user is working with one of these documents that has the *On Hold*, *Balanced*, *Pending Print*, or *Pending Email* status, the user can change values in any of the boxes in the **Ship-To Contact** and **Ship-To Address** sections of the **Address Details** tab of the appropriate form. To change these values, the user should select the **Override Contact** or **Override Address** check box in the respective section.

When Acumatica ERP is integrated with Avalara AvaTax, the information entered on the **Address Details** tab will be used for tax calculation. If a user overrides the ship-to settings, the address updated by the user will be used instead.

Changes to the Invoices and Memos (AR301000) Form

On the *Invoices and Memos* (AR301000) form, the **Billing Address** tab has been renamed to **Address Details**. On the new **Address Details** tab, section names have been changed from **Billing Contact** to **Bill-To Contact**, and from **Billing Address** to **Bill-To Address**. Two new sections, **Ship-To Contact** and **Ship-To Address**, have been added to the **Address Details** tab.

Figure: Address Details tab

The **Print and Email Options** section, which was formerly on the **Billing Address** tab, has been moved to the **Financial Details** tab.

Figure: Financial Details tab

Changes to the Cash Sales (AR304000) Form

On the *Cash Sales* (AR304000) form, the **Billing Address** tab has been renamed to **Address Details**. On the new **Address Details** tab, section names have been changed from **Billing Contact** to **Bill-To Contact**, and from **Billing Address** to **Bill-To Address**. Two new sections, **Ship-To Contact** and **Ship-To Address**, have been added to the **Address Details** tab.

Figure: Address Details tab

The **Print and Email Options** section, which was formerly on the **Billing Address** tab, has been moved to the **Financial Details** tab.

Cash Sales

Figure: Financial Details tab

Changes to the Invoices (SO303000) Form

On the *Invoices* (SO303000) form, the **Billing Address** tab has been renamed to **Address Details**. On the new **Address Details** tab, section names have been changed from **Billing Contact** to **Bill-To Contact**, and from **Billing Address** to **Bill-To Address**. Two new sections, **Ship-To Contact** and **Ship-To Address**, have been added to the **Address Details** tab.

Invoices

DOCUMENT   USER DEFINED FIELDS

Type:	Invoice ▼	* Customer:	ABCSTUDIOS - ABC Studios Inc ✎	Discount Total:	0.00
Reference Nbr.:	AR005779 🔍	* Location:	MAIN - Primary Location	VAT Exempt T...	0.00
Status:	Open	Currency:	USD 1.00 ▼ VIEW BASE	VAT Taxable T...	0.00
	☐ Hold	* Terms:	30D - 30 Days	Balance:	78,920.00
	☐ Credit Hold	* Due Date:	5/19/2018 ▼	Amount:	78,920.00
* Date:	4/19/2018	* Cash Discoun...:	5/19/2018 ▼	Cash Discount:	0.00
* Post Period:	04-2018	* Project:	X - Non-Project Code. ✎		
Customer Order:	ABCSTUDIOS	Description:	Electronics - Drop Shipped Order		

DOCUMENT DETAILS   TAX DETAILS   COMMISSIONS   FREIGHT DETAILS   FINANCIAL DETAILS   PAYMENT INFORMATION   **ADDRESS DETAILS**

BILL-TO CONTACT		SHIP-TO CONTACT	
	☐ Override Contact		☐ Override Contact
Company Name:	ABC Studios Inc	Company Name:	ABC Studios Inc
Attention:		Attention:	
Phone 1:	+1 (777) 446-7537	Phone 1:	+1 (777) 446-7537
Email:	info@abcstudios.con ✉	Email:	info@abcstudios.con ✉

BILL-TO ADDRESS		SHIP-TO ADDRESS	
	☐ Override Address		☐ Override Address
Address Line 1:	77 W 66th St # 13	Address Line 1:	77 W 66th St # 13
Address Line 2:		Address Line 2:	
City:	New York	City:	New York
Country:	US - United States of America	Country:	US - United States of America
State:	NY - NEW YORK	State:	NY - NEW YORK
Postal Code:	10023	Postal Code:	10023

Figure: Address Details tab

When an AR invoice is generated for an SO invoice, the ship-to address and ship-to contact settings are copied from the SO invoice on the *Invoices* form to the AR invoice on the *Invoices and Memos* (AR301000) form if they have been overridden.

Changes to the Pro Forma Invoices (PM307000) Form

On the *Pro Forma Invoices* (PM307000) form, the **Billing Address** tab has been renamed to **Address Details**. On the new **Address Details** tab, section names have been changed from **Billing Contact** to **Bill-To Contact**, and from **Billing Address** to **Bill-To Address**. Two new sections, **Ship-To Contact** and **Ship-To Address**, have been added to the **Address Details** tab.

Figure: Address Details tab

When the user runs the *Process Pro Forma Invoices* (PM506000) process, the information from the **Ship-To Contact** and **Ship-To Address** sections of the *Pro Forma Invoices* (PM307000) form for the pro forma invoice is copied to the AR invoice on the *Invoices and Memos* (AR301000) form.

Address Validation

When the *Address Validation Integration* feature is enabled on the *Enable/Disable Features* (CS100000) form and configured in the system, and the user clicks **Actions** > **Validate Addresses** on the form toolbar of one of the following forms, the system validates the bill-to and ship-to addresses:

- *Invoices* (SO303000)
- *Invoices and Memos* (AR301000)
- *Cash Sales* (AR304000)
- *Pro Forma Invoices* (PM307000)

Upgrade Notes

During the upgrade to Acumatica ERP 2019 R1, the shipping contact and address settings of documents on the following forms are updated with settings copied from the location specified in the document:

- *Invoices* (SO303000)
- *Invoices and Memos* (AR301000)
- *Cash Sales* (AR304000)
- *Pro Forma Invoices* (PM307000)

Changes to Reports

In the **Ship-To** section of the following generated reports, the system copies settings from the **Ship-To Address** section of the related form:

- *Pro Forma Invoice* (PM642000): Settings from the *Pro Forma Invoices* (PM307000) form
- *Invoice/Memo* (AR641000): Settings from the *Invoices and Memos* (AR301000) form
- *Invoice / Memo* (SO643000): Settings from the *Invoices* (SO303000) form

Finance: Deferral Code Improvements

The **Active** check box has been added to the *Deferral Codes* (DR202000) form, which gives users the ability to mark deferral codes as active by selecting this check box (as shown in the following screenshot) or as inactive by clearing it.

Figure: Active check box on the Deferral Codes form

The **Active** check box has been also added to the **Deferral Code** lookup table on the *Deferral Schedule Summary* (DR401000) and the *Deferral Transaction Summary* (DR402000) forms, as shown in the following screenshot. The lookup tables on these inquiry forms display both active and inactive deferral codes, because users may want to filter the data by an active code or an inactive code.

Figure: Deferral Code lookup table

Also, the system now displays only active deferral codes in the lookup tables on the following forms:

- *Deferral Schedules* (DR201510)

- *Bills and Adjustments* (AP301000)

- *Quick Checks* (AP304000)

- *Invoices and Memos* (AR301000)

- *Cash Sales* (AR304000)

- *Release Schedules* (DR503000)

- *Invoices* (SO303000)

- *Deferral Schedule Summary* (DR401000)

- *Deferral Transaction Summary* (DR402000)

The lookup table for the **Deferral Code** box on the **Deferral Settings** tab of the *Stock Items* (IN202500) and *Non-Stock Items* (IN202000) forms also displays only active deferral codes, and only active codes are listed in the table on this tab.

The removal of the inactive codes from these forms makes it impossible to select inactive deferral codes, which speeds up data entry in the system.

Finance: Predefined List of Currencies

Acumatica ERP now provides a predefined list of all currencies included in the ISO 4217 standard. Users no longer have to manually enter the world currencies and their basic settings.

The *Currencies* (CM2020PL) form displays a list of all currencies except for the base currency, with the **Currency ID**, **Currency Symbol**, and **Decimal Precision** from the ISO 4217 standard for each currency.

Currencies ☆

Currency ID	Description	Currency Symbol	Decimal Precision
AED	UAE Dirham	د.إ	2
AFN	Afghani	AFN	2
ALL	Lek	L	2
AMD	Armenian Dram	AMD	2
ANG	Netherlands Antillean Guilder	NA*f*	2
AOA	Kwanza	AOA	2
ARS	Argentine Peso	$	2
AUD	Australian Dollar	$	2
AWG	Aruban Florin	*f*	2
AZN	Azerbaijan Manat	AZN	2
BAM	Convertible Mark	BAM	2
BBD	Barbados Dollar	BBD	2
BDT	Taka	Tk	2
BGN	Bulgarian Lev	лв	2
BHD	Bahraini Dinar	د.ب.	3
BIF	Burundi Franc	FBu	0
BMD	Bermudian Dollar	BD$	2
BND	Brunei Dollar	B$	2
BOB	Boliviano	Bs	2
BOV	Mvdol	BOV	2
BRL	Brazilian Real	R$	2
BSD	Bahamian Dollar	B$	2

Figure: Predefined list of currencies on the Currencies form

: Although users can change the decimal precision of currencies on the *Currencies* form, we do not recommend doing this, because it can make it impossible to process documents in this currency and can affect integration with third-party providers, such as Avalara.

Base Currency Configuration

On the *Companies* (CS101500) form, the **Base Currency ID** box displays all active and non-active currencies. Users no longer have to manually create the base currency on this form. To assign a currency as the base currency, a user has to select the **Active** and **Use for Accounting** check boxes for this currency on the *Currencies* (CM202000) form, and then select this currency in the **Base**

Currency ID box on the *Companies* form. For details on configuring a currency, see *To Configure a Currency*.

Upgrade Notes

The changes introduced by this feature are applicable to only new installations of Acumatica ERP. If you are upgrading from an older version to 2019 R1, the existing currencies with their configurations will be preserved and no new currencies will be added to the system.

Finance: Project/Contract Box on Relevant Forms

The **Project** box has been renamed to **Project/Contract** in the Summary area of the *Invoices* (SO303000), *Invoices and Memos* (AR301000), and *Deferral Schedule* (DR201500) forms. The following screenshot shows this box on the *Invoices and Memos* form.

Figure: Project/Contract box on the Invoices and Memos form

Similarly, the **Project** column has been renamed to **Project/Contract** in the table of the *Journal Transactions* (GL301000) form (as shown in the screenshots below).

Figure: Project/Contract column on the Journal Transactions form

The **Project/Contract** box appears on these forms if either the *Project Accounting* feature or the *Contract Management* feature is enabled on the *Enable/Disable Features* (CS100000) form. The box also appears if both of these features are enabled, and both projects and contracts are available for selection in the lookup table for this box.

: For project accounting, to make the **Project/Contract** box appear on these forms, in addition to enabling the *Project Accounting* feature, users should select the **AR** check box in the **Visibility Settings** section on the **General Settings** tab of the *Projects Preferences* (PM101000) form.

Finance: Recognition of Revenue from Customer Contracts

Acumatica ERP now supports the requirements of the 606 Revenue from Contracts with Customers GAAP (Generally Accepted Accounting Principles) standard and the IFRS 15 (International Financial Reporting Standard) and these standards' models of recognizing revenue. If a contract exists between a seller and a buyer to transfer a package and the contract consists of multiple distinct performance obligations, the transaction price is allocated to each performance obligation based on the relative standalone selling prices of the goods or services being provided to the customer. Revenue is recognized when the performance obligations are satisfied. If a performance obligation is satisfied over time, the related revenue is also recognized over time. If a customer receives a discount, it can in some cases be allocated to only one performance obligation or to multiple performance obligations (for example, inventory IDs) in the contract.

To illustrate how revenue is recognized, consider the following example:

A company sells a package consisting of three items: a software subscription license, the related support services, and upgrade services. The duration of the contract is two years and the transaction price is $1,000. The standalone selling prices for the license, support, and upgrades are $750, $500, and $250 respectively. The revenue is calculated as follows:

Item	Calculation	Revenue
License	1,000 * 750 / (750 + 500 + 250)	$500.00
Support	1,000 * 500 / (750 + 500 + 250)	$333.33
Upgrade	1,000 * 250 / (750 + 500 + 250)	$166.67

The revenue of each item will be recognized evenly during two years—one half in the first year and the other half in the second year.

For details, see *Recognition of Revenue from Customer Contracts*.

Reallocation Pool

To support this functionality, the *reallocation pool* component of the system has been introduced. The reallocation pool is a table where the inputs and outputs of the reallocation process are stored. The reallocation process collects data about sold packages from invoice lines and splits these packages into separate performance obligations. Then for each sales order, the process collects the fair value (or best estimated) price from the list of sales prices, and allocates the transaction price among the sales orders proportionally to their standalone prices. The resulting sales orders and their amounts are used to create a deferred schedule and its components.

The share of each component in the transaction price depends on the following:

1. The estimated standalone (or fair value) price

2. The number of components in a package

3. The quantity of packages in an invoice line

The system creates the reallocation pool only if the *Revenue Recognition by IFRS 15/ASC 606* feature is enabled on the *Enable/Disable Features* (CS100000) form.

Algorithm for Selecting the Fair Value Price

The system uses the following input data entered on the *Sales Prices* (AR202000) form to select the fair value prices used by the revenue reallocation process:

- The inventory ID (performance obligation) defined by the revenue component (that is, the value in the **Component ID** box on the *Deferral Schedule* (DR201500) form.

- The unit of measure of the sales order in the pool (that is, the UOM of the revenue component)

- The document currency and the value of the **Use Fair Value Prices in Base Currency** check box on the *Deferred Revenue Preferences* (DR101000) form

- The date on which the price is valid (that is, the document date)

- The customer for which the price is specified

- The customer class to which the customer belongs

- The quantity

- The warehouse (for SO invoices only)

For inventory items, multiple prices with different goals may be available in the system. The system searches for prices according to the price search priority (highest to lowest) and stops the search when an applicable price for an item is found. The system uses the standard Acumatica price priorities when selecting fair value prices but with the following exceptions:

- Promotional prices are not selected.

- Default prices are not selected.

- All applicable prices must have the **Fair Value** check box selected on the *Sales Prices* (AR202000) form.

If no applicable price is found, the system displays a warning message, and a document with a warning message cannot be released. For details on configuring packages with MDA components, see *To Configure a Package for IFRS 15/ASC 606*

Changes to the Enable/Disable Features (CS100000) Form

The *Revenue Recognition by IFRS 15/ASC 606* feature has been added (in the *Deferred Revenue Management* group of features) on the *Enable/Disable Features* (CS100000) form. When this feature is enabled, the revenue of each component of an AR document will be recognized according to the ASC 606 standard.

Changes to the Deferred Revenue Preferences (DR101000) Form

The **Use Fair Value Prices in Base Currency** check box has been added to the *Deferred Revenue Preferences* (DR101000) form. This check box appears on the form if the *Multi-Currency Accounting* and *Revenue Recognition by IFRS 15/ASC 606* features are enabled on the *Enable/Disable Features* (CS100000) form. When the check box is selected, the system searches for fair value prices to be used in revenue recognition, which are in the base currency only. If there are prices defined in the document currency, these prices are ignored.

Changes to the Deferral Schedule (DR201500) Form

The screenshot below shows the UI elements that have been added to the *Deferral Schedule* (DR201500) form. The new UI elements are used as follows:

- The new **Override** check box is available when the *Revenue Recognition by IFRS 15/ASC 606* feature is enabled on the *Enable/Disable Features* (CS100000) form. When a user selects the check box, the data on the **Reallocation Pool** tab is cleared and the data in the **Components** table on the **Details** tab becomes available for editing. When the check box is cleared, the data on the **Reallocation Pool** tab is recalculated according to the fair value prices, and the data in the **Components** table of the **Details** tab becomes unavailable.

- The new **Recalculate** button on the form toolbar is used to update the reallocation pool and component data by using the recent sales prices and the data from invoice lines. If the deferral schedule was overridden, the system displays a confirmation message before recalculation.

- The new **Net Tran. Price**, **Comp. Total**, and **Comp. Deferred** boxes have been added to the Summary area of the form.

- The system uses invoice lines to populate the values of the **Project Task**, **Term Start Date**, and **Term End Date** columns (all of which are new) in the **Components** table on the **Details** tab when the *Revenue Recognition by IFRS 15/ASC 606* feature is enabled on the *Enable/Disable Features* form. In this case, the **Line Number**, **Line Amount**, **Project Task**, **Term Start Date**, and **Term End Date** boxes in the Summary area do not appear on the form.

Figure: Changes to the Deferral Schedule form

The **Reallocation Pool** tab, shown in the following screenshot, has been added to the form.

Figure: The new Reallocation Pool tab on the Deferral Schedules form

This tab contains a table with columns that represent the data model of the reallocation pool. The table rows correspond to the document in the Summary section. Users cannot delete or modify the data in the table. For manual schedules and for manually edited schedules, the table is empty.

Changes to the Sales Prices (AR202000) form

The **Fair Value** and **Prorated** columns have been added to the table on the *Sales Prices* (AR202000) form, as shown in the following screenshot.

Figure: Fair Value and Prorated columns on Sales Prices form

When the **Fair Value** check box is selected for a price, the system will use the fair value price selection algorithm to determine the best available price to use as the fair value price in the revenue reallocation process. When a user clicks the **Create Price Worksheet** button on the form toolbar to create a new sales price worksheet, the price with the **Fair Value** check box selected is ignored.

The **Prorated** column appears on the form when the *Revenue Recognition by IFRS 15/ASC 606* feature has been enabled on the *Enable/Disable Features* (CS100000) form; the column becomes available when the **Fair Value** check box for a price is selected. The value in this column is used when the system calculates the fair value price for inventory items with the deferral code of a flexible type (*Flexible by Period*, *Prorate by Days*, or *Flexible by Days in Period*).

Changes to the Sales Price Worksheets (AR202010) form

The **Fair Value** and **Prorated** check boxes have been added to the Summary area of the *Sales Price Worksheets* (AR202010) form.

When the **Fair Value** check box is selected, the sales prices created on release of the sales price worksheet are marked as fair value prices and will be used by the revenue reallocation process.

When the **Prorated** check box is selected, the price will be prorated when the system calculates the fair value price for inventory items with the deferral code of a flexible type (*Flexible by Period*, *Prorate by Days*, or *Flexible by Days in Period*).

On release of a sales price worksheet, the values of these check boxes are copied to the *Sales Prices* (AR202000) form.

Upgrade Notes

After the upgrade to Acumatica ERP 2019 R1, when a user enables the *Revenue Recognition by IFRS 15/ASC 606* feature on the *Enable/Disable Features* (CS100000) form, the system treats the deferral schedules and documents in the following way:

- The deferral schedules and their components previously created on the *Deferral Schedule* (DR201500) form are not modified.

- The **Use Fair Value Prices in Base Currency** check box on the *Deferred Revenue Preferences* (DR101000) form is cleared by default.

- Neither existing documents nor deferral schedules are updated.

UI Changes

The following UI list describes other UI changes that have been introduced to support the capabilities of revenue recognition from customer contracts:

- On the **Copy Prices** dialog box of the *Sales Price Worksheets* (AR202010) form, the **Fair Value** and **Prorated** check boxes have been added.

- On the **Deferral Settings** tab of the *Stock Items* (IN202500) and *Non-Stock Items* (IN202000) forms, the **Allocation Method**, **Fixed Amount**, and **Percentage** columns in the **Revenue Components** table become unavailable when the *Revenue Recognition by IFRS 15/ASC 606* feature is enabled on the *Enable/Disable Features* form, and the system allows users to enter revenue components with empty values in these columns.

Finance: Reconciliation Inquiries

The users of Acumatica ERP can occasionally come across inconsistencies in transactions, such as when a user has posted a GL entry directly to an AR account or used an AR account in the details of an AR invoice. These inconsistencies can result in different balances in AR, AP, and GL reports. To address this issue and make it easier to find documents that produce discrepancies in balances, a set of inquiries has been developed in Acumatica ERP 2019 R1. For details, see *Troubleshooting Balance Discrepancies*.

Discrepancy by Account

The *Discrepancy by Account* (AP409010) and *Discrepancy by Account* (AR409010) forms define discrepancies in AP and AR accounts, respectively, grouped by financial periods. The following screenshot illustrates the *Discrepancy by Account* form with a discrepancy found in the AR account.

Figure: Discrepancy by Account form with a discrepancy found

If a user clicks the link in the **Discrepancy** column, the system opens the *Discrepancy by Customer* (AR409020) or *Discrepancy by Vendor* (AP409020) form. For details, see *To Find Discrepancy in an Account*.

Discrepancy by Customer and Vendor

The *Discrepancy by Customer* (AR409020) and *Discrepancy by Vendor* (AP409020) forms show accounts that have balances in the selected period. When the **Show Only Documents with Discrepancy** check box is selected, the inquiries display accounts with balance differences.

The following screenshot illustrates the *Discrepancy by Customer* form after the user has clicked the link in the **Discrepancy** column on the *Discrepancy by Account* (AR409010) form, and shows the customer whose balance have the discrepancy.

Figure: Discrepancy by Customer form with the discrepancy shown

When the user clicks the link in the **Discrepancy** column, the system opens the *Discrepancy by Document* (AR409030) or *Discrepancy by Document* (AP409030) form. For details, see *To Find Discrepancy for a Vendor or Customer*.

Discrepancy by Document

The *Discrepancy by Document* (AR409030) and *Discrepancy by Document* (AP409030) forms show the documents that were posted in the selected periods for the selected customer or vendor, respectively. The screenshot below illustrates the *Discrepancy by Document* form with a row showing the document that caused the discrepancy. The user can click the link in the **Reference Nbr.** column to review the document on a separate tab; the user can also click the link in the **Batch Nbr.** column to review the corresponding GL batch and correct it. For example, the user might want to reverse the original document.

Figure: Discrepancy by Document form with a document with the discrepancy

For details, see *To Find a Discrepancy for a Particular Document*.

Finance: Synchronization of Credit Cards with Authorize.Net

Users can save time on data entry and reduce errors due to the synchronization betweenAcumatica ERP and credit cards registered in the Authorize.Net processing center. To implement this synchronization, a new form has been introduced: *Synchronize Cards* (CA206000). The system loads the data on credit cards missing in Acumatica ERP, the user selects a needed card, selects a payment method for the card, and assigns the card to a customer.

The synchronization of credit cards can be used, for example, in the following cases:

- A card has been registered in Authorize.Net, but has not yet been used in Acumatica ERP, so information on this card has not yet been entered in Acumatica ERP.

- New credit cards need to be mass-uploaded from Authorize.Net to Acumatica ERP.

For details, see *Credit Card Synchronization with Authorize.Net*.

The Synchronize Cards (CA206000) Form

By using this new form, shown in the following screenshot, a user can view unsynchronized credit cards that have been defined in Authorize.Net and synchronize these credit cards with Acumatica ERP.

Figure: The Synchronize Cards form

A user can work with the *Synchronize Cards* form in the following ways:

- Manually: The user selects a tokenized processing center in the **Processing Center** box and clicks **Load Card Data** on the form toolbar. Although the results have not yet been imported, they are shown on the *Synchronize Cards* form, where users can work with them, saving the results as needed. The system checks for unsynchronized cards and customer profiles in the selected processing center, and auto-matches customers to processing center profiles. When the user clicks **Process** or **Process All** on the form toolbar, the system imports the cards to Acumatica ERP as customer-specific payment methods that are maintained on the *Customer Payment Methods* (AR303010) form.

- Automatically: The user can set up the system to regularly load data with new cards and customers missing in Acumatica ERP from the processing center. The system regularly loads data with new cards and customers missing in Acumatica ERP. The user can configure the scheduling of this task by clicking **Schedules** > **Add** on the form toolbar. In the **Automation Schedules**

dialog box, which is opened, the user can specify how often the system should load data from the processing center.

After a user matches a customer to one line, if the system finds other lines with the same customer ID as defined in the processing center (the value in the **PC Cust. ID** column), the system displays a dialog box where the user can select other payment profiles to be assigned to this customer. For details, see *To Synchronize Credit Cards from Authorize.Net to Acumatica ERP*.

This functionality is also supported on mobile devices.

Changes to the Processing Centers (CA205000) Form

On the *Processing Centers* (CA205000) form, the *Authorize.Net AIM* plug-in, which can be selected in the **Payment Plug-in Type** box, is no longer supported for newly added processing centers, although it continues to be used by previously configured processing centers. When the user selects the *Authorize.Net AIM* plug-in when creating a new processing center, and tries to save it, the system displays an error message. The other old plug-ins will still work, but the system will display a warning that the support of these plug-ins will be discontinued when the user selects an existing processing center in the **Proc. Center ID** box of the *Processing Centers* form.

Upgrade Notes

To address the problem mentioned in the previous section with the *Authorize.Net AIM* plug-in no longer being supported, users must update their existing payment methods to use the *Authorize.Net API* plug-in instead of the *Authorize.Net AIM* and *Authorize.Net CIM* plug-ins on the *Payment Method Converter* (CA207000) form.

Finance: Support for Different Financial Calendars

In the previous versions of Acumatica ERP, companies within the same tenant could not have different fiscal year-end (FYE) dates. Now it is possible to implement multiple legal entities that have different fiscal year-end dates within the same tenant. With this functionality, an organization can accelerate implementation; simplify maintenance for companies that share vendors, stock items, and employees; run consolidated operational reports at any time; and facilitate the preparation of consolidated financial statements. For details, see *Multiple Calendar Support*.

Company-Specific Year Starting Date

To give organizations the ability to use different financial calendars, the *Multiple Calendar Support* feature has been introduced. If the feature is enabled on the *Enable/Disable Features* (CS100000) form, users will be able to configure companies with different fiscal year-end dates within one tenant. The feature can be enabled only when the *Centralized Period Management* feature is disabled.

With the feature enabled, on the *Company Financial Calendar* (GL201100) form, a user will be able to specify the start date of the first fiscal year of a new company by selecting one of the start dates of periods from the master calendar, as shown in the following screenshot.

Figure: Specifying the start date of a company's first fiscal year

Company calendars need to be generated separately for each company. For details of configuring company calendars, see *To Configure a Company Calendar*. For details on generating financial periods in company calendars, see *To Generate Periods for New Financial Years in Company Calendar*.

The **Master Calendar Period ID** column has been added to the *Company Financial Calendar* (GL201100) form; see the following screenshot. The column displays the period ID in the master calendar that corresponds to the company period.

Company Financial Calendar ☆

⬅ |< < > >| ACTIONS ▾   GENERATE CALENDAR

* Company:	RETAIL - Online Stor 🔍
* Financial Year:	2012 🔍
Start Date:	7/1/2012
Number of Periods:	13

C |⟷| ⊠

	Financial Period ID	Start Date	End Date	Description	Status	Closed in AP	Closed in AR	Closed in IN	Closed in CA	Closed in FA	Master Calendar Period ID
>	01-2012	7/1/2012	7/31/2012	July	Inactive	☐	☐	☐	☐	☐	07-2012
	02-2012	8/1/2012	8/31/2012	August	Inactive	☐	☐	☐	☐	☐	08-2012
	03-2012	9/1/2012	9/30/2012	September	Inactive	☐	☐	☐	☐	☐	09-2012
	04-2012	10/1/2012	10/31/2012	October	Inactive	☐	☐	☐	☐	☐	10-2012
	05-2012	11/1/2012	11/30/2012	November	Inactive	☐	☐	☐	☐	☐	11-2012
	06-2012	12/1/2012	12/31/2012	December	Inactive	☐	☐	☐	☐	☐	12-2012
	07-2012	1/1/2013	1/31/2013	January	Inactive	☐	☐	☐	☐	☐	01-2013
	08-2012	2/1/2013	2/28/2013	February	Inactive	☐	☐	☐	☐	☐	02-2013
	09-2012	3/1/2013	3/31/2013	March	Inactive	☐	☐	☐	☐	☐	03-2013
	10-2012	4/1/2013	4/30/2013	April	Inactive	☐	☐	☐	☐	☐	04-2013
	11-2012	5/1/2013	5/31/2013	May	Inactive	☐	☐	☐	☐	☐	05-2013
	12-2012	6/1/2013	6/30/2013	June	Inactive	☐	☐	☐	☐	☐	06-2013
	13-2012	6/30/2013	6/30/2013	Adjustment Period	Inactive	☐	☐	☐	☐	☐	13-2012

Figure: The Company Financial Calendar form

Support of Different Calendars for Fixed Assets

For fixed assets, a user can configure one posting book and multiple non-posting books that are shared across companies. In the posting books, the asset balance and history are stored by periods of the company to which the asset belongs, and in the non-posting books, the asset balance and history are stored by book periods.

If the *Multiple Calendar Support* feature has been enabled on the *Enable/Disable Features* (CS100000) form, users who work with fixed assets should note the following:

- To transfer assets between branches of different companies, these assets should be disposed of in one company and acquired in the other company.

- If fixed asset reports are run with empty **Company** and **Branch** parameters, the data in the reports will be consolidated by period number.

For details, see *Support of Different Calendars for Fixed Assets*.

Posting Transactions for Companies with Different Calendars

When companies with different calendars are involved in the same transaction, based on the period in the Summary area of the document, the system determines the corresponding master period and uses the periods that match the master period to post entries to the destination branches.

The posting process adds inter-branch balancing entries with the period according to the calendar of the branch associated with the entry. For details, see *Transactions for Companies with Different Calendars*.

Based on these enhancements, for consolidated reports and inquiries that show data posted by more than one company (with the **Company** and **Branch** boxes left blank), master periods are used in boxes where periods are selected. For details, see *Consolidated Reports for Companies with Different Calendars*.

The **Use Master Calendar** check box has been added to reports and inquiries that have the company as an optional parameter and the period as a parameter. The check box determines how data is consolidated as follows:

- Selected: Data is consolidated by the master calendar. That is, consolidated company reports are shown for the same period of time. The reports show account balances (or transactions) posted by the master calendar. In the reports that show the Retained Earnings account, the balances of the Retained Earnings account and the Income and Expense accounts are also calculated by the master calendar.

- Cleared: Data is consolidated by the company calendar. That is, reports are consolidated by the period number. The reports show account balances (or transactions) posted to the company period with the selected number; the balances of the Retained Earnings account and the income and expense accounts are also calculated by the company calendar.

On inquiry forms, if the **Company** and **Branch** boxes are empty, this check box is selected by default. If the **Company** or **Branch** setting is specified, the check box is cleared by default.

Master Period Support in ARM

On the *Report Definitions* (CS206000) form, the **Use Master Calendar** and **Request** check boxes have been added to the **Default Data Source Settings** section, as shown in the following screenshot.

Figure: The Use Master Calendar and Request check boxes

If the **Request** check box is selected, the **Use Master Calendar** check box is available on the ARM report parameter form, and the default value is the value specified in the report definition. If the

Request check box is cleared in the report definition, the **Use Master Calendar** check box is hidden on the ARM report parameter form, and this value will always be copied from the report definition.

Changes in Inventory Management

The following changes have been made in the inventory management functionality to reflect changes in calendars:

- On the *Inventory Transaction History* (IN405000) and *Inventory Transactions by Account* (IN403000) forms, the system calculates the balances by using master periods.

- On the *Inventory Transactions by Account* form, the following UI changes have been made:

  - In the Summary area, the **Start Date** and **End Date** boxes are available only when the **By Financial Period** check box is cleared. When this check box is selected, the **Start Date** and **End Date** boxes are unavailable, and their values are cleared.

  - In the table, the **Beginning Balance** and **Ending Balance** columns are hidden when the **By Financial Period** check box is cleared.

- The inventory turnover rate for an item for a period is now calculated as the quantity of the item sold during a turnover period divided by the average quantity on hand. The average quantity is calculated as a sum of on-hand quantities at the end of each last 12 periods divided by the number of periods in the last financial year, including the analyzed period.

Upgrade Notes

After the system has been upgraded to Acumatica ERP 2019 R1, the following changes will take place in the system:

- In the following tables, the upgrade scripts will set the `TranPeriodID` column to `FinPeriodID`: `GLTran`, `Batch`, `APTran`, `ARTran`, `ARRegister`, `APRegister`, `DRScheduleDetail`, `DRScheduleTran`, `APPayment`, `ARPayment`, `APAdjust`, `ARAdjust`, `SVATConversionHist`, `POReceipt`, `PMTran`, `INRegister`, `INTran`, `INTranCost`, `INPIHeader`, and `INItemSiteHist`.

- In the following tables with historical data, the upgrade scripts will update the amounts accumulated by transaction periods with the amounts accumulated by financial periods: `GLHistory`, `APHistory`, `ARHistory`, `CuryAPHistory`, `CuryARHistory`, `CuryGLHistory`, `DRExpenseProjection`, `DRRevenueProjection`, `DRExpenseBalance`, `DRRevenueBalance`, `INItemSiteHist`, `INItemCostHist`, `INItemSalesHist`, and `INItemCustSalesHist`.

UI Changes

The following list summarizes all of the UI changes have been made to support different financial calendars:

- On the *Enable/Disable Features* (CS100000) form, the *Multiple Calendar Support* feature has been added.

- On the *Company Financial Calendar* (GL201100) form, the **Master Calendar Period ID** column has been added.

- On the *Journal Transactions* (GL301000) form, the **Period ID** and **Master Period ID** columns have been added to the table. The columns are hidden by default and can be made visible in the table by using the **Column Configuration** dialog box.

- On the *Report Definitions* (CS206000) form, the **Use Master Calendar** and **Request** check boxes have been added.

- The **Use Master Calendar** check box has been added to the following reports:

- *Trial Balance Summary* (GL632000)
- *Trial Balance Detailed* (GL632500)
- *Transactions for Period* (GL633000)
- *Transactions for Account* (GL633500)
- *AP Balance by GL Account* (AP632000)
- *AP Balance by Vendor* (AP632500)
- *AP Aged Period Sensitive* (AP630500)
- *Vendor History Summary* (AP652100)
- *AR Balance by GL Account* (AR632000)
- *AR Balance by Customer* (AR632500)
- *AR Aged Period Sensitive* (AR630500)
- *Customer History Summary* (AR652100)
- *DR Balance by Account* (DR630010)
- *DR Recognition by Account* (DR630070)
- *DE Balance by Account* (DR630015)
- *DE Recognition by Account* (DR630075)
- The **Use Master Calendar** check box has been added to the following inquiry forms:
  - *Account Summary* (GL401000)
  - *Account by Subaccount* (GL403000)
  - *Account by Period* (GL402000)
  - *Account Details* (GL404000)
  - *Vendor Details* (AP402000)
  - *Vendor Summary* (AP401000)
  - *Customer Details* (AR402000)
  - *Customer Summary* (AR401000)
  - *Deferral Transaction Summary* (DR402000)
- On the *Reconciliation Statement* (CA627000) report, the **Cash Account** parameter is now required and the **Financial Period** parameter shows the financial periods from the company calendar of the selected cash account.
- The **Company** box has been added to the *Calculate Depreciation* (FA502000), *Transfer Assets* (FS507000), and *Dispose Assets* (FA505000) forms.

Inventory Management: Enhancements to the Physical Inventory Process

In Acumatica ERP 2019 R1, multiple changes have been made to the physical inventory (PI) process to make it clearer and more flexible.

Inclusion of Items with a Zero Book Quantity in a PI

In previous versions of Acumatica ERP, if during physical inventory, a user found items that had a zero book quantity in the system, the user had to add new lines to the PI document when entering count data. Now before counting is started, the user can decide whether to include items with a zero book quantity in a PI document.

On the *Physical Inventory Types* (IN208900) form, the **Include Items with Zero Book Quantity in PI** check box has been added (see the following screenshot); it is available for all types of physical inventory except types with the *Full Physical Inventory* generation method and types with the *By Inventory* generation method and the *Items Having Negative Book Qty.* selection method for items.

Figure: The Include Items with Zero Book Quantity in PI check box

By default, the check box is cleared. When this check box is selected, location-item pairs (from the generation method) in which items have a book quantity of zero (except lot-tracked or serial-tracked

items) are added to a PI document on the *Physical Inventory Review* (IN305000) form if the items have been stored in the locations for the past year. For physical inventory types with the *By Inventory* generation method and the *Last Count On or Before* selection method, the system checks the date of the last physical inventory count. If the date is more than one year ago and there were item movements in a warehouse location since the last physical inventory, the location is included in the current physical inventory count.

Items with a book quantity of zero included in the physical inventory are locked during the physical inventory count for all locations defined in the physical inventory type.

Ability to Hide the Book Quantity on a PI Count

To support "blind counting" (for which warehouse workers do not see quantities from the system and must enter the counted quantities), when preparing a physical inventory count, a warehouse manager can now configure the system so that the book quantity is hidden on the *Physical Inventory Count* (IN305010) form and on count sheets that are printed by using the *Physical Count Sheets* (IN620500) report.

To hide the **Book Quantity** column on the *Physical Inventory Count* form, the warehouse manager selects the **Hide Book Qty. on PI Count** check box in the Summary area of the *Physical Inventory Types* (IN208900) form (see the following screenshot).

Figure: The Hide Book Qty. on PI count check box

To hide the **Book Qty.** column on printed count sheets, the warehouse manager selects the **Hide Book Qty.** check box on the **Report Parameters** tab of the *Physical Count Sheets* report (as shown in the following screenshot).

Figure: The Hide Book Qty. check box

Locking of Items Included in a Running PI Count

In Version 2019 R1, changes have been made to prevent users from adding the same item to multiple physical inventory counts that are in progress.

The system locks location-item pairs that are included in a physical inventory count that is in progress. Now when a user tries to run another physical inventory count that includes any locked location-item pairs on the *Prepare Physical Count* (IN504000) form, an error message will be displayed and the system will not run the second count. The error message in the system trace contains the list of intersecting locations (for full physical inventory counts) or items (if at least one of the PI counts is not full). An error message with a list of items is shown in the following screenshot.

Figure: The error message in the system trace

Users can view the list of currently locked items by using the *Physical Inventory Locked Items* (IN409000) form (shown in the following screenshot).

Figure: The Physical Inventory Locked Items form

If a user wants to run another physical inventory count, this user must exclude the intersecting location-item pairs from the count by using the **Location Selection** or **Inventory Selection** tabs on the *Prepare Physical Count* form, as shown in the following screenshots. On these tabs, users can select locations and items, respectively, to be excluded from a physical inventory count. (The system copies locations and items from the physical inventory type used for the PI count.)

Figure: The Location Selection tab

Figure: The Inventory Selection tab

If an item is added to the **Excluded Inventory Items** list on the **Inventory Selection** tab, that item is removed from the physical inventory count for all warehouse locations (if multiple locations are used).

If a location is added to the **Excluded Locations** list on the **Location Selection** tab, the location is removed from the physical inventory count.

Changes in the Calculation of the Book Quantity

In previous versions of Acumatica ERP, item quantities from inventory issues and inventory transfers within the same warehouse were included in the count when the system calculated the book quantities of items. If any physical inventory count was in progress, this could cause the incorrect calculation of items included in the count.

In Version 2019 R1, the inventory issues and transfers that reflect movements of items within a warehouse are excluded from the calculation of the book quantity of an item. The formula the system now uses to calculate a book quantity is the following.

```
PI Book Qty. = Qty. On Hand – Qty. SO Shipped
```

Changes in Cost Calculation

The system now specifies values in the **Unit Cost** and **Estimated Ext. Variance Cost** columns on the *Physical Inventory Review* (IN305000) form when a user clicks **Finish Counting** on the form toolbar. If the user changes the physical quantity while entering data, the system also updates the values in these columns.

For lines with a positive variance quantity, the system calculates the values of the **Unit Cost** and **Estimated Ext. Variance Cost** columns according to the rules of valuation methods specified for items as follows:

- The *FIFO* and *Average* valuation methods:

    - The unit cost is calculated based on the values of the **FIFO Default Returns Cost** box (for the *FIFO* valuation method) or the **Avg. Default Returns Cost** box (for the *Average* valuation method) specified on the *Warehouses* (IN204000) form.

    - If the average cost of the item is zero on the **Price/Cost Information** tab of the *Item Warehouse Details* (IN204500) form, the system uses the value of the **Last Cost** box on this form as the unit cost.

    - If both the average cost and the last cost are zero on the **Price/Cost Information** tab of the *Item Warehouse Details* form, the system uses the average cost on the **Price/Cost Info** tab on the *Stock Items* (IN202500) form as the unit cost. If the average cost is zero, the system uses the last cost on the same tab as the unit cost.

- The *Specific* valuation method:

    - The system uses the cost layer that corresponds to the item as the unit cost. If multiple cost layers exist for the item, the system uses the last created cost layer as the unit cost.

    - If no cost layers exist for an item with a specific lot or serial number, the system uses the last cost specified on the **Price/Cost Information** tab of the *Item Warehouse Details* form as the unit cost.

- The *Standard* valuation method:

    - The system uses the current standard cost specified in the **Standard Cost** section of the **Price/Cost Information** tab on the *Item Warehouse Details* form as the unit cost.

    - If the current standard cost is zero, the system uses the current standard cost on the **Price/Cost Info** tab on the *Stock Items* form as the unit cost.

For lines with a negative variance quantity, the system calculates the values of the **Unit Cost** and **Estimated Ext. Variance Cost** columns according to the calculation rule of the PI adjustment and uses the data of the current cost layer.

The **Update Actual Cost** action now recalculates the values of the **Unit Cost**, **Estimated Ext. Variance Cost**, and **Total Variance Cost** columns for lines with a negative variance quantity according to the calculation rule of the PI adjustment, and the system uses the data of the current cost layer. For lines with a positive variance quantity, this action recalculates the costs if the default costs were changed on the *Item Warehouse Details* form.

Review of PI Adjustments Before Release

When a user completes the physical inventory, the system generates PI adjustments to correct the on-hand quantities (if necessary). In previous versions, users had no ability to review these adjustments and make any needed corrections before the adjustments were released. In Version 2019 R1, the user who configures the physical inventory can specify whether to release PI adjustments automatically or allow users to review and correct adjustments before release. The **Release PI Adjustment Automatically** check box, shown in the following screenshot, has been added to the *Inventory Preferences* (IN101000) form.

Figure: The Release PI Adjustment Automatically check box

If the **Release PI Adjustment Automatically** check box is cleared, the system works as follows:

- When a user clicks **Complete PI** on the form toolbar of the *Physical Inventory Review* (IN305000) form, a PI document has the *In Review* status and a PI adjustment is created with the *Balanced* status on the *Adjustments* (IN303000) form.

- In the PI adjustment on the *Adjustments* form, a user can edit the **Unit Cost** column value for particular items if the value of the **Quantity** column is positive. When the unit cost is changed manually and the edited adjustment is saved, the system changes the value of the **Final Ext. Variance Cost** column in the item line in the PI document on the *Physical Inventory Review* form.

- If a user changes a unit cost for a particular item on the **Transaction Details** tab of the *Adjustments* form, the new **Manual Cost** check box is selected automatically in the item line.

- For items with the *FIFO* valuation method selected on the *Stock Items* (IN202500) form, a user can edit the value of the **Receipt Nbr.** column on the **Transaction Details** tab of the *Adjustments* form.

- A user can delete a PI adjustment before the adjustment is released. After the adjustment is deleted, the status of the PI document changes to *Data Entering* on the *Physical Inventory Review* form, and the user can edit the PI count document and then create a new adjustment.

- When a user successfully releases a PI adjustment on the *Adjustments* form, the system updates the values of the **Final Ext. Variance Cost** column in the item line in the PI document and changes the status of the PI document to *Completed* on the *Physical Inventory Review* form.

If the **Release PI Adjustment Automatically** check box is selected, the system works as it did previously: When the user completes the physical inventory, the system changes the status of the PI document to *Completed*. It also generates a PI adjustment to correct the on-hand quantities, with unit costs copied from the PI document for each item, and releases the generated PI adjustment.

Other Enhancements

The following minor enhancements related to PI functionality have been introduced:

- As mentioned in the previous section, the new *In Review* status is available for a PI document created on the *Physical Inventory Review* (IN305000) form. This status means that the adjustment for this PI has been created and is being reviewed by accountants. When a PI document has this status, the document cannot be deleted.

- On the *Adjustments* (IN303000) form, users can edit the following UI elements for an adjustment with the *Balanced* status:

  - The **Unit Cost** column on the **Transaction Details** tab for items with a positive value in the **Quantity** column

  - The **Description**, **External Ref.**, **Post Period**, and **Date** boxes in the Summary area

- The **Base Unit** column has been added to the *Physical Inventory Count* (IN305010) and *Physical Inventory Review* (IN305000) forms.

- The **Manual Cost** check box has been added to the *Physical Inventory Review* and *Adjustments* forms. If a user edits the unit cost of an item, the system automatically selects this check box.

- On the *Physical Inventory Review* form, the **Actions** menu button has been added with the following menu commands:

  - **Update Actual Cost**: This menu command replaces the button of the same name, which had been on the table toolbar of the **Physical Inventory Details** tab.

  - **Set Not Entered to Zero**: This menu command replaces the button of the same name, which had been on the table toolbar of the **Physical Inventory Details** tab.

  - **Set Not Entered to Skipped**: This menu command replaces the button of the same name, which had been on the table toolbar of the **Physical Inventory Details** tab.

  - **Cancel PI**: This menu command replaces the button of the same name, which had been on the form toolbar.

- On the *Adjustments* form, the following references to the corresponding PI document (that is, the PI document for which the adjustment has been generated) have been added:

  - In the Summary area, the **PI Count Reference Nbr.** box: The reference number of the corresponding PI document

  - On the **Transaction Details** tab, the **PI Line Number** column: The line number of the item of the current line in the corresponding PI document

- The **Unfreeze Stock When Counting Is Finished** check box has been added to the *Physical Inventory Types* (IN208900) form. When this check box is selected, inventory items become available for warehouse operations after the counting is finished (that is, when the PI document has the *Data Entering* or *In Review* status). When the check box is selected, the system displays a warning on the *Physical Inventory Types* form because unfreezing stock items before the adjustment has been released may cause discrepancies in the quantity or cost of stock items. This check box replaces the **Freeze Inventory When PI Count Is in Data Entry State** check box, which has been removed from the *Warehouses* (IN204000) form.

Inventory Management: UI Enhancements

Multiple changes have been introduced in the user interface of the *Inventory Summary* (IN401000), *Inventory Allocation Details* (IN402000), and *Inventory Preferences* (IN101000) forms. The new *Storage Summary* (IN409010) form has been added.

UI Changes on the Inventory Summary (IN401000) Form

On the *Inventory Summary* (IN401000) form, the following UI changes have been introduced:

- The set of columns shown by default has been reduced. A user can manage the columns that are displayed and hidden by using the **Column Configuration** dialog box, which the user opens by clicking the icon to the left of the first column.

- A total row has been added for user convenience (see the following screenshot). This row displays the total quantities of the item across all of the warehouses.

Figure: The Total row on the Inventory Summary form

UI Changes on the Inventory Allocation Details (IN402000) Form

On the *Inventory Allocation Details* (IN402000) form, the boxes of the Summary area have been redesigned (see the following screenshot). The Summary area now contains the selection criteria and boxes that display the current availability of the selected item. All other boxes have been moved to the new **Qty by Plan Type** tab. This tab contains the following tables: The **Addition** table contains plan types that could increase the item quantity in stock; the **Deduction** table contains plan types that could decrease the item quantity in stock.

Figure: The Inventory Allocation Details form

A plan type is an item's status, which reflects a combination of actions that could effect the item availability in stock and that the system will apply to the item during the next processing stage. A plan of a particular type is related to documents that contain the item and have not been released. The combination of plan types that affect the item availability in stock is defined by the availability calculation rule applied to the item.

UI Changes on the Inventory Preferences (IN101000) Form

On the *Inventory Preferences* (IN101000) form, multiple changes have been made on the **General Settings** tab (see the screenshot below):

- The **Posting Settings** section has been placed after the **Account Settings** section.

- The **Release PI Adjustment Automatically** check box has been added to the **Physical Inventory Settings** section. For details, see *Inventory Management: Enhancements to the Physical Inventory Process*.

- The **Inventory Operations Settings** section has been added with configuration options that affect the functionality of automated warehouse operations. For details, see *Order Management: Automated Warehouse Operations*.

Figure: The Inventory Preferences form

Also, the **Reporting Settings** tab has been added (see the following screenshot). On this tab, the list of mailings for employees is displayed. Mailings are used to print documents or send electronic versions of documents (by email) to the company employees who oversee inventory operations.

Figure: The Reporting Settings tab

The Storage Summary (IN409010) Form

The new *Storage Summary* (IN409010) form has been added. On this form, users can view a list of the inventory items in a particular warehouse and narrow the list of items to be listed by storage type (location or cart), particular storage, or inventory item. The form is shown in the following screenshot.

| Storage Summary ☆ | | | | | CUSTOMIZATION | TOOLS ▾ |

☐ Warehouse:	WHOLESALE - Wholesale W. 🔍 ✎	Inventory ID:	🔍 ✎
Storage ID:	R1S1 - Row 1 Shelf 1 🔍		
	☑ Show Locations		
	☑ Show Carts		

	Warehouse	Storage ID	Cart	Active	Inventory ID	Qty. On Hand	Base Unit
>	WHOLESALE	R1S1	☐	☑	CONCRIB02	90.00	EA
	WHOLESALE	R1S1	☐	☑	CONGRILL	193.00	EA
	WHOLESALE	R1S1	☐	☑	CONCHAIR1	121.00	EA
	WHOLESALE	R1S1	☐	☑	CONCRIB01	176.00	EA
	WHOLESALE	R1S1	☐	☑	CONKID1	388.00	EA
	WHOLESALE	R1S1	☐	☑	CONKID2	340.00	EA
	WHOLESALE	R1S1	☐	☑	CONGRILLT	193.00	EA
	WHOLESALE	R1S1	☐	☑	CONHEARTM1	1,450.00	EA
	WHOLESALE	R1S1	☐	☑	AAMACHINE1	6.00	EA
	WHOLESALE	R1S1	☐	☑	CONAIRT1	35.00	EA
	WHOLESALE	R1S1	☐	☑	AACOMPUT01	613.00	EA
	WHOLESALE	R1S1	☐	☑	AALEGO500	910.00	EA
	WHOLESALE	R1S1	☐	☑	CONBABY3	206.00	EA
	WHOLESALE	R1S1	☐	☑	CONBOTTLE1	129.00	EA
	WHOLESALE	R1S1	☐	☑	CONBABY1	90.00	EA

|< 〈 〉 >|

Figure: The Storage Summary form

Order Management: Automatic Write-Off Functionality in SO Invoices

When a company is integrating its e-commerce system with Acumatica ERP, sales orders are imported to Acumatica ERP with the applicable payments; the payment amount is then transferred to the SO invoices created for these sales orders. Previously, accountants had to review the small discrepancies that could occur between payments and SO invoices created for these sales orders. In Acumatica ERP 2019 R1, the ability to process automatic write-offs for these small amounts has been introduced so that users can skip invoice verification, and mass-process invoices with small differences between the amount of the invoice and the amount of the applied payments.

A new **Auto Write-Off** check box has been added on the **General Settings** tab of the *Order Types* (SO201000) form. If this check box is selected for an order type, the system automatically calculates the write-off amount for the SO invoice created for the sales order of this type with an applied payment or multiple payments.

Figure: Configuration of automatic write-off for the order type

The amount of the automatic write-off for a particular invoice is calculated according to the limit that is specified for the applicable customer in the **Write-Off Limit** box on the *Customers* (AR303000) form. If the difference between the SO invoice amount and amount of its applied payment or payments is greater than the write-off limit of the customer, the SO invoice will not be released automatically. If the difference is within the write-off limit, the system calculates the write-off amount during the creation of

the SO invoice and specifies the amount in the **Balance Write-Off** box on the **Applications** tab of the *Invoices* (SO303000) form, as shown in the following screenshot.

Figure: Write-off amount automatically calculated for the SO invoice

The automatically calculated write-off balance can be either positive (if the invoice amount is greater than the amount of its applied payment or payments) or negative (if the amount of applied payment or payments is greater than the invoice amount). If needed, a user can adjust the calculated write-off amount manually in the **Balance Write-Off** box before releasing the invoice.

Order Management: Ship-To Information in SO Invoices

In Acumatica ERP 2019 R1, improvements have been made in the way the system defines the ship-to information in the SO invoices, which are defined on the *Invoices* (SO303000) form. The following sections describe the rules that the system now uses to determine which ship-to information is specified in the invoice, and how a user can determine that an SO invoice relates to documents with multiple ship-to addresses.

Ship-To Information in an SO Invoice

In an SO invoice, the system uses the following rules to specify the ship-to contact and ship-to address specified on the **Address Details** tab of the *Invoices* (SO303000) form:

- In the document header, the system uses the address of the company branch as the **From** address, and the ship-to address of the SO invoice as the **To** address.

- In each document line if the SO invoice was prepared from a sales order that requires shipment, the system uses the address of the warehouse specified in the line as the **From** address, and the ship-to address of the shipment as the **To** address.

- In each document line, if the SO invoice was prepared from a sales order that does not require shipment, the system uses the address of the warehouse or branch specified in the line as the **From** address, and the ship-to address of the sales order as the **To** address.

- If the SO invoice was prepared for multiple shipments, for each line of the SO invoice, the system uses the address specified for the line in the corresponding shipment.

- In a line added to the SO invoice without a link to sales order or shipment, the system specifies the address of the company branch as the **From** address, and the ship-to address of the SO invoice as the **To** address.

When a user prepares the printed version of an SO invoice on the *Invoice / Memo* (SO643000) form, the system always copies the ship-to address and ship-to contact from the SO invoice.

Indication of Multiple Addresses in an SO Invoice

On the **Address Details** tab of the *Invoices* (SO303000) form, the read-only **Multiple Ship-To Addresses** check box has been added. The check box is selected (as shown in the following screenshot) if multiple shipments or orders with different addresses are included in the SO invoice. If the check box is cleared, the shipments or sales orders included in the invoice have the same addresses.

Figure: The Multiple Ship-To Addresses check box

Order Management: Automated Warehouse Operations

Clients with medium or large warehouses typically use external WMS (warehouse management system) solutions for supporting standard warehouse operations with inventory items by using barcode scanners (or mobile devices with a scanning option). These warehouse operations include picking, packaging, receiving, putting away, transferring, and counting items. In Acumatica ERP 2019 R1, a completely new functionality for supporting automated warehouse operations has been added to the web and mobile versions of Acumatica ERP.

Changes to the Enable/Disable Features (CS100000) Form

Under **Advanced Inventory** on the *Enable/Disable Features* (CS100000) form, the **Automated Warehouse Operations** check box has been added. If this check box is selected, the administrative user setting up automated warehouse operations can select any of the following check boxes, thus enabling the corresponding feature and its associated functionality:

- **Fulfillment**: With this check box selected, users can perform the picking, packing, and shipping operations on the *Pick, Pack, and Ship* (SO302020) form.

- **Receiving**: With this check box selected, users can perform the receiving and putting away operations on the *Receive and Put Away* (PO302020) form.

- **Inventory**: With this check box selected, users can perform inventory operations (transferring, issuing, receiving, and counting items) on the *Item Lookup* (IN202520), *Storage Lookup* (IN409020), *Scan and Issue* (IN302020), *Scan and Receive* (IN301020), *Scan and Transfer* (IN304020), and *Scan and Count* (IN305020) forms.

- **Cart Tracking**: With this check box selected, users can configure carts and use them in automated warehouse operations.

Working Modes on Automated Warehouse Operations Forms

Acumatica ERP 2019 R1 introduces forms that have different *working modes*. With these modes, for the operation that the user is currently performing, the form is in the corresponding mode. Each mode of a form shows different content and supports a different set of operations. This functionality automates and simplifies warehouse operations.

While a user is performing warehouse operations, the user can change the working mode on the current form or navigate from the current form to another form by using special commands (or by scanning special barcodes) starting with @. For example, if the user scans or enters `@pack` in the **Scan** box (which is on all of the forms associated with the new features and listed in the previous section), the system navigates to the *Pick, Pack, and Ship* (SO302020) form in Pack mode. When the user changes the mode of a form, the system keeps the current document selected. For example, if the user has entered the shipment number in Pick mode and has entered the command (or scans the barcode) to switch to Pack mode, the system will automatically select the current shipment.

In addition to having multiple working modes, each of the forms provided by the *Automated Warehouse Operations* feature has the **Scan Log** tab, which shows a log of the data scanned or entered in the **Scan** box.

Workflow Configuration

Administrators can configure the workflow of automated operations by using the settings in the following locations:

- The **Receiving Workflow** and **Receiving Settings** sections on the *Purchase Orders Preferences* (PO101000) form
- The **Fulfilment Workflow** and **Fulfilment Settings** sections on the *Sales Orders Preferences* (SO101000) form
- The **Inventory Operations Settings** section on the *Inventory Preferences* (IN101000) form

For more information on which settings are available and how they affect the automated operation workflow, see *Configuration of Warehouse Operation Workflows*.

Pick, Pack, and Ship Operations

By using the new *Pick, Pack, and Ship* (SO302020) form, users can efficiently process shipments of the *Shipment* and *Receipt* types. On this form, a user can work in any of the following working modes:

- Pick: In this mode, the user processes the picking of the items for the shipment in the warehouse. The user switches to this mode by scanning the special barcode `@pick`. The *Pick, Pack, and Ship* form in Pick mode is shown in the following screenshot.

Figure: The user is picking items for a shipment

To start picking items, the user scans the shipment reference number from the pick list (the system downloads all line splits from the shipment) and starts to pick items. The process of picking an item includes scanning the location from which the item is taken, the inventory item barcode, and the lot or serial number barcode (if needed for the particular item). After that, the user confirms the picked line, if needed. The user can modify the quantity of the line currently being processed by using the barcode `#qty`. When all shipment lines have been picked, the user confirms the shipment (if packaging is not needed), or proceeds to Pack mode.

The user can remove a picked item by using the **Remove** button on the form toolbar or by entering the `#remove` command in the **Scan** box. Also, the user can use the `#clear` command or the **Reset** button on the form toolbar to clear the operation state and return to the first operation step of picking the items for the current shipment.

- Pack: In this mode, a user processes the packaging of the items that were picked for the shipment. A user switches to this mode on the same form by scanning the special barcode `@pack`. The *Pick, Pack, and Ship* form in Pack mode is shown in the following screenshot.
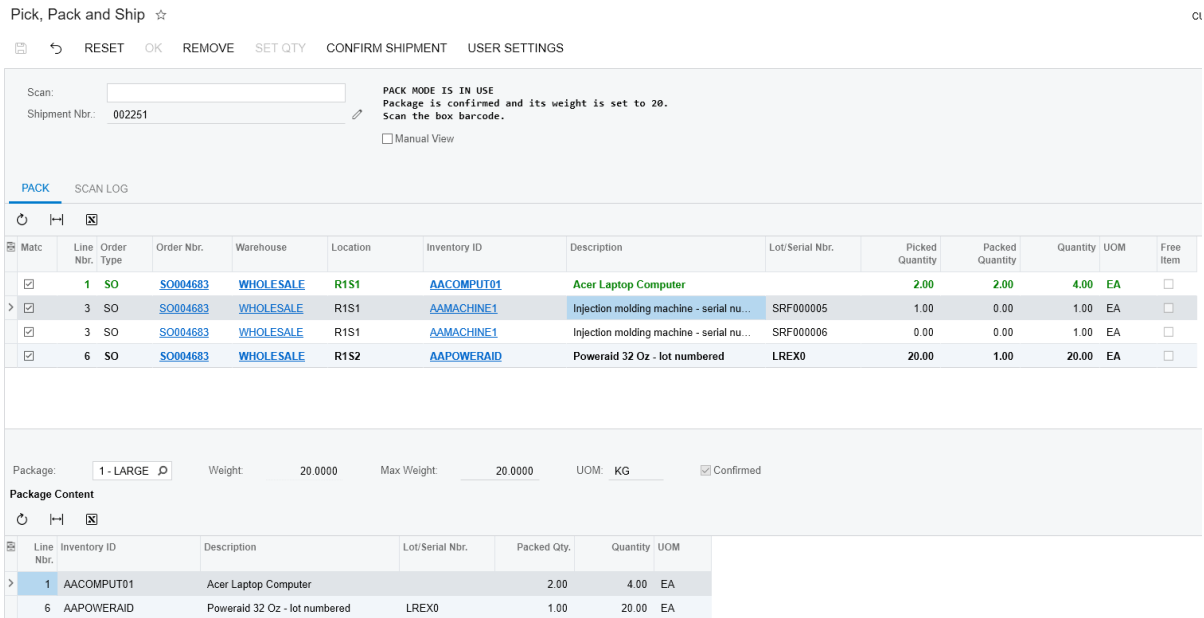
Figure: The user is packing items for a shipment

To start packing items, a user scans the shipment reference number from the pick list (or just switches to Pack mode if the user was previously picking the items for this shipment), scans the barcode of the box (in to which the items will be packed) and starts to package the items. The process of packaging each item includes scanning the inventory item barcode and the lot or serial number barcode (if needed for the particular item). The user performs the packaging of items until the box is completed. After that, the user confirms the box and enters the total weight of the packed box. Then the user continues with another box or multiple boxes until the complete shipment is packed. When all needed shipment lines are packed, the user confirms the shipment (if no specific shipping options have to be specified for this shipment), or proceeds to Ship mode to select the carrier and rate.

The user can remove a picked item by using the **Remove** button on the form toolbar or by entering the `#remove` command in the **Scan** box. Also, the user can use the `#reset` command or the **Reset** button on the form toolbar to clear the operation state and return to the first operation step of packing the items for the current shipment.

- Ship: In this mode, a user can manually select shipping options. The user switches to this mode by scanning the special barcode `@ship`. The *Pick, Pack, and Ship* form in Ship mode is shown in the following screenshot.

Figure: The user is selecting shipping options for a shipment

When the user switches to this mode, the system automatically sends requests for shipping rates to all integrated carriers that are configured in the system; these requests include the actual packages and weights of the items that are specified in the shipment. A user can review the rates proposed by carriers, select a rate from the list, receive the carrier's labels, and then confirm the shipment.

Receive and Put Away Operations

By using the new *Receive and Put Away* (PO302020) form, a user can automate the receipt of items ordered through purchase orders. On this form, the user can work in any of the following modes:

- Receive: In this mode, the user processes purchase receipts and purchase returns in the warehouse. The user switches to this mode by scanning the special barcode `@receive`. The *Receive and Put Away* form in Receive mode is shown in the following screenshot.

Figure: The user is receiving the items of a purchase receipt

In the **Settings** dialog box, which is brought up when a user clicks **User Settings** on the form toolbar, the user can select the **Use Single Receiving Location** check box to specify that all the items have been received to one warehouse location. In this case, the system will ask the user to scan the location only once when the user is processing the purchase receipt. If the check box is cleared, the system will ask the receiving location for each processed item.

To start processing the received items, the user scans the purchase receipt number on the printed document. The system copies all line splits from the purchase receipt and shows them as lines in the table on the **Receive** tab. If the user has specified that one receiving location is being used (by selecting the **Use Single Receiving Location** check box in the **Settings** dialog box), the system will ask the location before the processing of individual items. The process of receiving each item includes scanning the inventory item barcode, the lot or serial number barcode (if needed for the particular item), and the receiving location (if **Use Single Receiving Location** is cleared in the **Settings** dialog box).

After all details have been specified, the user confirms the line. The user can modify the line quantity, if needed. The user can also process the receipt of items that are not in the currently selected purchase receipt; in this case, the system will inform the user that the specified quantity of items exceeds the purchase receipt quantity and will request additional confirmation to receive the extra quantity. After receiving is completed, the user releases the receipt by using the **Release Receipt** button on the form toolbar or by entering the `#release#receipt` command in the **Scan** box. If not all purchase receipt lines has been received in full, the user can release the purchase receipt and mark all its lines as complete by using the **Complete PO Lines** button on the form toolbar or by entering the `#complete#polines` command.

- Put Away: In this mode, a user processes the putting away of received goods in the warehouse for a particular purchase receipt. A user switches to this mode by scanning the special barcode `@putaway`. The *Receive and Put Away* form in Put Away mode is shown in the following screenshot.

Matc	PO Order Type	PO Order Nbr.	Inventory ID	Transaction Descr.	Lot/Serial Nbr.	Expiration Date	Warehouse	Location	*To Location ID	Put Away Qty.	Quantity	UOM
☑	Normal	PO000905	AACOMPUT01	Acer Laptop Computer			WHOLESALE	RECEIVING	R1S2	1.00	1.00	EA
☑	Normal	PO000905	AAMACHINE1	Injection molding machine - serial nu...	SRF003		WHOLESALE	RECEIVING		0.00	1.00	EA
☑	Normal	PO000905	AAMACHINE1	Injection molding machine - serial ...	SRF000012		WHOLESALE	RECEIVING	R1S1	1.00	1.00	EA
☑	Normal	PO000905	AAPOWERAID	Poweraid 32 Oz - lot numbered	LREX0	1/1/2022	WHOLESALE	R1S1		0.00	1.00	EA

Figure: The user is putting away the items of the purchase receipt

The purchase receipt must be released; otherwise, it cannot be selected for putting away items. To start putting away items, the user scans the purchase receipt number on the printed form. The system copies all line splits from the purchase receipt and shows them as lines in the table on the **Put Away** tab. The process of putting away each item includes scanning the inventory item barcode, the lot or serial barcode (if needed for the particular item), and the location to which the items will be put away. After all details have been specified, the user confirms the line. The user can modify the line quantity, if needed. After all items have been added, the user uses the `#release#transfer` command or the **Release Transfer** button on the form toolbar to release the inventory transfer that the system generates to move items from the location defined in the purchase receipt to the location where it is put away. On the **Transfers** tab, the user can review the list of all transfer documents that have been prepared for the currently selected purchase receipt (see the screenshot below).

Figure: The user is reviewing transfer details

In both modes, the user can remove the added item by using the **Remove** button on the form toolbar or by entering the `#remove` command to the **Scan** box. Also, the user can use the `#reset` command or the **Reset** button on the form toolbar to clear the operation state and return to the first operation step of receiving or putting away the items for the current purchase receipt.

Inventory Operations

A user can automate basic inventory operations by using the following new forms: *Item Lookup* (IN202520), *Storage Lookup* (IN409020), *Scan and Issue* (IN302020), *Scan and Receive* (IN301020), *Scan and Transfer* (IN304020), and *Scan and Count* (IN305020). On these forms, the user can work in the following modes:

- Item Lookup: This mode is used for quickly finding an item (for example, if the item was unexpectedly found). A user switches to this mode by scanning the special barcode `@lookup`. Then the user scans the item barcode and the system shows the item information and the inventory summary for it. The *Item Lookup* form is shown in the following screenshot.

Figure: The user is looking up an item

- Storage Lookup: This mode is used for getting the list of items in a particular storage area (a location or a cart). A user switches to this mode by scanning the special barcode `@storage`. Then the user scans the barcodes for the warehouse and storage and the system displays the list of inventory items in this storage. The *Storage Lookup* form is shown in the following screenshot.

Figure: The user is looking up items in storage

- Scan and Issue: In this mode, a user processes the issuing of an item from inventory. The user switches to this mode by scanning the special barcode `@inissue`. The *Scan and Issue* form is shown in the following screenshot.

Figure: The user is issuing an item

To start issuing the items, the user scans the warehouse barcode. The process of adding an item to the issue includes scanning the location barcode, the inventory item barcode, and the lot or serial barcode (if needed for a particular item). After all details have been specified, the user confirms the line. The user can modify the line quantity, if needed. After all items have been added, the user releases the inventory issue by clicking **Release** on the form toolbar or by entering the `#release#issue` command in the **Scan** box.

- Scan and Receive: In this mode, a user processes the receipt of an item to inventory. The user switches to this mode by scanning the special barcode *@inreceipt*. The *Scan and Receive* form is shown in the following screenshot.

Figure: The user is receiving an item to inventory

To start receiving the items, the user scans the warehouse barcode. The process of adding an item to the inventory receipt includes scanning the inventory item barcode, the lot or serial barcode (if needed for a particular item), and the location barcode. After all details have been specified, the user confirms the line. The user can modify the line quantity, if needed. After all items have been added, the user releases the inventory receipt by clicking **Release** on the form toolbar, or by entering the `#release#receipt` command in the **Scan** box.

- Scan and Transfer: In this mode, a user processes intra-warehouse transfer operations with items. A user switches to this mode by scanning the special barcode `@intransfer`. The *Scan and Transfer* form is shown in the following screenshot.

Figure: The user is processing an intra-warehouse transfer

To start transferring the items, the user scans the warehouse barcode. The process of adding an item to the transfer includes scanning the source location barcode, the inventory item barcode, the lot or serial barcode (if needed for a particular item), and the destination location barcode. After all details have been specified, the user confirms the line. The user can modify the line quantity, if needed. After all items have been added, the user releases the inventory transfer by using the **Release** button on the form toolbar or by entering the `#release#transfer` command into the **Scan** box.

- Scan and Count: In this mode, a user counts inventory items within the physical inventory process. A user switches to this mode by scanning the special barcode `@count`. The *Scan and Count* form is shown in the following screenshot.

Figure: The user is counting items

To start counting inventory items, the user scans the reference number of the physical inventory document. The process of counting items within physical inventory includes scanning the location barcode, the inventory item barcode, and the lot or serial barcode (if needed for a particular item). After all details have been specified, the user confirms the line. The user can modify the line quantity, if needed. After all items in the location or locations have been counted, the user confirms the entered data by clicking **Confirm** on the form toolbar or entering the `#confirm# document` command in the **Scan** box.

In each mode, the user can remove the added item from the issue, receipt, or transfer by using the **Remove** button on the form toolbar or by entering the `#remove` command in the **Scan** box. Also, the user can use the `#reset` command or the **Reset** button on the form toolbar to clear the operation state and return to the first operation step of issuing, receiving, transferring, or counting the items, keeping the current inventory document (issue, receipt, transfer, or count).

Limitations

The following limitations apply to the WMS functionality in Acumatica ERP 2019 R1:

- The processing of inventory items with the *User-Enterable* lot/serial method is currently not supported in Pick and Pack modes.

- The processing of non-stock items that require shipment or require receipt is currently not supported in any of the automated modes.

Organization: Information About the Email Sender

In previous versions of Acumatica ERP, if a user sent an email from a system email account, the header of the email included the following information about the email sender:

- The display name of the employee who initiated the sending of the email

- The email address of the system email account enclosed in angle brackets

In Acumatica ERP 2019 R1, the **Sender Display Name** box has been added on the *System Email Accounts* (SM204002) form, as shown in the following screenshot. For the system email account, the option selected in this box determines the display name to be used in an email sent from this account.

Figure: Sender display name settings

One of the following options can be selected in this box:

- *Set to Email Account Display Name*: Makes the **Email Account Display Name** box on this form available for editing. The sender information in the header of a new email sent from the system email account will include the display name of the system email account specified in the **Email Account Display Name** box (or the identifier of the system email account specified in the **Email Account ID** box if the **Email Account Display Name** box is empty), followed by the email address of the system email account enclosed in angle brackets. In a new system email account, this option is selected by default, but this setting can be modified at any time.

- *Set to Employee Name*: The sender information in the header of a new email sent from the system email account will include the display name of the employee who initiated the sending of the email (or the identifier of the system email account specified in the **Email Account ID** box if the email has been generated automatically—that is, for any automatic notification), followed by the email address of the system email account enclosed in angle brackets. During the upgrade of Acumatica ERP to Version 2019 R1, the system automatically inserts this option into the **Sender Display Name** box for all existing system email accounts, but an administrator can modify this setting as needed.

Organization: Improved Incoming Mail Processing

In Acumatica ERP 2019 R1, the automatic creation of cases during the processing of incoming emails has been improved. In previous versions, each new case that the system created based on a processed email could be associated with only the contact whose email address matched the sender's email address, if such a contact existed in Acumatica ERP. Now new cases can also be associated with business accounts of the *Customer* type.

When the system processes an incoming email, if the **Create New Case** check box is selected on the **Incoming Mail Processing** tab of the *System Email Accounts* (SM204002) form, the system searches the database for a customer business account with an email address that matches the sender's email address. If no such business account exists in the database, the system behaves as it did in previous versions. If such a business account exists, the system associates it with the newly created case; the case also becomes associated with a contact related to the business account if such a contact exists and the contact's email address also matches the sender's email address.

For more information about the processing of incoming emails, see *Incoming Mail Processing*.

Organization: Shipping Information in Opportunities

Starting from Acumatica ERP 2019 R1, shipping information can be specified for an opportunity. This information is then transferred to any sales orders, invoices, and quotes created from the opportunity.

The **Shipping Info** tab has been added to the *Opportunities* (CR304000), *Sales Quotes* (CR304500), and *Project Quotes* (PM304500) forms. When a user creates an opportunity on the *Opportunities* form, the system checks the availability of the following information and populates the **Shipping Info** tab (shown in the following screenshot) with the first data it finds, in the specified order of priority:

1. The location specified for the opportunity

2. The default location of the specified business account

3. The main contact information and address of the specified business account

4. The contact information and address of the specified contact

5. The contact information specified on the **Contact Info** tab

Figure: Shipping Info tab

If the **Override Shipping Info** check box on the **Shipping Info** tab is selected, this indicates that the shipping information specified on this tab can be modified or already differs from that of the business account selected in the Summary area of this form. If the **Override Shipping Info** check box is selected and a user changes the business account, the system brings up a dialog box with a question whether the user wants the specified shipping information to be replaced with the information of the new business account.

If a primary quote exists for an opportunity, the shipping address specified for the quote is synchronized with the shipping information specified for the opportunity.

On the form toolbar of the *Opportunities* (CR304000), *Sales Quotes* (CR304500), and *Project Quotes* (PM304500) forms, the **Validate Addresses** menu command has been added to the **Actions** menu on the form toolbar (see the following screenshot). When a user clicks this menu command, the addresses

specified for the document are validated through integration with a specialized third-party software or service. This option appears only if the *Address Validation Integration* feature is enabled on the *Enable/Disable Features* (CS100000) form.

Figure: The Validate Addresses menu option

If the specified shipping address has been validated, the **Validated** check box on the **Shipping Info** tab is selected. This check box also appears only if the *Address Validation Integration* feature is enabled on the *Enable/Disable Features* form.

For more information about shipping information in opportunities, see *Shipping Information in Opportunities*.

Organization: Improved Assignment and Approval Maps

In Acumatica ERP 2019 R1, assignment and approval maps have been significantly improved.

> **:** Approval maps are available in the system only if the *Approval Workflow* feature is enabled on the *Enable/Disable Features* (CS100000) form.

The Ability to Enter a Reason for Document Approval or Rejection

On the **Rule Actions** tab of the *Approval Maps* (EP205015) form, the **Reason Settings** group of elements have been added, which includes the following settings (shown in the following screenshot):

- **Reason to Complete Approve Action**: Defines whether an approver would have to enter a comment each time he or she approves a document of the specified type.

- **Reason to Complete Reject Action**: Defines whether an approver would have to enter a comment each time he or she rejects a document of the specified type.

Figure: Reason Settings group of elements

The **Reason Settings** group of elements is available only for approval maps created for change orders, employee time cards, equipment time cards, expense claims, pro forma invoices, project quotes, or sales quotes.

For each of these settings, the following options are available:

- *Not Required*: The system does not require that an approver comments his or her decision when approving or rejecting a document.

- *Optional*: If an approver attempts to approve or reject a document, the system displays the **Enter Reason** dialog box (shown in the following screenshot) in which the approver may leave a comment about his or her decision. The approver can click **Cancel** at the bottom of the dialog box to proceed without leaving any comment.

- *Required*: Each time an approver attempts to approve or reject a document, the system displays the **Enter Reason** dialog box, and the approver has to leave a comment about his or her decision in order to proceed with the approval procedure. If the approver clicks **Cancel** at the bottom of the dialog box, the dialog box closes and the document remains in the *Pending Approval* status. An approver can use only the corresponding entry form to approve or reject a document that requires entering a comment upon approval or rejection; such documents cannot be approved or rejected on the *Approvals* (EP503010) form.

Figure: Enter Reason dialog box

Entered comments are displayed in the **Reason** column on the **Approval Details** tab (shown in the following screenshot) of the *Change Orders* (PM308000), *Employee Time Card* (EP305000), *Equipment Time Card* (EP308000), *Expense Claim* (EP301000), *Pro Forma Invoices* (PM307000), *Project Quotes* (PM304500), or *Sales Quotes* (CR304500) form (that is, the entry form for the corresponding type of document).

Figure: Approval Details tab

The Ability to Temporarily Deactivate Conditions, Steps, and Rules in a Map

If a condition, step, or rule is no longer required in an assignment or approval map, an administrator can temporarily deactivate it by clearing the **Active** check box in the settings of that condition, step, or rule on the *Assignment Maps* (EP205010) or *Approval Maps* (EP205015) form. (See the following screenshot for an example.)
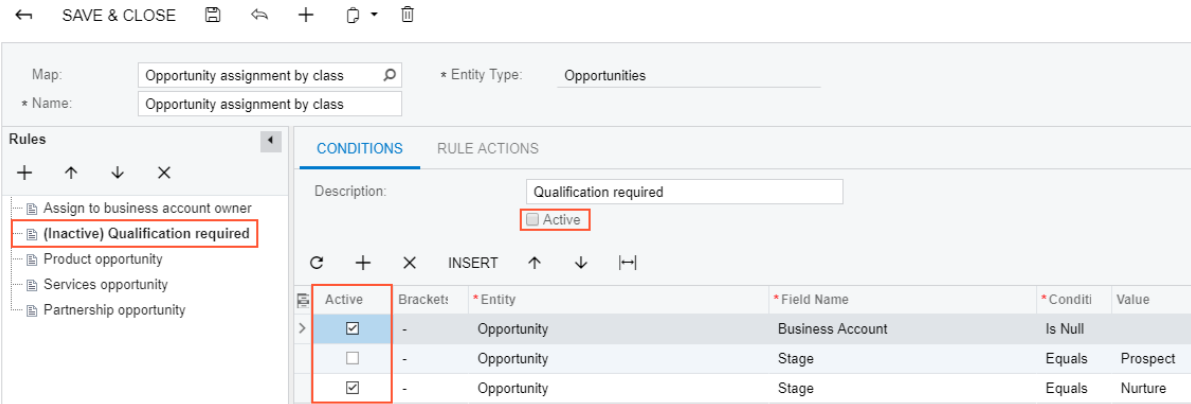
Figure: A deactivated rule in an assignment map

A deactivated step or rule is marked with the **(Inactive)** prefix in the **Steps** pane on the *Approval Maps* form or in the **Rules** pane on the *Assignment Maps* form.

An Extra Condition for Executing a Step of an Approval Map

If an approval map includes a large number of steps, it may be a difficult task for an administrator to configure that map with all possible variations of conditions taken into account so that an approver is always assigned to a submitted document of the specified type.

In Acumatica ERP 2019 R1, a new setting, **Execute Step** (shown in the following screenshot), has been added to the **Conditions** tab of the *Approval Maps* (EP205015) form for each step of an approval map. The following options are available for this setting:

- *Always* (default): The step is executed regardless of whether conditions in any previous step have been met and an approver has been assigned to the document.

- *If No Approvers Found at Previous Steps*: The step is executed only if all the conditions in all the previous steps have not been met and no approvers have been assigned to the document. If at least one approver has been assigned to approve the document after all the previous steps in the map have been executed, the system does not execute this step.
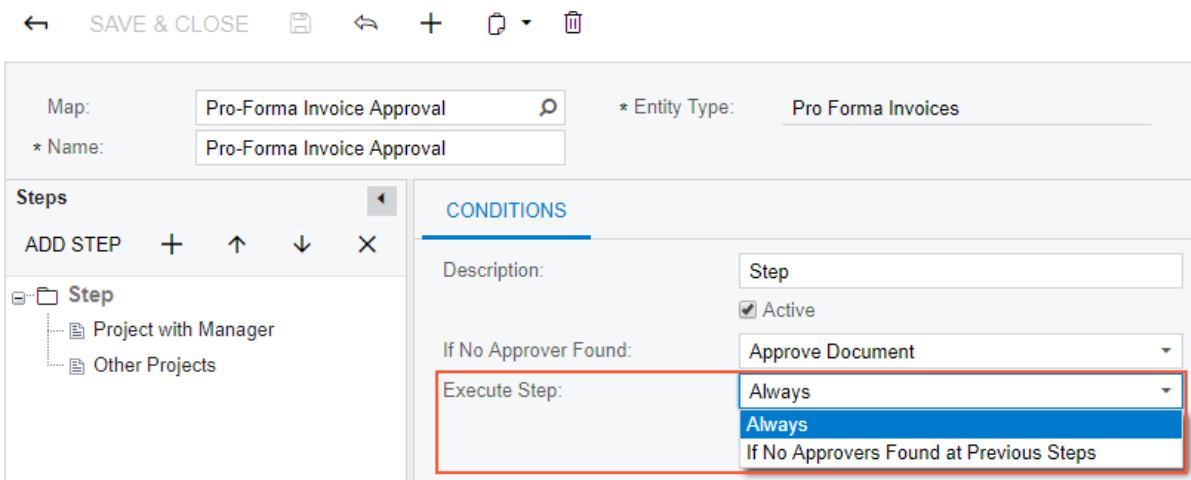
Figure: Execute Step setting

For more information about assignment and approval maps, see *Managing Assignment and Approval Maps*.

Organization: New HubSpot Data Provider

In Acumatica ERP 2019 R1, a new data provider, *HubSpot Enhanced Provider*, has been added to enhance the integration of Acumatica ERP with HubSpot. Now Acumatica ERP supports export of data from Acumatica ERP to HubSpot and import of data from HubSpot to Acumatica ERP through the use of integration scenarios. The *HubSpot Enhanced Provider* data provider can work with the following data.

Entity Type in Acumatica ERP	Corresponding Entity Type in HubSpot
Leads	Contacts
Contacts	Contacts
Business Accounts	Companies
Marketing Lists	Contact Lists

To configure synchronization of data between Acumatica ERP and HubSpot, an administrator should do the following:

1. Configure the *HubSpot Enhanced Provider* data provider on the **Parameters** tab of the *Data Providers* (SM206015) form so that it connects to HubSpot. This data provider supports the use of the OAuth protocol for authorization in HubSpot.

2. Create integration scenarios that use the *HubSpot Enhanced Provider* data provider for the entity types whose data need to be synchronized between the systems. You can use the following sample integration scenarios as a basis for the scenarios you need: *Export Companies to HubSpot*, *Export Contacts to HubSpot*, *Export Lists to HubSpot*, *Import Companies from HubSpot*, *Import Contacts from HubSpot*, and *Import Lists from HubSpot*.

3. Configure automation schedules that will run the needed import and export scenarios at the specified time interval.

For more information about the new data provider, see *Enhanced HubSpot Data Provider*.

Platform: Ability to Attach Reports to Notification Templates

Acumatica ERP 2019 R1 has introduced the ability to attach reports to notification templates.

On the *Notification Templates* (SM204003) form, the **Reports Attached** tab has been added for business event notifications, so that the user can select a report to attach it to the email. On the new tab, the user can specify the report format and parameters. If the parameter values are not specified, the default value of parameters will be used when the report is generated.

On the **Reports Attached** tab, in the **Report ID** box, the user can select the report to be attached. In the **Report Format** box, the user can select the format of the attached report: *Excel*, *HTML*, or *PDF*. Selecting the *HTML* format makes the new **Embedded** check box available. When this box is selected, the report will be inserted in the email body.

On the **Report Parameters** section, if the **Use Event as Data Source** box is selected, the system can pass the business event data to the report, rather than selecting data from the database at the moment of the report generation process.

Platform: Ability to Define a Workspace and Category for Particular Entities

With Acumatica ERP 2019 R1, a user can easily define the workspace and category in which each entity created on the following forms is organized:

- *Application Resources* (SM301010)
- *Dashboards* (SM208600)
- *Generic Inquiry* (SM208000)
- *Pivot Tables* (SM208010)
- *Report Definitions* (CS206000)

The needed workspace and category of a particular entity are specified in the **Workspace** and **Category** boxes, which have been added to each of these forms.

Any application resource, dashboard, generic inquiry, pivot table, or ARM report is visible in the system only if a user adds it to the site map—that is, makes a selection in the appropriate box of the form where the entity is created. When the site map location is specified for a new entity created on one of these forms, the system inserts the default values in the **Workspace** and **Category** boxes, thus causing the entity to be placed in the default workspace and category for the type of entity. A user can either leave the default values or change them to the needed ones. The following table shows the default values of these boxes on each of the forms where these entities are created.

Default values of the Workspace and Category boxes for new entities

Form title	Workspace	Category
Application Resources	**Data Views**	**Other**
Dashboards	**Data Views**	**Dashboards**
Generic Inquiry	**Data Views**	**Inquiries**
Pivot Tables	**Data Views**	**Pivot Tables**
Report Definitions	Report definitions of the *GL* type: **Finance**	**Financial Statements**
	Report definitions of the *PM* type: **Projects**	**Reports**

For an existing entity, if the site map location has already been selected or a user selects a new site map location, the system leaves the values in the **Workspace** and **Category** boxes that were specified before the user started modifying this entity, unless the user overrides the values in these boxes.

Platform: Ability to Use Online Help in an Acumatica ERP Search

With Acumatica ERP 2019 R1, an administrator can select which Help source the system will use for searching: built-in Help or online Help.

The built-in Help is provided with the Acumatica ERP instance. Topics in the built-in Help are relevant to the version of the Acumatica ERP instance in use and are not updated until the instance is updated.

Unlike built-in Help topics, online Help topics are regularly updated to the latest version of Acumatica ERP, and online Help contains the newest topics. The search functionality in online Help also takes into account the relevance of topics to the search term. If the system has been configured to use the online Help functionality, users can get the most relevant search results from the *Online Help Portal*, which is the open source of Help topics.

Configuration Setting to Use Online Help in Acumatica ERP Searches

By default, the online Help search functionality is not turned on. To turn it on, the administrator selects the **Use Online Help System** check box on the *Site Preferences* (SM200505) form, as shown in the following screenshot.

Figure: The Use Online Help System check box on the Site Preferences form

With the **Use Online Help System** check box selected, when a user performs a search, the system searches for the topics in the *Online Help Portal* and displays them on the **Help Topics** tab of the search results. For the most relevant topic, the system displays a preview box. To determine the most relevant topic, the system analyzes the frequency of views of the topics and displays the one that was viewed most often.

If the administrator clears the **Use Online Help System** check box, the system uses built-in Help source for searching and does not display a preview box with the most relevant topic.

Interface of the Help Topics Tab of the Search Results

When the **Use Online Help System** check box is selected on the *Site Preferences* (SM200505) form, the search results for the Help topics are displayed as shown in the following screenshots.

Figure: Interface of the Help Topics tab of the search results

Figure: The Open this article at Help Portal button

1. Topic preview box: This box displays a preview of the topic that the system has determined is the most relevant.

2. The **Show Full Version** button: The user can click this button at the bottom of the preview box to open the whole topic in a preview box. If the user clicks the **Show Full Version** button, the preview box is enlarged and the **Open this article at Help Portal** button appears, as shown in the second screenshot above.

3. Feedback section: The user can leave feedback by selecting **Yes** or **No** right of **Was this helpful?** in the preview box of the topic.

4. Other topics: The system displays the other topics that are relevant to the search string.

5. The **Open this article at Help Portal** button: This button (shown in the second screenshot above) appears only if the user has clicked the **Show Full Version** button in the preview box. When the user clicks this button, the system navigates to the full version of the topic, opening the online Help in a new browser tab.

Availability of the Online Help Functionality

Currently, the online Help functionality is available for only Acumatica ERP instances in a public cloud.

Platform: Automatic Deletion of the History of Execution Schedules

Version 2019 R1 provides the ability to automatically clear the history of executions. On the *Automation Schedules* (SM205020) form, the following elements have been added: the **Executions to Keep in History** box and the **Keep Full History** check box. The value specified in the **Executions to Keep in History** box indicates how many of the latest execution schedules will be saved in the history. Selecting the **Keep Full History** check box prevents the automatic deletion of the execution history and makes the **Executions to Keep in History** box unavailable.

Important: Before an instance is updated to Version 2019 R1, valuable execution history data should be backed up. When the instance is updated to Version 2019 R1, the **Executions to Keep in History** box will be automatically set to *1*. This will cause the system to delete the history of all previous executions and keep the history of only the latest execution.

Platform: Business Events Grouping Records by Generic Inquiry Fields

In version 2019 R1 introduced an option to raise an event per group of records per selected generic inquiry field which will be used for grouping. If this option is selected, the separate event will be raised for each group of records which have the same value of the specified field.

On the *Business Events* (SM302050) form, the *For Group of Records* option has been added to the dropdown list of the **Raise Events** box. If the *For Group of Records* option is selected, the new box **Group Records By** becomes visible. The **Group Records By** box contains a list of all generic inquiry fields in the format `<Table Name>.<Field Name>`, including formula fields.

The **Use Previous Value** check box has also been added to this form. If this check box is selected for an event, the previous value of the specified generic inquiry field will be used for grouping records when the event is triggered. When this check box is cleared, the new value of the field will be used when the event is triggered.

Example: To send sales quotes from a sales quotes generic inquiry to the customers, but to avoid sending a separate notification for every sales quote, the user can group the records by customer, so that every customer will receive the notification with the list of his or hers sales quotes in one email. To include the sales quotes and related information in the email body the <foreach> .....</foreach> tags should be used in the notification template.

Platform: Custom Color for User Interface

A company may want to personalize Acumatica ERP so that it adheres to the company's chosen style. This may include fitting the colors used in Acumatica ERP to the chosen colors of the company style.

In Acumatica ERP 2019 R1, administrators who have access to modify company site preferences can now select the primary color of the user interface. In addition to this functionality, for multi-branch companies, a different color can be specified for each branch to make it easier for employees to distinguish these branches.

To give administrators the ability to specify a custom color for the user interface, the **Primary Color** box has been added on the *Site Preferences* (SM200505), *Companies* (CS101500), and *Branches* (CS102000) forms. (This box on the *Site Preferences* form is shown in the screenshot below.)

This functionality is available for only the *Default* built-in theme. The theme is specified in the **Interface Theme** box of the *Site Preferences* form, as the following screenshot also shows.

Figure: The Primary Color box

The color selected in the **Primary Color** box is used for such elements as the header, the menu icons in the main menu, tiles, and active tabs. (Some of these elements are highlighted in the following screenshot.)

Figure: Elements that have the primary color

To override the color scheme for a specific company or branch, the **Override Colors for the Selected Company** check box has been added to the **Visual Appearance** tab of the *Companies* form and the **Override Colors for the Selected Branch** check box has been added to the **Visual Appearance** tab of *Branches* form, as shown in the following screenshot for the *Branches* form.

Figure: The Override Colors for the Selected Branch check box

Selecting Colors for the Site

On the *Site Preferences* (SM200505) form, users can select the built-in theme (*Default* or *Indigo*) to apply the particular color scheme to the user interface. When users select the *Default* theme, the **Primary Color** selection box appears under the **Interface Theme** selection box. Users can leave the default color defined in the theme or select a different primary color to be used for the user interface.

The selected color palette is applied to all companies and branches unless in the settings of a specific company or branch, an override of the site color is enabled and another color is selected.

Selecting Colors for the Specific Company or Branch

An administrator with access to modify the preferences of companies can override the color scheme of the user interface for specific company or branch. If a company has no branches, the administrator overrides the setting of the site color on the *Companies* (CS101500) form. If a company has multiple branches, the administrator can use the *Companies* or the *Branches* (CS102000) form to select the needed color. The color palette selected on the *Companies* form for the company with multiple branches is applied to all branches of a company unless in the settings of a specific branch, an override of the site color is enabled and another color is selected. To override the color for the specific branch, administrator uses the *Branches* form.

To override the site theme for the specific company or branch, the administrator selects the **Override Colors for the Selected Company** check box on the **Theme** section of the **Visual Appearance** tab of the *Companies* form or the **Override Colors for the Selected Branch** check box on the **Theme** section of the **Visual Appearance** tab of *Branches* form and then select the color to be used for this company or branch.

Platform: Enhanced Ability to Add and Delete Attachments

In Acumatica ERP 2019 R1, the ability to easily add links to the attachments that already exist in the system has been introduced. With this new functionality, a user can also delete the links to the files.

Previously, if a user wanted to use the same file in multiple documents, the user had to upload it to each document separately. This resulted in duplication of files and inefficient usage of database space. In Acumatica ERP 2019 R1, the user can add the link to the stored files right from the form to which the file should be attached. If the file is linked to multiple documents and a user wants to delete this file from one of them, after deletion, the file will be still available in the other documents. That is, the user deletes the link to the attachment, rather than deletes the file itself. If a link to the file is the last link to this file, it means that the file is linked to the selected document only; in this case, the user can delete the file only on the *File Maintenance* form, which can be opened right from the **Files** dialog box by clicking **Edit** button next to the name of the file which the user needs to delete.

The Files Dialog Box

To give users the ability to easily add or delete the links to the files that are saved in the system, the following new buttons have been added to the **Files** dialog box, as shown in the following screenshot:

Figure: The Files dialog box

1. **Add Link**: When a user clicks this button, the *Search in Files* form opens in a pop-up window, and the user selects the needed file whose link is added to the document.

2. **Remove Link**: When a user clicks this button, the link to the file is removed from the selected document. The **Remove Link** button doesn't delete the attachment if this attachment is linked to only this document. The user needs to delete the attachment on the *File Maintenance* form.

The Search in Files Form

When a user clicks the **Add Link** button of the **Files** dialog box, the system opens the *Search in Files* (SM202500) form in a pop-up window with the following new buttons that can be used to add the links to the files, as shown in the screenshot below:

Figure: The Search in Files form in a pop-up window

1. **Add Link**: When a user selects the needed file, the user clicks this button to link it to the document; the pop-up window remains open, and the user can select additional files to be linked, if needed.

2. **Add Link & Close**: When a user selects the needed file, the user clicks this button to link it to the document; the pop-up window is automatically closed by the system.

These two buttons are available only if the user opens the *Search in Files* form from the **Files** dialog box.

Addition of an Attachment that Exists in the System

To add a link to a file that already exists in the system to a different document, a user should do the following:

1. Open the form and the document to which you want to add a link to a file.

2. Do one of the following:

   - To add a link to the file to a document, in the form title bar, click **Files**.

   - To add a link to the file to a document line, click the **Files** (📎) button at the beginning of the appropriate detail row.

   The **Files** dialog box opens.

3. Click the **Add Link** button. The *Search in Files* form opens in a pop-up window.

4. In the left pane, in the list of nodes, open the node with the needed file or files.

5. Select the file, and on the table toolbar, click one of the following:

   - **Add Link**: Adds a link to the file and gives you the ability to repeat this step for other files. When you finish, click **Close**.

   - **Add Link & Close**: Adds a link to the file and closes the pop-up window.

   The link to the selected file will be shown to the **Files** dialog box for this form or document.

Deletion of the Link to the Attachment from the Document

To delete a link to a file that is attached to the document, do the following:

1. Open the form and the document from which you want to delete a file.

2. Do one of the following:

- To delete a link to the file from a document, in the form title bar, click **Files**.

- To delete a link to the file from a document line, click the **Files** (📎) button at the beginning of the appropriate detail row.

  The **Files** dialog box opens.

3. Select the file whose link you want to delete.

4. On the toolbar, click the **Remove Link** button. The system will process this operation as follows:

   - If the file is linked to multiple documents, the system will delete the link to this file from this particular document. This will not affect other documents to which the file is linked.

   - If the file is linked to this document only, the system will display the following error: *You can't delete the last link*. To delete the file from the system entirely, in the **Files** dialog box, next to the file name, click **Edit**, and on the *File Maintenance* form, which opens, click **Delete**. This will permanently delete the file from the system.

Platform: Enhancements in Generic Inquiries and Pivot Tables

In Acumatica ERP 2019 R1, the following improvements to generic inquiries and pivot tables have been made:

- When a user is viewing a generic inquiry, if the number of displayed records is limited by the **Select Top *x* Records** box on the *Generic Inquiry* (SM208000) form, a warning icon is now displayed indicating this.

- A check box, **Show Collapsed**, has been added on the **Properties** pane of the *Pivot Tables* (SM208010) form. The user can select this check box for row or column items to be displayed as collapsed by default.

- To give users the ability to collapse all or expand all expandable pivot fields, the **Collapse All** and **Expand All** buttons have been added to the bottom of the pivot table view screen.

- The usability of the clickable areas in the fields and icons of the pivot table view screen has been improved. The icons are now highlighted when a user points at them, so that it is easier to see if the user is clicking the **Sort** or **Filter** icon.

- In the pivot table view mode, users can no longer drag the fields between rows and columns. The movement of fields to different rows and columns can now be made only on the *Pivot Tables* (SM208010) form.

- On the Pivot Tables form, a field can be added to multiple panes.

- Differentiation between the *Null* and *0* values in pivot tables has been added, so that a row or column displays *0* instead of a blank if the value is *0*.

- An improvement has been introduced on the **Navigation** tab of the *Generic Inquiry* form, so that in the **Screens** pane, a user can add multiple rows with the same form, but with different parameters selected in the **Navigation** pane.

Platform: Generic Inquiry as Import Scenario Data Source

In Version 2019 R1, an option to register generic inquiry as a data source for the import scenario has been introduced. The data provider type for generic inquiries has been added to the *Import Scenarios* (SM206025) form. On the *Data Providers* (SM206015) form, the *Generic Inquiry Provider* type has been added to the **Provider Type** box.

Platform: Highlighting of Generic Inquiry Rows or Columns

In Acumatica ERP 2019 R1, an option to highlight rows or columns of a generic inquiry has been introduced.

On the **Results Grid** tab of the *Generic Inquiry* (SM208000) form, the **Row Style** box has been added, so that the user designing the generic inquiry can specify the style of a generic inquiry row. This box supports the use of formulas.

In the table of the **Results Grid** tab on the *Generic Inquiry* form, the **Style** box has also been added, so that the style of a generic inquiry column can be specified.

The **Component Type** pane of the formula editor box has been enhanced with **Styles** components, to be used in the formulas so that the user can highlight certain elements of a generic inquiry. By using the new **Styles** components, the user can specify the display style of an element described by the formula.

The following operators can be used to specify the styles for the highlighted elements.

Bad		Red	Orange	Green	Blue	Gray	Purple
Good		Red 60	Orange 60	Green 60	Blue 60	Gray 60	Purple 60
Neutral		Red 40	Orange 40	Green 40	Blue 40	Gray 40	Purple 40
		Red 20	Orange 20	Green 20	Blue 20	Gray 20	Purple 20

Consider the following example: `=IIf([CRCase.Priority] = 'H', 'bad', 'default')`. If the formula in this example is used as the value specified in the **Row Style** box of a generic inquiry listing support cases, then all the high-priority cases will be highlighted with red color.

Platform: Improvements to Long-Running Processing

In Acumatica ERP 2019 R1, the forms intended for mass processing of data records, such as *Validate Customer Balances* (AR509900), now display the following **Processing** pop-up window with a progress bar while the process is running.

The new **Processing** pop-up window displays the completion percentage, as well as the elapsed and remaining running time of the process. Also, this window has the following tabs, which display lists of records that meet particular criteria with regard to the long-running process:

- **Processed** - Lists all the sucessfully processed records

- **Errors** - Lists all the records that were processed with errors

- **Warnings** - Lists all the records that were processed with warnings

- **Remaining** - Lists all the remaining records to be processed

- **Total** - Lists all the records involved in the processing (those that have been processed successfully, those for which warnings or errors have occurred, and those that need to be processed)

The items in the lists of the tabs of the new progress bar window can have links. Clicking a link in the list will open the related record on the appropriate form in a new browser tab. The new progress bar window is designed to be run as a background operation, so that if the user opens another form in the same browser tab, the currently long-running process and the progress bar will keep running in the background and will be accessible again by opening the form from which the processing was invoked in the same browser tab.

The list of all the long-running processes can be viewed on the System Monitor (SM201530) form.

Platform: Improvements to the Generic Inquiry Side Panel

Acumatica ERP 2019 R1, has introduced the following improvements to the side panel of generic inquiries:

- For efficiency, if a user navigates to another generic inquiry record, the system will not reset the active tab selected in the side panel.

- The ability to resize the side panel has been added. The size will be saved automatically.

- On the side panel, a button has been added so that the users can maximize or minimize this panel.

- A warning message has been added to warn the users not to leave a record without saving changes.

- Side panel elements have been optimized to use window space more effectively when a user sets up additional columns in a generic inquiry in the **Column Configuration** dialog box.

- The overall performance of side panel has been improved, especially while the user switches between records.

Platform: Location Tracking of Users

In Acumatica ERP 2019 R1, the ability to track the GPS location of a user by using the mobile app has been added. For information on user account settings, see *User Accounts in Acumatica ERP*.

Changes on the Users form

The **Location Tracking** tab, where an administrator can configure location tracking for a particular user, has been added to the *Users* (SM201010) form. The tab contains the following elements (see the screenshot below):

- The **Track Location** check box, which can be selected to turn on location tracking for the user selected on the form

- The **Tracking Frequency In** x **Minutes** box, in which the administrator can specify how often the mobile device registers the user location

- The **Distance Frequency In** x **Meters** box, in which the administrator can specify the distance that the user has to move so that the mobile device registers the user location

- The table in the bottom of the section, in which the administrator can specify on which days and in which time periods the mobile registers the user location. The table contains the following columns:

    - **Days of Week**: The day of the week on which the location is tracked.

    - **Start Time**: The time when the location tracking starts for the particular day of the week.

    - **End Time**: The time when the location tracking ends for the particular day of the week.

By default, if an employee account is associated with the user (that is, if it is selected in the **Linked Entity** box of the Summary area), when the **Location Tracking** check box is selected, the system copies the settings to the table on the **Location Tracking** tab from the calendar assigned to the employee in the **Calendar** box of the *Employees* (EP203000) form. If no employee is specified in the **Linked Entity** box of the Summary area, when the **Location Tracking** check box is selected, the table on the **Location Tracking** tab is empty and the administrator has to insert the times manually.

Figure: The Location Tracking tab

New Location Tracking History Form

The new *Location Tracking History* (SM202000) form shows the GPS location coordinates tracked in the system. The form has the following columns (see the screenshot below):

- **Date**: The date and time when the location coordinates were tracked
- **Username**: The login name of a user whose location was tracked
- **Entity Name**: The full name of the user.
- **Longitude**: The longitude of the user location.
- **Latitude**: The latitude of the user location.
- **Altitude**: The altitude of the user location.
- **Device ID**: The identification of the device of the user, if any.
- **Device Name**: The name of the device of the user, if any.

Figure: The Location Tracking History form

Platform: Master Calendars in ARM

In Acumatica ERP 2019 R1, support of master calendars has been added to the Analytical Report Manager (ARM).

Master Period Support in ARM

On the *Report Definitions* (CS206000) form, the **Use Master Calendar** and **Request** check boxes have been added to the **Default Data Source Settings** section, as shown in the following screenshot.

Figure: The Use Master Calendar and Request check boxes

If the **Request** check box is selected, the **Use Master Calendar** check box is available on an ARM report form, and the default value is the value specified on the *Report Definitions* form for the report definition. If the **Request** check box is cleared on the *Report Definitions* form for the report definition, the **Use Master Calendar** check box is hidden on the ARM report form, and this value will always be copied from the report definition.

When the **Use Master Calendar** check box is selected on the *Report Definitions* form, the **Start Period** and **End Period** boxes in the Data Source Editor dialog box will list the master periods on the following forms:

- *Row Sets* (CS206010)
- *Column Sets* (CS206020)

- *Unit Sets* (CS206030)

Platform: Total Aggregate Function of Generic Inquiries

In Acumatica ERP 2019 R1, the ability to aggregate the total of a generic inquiry column has been introduced.

On *Generic Inquiry* (SM208000) form, on the **Results Grid** tab, the **Total Aggregate Function** column has been added, which gives the user the ability to aggregate the total value of a generic inquiry column.

The following aggregate functions are available:

- *AVG*: Returns the average of all non-null values of the column

- *COUNT*: Returns a count of all values of the column

- *MAX*: Returns the maximum value of all values of the column

- *MIN*: Returns the minimum value of all values of the column

- *SUM*: Returns the sum of all values of the column

When the **Total Aggregate Function** box is used, the resulting generic inquiry will display the aggregated value of the column displayed at the bottom of the screen.

DB Bills to Pay ☆

ALL RECORDS   OVERDUE BILLS

Drag column header here to configure filter

Type	Reference Nbr.	Account ID	Account Name	Due Date	Cash Discount Date	Amount Due
				max: 02/16/2019		avg: 46444.745463

Platform: Two-Factor Authentication

In Acumatica ERP 2019 R1, two-factor authentication has been introduced, whereby a user is granted access only after the user successfully presents to the system additional evidence of authentication in addition to the user credentials (that is, the username and password). At the system level, a system administrator can require two-factor authentication or turn off this authentication (the default setting). In addition, the administrator can specify different settings for individual users with regard to two-factor authentication; user settings take precedence over system-wide settings.

If two-factor authentication is required, the user needs to authenticate the sign-in operation by using one of the methods displayed on the following screenshot.

By default, when two-factor authentication is enabled, the system uses the push notification method to authenticate the login operation.

: Push notifications are available for only instances with a valid license.

The push notification method of authentication requires the Acumatica ERP application to be set up on a mobile device.

It is possible to specify whether the user confirms authentication in the following ways:

- By tapping **Approve** in mobile application push-notification

- By Email (this authentication method will be in the list if the administrator selects the *Allow Email* check box on the *Security Preferences* (SM201060) form)

- Via SMS (this authentication method will be in the list if the administrator selects the *Allow SMS* check box on the *Security Preferences* form)

- By generating codes in Acumatica ERP mobile application with the `Generate Access Code` command

- By generating codes on the *Users* (SM201010) or User Profile (SM203010) form

On the *Security Preferences* form, the **Two-Factor Authentication Policy** section has been added. In the **Two-Factor Authentication** box, the administrator can select *None* (two-factor authentication is not in use in the system), *Required* (two-factor authentication is required system-wide) or *Required for Unknown Devices* (two-factor authentication is only required for the unknown devices.). If the administrator selects the **Allow Email** check box, the authentication can be performed by using the email address specified for a user.

: On the *Security Preferences* form, when the *Required for the Unknown Devices* option is selected in the **Two-Factor Authentication** box, the **Do not Request Confirmation on This Device Again** check box will become visible on the login screen. This box allows the user to disable the second authentication step after a successful login of the used device.

: If the administrator selects the **Allow SMS** box, which does not appear on this form by default, authentication via SMS can be used. Authentication via SMS and the **Allow SMS** check box can be enabled after the administrator downloads the additional customization posted at *https://portal.acumatica.com*. The user will also need to set up the SMS provider on the *Voice Provider (SM203535)* form to use the SMS authentication method.

The two-factor authentication settings on the *Security Preferences* form influence all the company's users that do not have their own setting specified on the *Users* (SM201010) form.

On the *Users* form, the **Two-Factor Authentication** section has been added. The administrator must select the new **Override Security Preferences** check box in order to override the system default setting in the **Two-Factor Authentication** box and specify the two-factor authentication mode for the selected user. (Otherwise, the settings specified on the *Security Preferences* form will be used.)

The **Send Confirmation Push** column has been added to the **Devices** tab of the *Users* form. The column indicates whether the push notification login request will be sent to each particular device when the user tries to sign in to the web application.

On the User Profile and *Users* form, the **Generate Access Codes** button has been added to the form toolbar. The administrator clicks this button to generate and display a list of access codes for the selected user.

If two-factor authentication is required for a particular user, the first time that user signs in to the Acumatica ERP mobile app, the system will request the security access code that will be sent to the user's email address on signing in to the web version of Acumatica ERP. The mobile app will also require PIN code or biometric verification when the user signs in. The new **Generate Access Code** command in the account editing menu of the mobile app allows the user to generate access codes for two-factor authentication.

Configuring Two-Factor Authentication

Before enabling two-factor authentication users must do the following preparations steps:

1. Make sure that all users have email addresses properly configured in the system, and an action of sending and receiving emails by schedule is activated. You will receive access code by email for the first sign in after two-factor authentication is enabled.

2. Be sure that your license is activated for the instance. Otherwise two-factor authentication by push notifications cannot be used.

3. If your site works via the HTTP protocol add the following key to the *web.config* file: `<add key="identityServer:allowHttp" value="true" />`

Users do the following to configure two-factor authentication:

1. If you want to enable two-factor authentication for all users, on the *Security Preferences* (SM201060) form, in the **Two-Factor Authentication** box, select *Required*.

2. If you want to enable two-factor authentication for a particular user do the following on the *Users* (SM201010) form:

    a. In the **Login** box of the Summary area, select a user for whom you want to enable the two-factor authentication

    b. Select the **Override Security Preferences** check box.

    c. In the **Two-Factor Authentication** box, select *Required*.

        : If two-factor authentication is enabled for a user at least in one tenant the user must sign in to all tenants (to which he or she has access) by using two-factor authentication.

3. Before you sign out the system, generate access codes for at least a user with a system administrator role as follows: On the *Users* or User Profile form, click **Generate Access Codes** for each user. The system will generate access codes that the user can use if other sign-in ways will not work. Then print or save the list of codes for the future use.

4. If you want the system to send access codes by email, on the *Security Preferences* form, in the **Two-Factor Authentication Policy** section, select the **Allow Email** check box. When a user with two-factor authentication enabled signs in to the system, an access code will be sent at an email specified for the user on the *Users* form.

5. If you want the system to send access codes by SMS do the following:

    a. Publish the `PXVoiceProvider.zip` customization (which you can download from the Partner Portal).

    b. On the Voice Providers form, set up parameters of the *Twilio* account.

    c. On the Security Preferences form, select the **Allow SMS** check box in the **Two-Factor Authentication Policy** section. When a user with two-factor authentication enabled signs in to the system, an access code will be sent at a mobile phone number specified for the user on the User Profile form.

Signing In with Two-Factor Authentication

When two-factor authentication has been enabled, users must register their mobile devices to receive confirmation requests as push notifications. That is, each user must sign it to the Acumatica ERP server in the mobile application by using an access code.

: Even if users signed in to the server before, they must sign in again by using an access code. This must be done once for each mobile device.

To register a mobile device, users do the following:

1. When a user enters credentials on the Welcome page, the system sends an access code for a mobile application to the user's email.

2. A user does the following on his or her mobile device:

    a. If the Acumatica ERP mobile application is not installed on the device, the user installs the application and creates an account for the Acumatica ERP server to which he or she wants to connect.

    b. When the user signs in to the account and enters credentials the mobile application requests an access code. The user enters the access code received by email (see the following screenshot). If the access code is not received the user can use an access code from the list generated on the *Users* or User Profile form.

Figure: A sample email with an access code

3. When the user sign in to the mobile application, he or she clicks the **Send request to device** button on the Welcome page (as shown in the following screenshot). The system will send a push notification to the registered device and display a code that the push notification will contain. If the message with the access code is not displayed on the Welcome page this means that the device was not registered properly, and a user must make sure that instructions in the previous step have been completed correctly.

Figure: The Send request to device button

4. The user opens the push notification and tap **Approve** (as shown in the following screenshot). The user will need to confirm approval by biometric authentication (if it supported by device) or by entering PIN to the device.

Figure: A sample push notification with an access code

5. The user will be signed in to the web application automatically.

If a user cannot receive a push notification he or she can use the *Use Another Authentication Method* link on the Welcome page. The user can use any of the following authentication methods:

- Receive an access code by SMS: A user can use this method if sending SMS has been enabled on the *Security Preferences* (SM201060) form and the correct mobile phone number is specified on the User Profile form. When the user receives the access code in SMS he or she enters the code on the Welcome page.

- Receive an access code by email: A user can use this method if sending emails has been enabled on the *Security Preferences* form and the correct email is specified on the *Users* (SM201010) form. When the user receives the access code in email he or she enters the code on the Welcome page.

- Use an existing access code or a code generated by the mobile application: The user can use one of codes from the list generated on the *Users* or User profile form. Alternatively, if the user is signed in the mobile application he or she can use the **Generate Access Code** action on the mobile device (see the following screenshot).

Figure: The Generate Access Code action in the mobile application

When a user signs in to the system after registration a push notification with a sign-in request will be sent automatically on the user's registered mobile devices. The user must approve the request, and sign-in will be performed automatically. The other authentication methods (which are described above) also can be used if push notifications are not available at the moment of sign-in.

When a user signs in to the mobile application by using an account with enabled two-factor authentication the application will always request to confirm the user's identity by biometric authentication (if it is supported by the device) or by entering PIN.

Push notifications with sign-in requests can be disabled for particular device or devices by using the *Users* or User Profile form as follows: On the **Devices** tab, clear the check box in the **Send Confirmation Push** column.

Projects: Budget Forecasts

In Acumatica ERP 2019 R1, a new *Budget Forecast* feature has been introduced. The feature makes the new *Project Budget Forecast* (PM209600) form available. On this form, users can enter and modify project budget forecasts and compare these forecasts with the actual project costs and incomes for each financial period.

On the form, users can forecast original and revised budget amounts and quantities for existing project budget lines for financial periods of the master calendar. Each project can have multiple budget forecast revisions. In a forecast revision, a user can distribute amounts and quantities of the project budget among the selected range of financial periods to speed data entry. By using forecast data, users can create generic inquiries and pivot tables.

Before users can start using the budget forecasting functionality, an administrative user enables the *Budget Forecast* feature on the *Enable/Disable Features* (CS100000) form.

Creation of the Project Budget Forecast

A user can create a project budget forecast on the *Project Budget Forecast* (PM209600) form.

For a new project budget forecast, in the Summary area of this form, the user selects a project and enters an alphanumeric revision identifier of the budget forecast, which must be unique within the project. When a user enters the revision, the system automatically fills in the table with the budget lines of the selected project, as shown in the following screenshot.

Figure: A new revision of the project budget forecast

In the Summary area, the user can also specify any of the following selection criteria to view in the table only the project budget lines with the selected settings:

- **Project Task**: The applicable project task of the selected project
- **Type**: The account group type of the budget line, which is *Expense* by default
- **Account Group**: The account group of the budget line
- **Inventory ID**: The applicable stock or non-stock inventory item
- **Cost Code**: The applicable cost code if the *Cost Codes* feature is enabled on the *Enable/Disable Features* (CS100000) form

On the *Project Budget Forecast* form, a user can also create a new revision of the project budget forecast as a copy of an existing revision of the project budget forecast and modify this copy.

Distribution of Budget Values for Forecast Periods

On the *Project Budget Forecast* (PM209600) form, a user can add financial periods for project budget lines of the selected forecast revision in one of the following ways:

- Click the project budget line in the table, and on the table toolbar, click **Add Periods** to add a manually selected range of financial periods for the selected project budget line.

- In the form toolbar, click **Generate Periods** to automatically add financial periods for all the project budget lines selected in the table based on the selection criteria specified in the Summary area. For each line, the system adds the range of periods selected as follows:

  - The starting financial period of the range is the earliest of the following periods:

    - The financial period to which the **Planned Start Date** of the project task on the *Project Tasks* (PM302000) form belongs

    - The financial period to which the first actual or change order amount of the budget line was posted

    - The financial period to which the **Start Date** of the project task on the **Tasks** tab of the *Projects* (PM301000) form belongs, if no planned start date is found for the project task and no actual or change order amount has been posted for the project budget line

    - The financial period to which the **Start Date** of the project on the **Summary** tab of the *Projects* form belongs, if no start date is found for the project task

  - The ending financial period of the range is the latest of the following periods:

    - The financial period to which the **Planned End Date** of the project task on the *Project Tasks* form belongs

    - The financial period to which the last actual or change order amount of the budget line was posted

The system adds periods for the project budget lines with quantities and amounts of zero, as shown in the following screenshot.

Figure: Periods added for project budget forecast lines

A user can specify the **Original Budgeted Quantity**, **Original Budgeted Amount**, **Revised Budgeted Quantity**, and **Revised Budgeted Amount** values for each period line of the project budget line manually.

A user can also distribute the quantities and amounts of project budget lines among period lines automatically. On the form toolbar, the user clicks **Distribute**. In the **Distribute** dialog box (shown in the screenshot below), which is opened, the user can specify the following settings:

- In the **Value** section, the user selects one of the following options to define which values the system should distribute:

    - **Distribute Total**: The system distributes the values of the project budget line between all the period lines equally. All the values that have been already specified for the period lines will be overridden.

    - **Add Delta**: The system adds the delta, which is the difference between the values of the project budget line and the total values of the period lines, to all the period lines in proportion to the values that have been already specified for period lines.

- In the **Columns** section, the user selects the columns in which the system should distribute values.

- In the **Rows** section, the user specifies whether the system should distribute values for all the project budget lines in the table or for the selected project budget line only.

Figure: The Distribute dialog box

For each project budget line, in the **Original Budgeted Quantity**, **Original Budgeted Amount**, **Revised Budgeted Quantity**, and **Revised Budgeted Amount** columns, the system calculates the following values, as shown in the screenshot below:

- **Total**: The total of the period lines

- **Delta**: The difference between the value of the project budget line and the total of the period lines

Project Budget Forecast ☆

NOTES   FILES   CUSTOMIZATION   TOOLS ▾

🖫 ↶ + 🗑 |< < > >| GENERATE PERIODS   COPY REVISION   DISTRIBUTE

* Project:	FIXEDP03 - Fixed price for Carib 🔍 ✎	Project Task:	🔍	Account Group:	🔍
* Revision:	REVISION1 - The first revision 🔍	Type:	Expense ▾	Inventory ID:	🔍
Description:	The first revision				

↻ + ✕   ADD PERIODS   UPDATE PROJECT BUDGET   UPDATE FORECAST LINES ⊢| ☒ ⬆

Project Task	Account Group	Inventory ID	Description	Planned Start Date	Planned End Date	Financial Period	Original Budgeted Quantity	Original Budgeted Amount	Revised Budgeted Quantity	Revised Budgeted Amount	Budgeted CO Quantity	Budgeted CO Amount	Actual Quantit	Actual Amoun	Revised Quantity - Actual Quantity	Revised Amount - Actual Amount
01TASK	LABOR	<N/A>	Employee hours				80.00	6,400.00	80.00	6,400.00	0.00	0.00	0.00	0.00	80.00	6,400.00
						11-2018	0.00	0.00	0.00	0.00						
						12-2018	0.00	0.00	0.00	0.00						
						Total:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
						Delta:	80.00	6,400.00	80.00	6,400.00	0.00	0.00	0.00	0.00	80.00	6,400.00
01TASK	SUBCON	<N/A>	Subcontractor expenses				0.00	1,200.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	1,200.00
						11-2018	0.00	0.00	0.00	0.00						
						12-2018	0.00	0.00	0.00	0.00						
						Total:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
						Delta:	0.00	1,200.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	1,200.00
02TASK	TRAVEL	<N/A>	Travel expenses				0.00	1,000.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	1,000.00
						11-2018	0.00	0.00	0.00	0.00						
						12-2018	0.00	0.00	0.00	0.00						
						Total:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
						Delta:	0.00	1,000.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	1,000.00

Figure: Distributed values of the project budget forecast

Integration Between Forecasts and Projects

From the *Projects* (PM301000) form, a user can navigate to the last modified revision of the project budget forecast on the *Project Budget Forecast* (PM209600) form by clicking **Inquiries** > **Project Budget Forecast** on the form toolbar. If the project has no budget forecast, a new forecast revision is created for the project.

The user can click any project budget line and then click **Update Forecast Line Lines** on the table toolbar to update the selected project budget line of the forecast revision. For this selected line, the system adds the financial periods to which actual values or change orders values have been posted for the project budget line and that have been missed in the forecast revision.

On the table toolbar of the *Project Budget Forecast* form, a user can also click **Update Project Budget** to update the values of the project budget lines on the *Projects* form with the corresponding values of the project budget lines of the selected forecast revision. The original values of the project budget can be updated if the project budget is not locked. The revised values of the project budget can be updated if the change order workflow is disabled for the project.

Upgrade Notes

After the upgrade of Acumatica ERP from the 6.1 version to the 2019 R1 version, generic inquiries and reports that compare budget and actual values by financial period should be modified to use the data from the `PMForecastDetail` table instead of the `PMProjectStatus` table, because the upgrade procedure moves financial period-specific data from the `PMProjectStatus` table to `PMForecastDetail` table

After the upgrade of Acumatica ERP from any version to the 2019 R1, on the *Validate Project Balances* (PM504000) form, a user needs to run the validation process with the **Recalculate Change Orders** check box selected.

Projects: Company-Specific Financial Periods

In Acumatica ERP 2019 R1, companies within the same tenant can have different fiscal year-end dates. With this functionality, users can accelerate implementation, run consolidated operational reports at any time, facilitate the preparation of consolidated financial statements, and simplify maintenance for companies that share vendors, stock items, and employees. The company-specific periods are defined at the branch level.

To provide the ability to maintain different financial calendars, the *Multiple Calendars Support* feature should be enabled on the *Enable/Disable Features* (CS100000) form. Then users will be able to configure companies with different fiscal year-end dates within one tenant. The feature can be enabled only when the *Centralized Period Management* feature is disabled.

For more information about the feature, see *Finance: Support for Different Financial Calendars*.

Impact of the *Multiple Calendars Support* Feature on Project Accounting

On the *Project Transactions* (PM304000) form, the financial period is company-specific and defined based on the transaction branch and the transaction date.

`PMTran.TranPeriodID` now stores the ID of the master financial period. Also `PMTran.TranPeriodID` depends on `PMTran.BranchID` and `PMTran.FinPeriodID` instead of `PMTran.Date`.

On the *Pro Forma Invoices* (PM307000) form and the *Invoices and Memos* (AR301000) form, for the invoices created for a project, the financial period is defined based on the originating branch of the invoice.

On the , all the amounts are shown and entered in the project currency.

On the *Project Budget Forecast* (PM209600) form, the system uses the master calendar to retrieve the list of financial periods.

The `PMHistory` table has the new `BranchID` key field. The table now stores actual balances by financial period of the master calendar and by company-specific financial period, which is defined by the branch. Previously, balances were not segregated by branch in this table. The `Tran*` columns of the `PMHistory` table contain values for master calendar financial periods. The `Fin*` columns of the table contain values for company-specific financial periods based on the `PMTran.BranchID` and `PMTran.FinPeriodID` data.

The start period and end period parameters of the data source of ARM reports of the *PM* type are considered as financial periods of the master calendar.

The ARM engine uses the left join clause of `PMHistory` and `PMBudget` with the following parameters: project, project task, inventory item, cost code, and account group. The branch is not included in the list of clause parameters. Therefore, in the *Project History Details (CS600010)* report, data from the `PMBudget` table is repeated for each branch used in the `PMHistory` table.

Upgrade Notes

During the upgrade of Acumatica ERP to the 2019 R1 version, the values of `TranPeriodID` of the `PMTran` table are replaced with the values of `FinPeriodID`. Also, the new `BranchID` key field is added to the `PMHistory` table.

After the upgrade, the data in the `PMHistory` table needs to be rebuilt. To do so, on the *Validate Project Balances* (PM504000) form, the user needs to select projects for which the data has to be rebuilt and run the process with all the optional parameters cleared in the Summary area.

Projects: Multi-Currency Accounting

In Acumatica ERP 2019 R1, a new *Multi-Currency Projects* feature has been introduced. With this feature enabled, users can enter project transactions in different currencies and maintain projects in both the base currency and the project currency.

To start using this functionality, on the *Enable/Disable Features* (CS100000) form, an administrative user enables the *Multi-Currency Projects* feature. The *Multi-Currency Projects* feature can be enabled only if the *Multi-Currency Accounting* feature has been enabled.

Business Processes Provided by the Feature

The *Multi-Currency Projects* feature makes it possible to track a project in the project currency, which can differ from the base currency. With the feature enabled, users can do the following:

- Manage project budgets in the project currency

- Review actual revenues, actual costs, and committed costs in the project currency, with an ability to calculate project profitability in both the project currency and the base currency, and present costs to the customer in the customer's currency

- Track actual balances in the base currency at the historical exchange rate

- Track cost commitments in the project currency at the historical exchange rate

- Track change orders for budgeted amounts in the project currency

- Create change orders for commitments in a currency that differs from the base currency and the project currency

- Bill projects by using progress billing based on the revenue budget that is defined in the project currency

- Apply the exchange rates of the project currency to time and material transactions billed by quantity

- Add markup to billable amounts in the project currency during time and material billing

- Re-bill the exact amount of an expense in a foreign currency if the currency of the expense transaction is the same as the project currency in which the project is billed, which can be useful to re-bill travel expenses incurred during visits to the customer

- Plan budgets by financial period and create budget forecasts in the project currency to compare actual budgets and change order amounts with monthly budgets

- Create a project quote in a foreign currency and convert the quote to a project in this currency

Configuration of Exchange Rates

Projects in a foreign currency use currency exchange rates that are configured and maintained on the *Currency Rates* (CM301000) form.

For multi-currency accounting in projects, as the default rate type, the system uses the rate type specified in the **PM Rate Type** box (**Default Rate Types** section) on the *Currency Management Preferences* (CM101000) form.

Projects with Multi-Currency Accounting

Projects can have configurable currencies on the *Projects* (PM301000) form. If the project currency differs from the base currency, users can track the project in both the base currency and the project currency. (See the following screenshot.)

Figure: Currencies, the rate type, and the rate of a project

For a new project created on the *Projects* form, the system fills in the **Project Currency** box on the **Summary** tab (**Project Properties** section) with the customer's currency, which is selected in the **Currency ID** box on the **General Info** tab (**Financial Settings** section) of the *Customers* (AR303000) form. If the customer has no currency defined, the base currency is selected as the **Project Currency**. A user can change the **Project Currency** if the project has no transactions.

The system selects the project currency in the **Billing Currency** box on the **Summary** tab (**Billing and Allocation Settings** section) of the *Projects* form. This currency is used as the currency of the invoices created during the project billing. A user can select any currency as the **Billing Currency** if the project currency is the base currency.

The following table lists possible configurations for common business scenarios.

Business Scenario	Possible Configuration	Base Currency	Project Currency	Billing Currency
A company performs projects for local clients only.	The project currency equals the base currency. All currencies are the same. The configuration is backward-compatible.	USD	USD	USD
A company performs projects for local clients but can occasionally have a project for a foreign client.	The project currency equals the base currency. The billing currency differs from the project currency and the base currency. The configuration is backward-compatible.	USD	USD	CAD
A company performs projects for local and foreign clients.	The project currency differs from the base currency. The billing currency always equals the project currency. The configuration is new.	USD	CAD	CAD only

The **Currency Rate for Budget** (in the Summary area) is the exchange rate that is used to display amounts in the project and base currencies on the **Revenue Budget**, **Cost Budget**, and **Balances** tabs of the *Projects* form. By default, this is the exchange rate of the rate type selected in the **Currency Rate Type** box on the **Summary** tab (**Project Properties** section). If this box is cleared, which is the default value, the system uses the default rate type of projects specified in the **PM Rate Type** box (**Default Rate Types** section) on the *Currency Management Preferences* (CM101000) form.

A user can click the exchange rate value in the **Currency Rate for Budget** box in the Summary area of the *Projects* form. Then in the **Rate Selection** dialog box, which is opened (shown in the following screenshot), the user can override the exchange rate for the project.

Figure: The exchange rate for the project

By default, on the **Revenue Budget**, **Cost Budget**, and **Balances** tabs of the *Projects* form, the system shows the amounts in the project currency. A user can enter the amounts in the project currency only. If a user clicks the **View Base** button in the **Currency Rate for Budget** box in the Summary area, the system shows the budgeted amounts and balances in the base currency converted based on the rate shown in the **Currency Rate for Budget** box. To show the amounts in the project currency, the user clicks the **View Cury** button in the **Currency Rate for Budget** box in the Summary area.

Only amounts in the **Hist. Actual Amount in Base Currency** column on the **Revenue Budget**, **Cost Budget**, and **Balances** tabs of the *Projects* form are always shown in the base currency.

Project Transactions with Multi-Currency Accounting

On the *Project Transactions* (PM304000) form, a user can create project transactions with the amount in any foreign currency. The system converts the amount of these transactions in the project currency, which is specified in the **Project Currency** box on the **Summary** tab (**Project Properties** section) of the *Projects* (PM301000) form, as shown in the screenshot below.

The **Project Currency Rate** of the project transaction is defined by the project-specific rate type selected in the **Currency Rate Type** box on the **Summary** tab (**Project Properties** section) of the *Projects* form. If the project has no rate type selected, the system uses the default rate type of projects specified in the **PM Rate Type** box (**Default Rate Types** section) on the *Currency Management Preferences* (CM101000) form.

Figure: Currencies of project transactions

You enter the amount of the project transaction in the transaction currency. The system uses this amount in the transaction currency to calculate the transaction amounts in the project currency and in the base currency. The system also updates the actual amounts of the project budget in the project currency and in the base currency with the corresponding amounts of the project transaction, as shown in the following diagram.

Figure: The update of the project budget with transaction amounts

When the system creates a project transaction based on a general ledger transaction, the amount in the transaction currency and the amount in the base currency are copied from the general ledger transaction to the project transaction. The corresponding amount in the project currency of the project transaction is calculated based on the amount in the transaction currency. (See the following diagram.)

Figure: A project transaction created based on a GL transaction

When the system creates a general ledger transaction based on a project transaction, the amount in the transaction currency and the amount in the base currency are copied from the project transaction to the general ledger transaction, as the following diagram illustrates.

Figure: A GL transaction created based on a project transaction

Invoices for Projects with Multi-Currency Accounting

During project billing, the system creates pro forma or accounts receivable invoices in the billing currency of the project specified in the **Billing Currency** box on the **Summary** tab (**Billing and Allocation Settings** section) of the *Projects* (PM301000) form.

The exchange rate for the invoice is defined by the project-specific rate type selected in the **Currency Rate Type** box on the **Summary** tab (**Project Properties** section) of the *Projects* form. If the project

has no rate type selected, the system uses the default rate type of projects specified in the **PM Rate Type** box (**Default Rate Types** section) on the *Currency Management Preferences* (CM101000) form.

A user can override the exchange rate for an invoice if for the customer, the **Enable Rate Override** check box is selected on the **General Info** tab (**Financial Settings** section) of the *Customers* (AR303000) form.

All the invoice amounts can be reviewed in both the invoice currency and the base currency.

Billing Process with Multi-Currency Accounting

During the billing process, the system produces amounts in the project currency. Then the amounts are converted into the billing currency of the project, as shown in the following diagram.

Figure: The amounts calculated during the project billing

If the `@Price` parameter is used in a time and material step of a billing rule on the *Billing Rules* (PM207000) form, during the billing process with this billing rule, the system looks for the price in the project currency. If the price in the project currency is not found, the system converts the price from the base currency by using the exchange rate defined by the rate type of the project.

If the `@Rate` parameter is used in a time and material step of a billing rule on the *Billing Rules* form, during the billing process with this billing rule, the system retrieves the rate as is for use in the user-defined formulas of the billing rule. On the *Billing Rules* form, in formulas of time and material steps of a billing rule, a user can convert an amount retrieved with the `@Rate` parameter by using the `ConvertAmountToCurrency()` function.

The `Report.ConvertAmountToCurrency(fromCuryID, toCuryID, rateType, effectiveDate, value)` function has the following parameters:

- `fromCuryID`: The source currency in which the `@Rate` has been defined
- `toCuryID`: The project currency
- `rateType`: The rate type of the project
- `effectiveDate`: The date on which the exchange rate is effective
- `value`: The amount to be converted

To re-bill an amount in the project currency as is, in the formula of a time and material step of a billing rule on the *Billing Rules* (PM207000) form, a user can use the following data field: `[PMTran.ProjectCuryAmount]`.

Commitments with Multi-Currency Accounting

The system creates commitments for a project on the *Commitments* (PM306000) form in the project currency.

The exchange rate from the document currency to the project currency for the creation of the commitment is defined by the project-specific rate type selected in the **Currency Rate Type** box on the **Summary** tab (**Project Properties** section) of the *Proj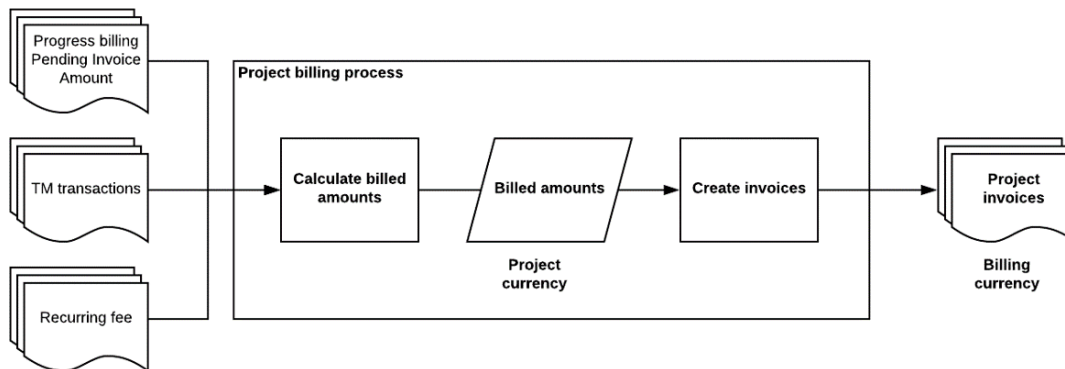ects* (PM301000) form. If the project has no rate type selected, the system uses the default rate type of projects specified in the **PM Rate Type** box (**Default Rate Types** section) on the *Currency Management Preferences* (CM101000) form.

Project Quotes with Multi-Currency Accounting

For a new project quote created on the *Project Quotes* (PM304500) form, the system fills in the **Currency** box in the Summary area with the business account's currency selected in the **Currency ID** box on the **General Info** tab (**Financial Settings** section) of the *Customers* (AR303000) form. If no currency is defined for the customer, the base currency is selected as the project quote currency.

If a project quote is created based on an opportunity selected on the *Opportunities* (CR304000) form, the system selects the opportunity currency as the project quote currency.

A user can change the project quote currency if for the customer, the **Enable Currency Override** check box is selected on the **General Info** tab (**Financial Settings** section) of the *Customers* form. If the user changes the project quote currency and the project quote is the primary quote of an opportunity, the system changes the opportunity currency accordingly.

For project quotes, the system uses the exchange rate of the default rate type of projects specified in the **PM Rate Type** box (**Default Rate Types** section) on the *Currency Management Preferences* (CM101000) form. A user can override the exchange rate for a project quote if for the customer, the **Enable Rate Override** check box is selected on the **General Info** tab (**Financial Settings** section) of the *Customers* form.

For the estimation lines of a project quote, the system converts the retrieved unit prices and unit costs of the selected inventory items to the project quote currency by using the exchange rate of the project quote.

Although all the project quote amounts can be reviewed in both the project quote currency and the base currency, a user can edit the amounts only in the project quote currency.

When a project is created based on the project quote, the system copies to the project the project quote currency, the exchange rate of the project quote, and the price and cost information from the project quote in the project currency.

Project Budget Forecasts with Multi-Currency Accounting

On the *Project Budget Forecast* (PM209600) form, all the amounts are shown and entered in the project currency.

ARM Reports

ARM reports of the *PM* type retrieve amounts in the project currency.

Upgrade Notes

During the upgrade to Acumatica ERP 2019 R1, for every project, the project currency is set to the base currency. The existing budgets, actual balances, and committed balances become values in the base currency and the project currency after the upgrade. The project currency cannot be changed for a project that already has actual balances or commitments.

Breaking Changes

The *Multi-Currency Projects* feature causes the following breaking changes:

- As a result of the upgrade, the project currency of all the projects is set to the base currency.

- The billing currency depends on the project currency instead of the customer currency.

- The amount data fields of the `PMTran` data access class become the following:

  - `PMTran.TranCuryAmount`: The amount in the transaction currency

  - `PMTran.ProjectCuryAmount`: The amount in the project currency

  - `PMTran.Amount`: The amount in the base currency of the project

  The amount data fields of the `PMBudget` data access class become the following:

  - `PMBudget.CuryActualAmount`: The amount in the project currency, which is the sum of the corresponding `PMTran.ProjectCuryAmount` values

  - `PMBudget.ActualAmount`: The amount in the base currency, which is the sum of the corresponding `PMTran.Amount` values

- The `PMHistory` table has the new `BranchID` key field. The table now stores actual balances by financial period of the master calendar and by company-specific financial period, which is defined by the branch. Previously, balances were not segregated by branch in this table.

- On the *Project Transactions* (PM304000) form, if the value of the **Quantity**, **Billable Quantity**, or **Unit Rate** column is changed, the system recalculates the **Amount**, which previously was not recalculated in this case.

- Project commitments are captured in the project currency instead of the base currency.

  The `PMChangeOrderLine.AmountInBaseCury` data field has been renamed to `PMChangeOrderLine.AmountInProjectCury`. On the **Commitments** tab of the *Change Orders* (PM308000) form, the corresponding column has been renamed to the **Amount in Project Currency** (from **Amount in Base Currency**).

- The contract-based API version 18.2 has been remapped to the `Cury` data fields.

Services: Ability to Generate SO Invoices

In Acumatica ERP 2019 R1, service personnel can now directly generate an SO invoice from a service order or an appointment.

: For SO invoices to be generated, the *Advanced SO Invoices* feature has to be enabled on the *Enable/Disable Features* (CS100000) form.

For details on generating of billing documents from service orders and appointments, see *Generation of Billing Documents from Service Orders* and *Generation of Billing Documents from Appointments*.

Changes on the Service Order Types Form

The following changes have been made on the *Service Order Types* (FS202300) form:

- In the **Invoice Generation Settings** section of the **Preferences** tab, the **SO Invoice** option button has been added under **Generate Invoices In**. This is now the default option for new service order types (see the screenshot below).

- If the **SO Invoice** option button is selected, the **Order Type for Invoice** and **Order Type for Negative Balance** boxes are hidden.

- If the **SO Invoice** option button and the **Allow Quick Process** check box are selected, the **Quick Process Settings** tab is displayed but the **Sales Order Actions** section is hidden.

Figure: The SO Invoice option button in the Invoice Generation Settings section

Changes on Other Forms

The following changes have been made to Acumatica ERP forms:

- On the *Generate Invoices from Service Orders* (FS500600) and *Generate Invoices from Appointments* (FS500100) forms, in the **Filtering Option** section, the *SO Invoice* option has been added to the **Generate Invoices In** box.

- If the **SO Invoice** option button is selected on the *Service Order Types* (FS202300) form, and a user uses quick processing on the *Service Orders* (FS300100) or *Appointments* (FS300200) form, the **Sales Order Actions** section is not displayed in the **Process Service Order** or **Process Appointment** dialog box, respectively.

- On the **Document Details** tab of the *Invoices* (SO303000) form, the following changes have been made (see the screenshot below):

  - The **Equipment Action** column has been added. The column displays the equipment-related action that is performed by a staff member (or multiple staff members). The column is read-only; the system copies its settings from the associated sales order, service order, or appointment.

  - The **Target Equipment** column has been renamed to **Target Equipment ID**.

  - The **Component Line Ref.** column has been added. The column is the line reference number of the component that is replaced if the *Replacing Component* option is selected in the **Equipment Action** column. The column is read-only; the system copies its settings from the associated sales order, service order, or appointment.

Figure: New columns on the Invoices form

- On the *Equipment Management Preferences* (FS100300) and *Route Management Preferences* (FS100400) forms, in the **Invoice Generation Settings** section, the **SO Invoice** option button has been added under **Generate Invoices In**.

Services: Actual Locations of Staff Members on Maps, and History of Locations

With the new *Location Tracking* functionality in Acumatica ERP 2019 R1, the ability to view the latest locations of staff members and their actual routes for a particular day on the new *Appointment History Map* (FS301200) map has been added. Additionally, the *Staff Appointments on Map* (FS301100), *Staff Routes on Map* (FS301000), and *Appointment History Map* (FS301200) forms now show the latest locations of staff members. The locations of staff members can be shown if location tracking is turned on for these users the *Users* (SM201010) form.
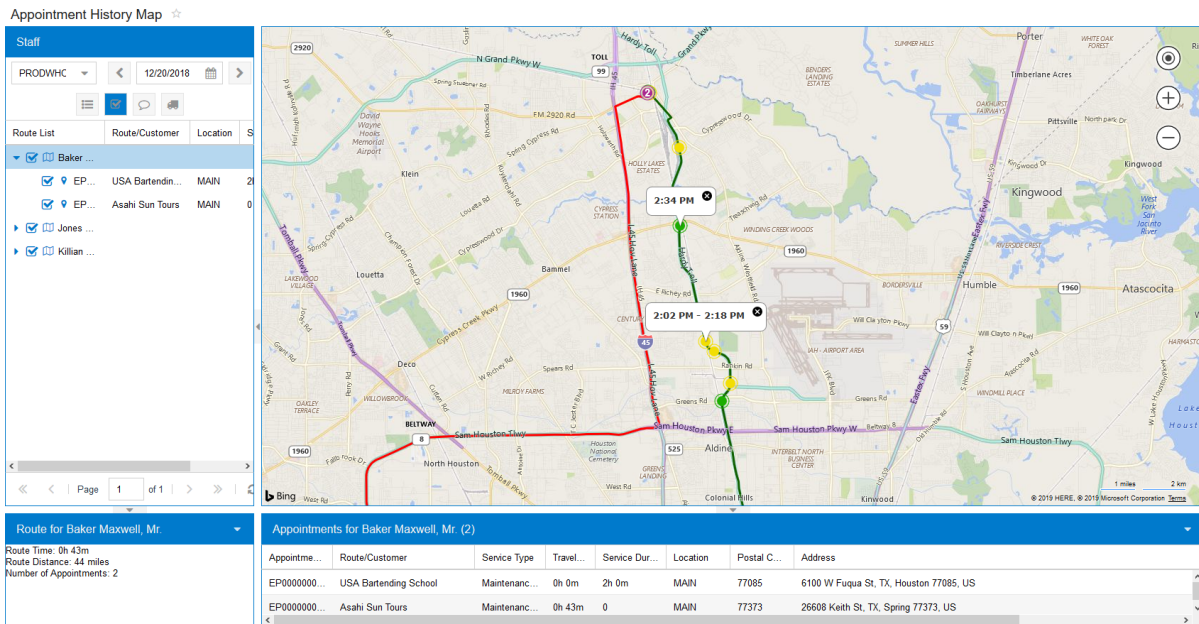
The New Appointment History Map

The *Appointment History Map* (FS301200) form has been created (see the screenshot below). The new map has a similar interface to that of the *Staff Appointments on Map* (FS301100) form. The difference between these maps is that the *Appointment History Map* form shows both the route suggested by Bing maps and the actual route of the staff member, which is calculated based on the location tracking engine of the mobile app.

In the map area of the *Appointment History Map* form, you can view the following information (also shown in the screenshot below) for the date and branch (if applicable) selected in the **Staff** pane:

- The actual route of the staff member: The route is displayed in green color. The system generates it in accordance with the locations tracked for the user.

- The route of the staff member that was suggested by Bing Maps: The route is displayed in the default color of Bing Maps. This is the route that has been built by Bing Maps.

- The latest location of the staff member: The most recent location is marked with a driver location (*D*) icon. You click this icon to see the location information (that is, the staff member's name and the time when the location was registered).

- The locations where the staff member was idle: These are the locations at which the staff member stayed for more than 15 minutes within a 5-kilometer or 3.1-mile range. These locations are displayed as yellow dots. You can click any yellow dot to see the time range when the staff member was at this location.

- The locations where a staff member was moving: At these locations, the staff member stayed for less than 15 minutes within a 5-kilometer or 3.1-mile range—that is, the staff member was moving. These locations are displayed as green dots. You can click any green dot to see the time when the staff member was at this location.

The system updates the information on the current location of the staff member every 15 minutes.

Figure: The Appointment History Map

Changes on the Service Management Preferences Form

The following elements have been added to the **Calendars and Maps** tab of the *Service Management Preferences* (FS100100) form (see the screenshot below):

- The **Track Mobile Device Using GPS** check box, which indicates (if selected) that the most recent locations of staff members are shown on the *Staff Appointments on Map* (FS301100) and *Staff Routes on Map* (FS301000) forms

- The **Refresh GPS Locations on Maps Every** *x* **Seconds** box, which defines how often the staff member locations are refreshed (in seconds) on the *Staff Appointments on Map* and *Staff Routes on Map* forms

Service Management Preferences ☆

GENERAL SETTINGS   CALENDARS AND MAPS   MAILING SETTINGS

CALENDAR SETTINGS ─────────────────   CUSTOM NAMINGS ─────────

* Work Calendar:	EST - Eastern Time Zone 🔍 ✎	Staff Member Name:
View Mode:	Vertical ▾	Branch Location N...
Appointment Resize Precision:	30 MINUTES ▾	Appointment Name:
Appointment Auto-Confirm Time:	12 h 00 m	
Show Service Orders in a Period Of:	Days	
☑ Track Start and Completion Appointment Locations		
☐ Track Mobile Devices Using GPS		

MAP SETTINGS ─────────────────────────

Bing Map API Key:	Apq1ycKl6STOVQF-E8h_wRtigv
Refresh GPS Locations on Maps Every:	30 Seconds

DEFAULT CALENDAR SETTINGS ─────────────

Time Range:	Day ▾
Time Filter:	Working Time ▾
Day Start Time:	7:00 AM ▾
Day End Time:	3:00 PM ▾
Day Resolution:	16 ▾
Week Resolution:	12 ▾
Month Resolution:	10 ▾

Figure: New elements on the Service Management Preference form

Changes on the Staff Appointments on Map and Staff Routes on Map forms

If the **Track Mobile Device Using GPS** check box is selected on the *Service Management Preferences* (FS100100) form, users now can view the most recent locations of staff members (indicated with the *D* icon) on the *Staff Appointments on Map* (FS301100) and *Staff Routes on Map* (FS301000) forms, as the following screenshot shows.

Figure: The latest location of the staff member on the map

Also, the following changes have been made on the **Staff** tab of the forms:

- The **Show All Devices on the Map** button has been added. When it is selected, the most recent tracked coordinates of the staff members appear on the map with the *D* icon. When a user clicks this icon, the informational box shows the employee name and the time when the location was registered.

Figure: The Show All Devices on the Map button

- The **Show or Hide GPS Location on the Map** action has been added to the menu that appears when you right-click a user. This action shows or hides the latest location coordinates of the selected staff member on the map. When a user clicks this action to show the coordinates, the system zooms in on the map to the related *D* icon.

Figure: The Show or Hide GPS Location on the Map menu command

Services: Refactoring of Field Services Database Tables

In previous versions of Acumatica ERP, the contact and address information of service orders, appointments, branch locations, and manufacturers was stored in the database tables used for the particular type of entity. In Acumatica ERP 2019 R1, this has been changed to follow the same standard that is followed for other entry documents. The contact and address information of service orders, appointments, branch locations, and manufacturers are stored in the new `FSAddress` and `FSContact` database tables.

The following columns have been removed from the `FSServiceOrder` (service orders and appointments; the data of these entities is stored in the same table), `FSBranchLocation` (branch locations), and `FSManufacturer` (manufacturers) database tables:

- `AddressLine1`
- `AddressLine2`
- `AddressLine3`
- `State`
- `City`
- `CountryID`
- `PostalCode`
- `Salutation`
- `Phone1`
- `Phone2`
- `Phone3`
- `Fax`
- `EMail`
- `WebSite`
- `IsValidated`

The following columns have been added to the `FSAddress` and `FSContact` tables:

- `ServiceOrderAddressID` and `ServiceOrderContactID` (for service order and appointment address and contact information)
- `BranchLocationAddressID` and `BranchLocationContactID` (for branch location address and contact information)
- `ManufacturerAddressID` and `ManufacturerContactID` (for manufacturer address and contact information)

Important: If developers have created customizations or reports that contain address or contact tables of service orders and appointments, branch locations, or manufacturers, the customizations and reports must be updated with new tables before the upgrade.

Changes related to these table changes have been made on the *Service Orders* (FS300100), *Appointments* (FS300200), *Branch Locations* (FS202500), and *Manufacturers* (FS204400) forms, as described in the sections below.

Changes on the Service Orders Form

The following changes have been made on the **Settings** tab, formerly named the **Summary** tab, of the *Service Orders* (FS300100) form (see the screenshot below):

- The settings that were in the **Date and Time** section (which has been removed) have been moved to the **Service Order Settings** section, which was previously the **Service Order Details** section.

- The **Deadline SLA** box has been renamed to **SLA**.

- The **Override** check box has been added above the **Contact** section. If the check box is already selected for a service order, the information in the **Contact** or **Address** sections has been overridden. If a user wants to override the default settings, the user selects this check box and then changes the settings in the **Contact** and **Address** sections as needed. By default, the system fills in the contact and address information based on the setting selected in the **Take Address and Contact Information From** box of the *Service Order Types* (FS202300) form.

- The **Main Customer Contact** section has been renamed to **Contact**, and the **Appointment Address** section has been renamed to **Address**.

- In the **Contact** section, the **Company Name** box has been added; also, now only one phone number is shown. If a user selects the **Override** check box and enters or edits contact and address information, the user can select the type of phone number that is shown (such as *Cell* or *Business Fax*) for this service order, with the *Business 1* phone number shown by default. (If a site needed to show a second phone number, a customization would be necessary.)

Figure: The Settings tab of the Service Orders form

Changes on the Appointments Form

The following changes have been made on the **Settings**, formerly named the **Summary** tab, tab of the *Appointments* (FS300200) form (see the screenshot below):

- The settings that were in the **Scheduled Date and Time** section have been moved to the second column of the tab.

- The **Override** check box has been added above the **Contact** section. If the check box is already selected for an appointment, the information in the **Contact** or **Address** sections has been overridden. If a user wants to override the default settings, the user selects this check box and then changes the settings in the **Contact** and **Address** sections as needed. By default, the system fills in the contact and address information based on the setting selected in the **Take Address and Contact Information From** box of the *Service Order Types* (FS202300) form.

- The **Appointment Contact** section has been renamed to **Contact** and the **Appointment Address** section has been renamed to **Address**.

- In the **Contact** section, the **Company Name** box has been added; also, now only one phone number is shown. If a user selects the **Override** check box and enters or edits contact and address information, the user can select the type of phone number that is shown (such as *Cell* or *Business Fax*) for this service order, with the *Business 1* phone number shown by default. (If a site needed to show a second phone number, a customization would be necessary.)

Figure: The Settings tab of the Appointments form

Changes on the Branch Locations Form

The following changes have been made on the *Branch Locations* (FS202500) form (see the screenshot below):

- The **Branch** box has been moved to the Summary area.

- The **Branch Location Details** tab has been added, and it contains the **Main Contact**, **Main Address**, **Financial Settings**, and **Inventory Defaults** sections.

- The **Company Name** box has been added to the **Main Contact** section.

- The **Address Validated** check box and the **Validate** button have been removed.

Figure: The updated Branch Locations form

Changes on the Manufacturers Form

The following changes have been made on the *Manufacturers* (FS204400) form (see the screenshot below):

- The **Contact** box has been moved to the Summary area.

- The **Manufacturer Details** tab has been added, and it contains the **Main Contact** and **Main Address** sections.

- The **Company Name** box has been added to the **Main Contact** section.

- The **Override** check box has been added at the top of the tab. If the check box is already selected for a manufacturer, the contact information (of the contact selected in the **Contact** box of the Summary area) has been overridden. If a user wants to override the default settings, the user selects this check box and then changes the settings in the **Main Contact** and **Main Address** sections as needed.

- The **Validated** check box has been removed.

Figure: The updated Manufacturers form

Services: Improvements on Appointments and Service Orders Forms

To adhere to the standards followed on other Acumatica ERP forms, a variety of changes have been made to the *Service Orders* (FS300100) and *Appointments* (FS300200) forms, as described in this topic.

Changes on the Service Orders Form

On the *Service Orders* (FS300100) form, the following changes have been made in the Summary area (see the screenshot below):

- The **Date** box has been modified so that the user has the ability to modify the date.

- The **Service Contract Period** box is not visible unless a **Service Contract Nbr.** has been selected.

- The **Default Project Task** box is displayed only if the user has selected a project in the **Project** box. (By default, the **Project** box contains the non-project code.)

On the **Services** and **Inventory Items** tabs, the **Branch** column has been added, which shows the branch that provides the service or item (see the following screenshot, which shows the column on the **Services** tab).

Figure: The Summary area and the Branch column of the Service Orders form

Also, the new **Other Information** tab has been added, as the screenshot below shows. This tab contains the information about the documents from which the service order is created and the billing documents generated for the service order; it is also possible to leave a comment on this tab. The following changes have been made:

- The information from the **Source Info** tab (which has been deleted) has been moved to the **Source Info** section of the **Other Information** tab. The **Source Type**, **Source Document Type**, and **Source Ref. Nbr.** boxes have been removed, and the **Document Type** and **Reference Nbr.** boxes have been added.

- The information from the **Invoice Info** tab (which has been deleted) has been moved to the **Invoice Info** section of the **Other Information** tab. The **Post To** and **Document Nbr.** boxes have been removed, and the **Document Type** and **Reference Nbr.** boxes have been added.

- At the bottom of the **Other Information** tab, there is a text editor with a text box and a toolbar with formatting tools, where a user can add a comment about the service order. The **Comment** tab has been removed.

Figure: The Other Information tab of the Service Orders form

The **Summary** tab has been renamed to **Settings**.

The **Financial Settings** tab has been added, which contains the following information, as shown in the following screenshot:

- Billing information, which had been located in the **Billing Info** section of the **Summary** tab in previous versions of Acumatica ERP

- Commission information, which had been located in the **Commission** section of the **Summary** tab in previous versions of Acumatica ERP

Figure: The Financial Settings tab of the Service Orders form

On the **Appointments** tab, the **Open Appointment Screen** button has been removed. The user should instead use the new **Schedule Appointment** menu command in the **Actions** menu of the form toolbar to create an appointment, as the following screenshot shows.

Figure: The Schedule Appointment menu command

Changes on the Appointments Form

On the *Appointments* (FS300200) form, the following changes have been made in the Summary area (see the screenshot below):

- The **Schedule Date** and **Actual Date** box has been modified so that the user has the ability to modify the date.

- The **Service Contract Period** box is not visible unless a **Service Contract Nbr.** has been selected.

- The **Default Project Task** box is displayed only if the user has selected a project in the **Project** box. (By default, the **Project** box contains the non-project code.)

On the **Services**, **Inventory Items**, and **Pickup/Delivery Items** tabs, the **Branch** column has been added, which shows the branch that provides the service or item (see the following screenshot, which shows this column on the **Services** tab).

Figure: The Summary area and the Branch column of the Appointments form

Also, the **Other Information** tab has been added to this form, as the screenshot below shows. This tab contains location information, signature details, information about the documents from which the service order is created, and details of the billing documents generated for the service order. It is also possible to leave a comment on this tab. The following changes have been made:

- The information from the **Source Info** tab (which has been deleted) has been moved to the **Source Info** section of the **Other Information** tab.

- The information from the **Invoice Info** tab (which has been deleted) has been moved to the **Invoice Info** section of the **Other Information** tab. The **Post To** and **Document Nbr.** boxes have been removed, and the **Document Type** and **Reference Nbr.** boxes have been added.

- The information from the **Location** tab (which has been deleted) has been moved to the **Location** section of the **Other Information** tab. The information of the **Appointment Location** section, which contained the **Latitude** and **Longitude** boxes, is now displayed in the **Appointment Location** box. Similarly, the **Start Location** and **Completion Location** sections have been moved. The **Driving Time** and **GPS Latitude Location** boxes have been removed.

- At the bottom of the **Other Information** tab, there is a text editor with a text box and a toolbar with formatting tools, where a user can add a comment about the service order. The **Comment** tab has been deleted.

- The information from the **Route Info** tab (which has been deleted) has been moved to the **Route Info** section of the **Other Information** tab.

- The information from the **Signature** tab (which has been deleted) has been moved to the **Signature** section of the **Other Information** tab.

Figure: The Other Information tab of the Appointments form

The **Summary** tab has been renamed to **Settings** (see the screenshot below). The following changes have been made on this tab:

- The **Confirmed** check box has been moved from the Summary area of the form to the **Scheduled Date and Time** section of this tab.

- The **Finished** check box has been moved from the Summary area of the form to the **Actual Date and Time** section of this tab.

- The **Schedule Time** box of the **Scheduled Date and Time** section has been renamed to **Scheduled Start Time**.

Figure: The Settings tab of the Appointments form

The **Financial Settings** tab has been added, which contains the following information:

- Billing information, which was located in the **Billing Info** section of the **Summary** tab in previous versions of Acumatica ERP

- Commission information, which was located in the **Commission** section of the **Summary** tab in previous versions of Acumatica ERP

The following changes have been made to the **Actions** menu of the form toolbar (see the screenshot below):

- The **Clone Appointment** button has been removed from the form toolbar and added as a menu command.

- The **Schedule on the Calendar Board** menu command has been added. When a user clicks this menu command, the system opens the *Calendar Board* (FS300300) form with the selected appointment displayed on the **Unassigned Appointments** tab.

- The **Schedule on the Staff Calendar Board** menu command has been added. When a user clicks this menu command, the system opens the *Staff Calendar Board* (FS300400) form with the selected appointment displayed on the **Unassigned Appointments** tab.

- The **Schedule on the Room Calendar Board** menu command has been added. When a user clicks this menu command, the system opens the *Room Calendar Board* (FS300700) form with the selected appointment displayed on the **Unassigned Appointments** tab. This menu command is available only if the **Enable Rooms** check box has been selected on the *Service Management Preferences* (FS100100) form.

Figure: The Actions menu of the Appointments form

Services: Improvements of Calendar Boards

Various features have been added to the *Calendar Board* (FS300300) and *Room Calendar Board* (FS300700) forms, as described in the sections below. For details, see the *Calendar Boards and Maps* chapter of the Interface guide.

Ability to Change the Dashboard Orientation

In previous versions of Acumatica ERP, the dashboards of the *Calendar Board* (FS300300) and *Room Calendar Board* (FS300700) forms were oriented vertically—that is, staff members were located on the horizontal axis and time was located on the vertical axis of the dashboard (see the screenshot below).

In Acumatica ERP 2019 R1, a user can change the orientation of the dashboard by clicking the button that is located in the lower right corner of the dashboard (see the following screenshot).

Figure: The horizontal orientation of the dashboard

If the user clicks this button while viewing the vertical orientation, the orientation is changed to horizontal so that the staff members are shown on the vertical axis and time is shown on the horizontal axis, as shown in the following screenshot.

Figure: The vertical orientation of the dashboard

If the user clicks this button again (while viewing the horizontal orientation, the orientation is changed back to vertical).

To give an administrator the ability to set the default orientation for the instance, on the **Calendars and Maps** tab of the *Service Management Preferences* (FS100100) form, the **View Mode** box has been added with the following options: *Vertical* and *Horizontal*.

Figure: The View Mode box and its options

Ability to Change the Time Range

In previous versions of Acumatica ERP, schedules for only one day have been shown on the *Calendar Board* (FS300300) and *Room Calendar Board* (FS300700) forms. In Acumatica ERP 2019 R1, a user can now change the time range to show schedules for one week or one month. To do so, the user selects the necessary option in the new box in the upper right corner of the dashboard (see the screenshots below). This functionality gives the user the ability to perform such actions as reassigning an appointment from one staff member to another on a different date, viewing the agenda for a group of staff members on a particular week or month, or viewing the availability of rooms on a particular week or month.

The following options are available in this new box:

- *Day*: One day is shown on the dashboard (see the screenshot below).

  The Date box shows the selected date (for example, Jan 11, 2019). By clicking the arrow buttons right and left of the Date box, the user can change the date displayed on the dashboard.

Figure: The Day view of the Calendar Board

- *Week*: One week (Sunday to Saturday) is shown on the dashboard (see the screenshot below).

  The Date box shows the date interval (for example, Jan 6, 2018–Jan 12, 2019). By clicking the arrow buttons right and left of the Date box, the user can change the week displayed on the dashboard. If the user selects a date by using the Calendar dialog box, the Date box shows the week that contains the selected date.

Figure: The Week view of the Calendar Board

- *Month*: One month (from the first day of the month to the last day of the month is shown on the dashboard (see the screenshot below).

  The Date box shows the selected month (for example, January 2019). By clicking the arrow buttons right and left of the Date box, the user can change the month displayed on the

dashboard. If a user selects a date by using the Calendar dialog box, the box shows the month that contains the selected date.

Figure: The Month view of the Calendar Board

The time range functionality is available in both the *Horizontal* and *Vertical* view modes.

To give an administrator the ability to set the default time range for the instance, on the **Calendars and Maps** tab of the *Service Management Preferences* (FS100100) form, the **Time Range** box has been added with the following options: *Day*, *Week*, and *Month*. (See the following screenshot.)

Figure: The Time Range box and its options

Ability to Change the Time Resolution

In Acumatica ERP 2019 R1, a user can now change the time resolution in the *Vertical* view mode on the *Calendar Board* (FS300300) and *Room Calendar Board* (FS300700) forms. To make this possible, a new time zoom slide and buttons have been added to the lower right section of the dashboard, as the following screenshot shows.

Figure: The zoom slide and buttons

A user can change the time resolution in one of the following ways:

- By moving the slide. When the user moves the slide, a tooltip appears showing the current resolution.

- By clicking the minus or plus button.

The following screenshots show the view of the calendar for different time ranges with different time resolution.

Figure: The Calendar Board view for the Day time range with different resolutions

Figure: The Calendar Board view for the Week time range with different resolutions

Figure: The Calendar Board view for the Month time range with different resolutions

On the **Calendars and Maps** tab of the *Service Management Preferences* (FS100100) form, the following boxes have been added (as shown in the screenshot below):

- **Day Resolution**: The default time resolution for the *Day* view mode on calendar boards.

- **Week Resolution**: The default time resolution for the *Week* view mode on calendar boards.

- **Month Resolution**: The default time resolution for the *Month* view mode on calendar boards.

Figure: The resolution settings

Ability to Set Time Filters

In Acumatica ERP 2019 R1, a user can now display information filtered by time on the *Calendar Board* (FS300300) and *Room Calendar Board* (FS300700) forms. The Time Filter box has been added to the lower right corner of the dashboard with the following options (see the screenshots below):

- *Cleared Filter*: No filters are applied to the dashboard. That is, the dashboard shows information for 24 hours of each day of the selected time range selected.

Figure: The Cleared Filter option

- *Working Time*: The dashboard shows information for the start and end time of working hours for each day of the selected time range (see the following screenshot).

Figure: The Working Time option

The start time and end time of working hours are specified in the **Day Start Time** and **Day End Time** boxes on the **Calendars and Maps** tab of the *Service Management Preferences* (FS100100) form, as the following screenshot shows.

Figure: The start and end time of working hour settings

- *Weekdays*: The dashboard shows information for 24 hours from Mondays to Fridays for the selected time range.

Figure: The Weekdays option

- *Working Time and Weekdays*: The dashboard shows information for working hours from Mondays to Fridays for the selected time range.

- *Booked Days*: The dashboard shows the days to which at least one appointment is assigned for the displayed staff members during the selected time range selected; for each day, it shows only the time interval to which at least one appointment is assigned.

To give the administrator the ability to set the default time filter, on the **Calendars and Maps** tab of the *Service Management Preferences* (FS100100) form, the **Time Filter** box has been added with the following options: *Cleared Filter*, *Working Time*, *Weekdays*, *Working Time and Weekdays*, and *Booked Days* (see the following screenshot).

Service Management Preferences ☆

GENERAL SETTINGS   **CALENDARS AND MAPS**   MAILING SETTINGS

CALENDAR SETTINGS

		CUSTOM NAMINGS	
* Work Calendar:	EST - Eastern Time Zone	Staff Member Name:	
View Mode:	Vertical	Branch Location N...	
Appointment Resize Precision:	30 MINUTES	Appointment Name:	
Appointment Auto-Confirm Time:	12 h 00 m		
Show Service Orders in a Period Of:	Days		

☑ Track Start and Completion Appointment Locations

☐ Track Mobile Devices Using GPS

MAP SETTINGS

Bing Map API Key: Apq1ycKl6STOVQF-E8h_wRtigv

Refresh GPS Locations on Maps Every: 30   Seconds

DEFAULT CALENDAR SETTINGS

Time Range:	Day
Time Filter:	Cleared Filter
Day Start Time:	**Cleared Filter**
Day End Time:	Working Time
Day Resolution:	Weekdays
Week Resolution:	Working Time and Weekdays
Month Resolution:	Booked Days
	10

Figure: The Time Filter box

Services: Improvements in Creating Service Orders from Sales Orders

In Acumatica ERP 2019 R1, the following changes have been made on the *Sales Orders* (SO301000) form:

- In the Summary area, the **Service Management** section has been removed.

- The **Service Management** tab has been removed.

- The **Create Service Order** menu command has been added to the **Actions** menu on the form toolbar (see the screenshot below). If a user clicks **Actions** > **Create Service Order**, the **Create Service Order** dialog box opens with the following boxes, which the user should fill in:

  - **Service Order Type**: The type of the service order that is created for the sales order

  - **Assigned To**: The staff member who is a supervisor of the service order

  - **Deadline - SLA**: The date and time when the services of the service order must be performed

  When the user fills in these boxes and clicks **OK**, the system closes the dialog box, creates the service order related to the sales order, and opens the *Service Orders* (FS300100) form.

- The **Schedule on the Calendar Board** menu command has been added to the **Actions** menu. If a service order document has been created from the sales order, this menu command is available. (The screenshot below shows this menu command being unavailable because a service order related to the sales order has not yet been created.) If services have been added to the service order, when the user invokes this action, the *Calendar Board* (FS300300) form opens, on which the user can schedule appointments to perform the services.

- The new **View Service Order** menu command has been added to the **Inquiries** menu. If a service order has been created from the sales order, this menu command is available; when the user clicks it, the system opens the *Service Orders* form with the associated document.

Figure: New menu commands in the Action menu of the Sales Orders form

For more information, see *Integration of Sales Orders and Service Orders*.

Services: Improvements on the Service Order Types Form

To improve the UI, minimize the decisions involved in defining a new service order type, and standardize the field services functionality with that of other parts of Acumatica ERP, the following check boxes have been removed from the *Service Order Types* (FS202300) form:

- **Allow Only One Appointment per Service Order**

- **Allow Only One Service per Service Order/Appointment**

- **Allow Assignment of Multiple Staff Members**

- **Allow Creation Without Specifying a Service**

- **Allow Creation Without Assigning a Staff Member**

Depending on whether or not each check box was selected, the system performed extra validation steps. For example, if **Allow Only One Appointment per Service Order** had been selected, when a user attempted to create an appointment, the system performed validation to be sure no other appointments exist for the specified service order. Based on whether the check boxes are selected or cleared, as described below, the appropriate system users need to prepare the system before upgrading it.

Additional changes have been made to the UI of the *Service Order Types* form as well.

System Upgrade Notes

Before upgrading to Acumatica ERP 2019 R1, an appropriate system user has to verify whether the check boxes for each service order type defined in your system are set on the *Service Order Types* (FS202300) form as described below—that is, whether validations are turned on for any service order type. If any of the check boxes is set to perform validation for any service order type, the user has to contact the Acumatica ERP support team for help with the upgrade process.

The following settings correspond to validations that are turned on for the service order type:

- **Allow Only One Appointment per Service Order**: Selected

  If this check box is selected, the system allows only one appointment per service order.

- **Allow Only One Service per Service Order/Appointment**: Selected

  If this check box is selected, the system allows only one service per service order and appointment.

- **Allow Assignment of Multiple Staff Members**: Cleared

  If this check box is cleared, the system allows only one staff member to be assigned to an appointment.

- **Allow Creation Without Specifying a Service**: Cleared

  If this check box is cleared, the system allows the creation of appointments only if at least one service has been assigned to an appointment.

- **Allow Creation Without Assigning a Staff Member**: Cleared

  If this check box is cleared, the system allows the creation of appointments only if at least one staff member has been assigned to an appointment.

Other UI Changes

The UI of the *Service Order Types* (FS202300) form has been modified to follow the standards established in other Acumatica ERP forms in which maintenance settings are specified. The following changes have been made (see the screenshot below):

- The **Numbering Sequence** and **Behavior** boxes have been moved to the **General Settings** section of the **Preferences** tab.

- The **Appointment Settings** section has been renamed to **Default Settings**.

- The **Take Address and Contact Information From** group of option buttons is now a box with a drop-down list.

- In the **Take Address and Contact Information From** box, the *Customer Contact* option has been renamed to *Contact*.

- The **Salesperson ID** box and the **Commissionable** check box have been moved to the **Default Settings** section.

- The **Post Pickup/Delivery Items to Inventory** check box is now visible only if *Route* is selected in the **General Settings** section of the **Preferences** tab, which means that service orders of the type are fulfilled by appointments to provide a route service.

Figure: Changes on the Service Order Types form

Services: Numbering Sequences for Service Contracts and Their Schedules

Previously, the numbering of service contracts on the *Service Contracts* (FS305700) and *Route Service Contracts* (FS300800) forms was performed automatically by the system, as was the numbering of schedules on the *Service Contract Schedules* (FS305100) and *Route Service Contract Schedules* (FS305600) forms.

The contract numbering consisted solely of numerals, and the system generated the number for each particular customer independently; thus, the same contract numbers could be assigned to multiple contracts. For example, the *ABARTENDE* customer had service contracts with the *00001* and *00002* reference numbers, and the *ABCHOLDING* customer had a service contract with the *00001* reference number. The schedule numbers, which were a combination of the service contract number and the number of the schedule sequence, were also generated by the system. For example, *00001-1* was the number of the first schedule of the *00001* contract for *ABARTENDE* (and the number of the first schedule of the *00001* contract for *ABCHOLDING*). Thus, to select a particular contract or contract schedule, a user had to first select the customer and then select the reference number of the document.

In Acumatica ERP 2019 R1, the following numbering sequences for service contracts and schedules have been defined on the *Numbering Sequences* (CS201010) form:

- *FSCONTRACT (FS Contract)*: The numbering sequence for service and route service contracts, which has the *FCT00000000* format and a numbering step of *1*

- *FSSCHEDULE (FS Schedule)*: The numbering sequence for service and route service contract schedules, which has the *FSC00000000* format and a numbering step of *1*

The system uses these numbering sequences to generate the identifiers for service contracts and their schedules for all customers. Thus, each identifier is unique in the system.

> **:** The previous numbering sequence for service contracts and schedule is stored in the database, and the system still continues to generate the numbers of contracts and schedules by using the old sequence along with generation of the numbers of contracts and schedules by using the new sequence.

System Upgrade Notes

During the upgrade to Acumatica ERP 2019 R1, the system automatically uses the *FSCONTRACT* numbering sequence to assign numbers to the existing service contracts and the *FSSCHEDULE* numbering sequence to assign numbers to the existing contract schedules.

If it is necessary in a particular company to use the old numbers in reports or in a customization, an appropriate administrative user has to update the reports or the customization as follows to refer to the new database columns:

- For service contracts, the old numbering sequence is stored in the `CustomerContractNbr` column of the `FSServiceContract` database table.

- For service contact schedules, the old numbering sequence is stored in the `OldContractScheudleRefNbr` column of the `FSSchedule` database table.

Changes on the Preference Forms

On the *Equipment Management Preferences* (FS100300) and *Route Management Preferences* (FS100400) forms, the new following boxes have been added (see the screenshot below, which shows these boxes on the *Equipment Management Preferences* form):

- **Service Contract Numbering Sequence**: The numbering sequence the system uses to assign identifiers to the service contracts created on the *Service Contracts* (FS305700) form and route

service contracts created on *Route Service Contracts* (FS300800) form. By default, *FSCONTRACT* is inserted in this box.

- **Service Contract Schedule Numbering Sequence**: The numbering sequence the system uses to assign identifiers to the service contract schedules created on the *Service Contract Schedules* (FS305100) form and route service contract schedules created on the *Route Service Contract Schedules* (FS305600) form. By default, *FSSCHEDULE* is inserted in this box.

Equipment Management Preferences ☆

NUMBERING SETTINGS

Equipment Numbering Sequence: SMEQUIPMNT - SM Equipme

* Service Contract Numbering Se... FSCONTRACT - FS Contract

* Service Contract Schedule Num... FSSCHEDULE - FS Schedule

GENERAL SETTINGS

☐ Enable Service on All Target Equipment

CONTRACT SETTINGS

☐ Enable Seasons in Schedule Contracts

Calculate Warranty From

- ⦿ Sales Order Date
- ◯ Installation Date
- ◯ The Earliest of Both Dates
- ◯ The Latest of Both Dates

INVOICE GENERATION SETTINGS

Generate Invoices In

- ⦿ Accounts Receivable
- ◯ Sales Order
- ◯ SO Invoice

* Default Terms: 30D - 30 Days

Use Sales Account From: Customer/Vendor Location

* Combine Sales Sub. From: LLL-LLL

☑ Activate Upcoming Period on Invoice Generation

Figure: New boxes for contract and schedule numbering sequences

Changes on the Service Contracts and Route Service Contracts Forms

The following changes have been made on the *Service Contracts* (FS305700) and *Route Service Contracts* (FS300800) forms (see the screenshot below, which shows these changes on the *Service Contracts* form):

- The **Service Contract ID** box has been added to the form. For documents that already existed at the time of the upgrade, this is the new identifier of the document, which was inserted during the upgrade. For new documents that are generated after the upgrade, the system automatically generates this ID by using the numbering sequence assigned on the respective preference form. Because now the generation of the service contract identifiers does not depend on customers, a user doesn't need to select customer to view a particular contract created in the system.

- The **Customer Contract Nbr.** box has been added, which contains the number generated by using the old numbering sequence. This box is read-only, and the system continues to generate its reference numbers (using the old sequence) after the upgrade.

- The **Branch** and **Branch Location** boxes have been moved to the **Billing Settings** section of the **Summary** tab.

Figure: Changes on the Service Contracts form

Changes on the Service Contract Schedules and Route Service Contract Schedules Forms

The following changes have been made on the *Service Contract Schedules* (FS305100) and *Route Service Contract Schedules* (FS305600) forms (see the screenshot below, which shows these changes on the *Service Contract Schedules* form):

- The **Service Contract ID** box has been added to the form to show the new reference number of the related service contract.

- The **Schedule ID** box has been added to the form. For documents that already existed at the time of the upgrade, this is the new identifier of the schedule, which was inserted during the upgrade. For new documents that are generated after the upgrade, the system automatically generates this ID by using the numbering sequence assigned on the respective preference form. Because now the generation of the contract schedule identifiers does not depend on customers, a user doesn't need to select a customer to view a particular schedule created in the system.

- The **Customer Contract Nbr.** box has been added, which contains the number generated by using the old numbering sequence. This box is read-only, and the system continues to generate its reference numbers (using the old sequence) after the upgrade.

Figure: New boxes on the Service Contract Schedules form

Changes on Other Forms

The following changes have been made on other forms, inquiries, and reports that contain information related to service contracts:

- The **Service Contract ID** element now shows the new identifier of the service contract.
- The **Schedule ID** element now shows the new identifier of the service contract schedule.

Services: Pop-Up Notes in Service Orders and Appointments

In previous versions of Acumatica ERP, for service orders and appointments, the functionality of pop-up notes has been provided for non-stock items of the *Service* type only. To turn on the display of a pop-up note when a service was added to an appointment or service order, on the **Service Management** tab of the *Non-Stock Items* (IN202000) form, the user selected the **Open Note When Service Is Selected** check box.

In Acumatica ERP 2019 R1, the **Open Note When Service Is Selected** check box has been removed from the *Non-Stock Items* (IN202000) form, and now the *Appointments* (FS300200) and *Service Orders* (FS300100) forms are compatible with the pop-up note functionality included in Acumatica ERP 2018 R2. The functionality applies for customers, non-stock items, and stock items that have the **Add Pop-Up Notes** check box selected in the **Enter Record Note** dialog box of the *Customers* (AR303000), *Non-Stock Items* (IN202000), or *Stock Items* (IN202500) form, respectively.

> **Important:** The system must be prepared before it is upgraded if the company has been using the pop-up notes functionality in service management, as described below.

For information on how to attach a pop-up note to a record, see *To Attach a Pop-Up Note to a Record*.

System Upgrade Notes

To keep showing the pop-up notes that were shown for the field services documents in previous versions of Acumatica ERP, an appropriate system user should do the following:

1. On the *Non-Stock Items* (IN202000) form, open each document of the *Service* type.

2. If the **Open Note When Service Is Selected** check box is selected for the non-stock item of the *Service* type, click **Notes** on the form title bar, select the **Add Pop-Up Notes** check box, and copy the text from the **Note** box to the **Pop-Up Note** box.

Alternatively, the user can contact the Acumatica ERP support team for help with an upgrade process.

User Interface: Improvements

A variety of user interface improvements have been made in the 2019 R1 version of Acumatica ERP.

Improved Lookup Boxes with Selector Buttons

On all Acumatica ERP forms, for lookup boxes having *autocomplete* functionality, the following improvements have been introduced.

For faster loading of the list in the lookup table, only the first seven entries are displayed initially. If the number of entries exceeds seven, a scroll bar appears on the right (as shown in the previous screenshot). With the new dynamic scroll feature, the more entries are displayed by scrolling, the smaller the size of scroll bar cursor is.

Now the user can also scroll the list by pressing the following keys: Page Up, Page Down, Up arrow, and Down arrow. For a list with a significant number of entries, the *Prev* and *Next* links have been removed. The whole list is displayed in one box that the user can scroll.

All the previous functionality of the lookup boxes with lookup tables continues to be supported.

The following screenshot shows an example of the autocomplete functionality with the user typing the `ca` character string. Notice that in the second and sixth results in the lookup table, you cannot see the *ca* character string highlighted in the displayed columns. This occurs because of insufficient size of visible area of the lookup table.

Figure: Lookup table with highlighted entries

Improvements to Search Relevance for Forms

Usually users search the same word combinations to navigate to limited number of forms. This means that the user usually types the same search string and clicks the same specific menu item link that is displayed in the search results. To provide a more convenient user experience, the displaying of search results has been improved.

Previously, the position of a menu item link in the search results did not depend on how often user followed this link. Now the more frequently the user clicks a specific link in the search results after entering a particular string, the higher the workspace containing this link will be displayed next time in the search results when this user enters this string.

The following screenshots present an example of the search results before and after this improvement has been implemented. The user often searches *Sales*, and the most-often-clicked menu item link is *Sales Orders*.

Figure: Search results before improvement

Figure: Search results after improvement

Upgrade Procedure: Customizations and Integrations

Multiple changes have been made since Acumatica ERP 2018 R2 Update 10 (18.210.0010) that may affect reports, customizations, and integrations that were implemented by developers for the prior versions. The complete list of the changes is provided in *Reference List of Changes*. Additional recommendations about the possible approaches that a developer can use to prevent issues with the implemented solutions are described in the following sections.

To prevent breaking changes in the customizations, the developer should do the following:

1. Analyze the customization projects.

2. Carefully read the list of breaking changes in *Reference List of Changes*.

3. Replace the changed objects with their alternatives.

4. If the objects used in the customization projects have been removed and no alternatives have been provided, consider creating new customization projects.

After an upgrade to Acumatica ERP 2019 R1, to detect the changes that break existing customization projects, the developer can check the compatibility of the code included in all published customization projects with the original code. For details, see *To Validate the Compatibility of the Published Customization with a New Version Before an Upgrade* in the Customization Guide.

: The validation that detects breaking changes is turned on by default in Acumatica ERP 2019 R1. If any errors occur during the validation, see *To Resolve an Issue Discovered During the Validation* in the Customization Guide.

Changes in the Translation of BQL Commands to SQL

In Acumatica ERP 2019 R1, the system converts all data queries, including the business query language (BQL) commands that the system processes during the generation of reports and of generic inquiry results, to SQL tree expressions. (For details about the conversion, see *Translation of a BQL Command to SQL* in the Acumatica Framework Guide.) The system does not perform the direct conversion of BQL command to SQL text, as it did in Acumatica ERP 2018 R1 and earlier versions. Because BQL commands no longer generate SQL text, the `IBqlCreator.Parse()` method, which was used to extract the SQL text from the BQL commands, has been removed.

If customization code implements any custom BQL classes, the developers of the code have to remove the implementation of the `IBqlCreator.Parse()` method from these classes.

Changes Related to Fluent Business Query Language

The fluent business query language introduced in Acumatica ERP 2019 R1 uses the strongly typed declaration of class fields in data access classes (DACs). All types of the class fields in DACs of Acumatica ERP have been changed to `PX.Data.BQL.Bql[Type].Field<TSelf>`, where `Bql[Type]` is the class that corresponds to the type of the related property field of the DAC. For example, if the `ProductID` property field has the `int?` type, the `productID` class field has the `PX.Data.BQL.BqlInt.Field<productID>` type.

Because `PX.Data.BQL.Bql[Type].Field<TSelf>` implements the `IBqlField` interface, all class fields of the predefined DACs of Acumatica ERP can be used in traditional BQL. Therefore, you do not need to do any changes to the customization code, however you need to recompile it.

For details about fluent BQL, see *Platform API: Fluent Business Query Language* in this document and *Creating Fluent BQL Queries* in the documentation.

Changes Related to LINQ Support

With LINQ in Version 2019 R1, you may not be able to filter records by using custom C# functions. For example, if your C# function filters records by a regular expression, which cannot be converted to standard SQL functions. If the system cannot convert a custom C# function in a LINQ statement, the system executes the data query in memory, which can lead to degradation of the application performance.

The system writes to the trace log about all situations when the system cannot convert the query to standard SQL functions. Therefore, we highly recommend that you investigate the trace log for such issues and fix the issues in one of the following ways:

- Remove the custom C# functions from the queries so that the full query is executed in the database.

- Append the `AsEnumerable()` method to the part of the query that can be converted to SQL, as shown in the following code, and add after it the conditions that include custom C# functions.

```
// MyHelpers.IsHighPriority is a custom function
var results = graph
    .Select<CRCase>()
    .OrderByDescending(c => c.Date).AsEnumerable()
    .Where(c => MyHelpers.IsHighPriority(c));

foreach (CRCase case in results)
{
    ...
}
```

For details about building queries with LINQ, see *Platform API: LINQ Support* in this document and *Creating LINQ Queries* in the documentation.

Changes Related to the Support of Different Financial Calendars

In Acumatica ERP 2019 R1, users can implement multiple legal entities, which have different fiscal year-end dates, within the same tenant. For details about this functionality, see Finance: Support for Different Financial Calendars in Acumatica ERP 2019 R1 Beta Release Notes.

In previous versions of Acumatica ERP, the `TranPeriodID` field stored the financial period ID that was defined by the document date. Now the `TranPeriodID` field stores the master period ID that corresponds to the `FinPeriodID` field (which contains the financial period defined by the document date). The master period ID is calculated by using both the financial period ID and the branch ID. The `PeriodIDAttribute` class and its descendants implement the business logic of the `TranPeriodID` and `FinPeriodID` fields. To implement the business logic of multiple financial calendars in master-detail documents, a developer also needs to use the `DocumentWithLinesGraphExtension` generic graph extension.

Other Code Changes Related to Financial Management

The following classes and methods, which were used in cash management, have been removed as obsolete:

- `PX.Objects.AR.ARDunningLetterPrint.DetailsResult.Copy(PXGraph, ARDunningLetter, Customer)`

- `PX.Objects.CA.AddDetailFilter`

- `PX.Objects.CA.CABatch.workgroupID`

- `PX.Objects.CA.CABatch.WorkgroupID`

- `PX.Objects.CA.CARecon.LineCntr`

- `PX.Objects.CA.CARecon.lineCntr`

- `PX.Objects.CA.caCredit`

- `PX.Objects.CA.CashTranIDAttribute.IsMigrationModeEnabledSetupField`

- `PX.Objects.CA.CashTranIDAttribute.IsMigrationModeEnabled`

- `PX.Objects.CA.CashTranIDAttribute(Type)`

- `PX.Objects.CA.Messages.DocumentCount`

- `PX.Objects.CA.Messages.AutoReconcile`

- `PX.Objects.CA.Messages.ParameterShouldNotNull`

- `PX.Objects.CA.Messages.IsNotBqlField`

- `PX.Objects.CA.CATranEntry.viewBatch`

- `PX.Objects.CA.CATranEntry.ViewBatch()`

- `PX.Objects.GL.GLTranDoc.AccountBranchID`

- `PX.Objects.GL.GLTranDoc.accountBranchID`

Code Changes Related to Inventory and Order Management

Note the following about the code changes that are related to inventory and order management:

- The `LockSitePICountEntry` property of the `PX.Objects.IN.INSite` DAC
  has been removed. The new `UnlockSiteOnCountingFinish` property of the
  `PX.Objects.IN.INPIClass` DAC can be used instead of the removed DAC. The new property
  implements inverse logic.

- `PX.Objects.IN.PXMassProcessException` has been marked as
  obsolete in Acumatica ERP 2018 R1 and is removed in Version 2019 R1.
  `PX.Objects.Common.PXMassProcessException` or a custom exception type can be used
  instead.

- `PX.Objects.PO.POItemCostManager.ConventCury(PX.Data.PXGraph,`
  `System.String, System.String, System.Decimal, System.String)` has been
  marked as obsolete in Acumatica ERP 5.3 and is removed in Version 2019 R1. Instead,
  `PXCurrencyAttribute` should be used for currency conversion.

- `INLotSerClass.LotSerNumVal` and `InventoryItem.LotSerNumVal` have been moved to
  the `INLotSerClassLotSerNumVal` and `InventoryItemLotSerNumVal` DACs, respectively.
  The start value for the auto-incremented numbering segment can be obtained by invocation of the
  `INLotSerialNbrAttribute.ReadLotSerNumVal(PXGraph, PXResult<InventoryItem,`
  `INLotSerClass>)` static method.

- The `LSSelect<,,>.AvailabilityFetch` method has been marked as obsolete in a previous
  version and is removed in Version 2019 R1.

- The set of parameters of the `SO.SOShipmentEntry.PostShipment` method has been
  changed. Now the method accepts `INTransferEntry` and `INIssueEntry`.

Code Changes Related to Project Accounting

The `AmountInBaseCury` field of the `PMChangeOrderLine` DAC has been renamed to
`AmountInProjectCury`.

Other Code Changes in Platform

The `PX.DataSync.IEnumerableExstension` class was renamed to
`PX.DataSync.IEnumerableExtension` and moved to the `PX.DataSync.Core.dll` library.

Changes to the *Default/18.200.001* Endpoint

In the *Default/18.200.001* endpoint, mappings of the `Amount` fields of the entities related to project accounting have been changed: Now these fields are mapped to the internal `CuryAmount` fields.

Customization: ISV Certification in the Customization Project Editor

Acumatica ERP now can validate and help to certify an ISV solution that customizes Acumatica ERP in the following ways:

- Naming conventions for customization projects have been updated.

- Developers can now manage prefixes for most of the objects included in a customization project. For details, see *Managing Prefixes for Objects of a Customization Project*.

- A new type of project validation has been introduced that includes the following capabilities:

    - Checking of the database schema changes included in a customization project

    - Making sure that the customization project doesn't replace or modify files distributed as part of the standard Acumatica ERP application

    - Verification of the correspondence between the data types of a custom database column and all Data Access Classes (DACs) fields bound to it.

    : These types of validations are applicable to ISV solutions only.

    Developers can perform this type of validation from the **Validations** menu of the Customization Projects (SM204505) by selecting the **Validate Highlighted Project** or **Validate Multiple Projects** menu command.

- The validation of cache extensions performed during the publication of a project has been improved.

- Developers can now check for data consistency in DACs in published customization projects. For details, see *Validating Data Consistency in Published Customization Projects*.

- Developers can now analyze custom files included in a customization project. For details, see *Analyzing Custom Files Included in the Customization Project*.

- Developers can now generate an Excel file that includes a list of solution objects and integration scenarios. For details, see *Generating an Excel Workbook*.

Managing Prefixes for Objects of a Customization Project

Developers can add a prefix that should be added to any object of the customization project. When validation of the customization project is performed, all objects are checked for the added prefix.

To manage prefixes for a customization project, the developer should do the following:

1. In the main menu of Customization Project Editor, select **File > Validate Project Prefix**.

    The **Customization Project Prefix** dialog box opens.

2. In the **Project Prefix** field, add the prefix for the customization project. The prefix is a combination of two to four characters that can be any of the 26 Latin letters (A through Z).

3. Click **Save**.

    The developer can perform validation of the project's objects to check for the added prefix. To do this, in the **Customization Project Prefix** dialog box, click the **Validate Project Items** button. In the **Validation Result** area, the result of the validation appears. As an example, see the validation results in the screenshot below, where the *CE* prefix is added for the OnReleaseComplete project.

Figure: The Customization Project Prefix dialog box

For details, see *To Manage Prefixes in a Customization Project*.

Validating Data Consistency in Published Customization Projects

Developers can verify the correspondence between the data types of DACs fields and field states generated by field attributes at run time. To perform this verification, the following options have been introduced:

- Verification that the data type of a DAC field matches with the field states generated at run time (the **DAC Field Types** menu command)

- Determination of whether there are any `PXAttributeFamilyAttribute` violations on a DAC field (the **DAC Attributes** menu command)

- Verification that DAC fields with lookup defined for a segmented key properly handle foreign key segments by means of `PXDimensionAttribute` (the **Lookup Definitions** menu command)

These menu commands are shown in the **Validations** menu of the Customization Projects (SM204505) form, as shown on the following screenshot.

Figure: DAC field validation options

Analyzing Custom Files Included in the Customization Project

Developers can analyze custom files (assemblies) included in the customization project to verify that customization project doesn't replace or modify files distributed as part of the standard Acumatica ERP application. To do this, in the main menu of Customization Project Editor, the developer selects **Extension Library > Analyze Referenced Assemblies**. A CSV is downloaded to the developer's computer with all references made in the project's custom files.

Generating an Excel Workbook

To generate the workbook containing a list of the project's objects in Excel format, in the main menu of the Customization Project Editor, the developer should select **File > Export ISV Solution Objects Workbook**. An XLSX file is automatically downloaded to the developer's computer.

The generated workbook contains a list of solution objects and integration scenarios grouped by the following types:

- Site map nodes
- Mobile site map nodes
- BLCs and BLC extensions
- DACs and DAC extensions
- Push notifications
- Import or export scenarios

For details, see *Validation of a Customization Project*.

Customization: Automation Improvements

In Version 2019 R1, the capabilities for customizing forms have been simplified and expanded with the ability to add conditions. Now there is no need to write code to perform several types of customization, because these customizations can be performed from the new Screen Editor.

Screen Editor

The Layout Editor has been renamed to the Screen Editor to reflect its expanded abilities. The **Properties** tab has been split into the following tabs (shown in the following screenshot):

- **Main Properties**: Lists properties that can be modified at the graph level

- **Layout Properties**: Lists properties that can be modified at the ASPX level

Figure: Screen Editor updated page

With the new layout, a user can easily review the actions available on the selected screen. The actions are conveniently grouped by toolbars on the screen, such as **Standard** and **Form-Specific**. Other available actions are collected under the **Other** group; see the following screenshot.

Figure: Convenient grouping of screen actions in the actions tree

The list of available fields can be also viewed.

For details, see *Screen Editor*.

New Means of Form Customization

The developer can now do the following when customizing forms:

- Review the list of actions for a screen and the list of fields

- Enable or disable, toggle the visibility of existing actions with or without conditions

- Enable or disable, toggle the visibility of existing fields with or without conditions

  : Developers can enable actions and fields by using the Screen Editor only if these actions and fields are not disabled in source code of Acumatica ERP.

- Add new actions of any of the following types:

  - Run a report

  - Navigate to an existing record

  - Navigate to the form to create a new record

- Change the order of actions on the screen by dragging the actions in the actions tree of the Screen Editor (see the previous screenshot)

For details, see *To Add a Condition*.

Customization: User-Defined Fields in a Customization Project

In the previous version of Acumatica ERP, user-defined fields were introduced and could be managed only within an instance of Acumatica ERP. Now these user-defined fields can be also managed in the Customization Project Editor, and then exported and imported with the help of customization packages.

Now the Customization Project Editor includes the new User-Defined Fields page, which is shown in the screenshot below. On this page, a developer can do the following:

- Load fields that have already been defined by users in an instance of Acumatica ERP.

- Add a new user-defined field based on existing attributes. For details on defining attributes, see *Attributes and User-Defined Fields*.

- View detailed information about a user-defined field.

- Edit or remove an existing user-defined field.

Figure: The User-Defined Fields page

Adding a User-Defined Field to the Customization Project

A developer can choose which fields defined in an instance are included in the customization project and manage on which screens these fields are displayed.

After users have defined some fields based on attributes, a developer opens the User-Defined Fields page of the Customization Project Editor. On this page, the developer loads the fields defined in the instance database or adds them manually by clicking the **Add New Record** button. An example of added user-defined fields is shown below.

User-Defined Fields

Figure: The list of user-defined fields

After the fields have been added, the developer can edit the list of forms on which each field is displayed. To do this, the developer clicks an attribute ID in the list. In the **Edit Attribute** dialog box (see the following screenshot), which opens, the developer selects the desired forms by selecting the unlabeled check boxes in the rows of the form IDs.

Figure: The Edit Attribute dialog box

After the forms have been selected, the developer clicks **Save** in the dialog box, which closes it, and then clicks **Save** on the page toolbar of the User-Defined Fields page. The selected form IDs are listed in the **Screen ID** column of the edited user-defined field, as shown in the following screenshot.

Figure: The list of user-defined fields after being edited

For details, see *User-Defined Fields*.

Customization: Customization of Icon Sets

In the previous version of Acumatica ERP, icons could be customized by replacing the default Sprite icon sets. In Acumatica ERP 2019 R1, a new way of customizing icons using Icon Fonts has been introduced: A developer can modify or create an Icon Font in the `WebSites\Pure\Site\fonts` folder of the Site project and modify the `font-awesome.css` file in the `WebSites\Pure\Site\content` folder of the Site project.

The customization of icons using Sprite icon sets is no longer supported.

Platform API: Fluent Business Query Language

Acumatica ERP 2019 R1 includes the fluent business query language (BQL), which is a new dialect of BQL that is more similar to SQL. Fluent BQL provides the following advantages as compared to the traditional BQL:

- It is easier to read and edit fluent BQL queries than traditional BQL queries because each section of a fluent BQL query does not depend on the others and can appear in only specific places of the query. Also, fluent BQL queries contain fewer commas and angle brackets and do not use numbered classes (such as `Select2` or `Select6`).

- A developer does not need to select a suitable class for the query (such as `PXSelectOrderBy<,>` or `PXSelectJoinOrderBy<,,>`); instead, the developer simply starts typing the command, and IntelliSense offers continuations that are relevant for the current query state.

The following example shows the declaration of the same data view in fluent BQL and in traditional BQL.

```
//Fluent BQL view declaration
public SelectFrom<
    PMProject>.
    LeftJoin<PMTask>.On<
        PMTask.projectID.IsEqual<PMProject.contractID>.
        And<PMTask.approverID.IsEqual<
        EmployeeActivitiesApprove.EPActivityFilter.approverID.FromCurrent>>>.
    Where<
        PMProject.isActive.IsEqual<True>.
        And<
            PMTask.taskID.IsNotNull.
            Or<PMProject.approverID.IsEqual<
            EmployeeActivitiesApprove.EPActivityFilter.approverID.FromCurrent>>
            >>.View PMProjectFBQLView;

//Traditional BQL view declaration
public PXSelectJoin<
    PMProject,
    LeftJoin<PMTask,
        On<
        PMTask.projectID,Equal<PMProject.contractID>,
        And<PMTask.approverID,Equal<
        Current<EmployeeActivitiesApprove.EPActivityFilter.approverID>
        >>>>,
    Where<PMProject.isActive, Equal<True>,
        And<
    Where<PMTask.taskID, IsNotNull,
            Or<PMProject.approverID, Equal<
            Current<EmployeeActivitiesApprove.EPActivityFilter.approverID>
            >>>>>> PMProjectBQLView;
```

Fluent BQL queries can be used instead of traditional BQL almost anywhere (such as in attributes, view declarations, and dynamic query building). However, fluent BQL cannot be used in the following cases:

- When the query is supposed to be parsed and modified by the direct use of reflection— that is, not by `BqlCommand.Decompose()`, but by `Type.GetGenericArguments()`

- When it is necessary to use separate BQL components, such as `Join`, `Where`, `Aggregate`, `OrderBy`, and `On` clauses

For the full list of differences between fluent BQL and traditional BQL, see *Comparison of Fluent BQL, Traditional BQL, and LINQ*.

A developer can find all classes that can be used in fluent BQL in the `PX.Data.BQL.Fluent` and `PX.Data.BQL` namespaces. For details about building queries with fluent BQL, see *Creating Fluent BQL Queries* in the documentation.

Platform API: LINQ Support

In Version 2019 R1, developers can write requests to the database by using language-integrated query (LINQ) expressions. This approach can be used to define a query in the application code or to filter the data resulting from a business query language (BQL) query.

Developers can configure LINQ expressions in code by using any of the following variants of syntax:

- A query expression, which is shown in the following code.

```
using PX.Data.SQLTree;
using System.Linq;

ProductMaint graph = PXGraph.CreateInstance<ProductMaint>();
var goods = from p in graph.Select<Product>()
  where
    p.ProductCD.Length == 5 &&
    p.GroupMask.Length == 4 &&
    (p.WorkGroupID & 0b10) != 0
  select new
  {
    p.ProductID,
    p.ProductCD,
    p.ProductName,
    Len = p.ProductName.Length,
    BLen = SQL.BinaryLen( p.ProductName) + 1,
    p.GroupMask,
    p.WorkGroupID
};
```

- Explicit (method-based) syntax. The following code is equivalent to the query expression shown above.

```
using PX.Data.SQLTree;
using System.Linq;

ProductMaint graph = PXGraph.CreateInstance<ProductMaint>();
var goods = graph.Select<Product>()
  .Where( p =>
    p.ProductCD.Length == 5 &&
    p.GroupMask.Length == 4 &&
    (p.WorkGroupID & 0b10) != 0)
  .Select( p => new
    {
      p.ProductID,
      p.ProductCD,
      p.ProductName,
      Len = p.ProductName.Length,
      BLen = SQL.BinaryLen(p.ProductName) + 1,
      p.GroupMask, p.WorkGroupID
    });
```

Because `PXResultset<T0>`, which is returned by the `Select` method of all `PXSelect` classes, now implements the `IQueryable<PXResult<T0>>` interface, developers can work with the data defined with a `PXSelect` query by using LINQ. The following code shows an example of additional filtering of data of BQL query by using LINQ.

```
//BQL statement
var Products = new PXSelect<Product,
  Where<Product.productCD, Like<string_D>>>(graph);
//Use of LINQ for the result of BQL query
var goods = Products.Select()
  .Where(p => p.GetItem<Product>().StockUnit == "item");
//Execution of the query
foreach (var good in goods) {
```

```
  var prod = good.GetItem<Product>();
}
```

For details about building queries with LINQ, see *Creating LINQ Queries* in the documentation.

Platform API: Changes on the Processing Pages

Acumatica ERP 2019 R1 introduces a new UI of the processing pages, which is shown in the following screenshot. When a user starts a processing operation, the **Processing** dialog box opens, which displays the status of the processing.

Figure: The Processing dialog box

When a processing operation is started, all elements of the processing page become unavailable. If a developer needs to enable a button from the processing page during processing, the developer has to add this button to the processing dialog box. A developer can also turn off the displaying of the processing dialog box and use the system behavior of Acumatica ERP 2018 R2.

Adding a Button to the Processing Dialog Box

To add a button to the processing dialog box, a developer can use one of the following approaches:

- For the action that corresponds to the button, in the graph, set the value of the `VisibleOnProcessingResults` property of `PXButtonAttribute` or its descendant to `true`, as shown in the following code example.

```
[PXUIField(DisplayName = Messages.ShowDocuments)]
[PXButton(VisibleOnProcessingResults = true)]
public virtual IEnumerable showDocuments(PXAdapter adapter)
{
    ShowOpenDocuments(SelectedItems);
    return adapter.Get();
}
```

- In the ASPX file that corresponds to the page, set the value of the `VisibleOnProcessingResults` property of `PXDSCallbackCommand` to `True`, as shown in the following example.

```
<px:PXDataSource ID = "ds" Width="100%"
    runat="server" Visible="True" PrimaryView="Filter"
    TypeName="PX.Objects.FA.FAClosingProcess" >
        <CallbackCommands>
            <px:PXDSCallbackCommand Name = "showDocuments"
                VisibleOnProcessingResults="True"/>
```

```
            </CallbackCommands>
    </px:PXDataSource>
```

For details about adding buttons to the processing dialog box, see *To Add a Button to the Processing Dialog Box* in the documentation.

Turning Off the New UI of the Processing Pages

To turn off the new UI of the processing pages, a developer can do one of the following:

- To turn off the new UI for a particular page, override the IsProcessing property of the graph that corresponds to the page, as shown in the following code.

```
public override bool IsProcessing
{
    get { return false; }
    set { }
}
```

- To turn off the new UI for all processing pages, add the ProcessingProgressDialog key in the appSettings section of the web.config file of the application, as shown in the following example.

```
<add key="ProcessingProgressDialog" value="false" />
```

For details about how to turn off the new UI of the processing pages, see *To Not Display the Processing Dialog Box* in the documentation.

Platform API: Logging Improvements

In Acumatica ERP 2019 R1, the logging system has been improved, as described in the following sections.

Improved Performance

The performance of the logging system has been improved. Now the system does not collect the stack trace by default. For example, the following code does not collect the stack trace.

```
PXTrace.WriteInformation("The operation has been started.");
```

To collect the stack trace, a developer should call the `WithStack()` static method and specify the logging level at which the stack trace should be collected. In the following example, the stack trace is collected for the *Information* logging level.

```
PXTrace.WithStack().Information("The operation has been started.");
```

The `WithStack()` method affects the performance of the application.

Collection of the Information about the Location of the Logged Message in Code

Developers can collect the following information about the location in the code where the writing to the log has been performed: the name of the method, the file name, and the line number in this file. To collect this information, developers should use the `WithSourceLocation()` static method and specify the logging level at which this information should be collected, as shown in the following example.

```
PXTrace.WithSourceLocation().Verbose("The operation has been started.");
```

The `WithSourceLocation()` method does not affect the performance of the application.

Developers can use both the `WithSourceLocation()` and the `WithStack()` methods, as shown in the following code example.

```
PXTrace.WithSourceLocation().WithStack().Verbose("The operation has been started.");
```

Web Services: Contract-Based API Improvements

With the *Default/18.200.001* contract-based API endpoint of Acumatica ERP 2019 R1, developers can do the following (in addition to the functionality available in Acumatica ERP 2018 R2):

- Insert an entire sales order in a shipment in one call. This way is faster than the insertion of the order lines one by one.

- Create a sales order with payments in one call. In this call, a developer can specify the payment method, cash account, and the payment amount for each payment. For the payments by credit card, a developer can specify the payment profile ID for the sales order.

- Insert separate lines of a purchase order or a purchase receipt in an AP bill. In Acumatica ERP 2018 R2, it was possible to insert only all lines of a purchase order or a purchase receipt in an AP bill.

- Create a purchase receipt with allocations in one call.

- Create a vendor with payment instructions in one call.

- Obtain attributes of cases.

Web Services: Changes in the License API Limits

Each Acumatica ERP license includes the limits on the number of web services API users, the number of concurrent API requests, and the number of web services API requests per minute. A developer can view the limits of the Acumatica ERP license on the *License Monitoring Console* (SM604000) form, which is shown in the following screenshot.

Figure: License limits

In Acumatica ERP 2018 R2, if any of these limits has been reached, the subsequent web services API request is declined. Acumatica ERP 2019 R1 processes the web services API requests differently. The following sections describe the changes in this processing.

Number of Requests per Minute

If the number of requests that have been done in a particular minute reaches 50 percent of the limit specified for the license, the subsequent requests during this minute are added to the queue and delayed for the following time: 60 seconds minus the number of seconds that have passed since the beginning of the current minute, divided by the remaining number of requests that can be processed in the minute.

For example, suppose that in a particular license, the limit of the number of web services API requests per minute is 50. Since the beginning of the current minute, if the system has already processed 25 requests in 40 seconds and the system receives another request, this request is delayed for `(60-40)/25` seconds. After the delay, the request will be processed.

The request will be declined only if the number of requests in the queue is greater than 20, or the request remains in the queue for more than 10 minutes.

A developer can view the statistics of the delayed and declined requests on the **Statistics** tab of the *License Monitoring Console* (SM604000) form, which is shown in the following screenshot.

License Monitoring Console ☆   CUSTOMIZATION   TOOLS ▾

LICENSE   STATISTICS   WARNINGS   CONSTRAINT HISTORY

Month	Commercial Transactions (% of Limit)	ERP Transactions (% of Limit)
> 01-2019	4 (0%)	230 (0%)
12-2018	6 (0%)	98 (0%)
11-2018	1 (0%)	33 (0%)

|<   <   >   >|

COMMERCIAL TRANSACTION DETAILS

Date	Commercial Transactions (% of Limit)	ERP Transactions (% of Limit)	Peak Number of Web Services API Requests per Minute (% of Limit)	*Declined API Requests (% of All)	*Delayed API Requests (% of All)
> 1/16/2019	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
1/15/2019	2 (0%)	94 (0%)	0 (0%)	0 (0%)	0 (0%)
1/14/2019	1 (0%)	46 (0%)	0 (0%)	0 (0%)	0 (0%)
1/13/2019	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
1/11/2019	0 (0%)	19 (0%)	0 (0%)	0 (0%)	0 (0%)

|<   <   >   >|

Figure: Statistics of the delayed and declined requests

Number of Concurrent Requests

If the limit for the number of concurrent web services API requests has been reached, the next concurrent request is queued and is processed when any of the previous requests has completed.

The request will be declined only if the number of requests in the queue is greater than 20, or the request remains in the queue for more than 10 minutes. One queue is used for processing of the limit of the number of concurrent requests and the limit of the number of request per minute.

A developer can view the statistics of the delayed and declined requests on the **Statistics** tab of the *License Monitoring Console* form.

Mobile Development: Comparison of Mobile Site Map Differences

In Acumatica ERP 2019 R1, the `ac.exe` command-line utility can now compare two mobile site maps and convert a mobile site map in XML format to be in MSDL format. The utility can also save the resulting MSDL script into a customization package.

The following table lists the added commands and their descriptions.

Command line parameter	Description

`d[elta] s[cript]`
`path_to_old_sitemap_folder`
`path_to_new_sitemap_folder`
`path_to_msdl_script_file`
	Compares two mobile site maps, and saves an MSDL script with the delta of these site maps.

`d[elta] p[roject]`
`path_to_old_sitemap_folder`
`path_to_new_sitemap_folder`
`path_to_customization_project_file`
	Compares two mobile site maps, and saves the delta of these site maps to the customization package.

`c[onvert] s[cript]`
`path_to_sitemap_folder`
`path_to_msdl_script_file`
	Converts an XML mobile site map to MSDL format.

`c[onvert] p[roject]`
`path_to_sitemap_folder`
`path_to_customization_project_file`
	Converts an XML mobile site map to MSDL format, and saves the result to the customization package.

`u[pgrade] s[cript]`
`path_to_custom_sitemap_folder`
`path_to_msdl_script_file`
	Compares an XML mobile site map with the default mobile site map, and saves an MSDL script with the delta of these site maps.

`u[pgrade] p[roject]`
`path_to_custom_sitemap_folder`
`path_to_customization_project_file`
	Compares an XML mobile site map with the default mobile site map, and saves the delta of these site maps to the customization package.

For details, see *ac.exe MOBILESITEMAP Reference*.

Plug-In Development: Improvements in Credit Card Processing

Acumatica ERP 2019 R1 includes multiple improvements to credit card processing, which can be incorporated in custom credit card plug-ins.

Processing of Payments from New Credit Cards

In previous versions of Acumatica ERP, to be able to accept payments from new credit cards, a user had to first define a customer payment profile for the customer with this credit card. In Acumatica ERP 2019 R1, information about a new credit card can be entered when a user processes a payment on the *Payments and Applications* (AR302000) form. For details about this functionality, see *Finance: Ability to Process Payments from New Credit Cards*.

To implement the creation of a new credit card in a custom credit card plug-in, a developer needs add to the code of the plug-in the classes that implement the following interfaces: `ICCProfileCreator`, `ICCTransactionGetter`, and `ICCHostedPaymentFormProcessor`.

Synchronization of Credit Cards with the Processing Center

Acumatica ERP now supports the synchronization of credit cards registered in the Authorize.Net processing center with Acumatica ERP. A developer can implement the synchronization of credit cards registered in other processing centers with Acumatica ERP by adding the classes that implement the `ICCTransactionGetter` interface.

Support of Webhooks

Acumatica ERP supports webhooks as a way to receive a response from the processing center. If a developer needs to use webhooks, the developer should add the classes that implement the `ICCWebhookProcessor` interface, which manages webhooks, and the `ICCWebhookResolver` interface, which parses the information that comes from the processing center through webhooks.

For details about the implementation of custom payment plug-ins, see *Interfaces for Processing Credit Card Payments* and *To Implement a Plug-In for Processing Credit Card Payments (Version 2 of Interfaces)* in the documentation. For details about the interfaces mentioned in this topic, see the *API Reference*.

Other Improvements

This topic lists the minor improvements to Acumatica ERP that have not been described in the previous topics.

Services

AC-76810: The UI of the calendar boards and maps has been improved for consistency with the rest of the Acumatica ERP UI. These improvements have not affected the functionality of the forms that include calendar boards and maps.

AC-108556: In previous versions of Acumatica ERP, for Avalara tax calculation, the system used the branch address as Address From and the customer location address as Address To. Now the improved way the system selects Address From and Address To works as follows:

- For the line items on the *Service Orders* (FS300100) and *Appointments* (FS300200) forms, the system uses the warehouse address (if applicable) or the branch location address of the service order (if no warehouse is applicable) as Address From. The system uses the service order address as Address To.

- When a billing document (that is, an AR document, sales order, or SO invoice) is created from a service order or appointment, if a line item has been added to the service order or appointment, the sales taxes calculated in the service order or appointment are used in the billing document.

AC-110062: In Acumatica ERP, a *substitute form* is a form that displays a list of the documents or entities that have been created by using a particular data entry form. The substitute form is opened when a user navigates to or searches for the entry form, and from the substitute form, the user can open any listed entity or create a new entity of the type on the data entry form. Each of the following forms now has a corresponding substitute form:

- *Service Contracts* (FS305700)
- *Service Contract Schedules* (FS305100)
- *Manufacturers* (FS204400)
- *Manufacturer Models* (FS204800)
- *Service Templates* (FS204900)
- *Master Contracts* (FS204700)
- *Route Document Details* (FS304000)
- *Routes* (FS203700)
- *Route Service Contracts* (FS300800)
- *Route Service Contract Schedules* (FS305600)
- *Vehicles* (FS203600)
- *Vehicle Types* (FS204200)

Organization

AC-118831: The out-of-the-box performance of the quick search functionality used on generic inquiry forms has been improved due to a reduced number of columns that are used in the quick search by default. If the check box is selected in the **Use in Quick Search** column on the **Results Grid** tab of the *Generic Inquiry* (SM208000) form, the column is used in the search.

AC-125402: Now if a standard cost is specified for an expense non-stock item (that is, a non-stock item that represents a specific type of expense) on the **Price/Cost Information** tab of the *Non-Stock Items* (IN202000) form, the system inserts this cost by default for the expense item in the **Unit Cost** box on the *Expense Receipt* (EP301020) and *Expense Claim* (EP301000) forms, with respect to the effective date of the current standard cost—that is, for a document whose date is earlier than the effective date of the current cost, the system uses the last cost of the non-stock item as the default unit cost on the document entry form.

AC-124868: Because the **Show Author's Email Address** check box on the **General Settings** tab of *Customer Management Preferences* (CR101000) form duplicated the logic that had been implemented on the *System Email Accounts* (SM204002) form, this check box has been removed.

Mobile App

AC-104606: In the Acumatica mobile app, the mobile forms related to the Customer Management functionality, such as Contacts, Business Accounts, Opportunities, Cases, Task, Event, Email Activity, and Activity, have been significantly redesigned. Headers with most viewed information have been added. Location of fields on the mobile forms have been optimized for better usability. A new mobile form, Sales Quotes, have been added.

Platform

AC-64899: On data entry forms, a user no longer has the ability to modify any details of a document while the system is running a long-run operation, such as the release of the document the user is working with. If the user changes the document while this processing is occurring and tries to save the changes, the system displays a warning message indicating that the changes have blocked and continues processing the operation involving the document.

AC-95155: Some elements of the user interface have been renamed. See the table below for more information.

Old Element Name	New Element Name	Location of the Element
All Items	**Full Menu**	Name of the element displayed in the workspace title bar
Help Articles	**Help Topics**	Name of the tab name in the Search Results window
Exit Edit Menu	**Exit Menu Editing Mode**	Name of the button in Menu Editing mode
Form Parameters	**Item Parameters**	Name of the dialog box that is opened when a user clicks **Edit** on the form link

Inventory and Order Management

AC-39464: In the table on the *Process Shipments* (SO503000) form, a new **Bill Separately** column containing a check box has been added. If the check box in this column is selected in a particular row of the table (which represents a shipment), when the user runs the mass-processing of the selected shipments, the system will prepare a separate invoice for this shipment from the invoice of the other shipments to the same customer, if applicable.

AC-96912: On the **Document Details** tab of the *Sales Orders* (SO301000) form, the **Amount** column, which shows the amount of the document line after the application of discounts, has been added; this amount cannot be edited. The **Ext. Price** column on the same tab now shows the extended price, which is the unit price multiplied by the quantity; the extended price can be edited.

AC-119342: On the *Availability Calculation Rules* (IN201500) form, the **Include Qty. on Returns** check box has been renamed to **Include Qty. on Sales Returns** for clarity.

AC-114220: The new *Completed* status has been introduced for purchase orders on the *Purchase Orders* (PO301000) form. The system assigns this status to a purchase order that has been received in full but has not been billed in full—that is, if all purchase order lines on the **Document Details** tab have the **Completed** check box selected and at least one purchase order line still has the **Closed** check box cleared. (The system does not consider purchase order lines of the *Description* line type in assessing whether this status should be assigned; lines of this type are ignored.)

AC-124211: The *PX.StampsCarrier.StampsCarrier* carrier plug-in has been improved. The plug-in now supports custom information for U.S. military mailing addresses and shipping to unincorporated U.S. territories such as Puerto Rico and Guam. Also, the ability to skip address verification has been implemented.

Finance

AC-110113: On the *Print Invoices and Memos* (AR508000) form, the **Status** column has been added, which gives users the ability to filter documents by their status (*Balanced* or *Released*).

AC-41317: On the *Customer Details* (AR402000) form, the **Pay Invoice** action (in the **Actions** menu on the form toolbar) has been renamed to **Enter Payment/Apply Memo**. Similarly, on the *Vendor Details* (AP402000) form, the **Pay Bill** action (in the **Actions** menu on the form toolbar) has been renamed to **Pay Bill/Apply Adjustment**. If these actions are invoked for an unreleased, voided, or closed document, the system displays an error message; these actions can be invoked only if the document has the *Open* status. These enhancements make it more convenient for users to further process documents opened on these forms.

AC-94388: Small credit write-offs are now allowed directly on the *Payments and Applications* (AR302000) form. A user can perform a credit write-off if the payment amount is greater than the invoice amount. To do this, when creating a payment for an invoice, on the **Documents to Apply** tab, the user should enter a negative amount in the **Balance Write-Off** column and select the credit write-off reason code in the **Write-Off Reason Code** column. Users can also enter negative write-offs on the **Applications** tab of the *Invoices and Memos* (AR301000) and *Invoices* (SO303000) forms.

For example, if the invoice amount is $95 and the payment amount is $100, on the *Payments and Applications* form, on the **Documents to Apply** tab, the user should enter 100 in the **Amount Paid** column and –5 in the **Balance Write-Off** column to give both documents the *Closed* status after release. In this case, the system creates the following GL batch.

Account	Debit	Credit
Cash Account	$100	$0
Accounts Receivable Account	$0	$95
Other Income Account	$0	$5 ($100 – $95)

AC-122911: On the *Recognize Input VAT* (TX503500) and *Recognize Output VAT* (TX503000) forms, Acumatica ERP supports pending VAT recognized in AP and AR documents, respectively, with multiple installment credit terms.

Reporting

AC-128772: In Acumatica ERP 2019 R1, support of project currency has been added to reports related to projects. The amounts in the generated reports will be shown in the currency of the project.

Projects

AC-118997: On the **Commitments** tab of the *Change Orders* (PM308000), a user can now select a purchase order line with the *Completed*, *Closed*, or *Canceled* status. If this line belongs to a purchase order with the *Completed*, *Closed*, or *Canceled* status, the purchase order can be reopened by means of change orders and will be assigned the *Open*, *Pending Printing*, or *Pending Email* status, depending on the purchase order workflow.

AC-121502: On the table toolbar of the **Commitments** tab of the *Projects* (PM301000), a user can click **Create Purchase Order** and navigate to the *Purchase Orders* (PO301000) to create a new purchase order.

AC-91883: The **Project** box has been renamed to **Project/Contract** on the following forms:

- *Sales Orders* (SO301000), in the Summary area

- *Invoices and Memos* (AR301000), in the Summary area

- *Deferral Schedule* (DR201500), in the Summary area

- *Journal Transactions* (GL301000), in the table

AC-125440: The **Internal Revenue Commitment Tracking** check box has been hidden on the **General Settings** tab (**General Settings** section) of the *Projects Preferences* (PM101000) form. The check box can be made visible by a simple customization project.

AC-124055: The `PMHistory` table has been changed as follows:

- The new `BranchID` key field has been added. The table now stores actual balances by financial period of the master calendar and by company-specific financial period, which is defined by the branch. Previously, balances were not broken down by branch in this table.

- The `Tran*` columns of the table contain values for master calendar financial periods.

- The `Fin*` columns of the table contain values for company-specific financial periods based on the `PMTran.BranchID` and `PMTran.FinPeriodID` data.

Acumatica ERP Configuration Wizard

AC-91152: The **Size** box has been removed from the Acumatica ERP Configuration wizard on the database selection step if the system is being deployed on Azure.

Application Customization

AC-118708: The Acumatica Customization Engine now supports C# 7.0. Developers can use all features of C# 7.0 in customizations of Acumatica ERP.

AC-118949: The dashboard import and export scenarios have been improved, so that when a new dashboard is added to a customization project, all the included generic inquiries and wiki pages are also added or updated in the customization project. If any widget in the dashboard is linked to an Acumatica ERP form, the form is added or updated on the **Site Map** page of the Customization Project Editor.

AC-119313: Now developers can use the `RowPersisting` and `RowPersisted` events and the `InsertDocumentTransaction`, `InsertSplitTransaction`, `InsertRoundingTransaction`, and `InsertDepositChargeTransaction` methods to customize the release of cash transactions. For details about this approach, see *Customizing the Release Process for CA Documents* in the documentation.

AC-127572: The names of the customization projects that contain periods and brackets were imported incorrectly in the Customization Project Editor. Now periods and brackets can be used in the names of customization projects.

Platform API

AC-115427: The `Having<TCondition>` and `Aggregate<TFunctions,THaving>` classes have been added to the business query language (BQL). The `Having<TCondition>` class is equivalent to the SQL `HAVING` clause. In this class, you can specify the condition only by using fluent BQL.

AC-117732: The `Power<Operand1, Operand2>` class, which is equivalent to the `POWER(Operand1, Operand2)` SQL function, has been added to BQL.

AC-118576: Now it is possible to run a report with predefined report parameters (`Dictionary<string, strting>`) and data to be used for report generation (`PXResultSet`).

To generate a report, a developer can use a `PXReportRedirectParameters` instance to pass the parameters and the data to a `PXReportRequiredException` instance.

Integration Development

AC-49767: For the forms that have multiple dependent sets of detail lines, such as the *Projects* (PM301000) form, the performance of exporting data has been improved. For these forms, all of the following processes work faster: the copying and pasting of an entity on a form, the export of an entity in XML format, and the data retrieval through export scenarios, the web services APIs, and the mobile API.