Microsoft Dynamics® AX 2012 R2

Support for previous POS versions

White Paper

This document describes how to enable previous versions of Retail Point of Sale (POS) to exchange data with Microsoft Dynamics AX 2012 R2.

December 2012

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Microsoft Dynamics®

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Overview

In previous versions of Microsoft Dynamics AX for Retail, all Retail Point of Sale (POS) terminals had to be upgraded after the Microsoft Dynamics AX instance was upgraded. Otherwise, all data connectivity between Retail POS and Microsoft Dynamics AX was stopped, and any sales transactions processed in Retail POS after the start of the Microsoft Dynamics AX upgrade had to be manually imported for posting. Microsoft Dynamics AX 2012 R2 introduces new functionality that lets a previous version of POS (Microsoft Dynamics AX for Retail 2009 R2 Refresh or Microsoft Dynamics AX 2012 Feature Pack POS) communicate with Microsoft Dynamics AX 2012 R2 after the upgrade.

Before the upgrade

Before starting the upgrade, also refer to upgrade documentation.

There are several steps to consider in preparation for the upgrade if you want to enable previous version support.

Microsoft Dynamics AX for Retail 2009 R2 Refresh

Duplicate stores

In Microsoft Dynamics AX for Retail 2009, retail stores were defined per company; but in Microsoft Dynamics AX 2012 Feature Pack, retail stores are shared across legal entities. If the Microsoft Dynamics AX for Retail installation to be upgraded has multiple companies, it possible that the same store number exists across those companies. During the upgrade, such conflicts are identified, and the pre-upgrade checklist prompts you to change the store numbers. After the upgrade, this would cause an issue, because Retail POS would have a different store number than Microsoft Dynamics AX for the store. You have two options for resolving this before the upgrade:

- Change the store number before the upgrade:

  1. In Microsoft Dynamics AX for Retail 2009, select the store, right-click the store number, and then click **Record info**. In the **Record information** dialog box, click **Rename**, and then enter the new store number. This will also update the store number in all related tables[1], such as POS transactions.

  2. At the store, create a new database that reflects the new store number, and resend all data.

- Use a data partition. Microsoft Dynamics AX 2012 R2 introduces a new concept called *data partitioning*. This enables data to be segmented into different partitions. Data in separate partitions cannot be shared. No specific steps are required to prepare for the upgrade; during the upgrade, you just specify that each company should be moved to its own partition.

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[1] This update will not create preactions, and the changes are not sent by using Retail Scheduler jobs of type action (A-Jobs).

Duplicate cashiers

Staff in Microsoft Dynamics AX for Retail 2009 was defined by company. In Microsoft Dynamics AX 2012 Feature Pack and later versions, retail-specific staff, such as cashiers, leverages the human resources functionality in Microsoft Dynamics AX 2012. As with store numbers, this could result in duplicate personnel numbers that will be resolved during the upgrade. This will result in a mismatch in operator IDs between Retail POS and Microsoft Dynamics AX. You have one option for resolving those conflicts:

- Change the employee ID:

    1. In Microsoft Dynamics AX for Retail 2009, select the employee, right click the employee ID, and then click **Record info**. In the **Record information** dialog box, click **Rename**, and then enter the new employee ID. This will also update the employee ID in all related tables[2].

    2. Send the updated employee and staff information to the appropriate store.

Note: The existing sales transactions in the POS database will not be updated with the new cashier number.

Running a previous version of Retail POS

Previous version support depends on the following prerequisites:

- The foundation upgrade model has been installed.

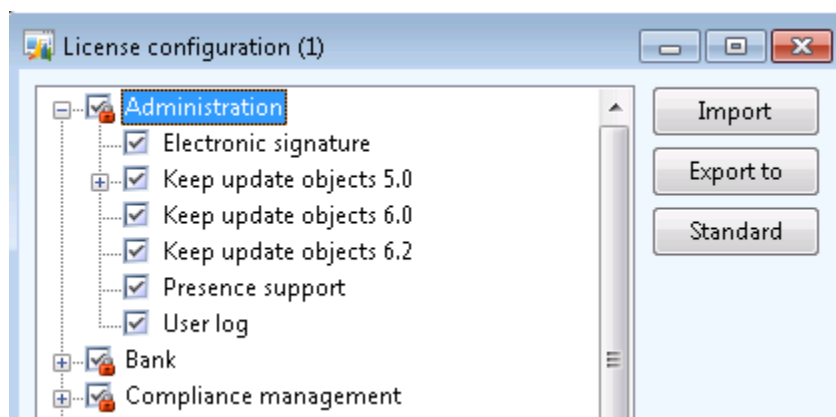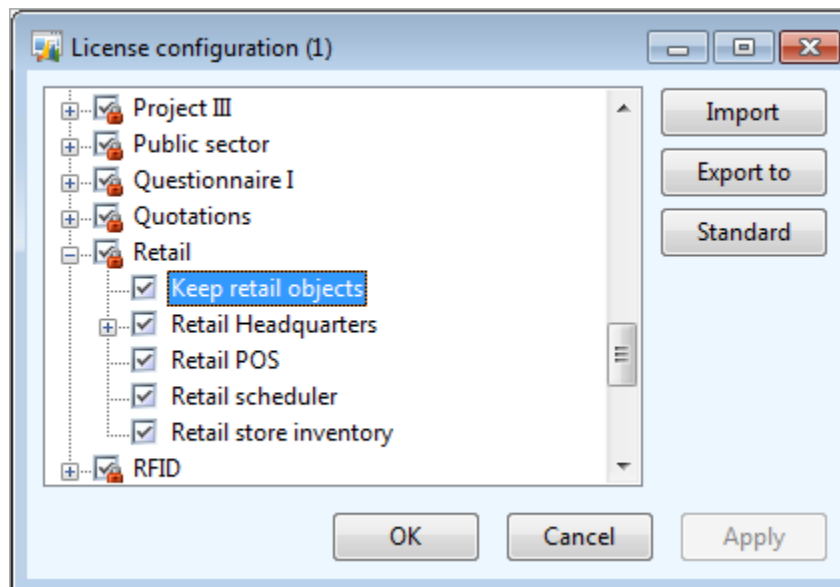- The **Keep update objects** keys are enabled.

Figure 1 License configuration – Keep update objects keys

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[2] This update will not create preactions, and the changes are not sent by using Retail Scheduler jobs of type action (A-Jobs).

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- The **Keep retail objects** configuration key is enabled.

Figure 2 License configuration – Keep retail objects configuration key

Configuration changes

Several changes have been made to the configuration of data distribution in Microsoft Dynamics AX 2012 R2 to enable support for previous versions of Retail POS:

- **Retail channel schema** – Identifies the version of Retail POS that this scheduler job is configured for.

- **Job execution class** – Identifies the class that will process the scheduler job.

- **Data processing class** – This class is only used if data translation is required for the scheduler job.
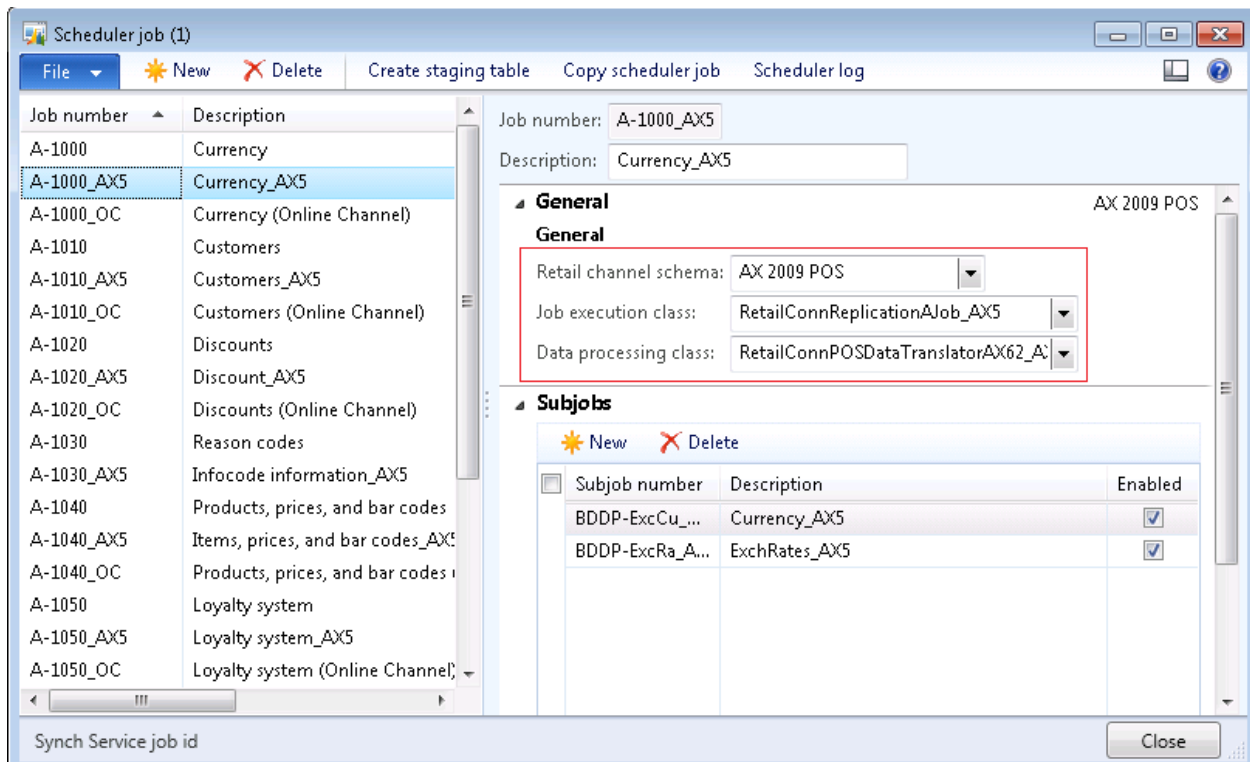

Figure 3 Scheduler job

Microsoft Dynamics AX for Retail 2009 R2 Refresh

After the upgrade is completed, several steps are required to prepare your system.

Distribution locations

In Microsoft Dynamics AX 2009 for Retail, the recommended configuration was to have one database for each Retail POS register. This configuration is no longer supported; instead, there is one Retail POS database for all registers in a store (store database). In the **Distribution locations** form, select **AX 2009 POS** as the retail channel schema.

Figure 4 Distribution location

In Microsoft Dynamics AX 2009, creating a store or register would create a corresponding distribution location with the same location number as the store or register number. In the recommended deployment (shown in the following diagram), each register distribution location would have a database profile assigned. When you assigned a register to a store, the register distribution location would also be added to the distribution subgroup of the same name. Including the register distribution Location in the store distribution subgroup would ensure that data was sent to all registers in the store.

In Microsoft Dynamics AX 2012, there is only a distribution location per store. The database profile is assigned to that distribution location, as shown in the following diagram.

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After the upgrade, go to each distribution location corresponding to a Retail POS register, and assign the appropriate retail channel.
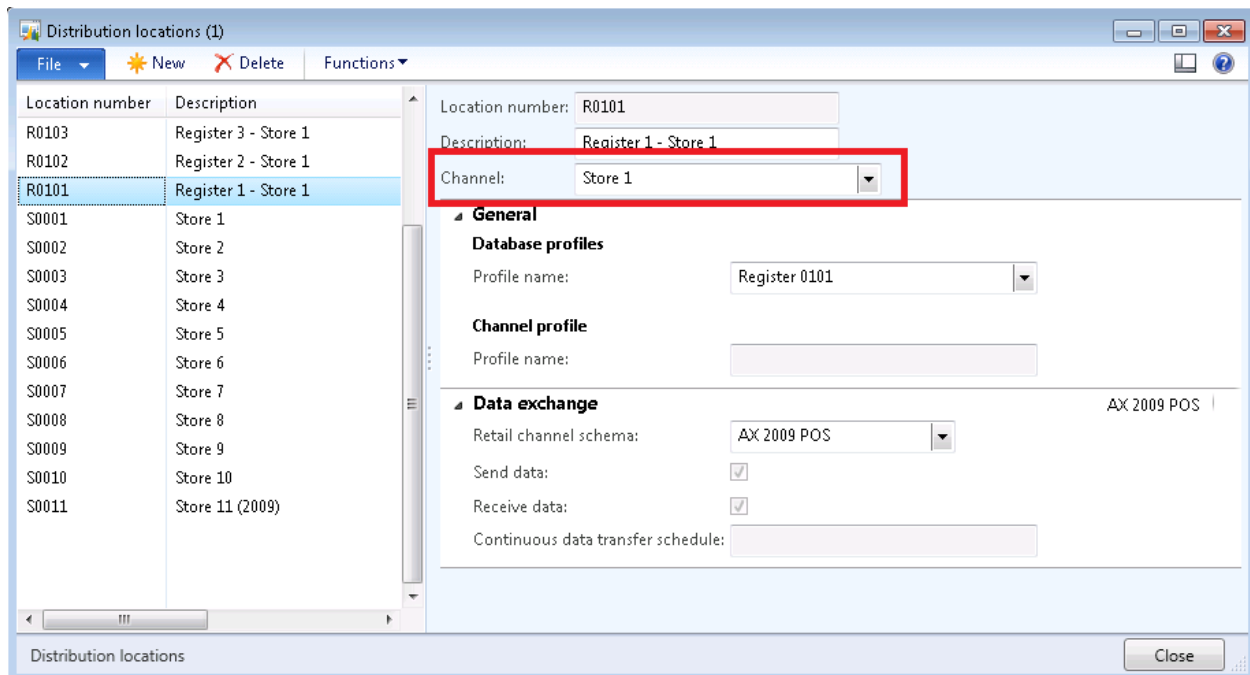

Figure 5 Distribution location – Register 0101

Scheduler jobs

Microsoft Dynamics AX for Retail uses scheduler jobs to define the data mapping between Microsoft Dynamics AX and Retail POS tables. To create the default scheduler definitions for Microsoft Dynamics AX 2009, open the Application Object Tree (AOT), expand the **Classes** node, double-click **RetailConnSeedDataGeneratorAX5**, and then click **Go** to generate the scheduler jobs and scheduler subjobs. Make sure that the default configuration for Microsoft Dynamics AX 2012 R2 has been created already (**Retail parameters** > **Initialize**). If any customizations were performed in Microsoft Dynamics AX 2009, corresponding changes have to be made to the scheduler job definitions.

Data translation

The database schema has substantially changed between Microsoft Dynamics AX 2009 and Microsoft Dynamics AX 2012. Microsoft Dynamics AX 2012 R2 provides a translation class that maps Microsoft Dynamics AX 2012 data elements to the expected format in Retail POS 2009. The translation class **RetailConnPOSDataTranslatorAX62_AX5** transforms the data for each scheduler job. The translated data is written to temporary tables, from which Commerce Data Exchange: Synch Service will read the data to transfer to the store. For customizations that require changes to the tables and fields, the appropriate translation logic has to be added to the class **RetailConnPOSDataTranslatorAX62_AX5**. Another option would be to create a new class that inherits from the base class **RetailConnPOSDataTranslator**, and then specify this new class as the scheduler jobs data processing class (see Figure 3).
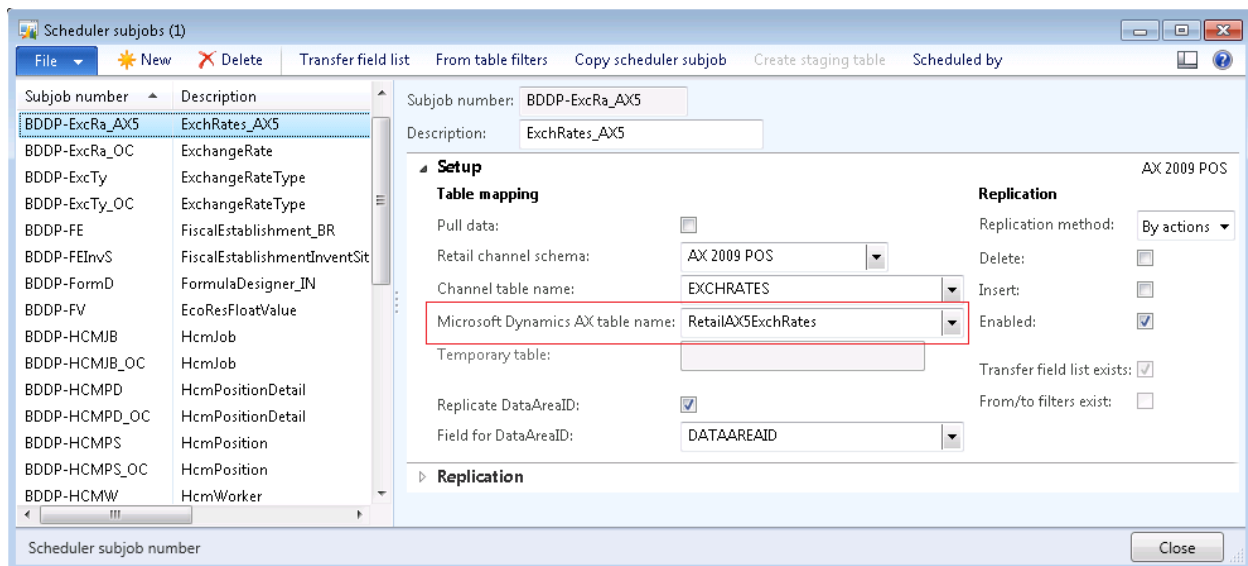

Figure 6 Scheduler subjob showing the temporary table used for translated data
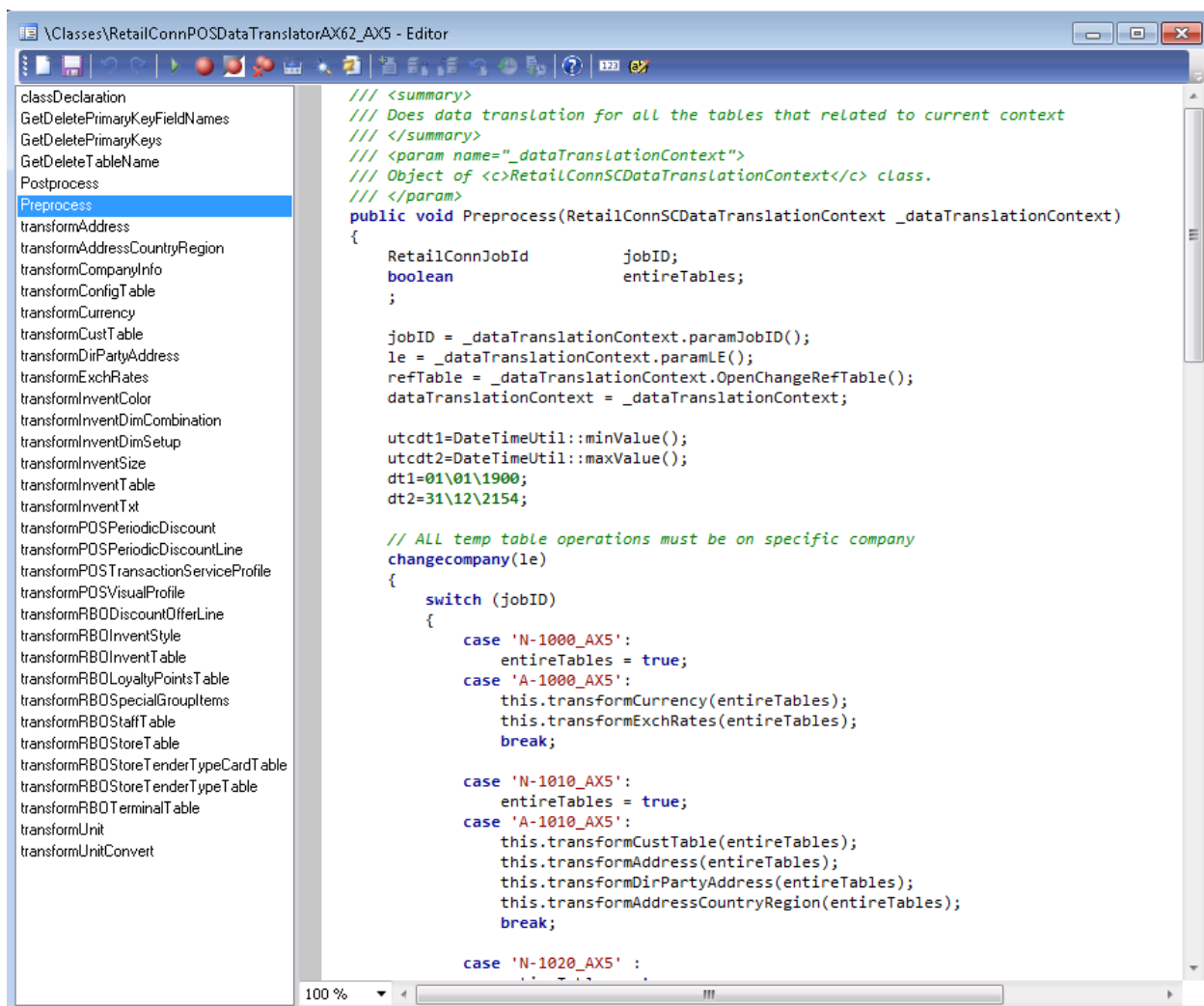
SUPPORT FOR PREVIOUS POS VERSIONS

Figure 7 RetailConnPOSDataTranslatorAX62_AX5 class

Commerce Data Exchange: Real-time Service[3]

Setup for Microsoft Dynamics AX 2012 R2 will install the previous versions of Commerce Data Exchange: Real-time Service and also create the default Windows services. Configure the settings in RetailTransactionService.exe.config for version 5.1; this file can be found under <Microsoft Dynamics AX installation folder>\Commerce Data Exchange\Real-time Services\5.1\Bin. Configure and start the service named Microsoft Dynamics AX Commerce Data Exchange: Real-time Service 5.1. The Commerce Data Exchange: Real-time Service profile has new properties, most of which can be ignored. The exception is the Commerce Data Exchange: Real-time Service version. The relevant configuration options are as follows:

- **Server** – The name or IP address of the computer that Commerce Data Exchange: Real-time Service is running on.

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[3] Commerce Data Exchange: Real-time Service is the new name for Microsoft Dynamics AX for Retail Transaction Service in Microsoft Dynamics AX 2012 R2.

- **Port** – The TCP port on which the transaction service is listening; the default port is 1239.

  Note: This value has to match the value specified in the RetailTransactionService.exe.config file.

- **Passphrase** – This value is used by the POS client to authenticate itself.

- **Language** – The language used by .NET Business Connector to log on to Microsoft Dynamics AX. This determines the language for any error messages sent from Microsoft Dynamics AX to Retail POS.

- **Real-time Service version** – Select **AX 2009** for the required data translation.

Figure 8 Commerce Data Exchange: Real-time Service profile

Known issues

- Both the database profile and the Commerce Data Exchange: Synch Service profile provide an option to test the configured connection. This functionality will not work if the profile represents a Retail POS 2009 database or Commerce Data Exchange: Synch Service 2009, respectively.

- The configuration of discounts in Microsoft Dynamics AX 2009 for Retail used priorities to determine which discount offers would apply in Retail POS. Microsoft Dynamics AX 2012 R2 replaced the priority settings with concurrency rules. As part of the data translation, the priority of the discounts will be set based on the time of creation, meaning that the newest discount offer will have the highest priority, and the oldest discount offer will have the lowest priority.

- Microsoft Dynamics AX 2009 for Retail supported a fixed retail hierarchy of four levels. This hierarchy was replaced in Microsoft Dynamics AX 2012 Feature Pack by the category framework, which supports unlimited levels. Microsoft recommends that the product hierarchy not be changed until all Retail POS registers have been upgraded to Microsoft Dynamics AX 2012 R2. Otherwise, the product hierarchy will be truncated to four levels during data translation, which could result in errors during transaction processing in Retail POS.

- To delete a record in the Retail POS database through an A-job, the primary key for the table is used. For the following Retail POS tables, Microsoft Dynamics AX 2012 uses the RecId as primary key; however, Retail POS 2009 does not, which means that records will not be deleted when the corresponding A-job is run:
    - RBOCUSTTABLE
    - INVENTDIM
    - CONFIGTABLE
    - INVENTCOLOR
    - INVENTSIZE
    - RBOINVENTSTYLE
    - RBOCOLORS
    - RBOSIZES
    - UNIT
    - COMPANYINFO
    - TAXTABLE
    - POSTRANSACTIONSERVICEPROFILE
    - RBOSUPPORTEDCOUNTRYREGION
    - RBOPARAMETERS
    - RBOSTORETABLE
    - RBODISCOUNTOFFERLINE
- Downloading updated Commerce Data Exchange: Synch Service upload options to a Retail Store Connect 2009 instance is not supported.
- In Microsoft Dynamics AX 2012, only customers that are included in the store's customer address book are available in Retail POS. Removing a customer from the address book will not delete this record from the Retail POS 2009 database, and that customer is still available in Retail POS.
- If a product for which the product number (EcoResProdcut.DisplayProductNumber) and item ID (InventTable.ItemId) are different is included in a loyalty scheme, Retail POS 2009 will not calculate the loyalty points.

Microsoft Dynamics AX 2012 Feature Pack

Distribution locations

Since Microsoft Dynamics AX 2012 Feature Pack, only the store database is supported for data exchange between Microsoft Dynamics AX and Retail POS. The distribution locations for the stores and database profiles will be upgraded, so the only change is to set the schema version to **AX 2012 Feature Pack POS**.

Figure 9 Distribution location configuration – Microsoft Dynamics AX 2012 Feature Pack

Scheduler jobs

Microsoft Dynamics AX for Retail uses scheduler jobs to define the data mapping between Microsoft Dynamics AX and Retail POS tables. To create the default scheduler definitions for Microsoft Dynamics AX 2012 Feature Pack, open the AOT, expand the **Classes** node, double-click **RetailConnSeedDataGeneratorAX61**, and then click **Go** to generate the scheduler jobs and scheduler subjobs. If any customizations were performed in Microsoft Dynamics AX 2012 Feature Pack, corresponding changes have to be made to the scheduler job definitions.
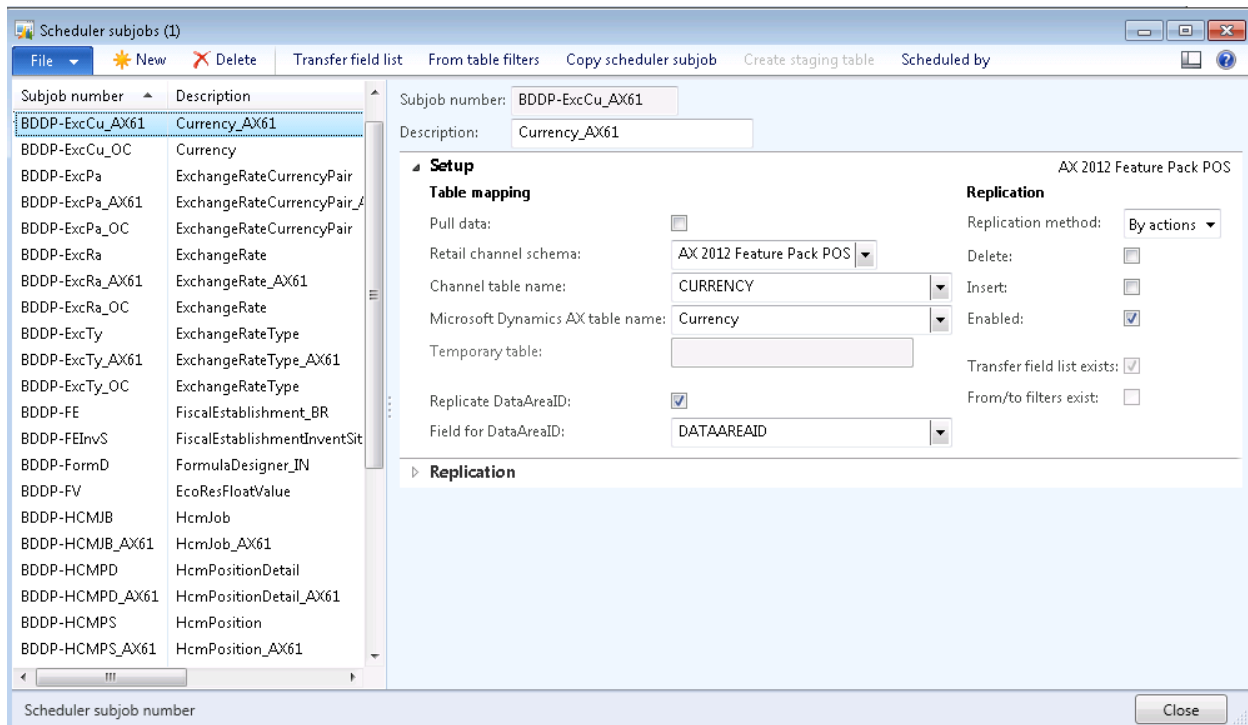

Figure 10 Scheduler subjob configuration for Microsoft Dynamics AX 2012 Feature Pack

Data translation

There were minor changes to the database schema between Microsoft Dynamics AX 2012 Feature Pack and Microsoft Dynamics AX 2012 R2. Microsoft Dynamics AX 2012 R2 provides a translation class that maps Microsoft Dynamics AX 2012 R2 data elements to the expected format in Retail POS 2012 Feature Pack. The translation class **RetailConnPOSDataTranslatorAX62_AX61** transforms the data for each scheduler job. The translated data is written to temporary tables, from which Retail Store Connect will read the data to transfer to the store. For customizations that require changes to the tables and fields, the appropriate translation logic has to be added to the class **RetailConnPOSDataTranslatorAX62_AX61**.
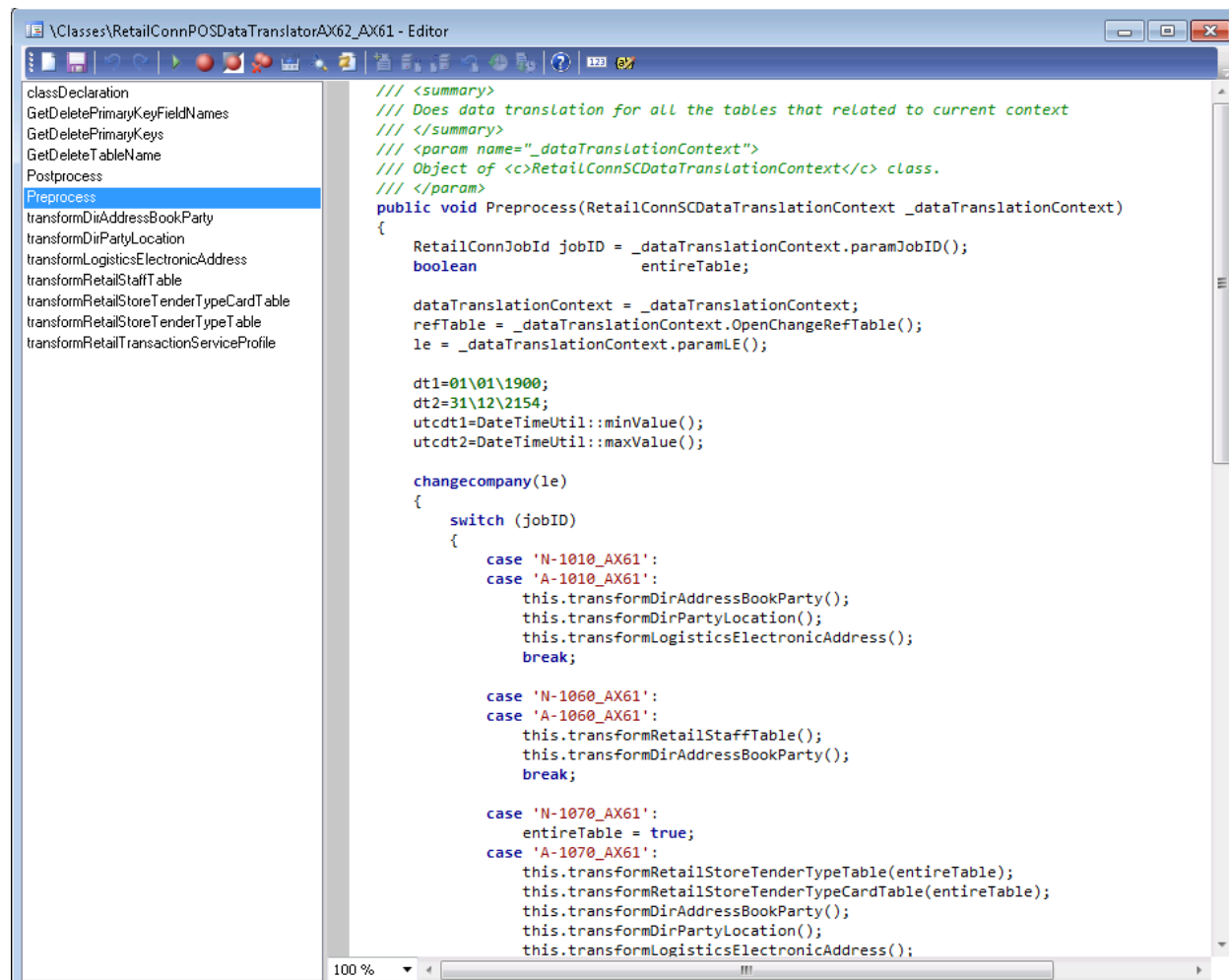

Figure 11 RetailConnPOSDataTranslatorAX62_AX61

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Commerce Date Exchange: Real-time Service

Setup will install the previous versions of Commerce Data Exchange: Real-time Service and also create the default Windows services. Configure the settings in RetailTransactionService.exe.config for version 6.1; this file can be found under <Microsoft Dynamics AX installation folder>\Commerce Data Exchange\Real-time Services\6.1\Bin. Configure and start the Windows service named Microsoft Dynamics AX Commerce Data Exchange: Real-time Service 6.1. The Commerce Data Exchange: Real-time Service profile has new properties, most of which can be ignored. The exception is the Commerce Data Exchange: Real-time Service version. The relevant configuration options are as follows:

- **Server** – The name or IP address of the computer on which the transaction service is running.

- **Port** – The TCP port on which the transaction service is listening; the default port is 1239.

  Note: This value has to match the value specified in the RetailTransactionService.exe.config file.

- **Passphrase** – This value is used by the POS client to authenticate itself.

- **Language** – The language used by .NET Business Connector to log on to Microsoft Dynamics AX. This determines the language for any error messages sent from Microsoft Dynamics AX to Retail POS.

- **Real-time Service version** – Select **AX 2012 Feature Pack** for the required data translation.
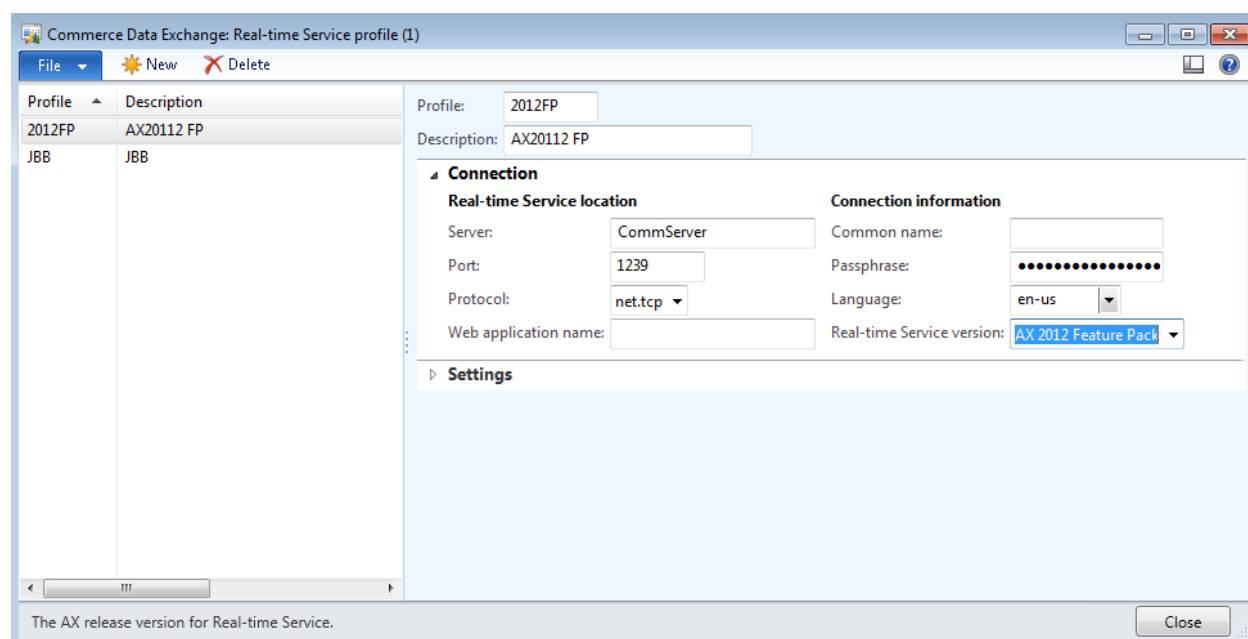

Figure 12 Commerce Data Exchange: Real-time Service profile – Microsoft Dynamics AX 2012 Feature Pack

Known issues

- The provisioning of the offline database in Retail POS 2012 Feature Pack after an upgrade to Microsoft Dynamics AX 2012 R2 is not supported.

- If Retail POS 2012 Feature Pack creates a new customer, Commerce Data Exchange: Real-time Service will only return the telephone number, not the email address. The customer's email address will be available in Retail POS after the A-1010 scheduler jobs have run.

POS upgrade

Starting with Microsoft Dynamics AX 2012 Feature Pack, there is no longer an in-store upgrade process for Retail POS; instead, a new installation must be performed. This means that you must uninstall the previous version, back-up the Retail POS database, and then install Microsoft Dynamics AX 2012 R2 Retail POS and create a new database. In Microsoft Dynamics AX, make the required changes to switch to Microsoft Dynamics AX 2012 R2 Retail POS:

- Under **Retail** > **Setup** > **Retail scheduler** > **Channel integration** > **Database profiles**, create a database profile for the newly created POS database.

- Under **Retail** > **Setup** > **Retail scheduler** > **Distribution locations**, delete the distribution locations for the Retail POS registers in the upgraded store. For the distribution location for the store, assign the database profile, and make sure that the appropriate channel is selected. Under **Data exchange**, change the retail channel schema to **AX 2012 R2 POS**.

  Note: By default, the POS register number matches the distribution location number. This step is only required when you upgrade from Microsoft Dynamics AX 2009.

- Under **Retail** > **Setup** > **Retail scheduler** > **Distribution location lists**, remove the distribution locations for the Retail POS registers from the appropriate distribution locations list, and instead add the distribution location for the upgraded retail store.

  Note: By default, the store number matches the distribution location number.

- Under **Retail** > **Periodic** > **Data distribution** > **Distribution schedule**, make sure that the Microsoft Dynamics AX 2012 R2 versions of the scheduler jobs are included in the store's distribution schedules.

To download all required data to the upgraded store, run the Retail POS redeployment checklist under **System administration** > **Setup** > **Checklists**. Create a new entry for each Retail POS register in the store, and calculate the next number for the number sequence used by POS, or manually set the new values. Follow the remainder of the checklist to complete the data download to the store.
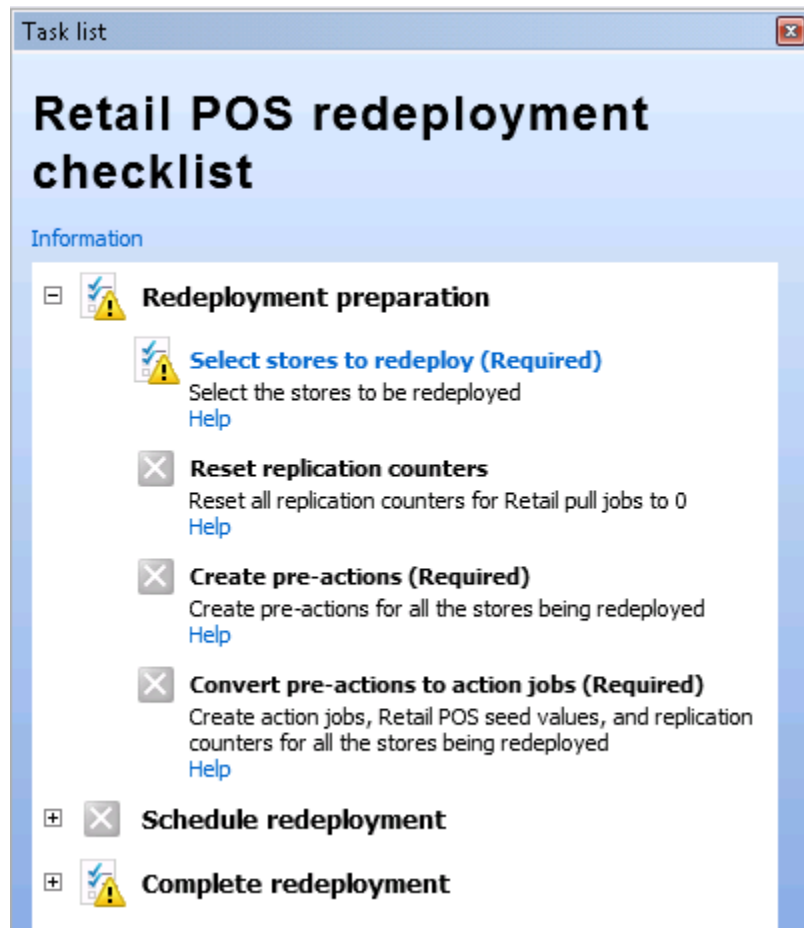

Figure 13 Retail POS redeployment checklist

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Worldwide +1-701-281-6500

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