Join Command

Used For

To combine information from two tables, where each table has at least one matching field, into a third table. The new table consists of matched or unmatched records from the original tables. The new table is then used like any other ACL table.

When Used

When the auditor needs information from two related tables to permit additional audit testing.

Examples

- Join a table of outstanding accounts receivable balances with a customer master file table that includes credit limits to identify customers with account balances exceeding their credit limits.
- Join a payroll transaction table with an employee master file table that includes approved gross pay per period to identify instances where employees' gross pay differs from approved amounts.

Five Requirements Before Running the Join Command

The Join command combines fields from two different tables to create a new table consisting of matched or unmatched records from the two original tables. Records are matched or unmatched based on a field that is present in both tables.

Before running the Join Command you **must complete each of the following five requirements:**

1. **Decide which two tables you want to join.** This requires audit planning to decide the information you want for the audit and the tables that include the information. **Note:** A table will not show up as available for joining as a secondary table if the primary table has already been related to that table.
2. **Decide which fields you will use to join the two tables.** The field must be the same for both tables. The fields can be character, date, or numeric, but the character field is the one most commonly used. Examples of common character fields are employee number, inventory item number, customer number, or vendor number.
3. **Decide which table will be the primary table and which the secondary.** Normally a transaction table is defined as the primary table and the related master file table becomes the secondary table.

4. **Satisfy the six primary and secondary table rules.** See "Six Primary and Secondary Table Rules" later in this section.

5. **Decide which of five join options to select for the join.** Each option accomplishes something different. Deciding the appropriate option requires careful planning. Selecting the wrong option can result in reaching wrong audit conclusions. See "Five Join Options" later in this section for guidance.

Join Steps

After the initial five steps are completed, you are ready to start the Join command.

⊞ *Open the primary table.*

Click Data → Join to open the Join command dialog.
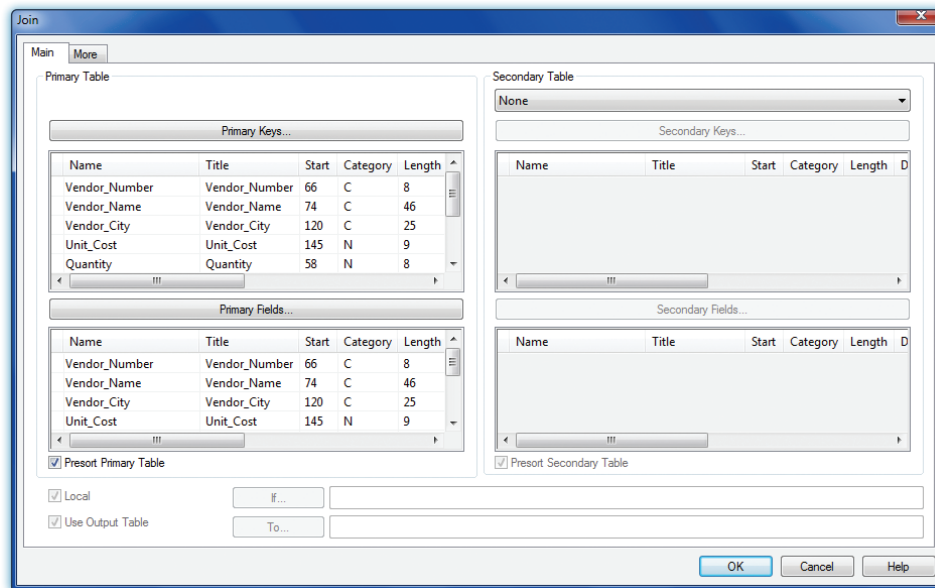
Use the Secondary Table drop-down list arrow to select the secondary table.

In the Primary Keys section of the command dialog, click on the name of the primary key field.

In the Secondary Keys section of the command dialog, click on the name of the secondary key field.

Next, ACL needs to know which fields to include in the joined table. The fields you select depend on the objective of your testing. Include all fields that you are interested in testing in the join.

■▮▮ *Click the Primary Fields button to open the Selected Fields window. Either double-click on each field to include it in the joined table or use the Add All button to select all fields.*
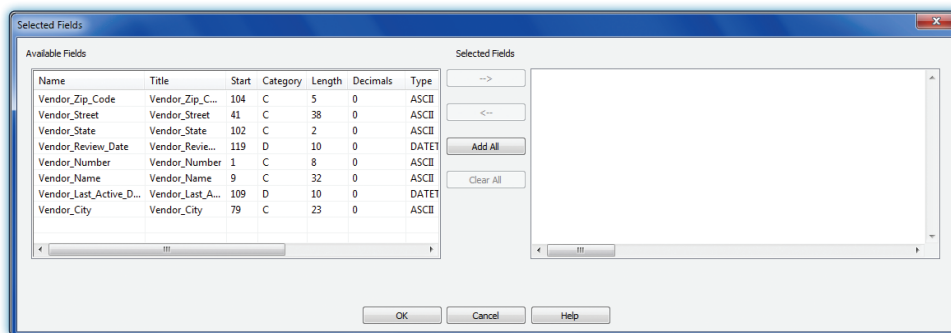
■▮▮ *Click OK to return to the Main tab.*

■▮▮ *Click the Secondary Field button to open the Selected Fields window. Either double-click on each field to include it in the joined table or use the Add All button to select all fields.*

■▮▮ *Click OK to return to the Main tab.*

■▮▮ *Click the Presort Secondary Table box.*

■▮▮ *Click the More tab.*
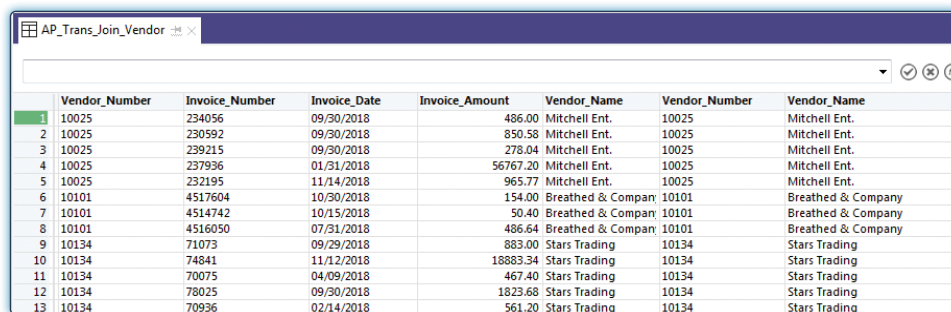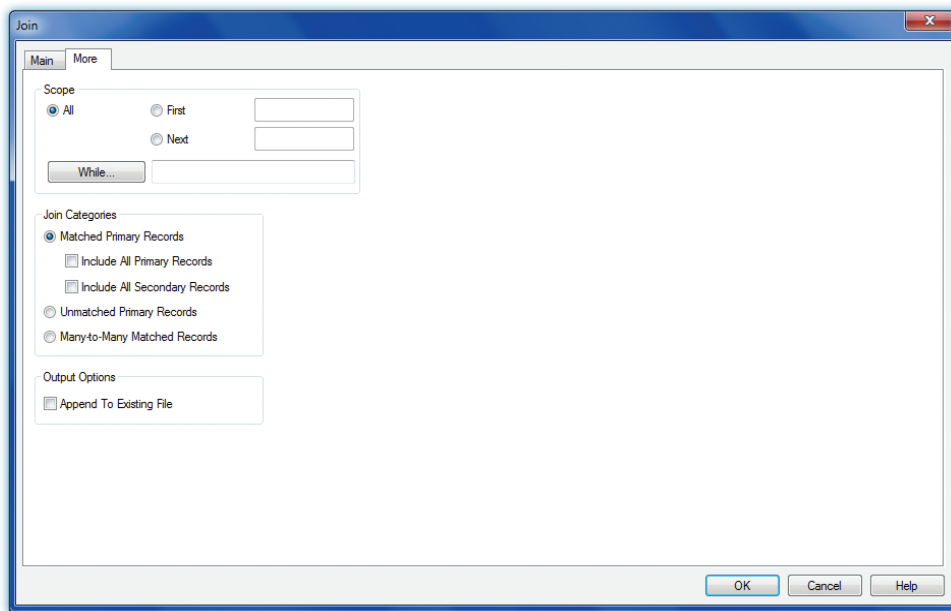
The next step is to select the appropriate Join option from the five options described on the following pages.

- *Use the radio buttons and/or check boxes to select the appropriate Join option. You may select only one of two radio buttons: Matched Primary Records for options 1 through 4 or Unmatched Primary Records for option 5. (Note: You will not use Many-To-Many Matched Records in this project.) If you decide on option 2 or 3, select Matched Primary Records and check the appropriate box — Include All Primary Records or Include All Secondary Records. If you decide on option 4, select Matched Primary Records and check both boxes.*

- *Click the Main tab to return to the main portion of the Join command dialog.*

- *Type a meaningful table name in the To box.* It is helpful to include at least part of each table name from the primary and secondary tables. An example of a meaningful joined table name is "SalesTrans_Join_InvMaster."

- *Click OK to join the two tables.*

Command Results

The Join command creates a new table that contains only the records for the joined table. Notice that there is a new table in the Overview window with the name of the new table you just created. In addition, the default view changes to the new joined table. You can move the columns of the joined table to manipulate the joined data for further analysis. An excerpt from a joined table follows.

AP_Trans_Join_Vendor

	Vendor_Number	Invoice_Number	Invoice_Date	Invoice_Amount	Vendor_Name	Vendor_Number	Vendor_Name
1	10025	234056	09/30/2018	486.00	Mitchell Ent.	10025	Mitchell Ent.
2	10025	230592	09/30/2018	850.58	Mitchell Ent.	10025	Mitchell Ent.
3	10025	239215	09/30/2018	278.04	Mitchell Ent.	10025	Mitchell Ent.
4	10025	237936	01/31/2018	56767.20	Mitchell Ent.	10025	Mitchell Ent.
5	10025	232195	11/14/2018	965.77	Mitchell Ent.	10025	Mitchell Ent.
6	10101	4517604	10/30/2018	154.00	Breathed & Compan	10101	Breathed & Company
7	10101	4514742	10/15/2018	50.40	Breathed & Compan	10101	Breathed & Company
8	10101	4516050	07/31/2018	486.64	Breathed & Compan	10101	Breathed & Company
9	10134	71073	09/29/2018	883.00	Stars Trading	10134	Stars Trading
10	10134	74841	11/12/2018	18883.34	Stars Trading	10134	Stars Trading
11	10134	70075	04/09/2018	467.40	Stars Trading	10134	Stars Trading
12	10134	78025	09/30/2018	1823.68	Stars Trading	10134	Stars Trading
13	10134	70936	02/14/2018	561.20	Stars Trading	10134	Stars Trading

Note: After the Join is completed the new table can be joined with another table if they both meet the six rules for a Join shown below.

Six Primary and Secondary Table Rules (Requirement 4)

Each of the following rules must be satisfied before running a Join command. When you are running Join more than once on the same two tables, it is not necessary to satisfy the rules after the first join. The way to satisfy each rule, except the first two, is shown in italics.

1. The two input tables must be in the same ACL project.
2. Only two tables can be joined at one time.

3. Both tables must contain a common field to be used to join the tables. *Use Table Layout in both tables.*

4. The key field must be the same length in both tables. *Use Table Layout in both tables.*

5. ⓕⓍ The key field in both tables should be tested for blanks. *Use a filter on the key field in both tables.*

6. The key field in both tables should be tested for duplicates. *Use the Duplicate command on both tables. If there are extensive duplicates use the Summarize command and save the summarized data into a new table.*

Five Join Options (Requirement 5)

The auditor must select one of the five join options each time the Join command is used. The following provides guidance in selecting the option. For each option, a figure is used to depict the records selected in the option. Understanding each of the five figures is critical to selecting the best option.

To illustrate each option the following example is used:

Primary Table – Monthly sales
Fields–Inventory item sold and unit selling price

Secondary Table – Inventory master file
Fields–Inventory item number and unit selling price

The common field used to join the two tables is the inventory item number field. In all cases the auditor selects the item number and the unit selling price from each table for the joined table.

Option 1, Matched Primary Records Join: Creates one output record for every primary table record that has a match in the secondary table.
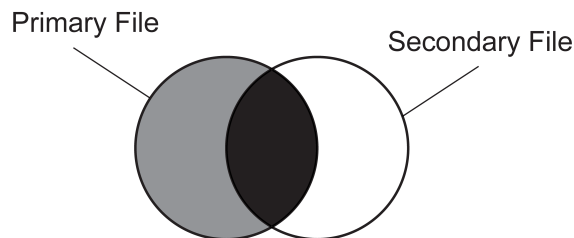

Matched Primary Records
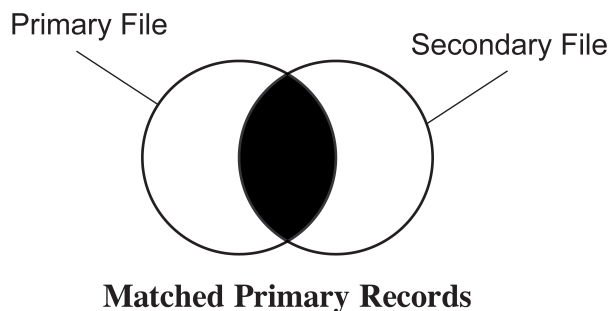
As can be seen from the diagram, the joined table includes inventory items included in both tables. The joined table also includes the selling price from both the primary and secondary tables for those items where there is a match. The auditor can create a filter on the new table comparing the selling prices to identify those with differences.

Also, as can be seen in the diagram, the matched primary records join will not include either of the following:

- An inventory item sold that was not in the master file.
- A master file inventory item that was not sold during the sales month.

For most audits, the absence of the first exclusion would be a serious audit deficiency.

Option 2, Matched Records, Includes All Primary Records Join: Creates one output record for every primary table record that has a match in the secondary table and an additional record for every unmatched primary table record.

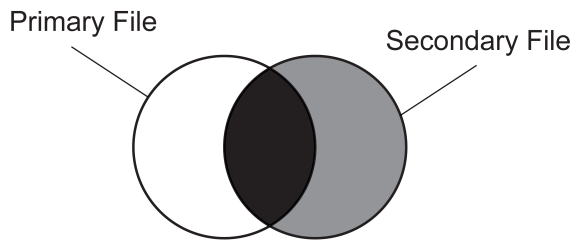Primary File   Secondary File

**Matched Primary Records
Includes All Primary Records**

For this example, as can be seen from the diagram, the joined table includes inventory items included in both tables (dark shading) plus the unmatched record from the primary table (light shading). The unmatched records are inventory items in the primary table that are not in the secondary table. These are of great interest to the auditor in this case because they represent items included as being sold for which there is no record in the master file table.

A filter on the new table comparing the selling prices will identify those with differences. Inventory items in the primary table that are not in the secondary table will show up as zeros in the joined table.

As can be seen in the diagram, this join would not include a master file inventory item that was not sold in the sales month. In many audits, this is the ideal type of join.

Option 3, Matched Primary Records, Includes All Secondary Records Join: Creates an output record for every primary table record that has a match in the secondary table, plus one record for every unmatched secondary table record.
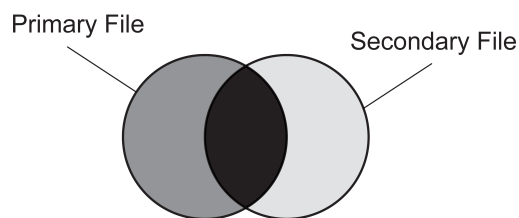
Primary File   Secondary File

Matched Primary Records
Includes All Secondary Records

For this example, as can be seen from the diagram, the joined table includes inventory items included in both tables (dark shading) plus the unmatched records from the secondary table (light shading). In most audits the auditor would not be interested in the inventory items in the master file not sold in a certain month.

A filter on the joined table comparing the selling prices will identify those with differences. Inventory items in the secondary table that are not in the primary table will show up as blanks or zeros, depending on the field type in the output table.

As can be seen in the diagram, this join will not include an inventory item sold that was not in the master file. For most audits, the absence of this exclusion would be a serious audit deficiency.

Option 4, Matched Primary; Includes all Primary; Includes all Secondary Join: Creates an output record for every primary table record that has a match in the secondary table, plus one record for every unmatched primary table record and one record for every unmatched secondary table record.
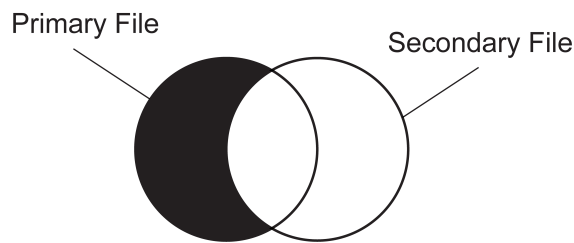
Primary File   Secondary File

Matched Primary Records
Includes All Primary Records
Includes All Secondary Records

For this example, as can be seen from the diagram above, the joined table includes inventory items and selling prices included in both tables (dark shading), the unmatched records from the primary table (medium shading), plus the unmatched records from the secondary table (light shading).

A filter on the new table comparing the selling prices will identify those with differences.

As can be seen in the diagram on the previous page, this join accounts for all inventory items sold and all inventory items included in the master file table. This is the safest type of join because it includes all matched and unmatched records from both tables. But, there may be a large number of records in which the auditor has no interest. Typically, for that reason, the auditor does not choose this option often.

Option 5, Unmatched Primary Records Join: Creates one output record for every primary table record that does not have a match in the secondary table.

Unmatched Primary Records

For this example, as can be seen from the diagram, the joined table includes inventory records in the primary table that are not in the secondary. This join is useful if the only objective is to test for items sold that are not included in the master file. If the auditor also wants to compare unit costs on both tables, this join would not be sufficient.