

[Tech Note 959](#)

Planning for Supply Chain Connector Import Efficiency

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Introduction

The Supply Chain Connector (SCC) feature is one of the most-used features in the MES product. The feature allows you to import and export data from external and third party programs, and then share data with the MES program.

This feature is sometimes misused and can cause issues with performance or data integrity if not used correctly. This *Tech Note* provides recommendations on what to consider before implementing the SCC functionality.

Application Versions

- Wonderware Manufacturing Execution Software 4.0 and later
- Supply Chain Connector 4.0 and later

How Supply Chain Connector Works

It is important to understand how SCC moves data from- or to - an external database or file. This will help you to determine the best way to set up and define the data.

There are two parts to SCC. The first part is the SCC definition screen located in the **Supervisor Module** (Figure 1 below).

| Schedule ID | Enabled | Trigger Type | Data Type | Format | Transport | Post Upd: |
|---------------------|-------------------------------------|----------------------------------|-------------------------------|----------------|----------------|-------------|
| AttributeCreate | <input type="checkbox"/> | File exists | Attribute | XML format | File | None |
| BomCreate | <input type="checkbox"/> | File exists | BOM Items | XML format | File | Delete file |
| BOMVersionCreate | <input type="checkbox"/> | File exists | BOM Versions | XML format | File | Delete file |
| Link | <input type="checkbox"/> | Manual | Process / Item Links | XML format | File | None |
| LinkProcessCreate | <input type="checkbox"/> | File exists | Processes | XML format | File | Delete file |
| MaterialCreate | <input type="checkbox"/> | File exists | Items | XML format | File | Delete file |
| WOAttributes | <input type="checkbox"/> | Completed or failed SCC schedule | WO Attributes | XML format | Database table | Delete file |
| WorkOrderCreate | <input type="checkbox"/> | File exists | Work Orders (With Process) | XML format | File | None |
| WorkOrderCreate2 | <input type="checkbox"/> | Completed or failed SCC schedule | Work Orders (Without Process) | XML format | File | Delete file |
| xAttributeCreate | <input checked="" type="checkbox"/> | Completed SCC schedule | Attribute | Database table | Database table | Update Sou |
| xBomCreate | <input checked="" type="checkbox"/> | Completed or failed SCC schedule | BOM Items | Database table | Database table | Update Sou |
| xBOMVersionCreate | <input checked="" type="checkbox"/> | Completed or failed SCC schedule | BOM Versions | Database table | Database table | Update Sou |
| xCreacionMateriales | <input checked="" type="checkbox"/> | Table data exists | Items | Database table | Database table | Update Sou |
| xLinkProcessCreate | <input checked="" type="checkbox"/> | Completed or failed SCC schedule | Process / Item Links | Database table | Database table | Update Sou |
| xWOAttributes | <input checked="" type="checkbox"/> | Time interval | WO Attributes | Database table | Database table | Update Sou |
| xWorkOrderCreate | <input checked="" type="checkbox"/> | Completed or failed SCC schedule | Work Orders (With Process) | Database table | Database table | Update Sou |
| xWorkOrderCreate2 | <input checked="" type="checkbox"/> | Completed SCC schedule | Work Orders (Without Process) | Database table | Database table | Update Sou |

FIGURE 1: SUPERVISOR VIEW OF SCC DEFINITION SCREEN

This screen with the related tabs allows for how the data is going to be either imported to the MES database or exported to 3rd party software. Each one of these defined procedures is referred to as a schedule (import schedule, Export Schedule).

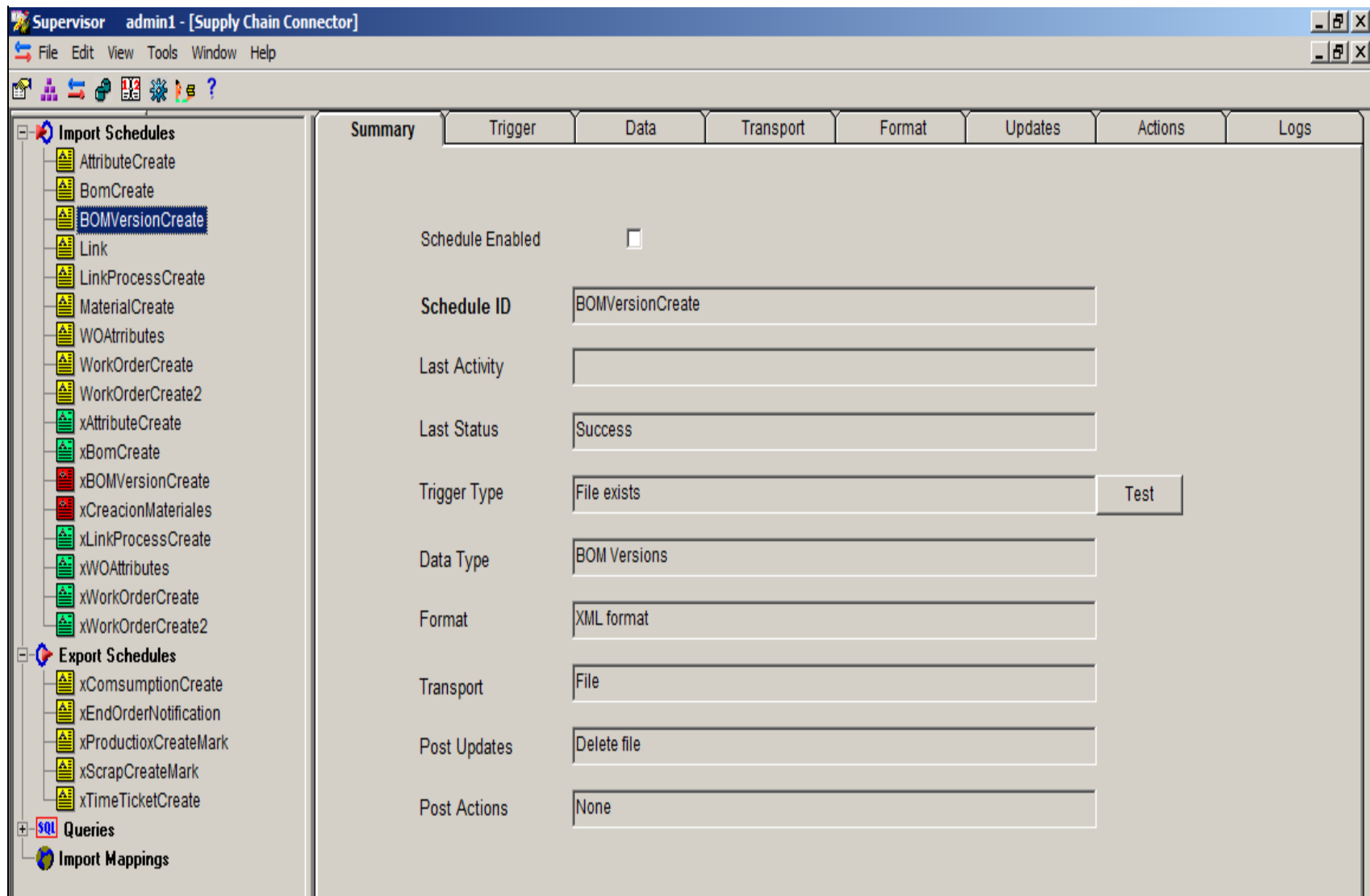


FIGURE 2: DATA SCHEDULES

The second part of SCC is what actually runs the schedules. This part is done by the MES Service. One of the jobs of the "minutely task" in the MES services is to check if there are any Import or Export schedules that need to be executed.

- When a schedule needs to be started, the task is passed to the Middleware.
- The Middleware takes over to determine if all business rules are being followed.
- If not, generates an error and records it in the SCC log.

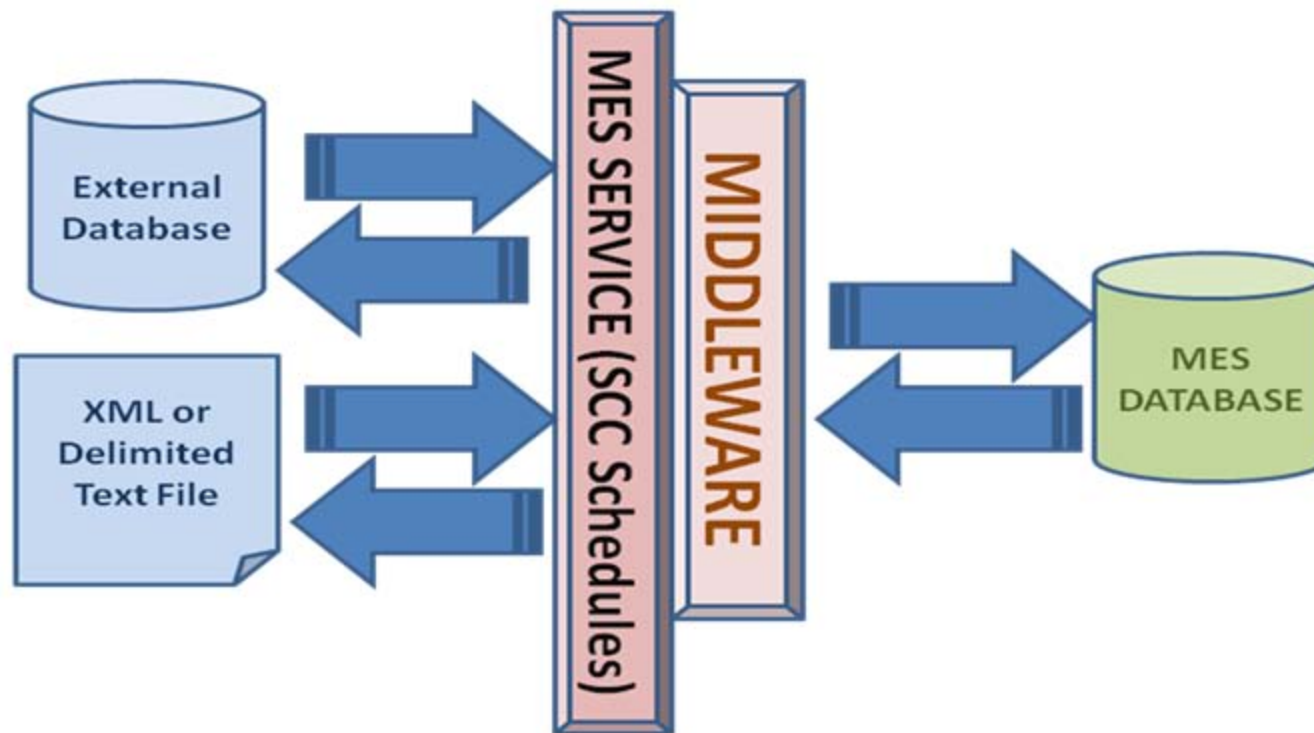


FIGURE 3: SCC SCHEDULES INTERACTIONS

Considerations When Defining the Schedules

Custom Tables

When dealing with large amount of data it is good to consider a custom table where data from the 3rd party software is written and SCC then can read it from the table.

This is a wise choice for two reasons.

- First, records coming in can be validated to assure that the data structure is correct and that it has been exported.
- The second is that the data can be marked as processed assuring that all the records have been written to the MES database and if there are any errors then that record would be easily identified.

The rule of thumb should be that if you are processing small amounts of data, a File import works very well. The file transports take very little time to set up and to maintain.

Duplicate Records

Using SCC incorrectly can drastically affect performance. One of the big causes of performance issues when Importing SCC records is duplicate records and how they are handled.

SCC allows you to define how duplicate records are to be processed. This is done in the **Data** tab of SCC.

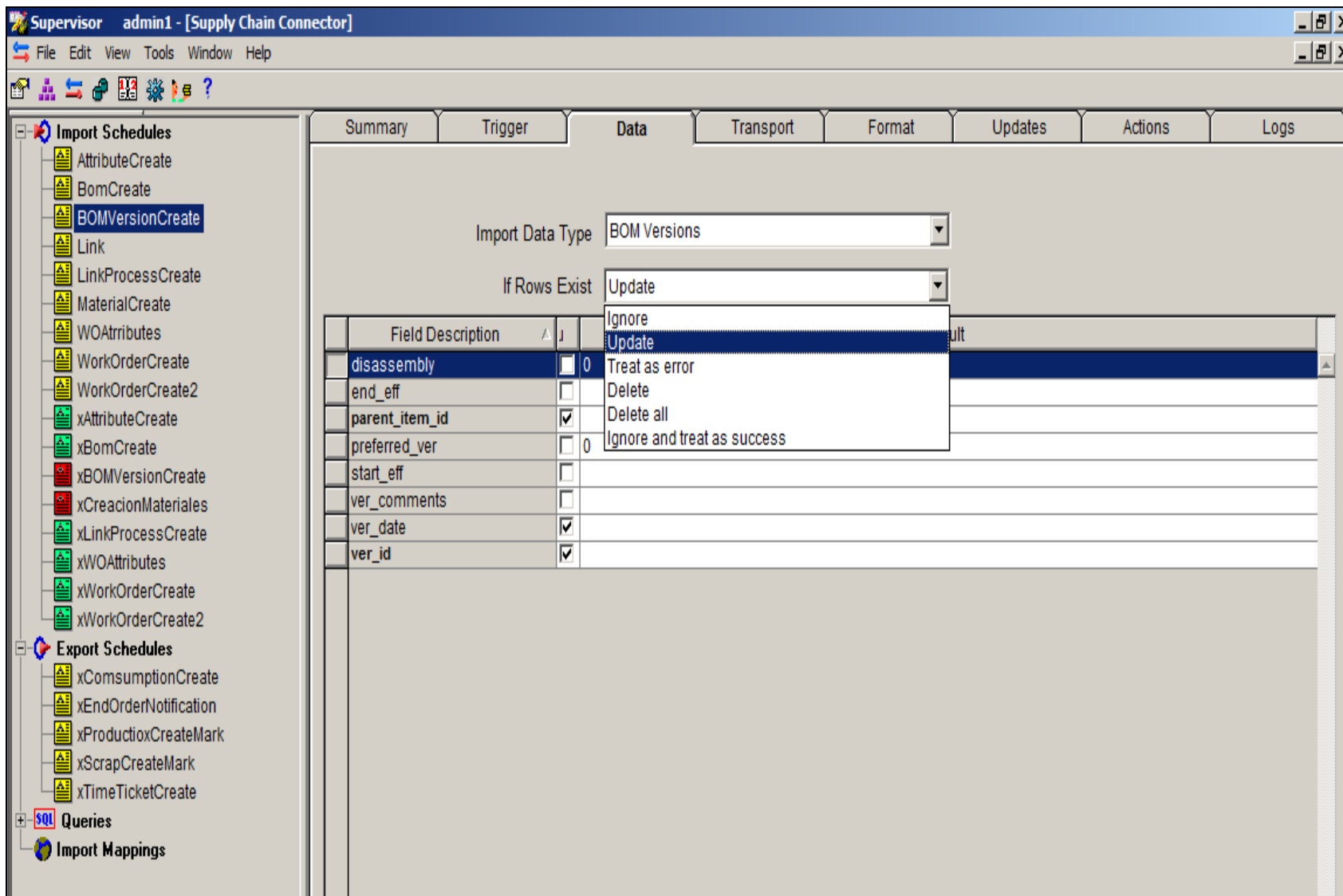


FIGURE 4: DUPLICATE RECORDS HANDLING OPTIONS

The best practice for duplicate records is to stop them before they reach SCC. This can be done by flagging processed records in a custom table when completed before they are brought into the schedule. When a record is updated in the MES database it can take longer than just a standard add.

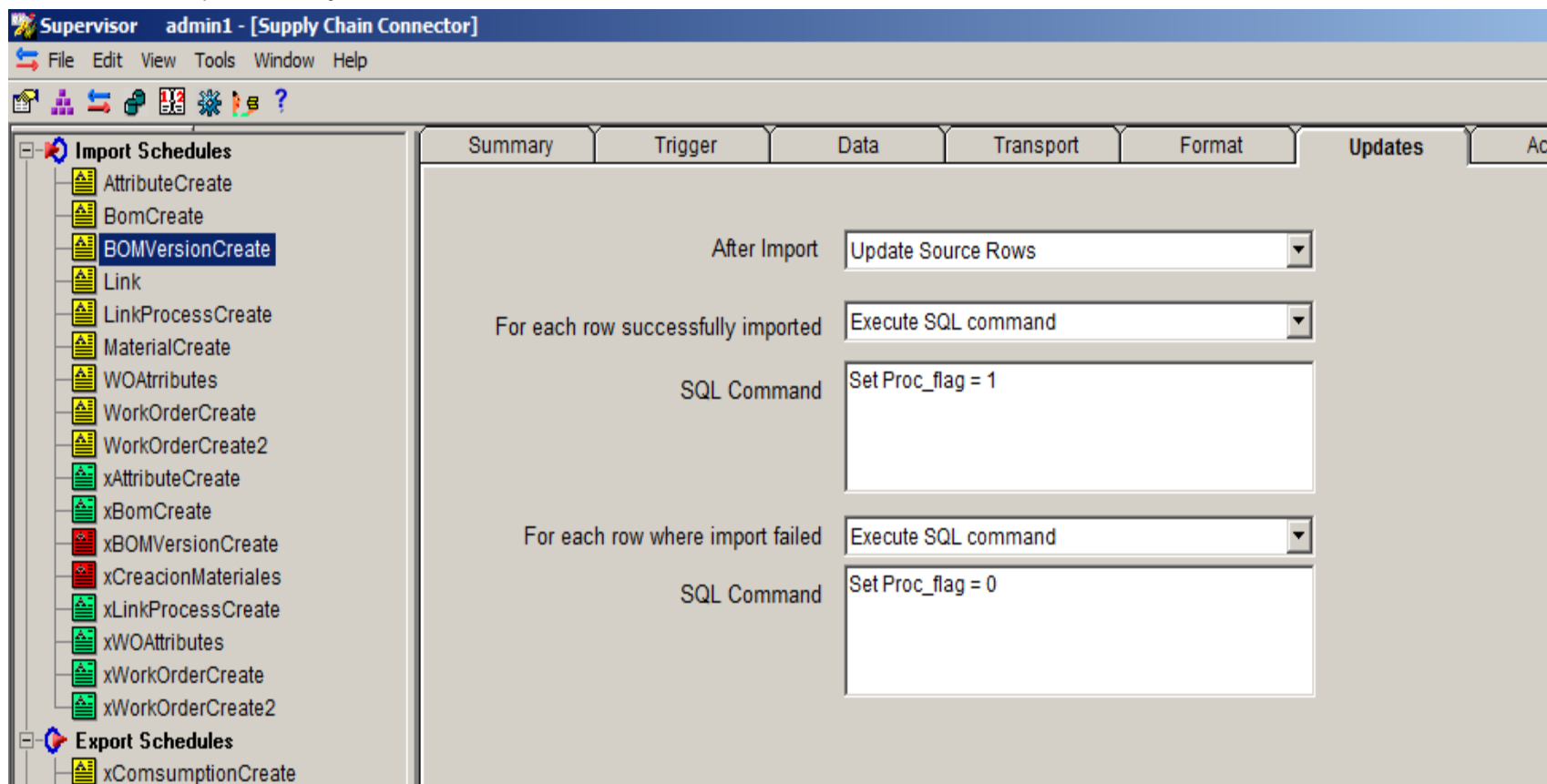
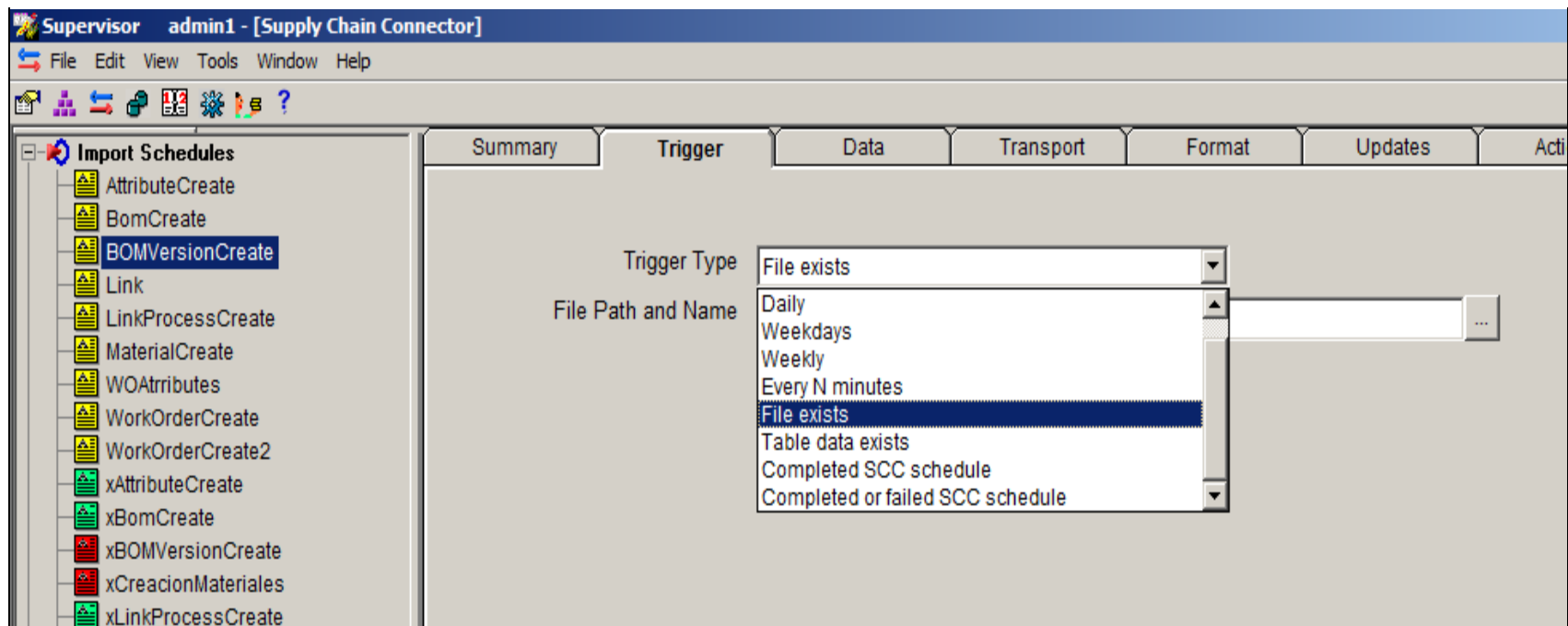


FIGURE 5: FLAGGING PROCESSED RECORDS IN A CUSTOM TABLE

SCC allows for records to be updated *after* they are processed. This is a good way to maintain a "processed" field within the custom database to assure accuracy.

Number of Records Per Cycle

MES Services checks every minute if a Schedule needs to be executed. When defining a schedule there are several options for when the schedule is executed. This is done through the **Trigger** tab of SCC.



Most of the time a time-based trigger will be selected, but you also have an option to trigger the Schedule when another schedule has completed (**Completed SCC schedule**). This can be a very helpful trigger type, but linking many schedules together can cause performance issues. You should make sure that the linked schedules has suitable amount of time to finish before a second set of schedules is executed.

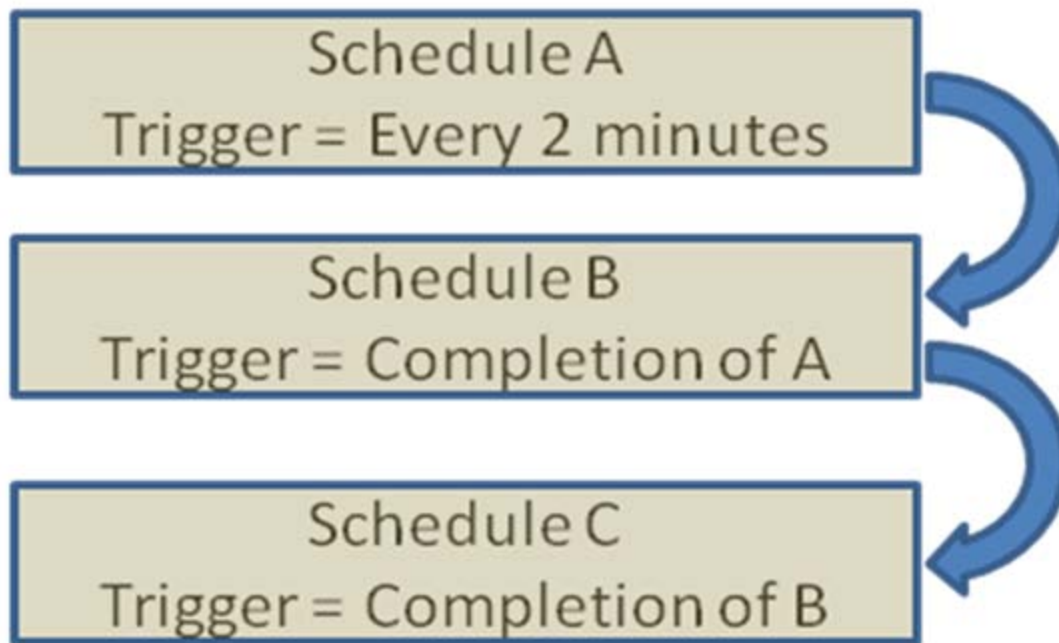


FIGURE 7: ALLOW TIME FOR SCHEDULES TO COMPLETE

In this example Schedule A fires every 2 minutes and Schedule B will start on the completion of Schedule A.

What you need to plan is that the amount of data being processed in Schedule B takes *less* time than the completion of Schedule A + **2 minutes**. This ensures that Schedule A does not finish a second cycle before Schedule B, while Schedule B is still processing data from the last cycle. This scenario can cause a bottleneck and problems with data migration and MES performance.

J. Stella

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