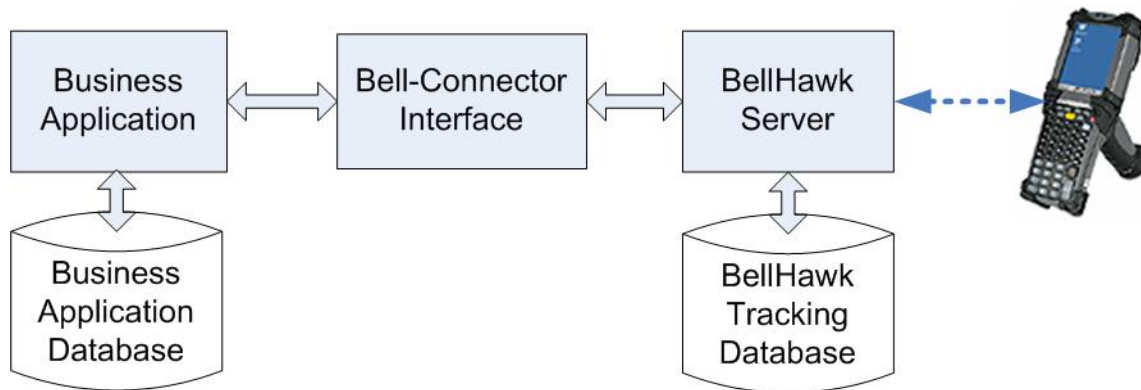


Data Exchange with BellHawk



Introduction

This document summarizes the data that is normally exchanged with BellHawk when it is used in conjunction with a business Accounting or ERP system.

BellHawk Systems' Bell-Connector™ Interface can be used to communicate with the database in the business application either directly using ODBC or through the business system's API or XML interface. Bell-Connector periodically monitors changes in the business system's database and automatically imports required data into the BellHawk database. It also monitors changes, such as new transaction records, in the BellHawk database and exports these to the business system.

Bell-Connector handles pre-requisite chaining. That is, it makes sure that it transfers data needed by an update record for reference in the target system before transferring the update record itself. BellTran also handles data format conversions and can merge data from multiple sources and update multiple target tables as a result of a data transfer.

The goal of both these interfaces is to make sure that the systems work seamlessly together without needing manual intervention to move data between the systems (unless so desired).

Generally all the financial information is maintained in the business application and the detailed information about materials is maintained in the BellHawk tracking system. If the business application has materials requirements planning capabilities, then production jobs are initiated in the business application, otherwise they are initiated and tracked in the BellHawk system.

Setup Data

This data is typically setup in one system and exported to the other. Usually one system is treated as the master and the other as the slave for a specific type of data, depending on which system has the richest data representation for the data object in question.

After the data is exported from one system it may have additional data added in the other system. Also, some data objects may be entered on a one-time basis in BellHawk and not exported to the business system.

Data objects in this category includes:

1. Item Master Records
2. Measure Types
3. Units of Measure
4. Part Categories (such as Raw, Finished Goods etc.)
5. Material Types (Metal, Plastic etc.)
6. Employees
7. Departments
8. Shifts
9. Customers
10. Vendors

BellHawk keeps track of materials in very specific inventory locations, such as the bin, shelf, rack and aisle where something is stored. Most business systems use more generic locations, such as "Warehouse" and "Production". Typically locations are setup in BellHawk with each location record in BellHawk having the corresponding generic location in the business system.

BellHawk tracks the actual cost for all materials it receives and the price at which it ships items. It also has a standard cost and price for each item master part.

All transaction exports that involve a change in inventory level for a part include the item number and change in quantity as well as the BellHawk location, the BellHawk Facility and the business system's location code.

Inventory Tracking Data

BellHawk exports the following transactions.

1. Receive from vendor into inventory against vendor PO
2. Enter into inventory at standard cost with reason code
3. Withdraw from inventory at current cost with reason code
4. Move to new location, facility and business system location
5. Adjust inventory quantity with reason code at current cost
6. Ship to customer from inventory against customer ship order.

Receive against Vendor PO

Vendor/Supplier Purchase Orders and their line items can be entered in either system and exported to the other.

BellHawk provides a separate transaction for receive against vendor PO that references the PO and PO line against which it was received. Items are received into inventory and tracked at actual cost.

Vendor address and ship to address information can be included in the PO header and/or can be exported to BellHawk as separate setup data objects. Similarly recommended shipper can be entered as a text field in the PO header or can be exported as a separate data object that is referenced in the PO header.

PO transactions from BellHawk are not normally exported immediately to the business system, so as to allow for any corrections or adjustments to be made. Then, when all needed adjustments have been made, the transactions can be made available for export.

BellHawk also handles receipt and tracking of customer owned material but typically does not report these transactions to the business system as they do not impact the accounting function.

Ship against Sales Order

Customer sales orders and their line items can be entered in either system and exported to the other.

BellHawk provides a separate transaction for ship against customer SO that references the SO and SO line against which it was shipped. Items are shipped from inventory at the price on the SO line item.

Customer address information can be included in the SO header and/or can be exported to BellHawk as separate setup data objects. Similarly recommended shipper can be entered as a text field in the SO header or can be exported as a separate data object that is referenced in the SO header.

Shipment transactions are made available for export when the materials are recorded as being shipped as in a pick–shipped transaction in BellHawk or a close loading dock doors action. These are usually verified and corrected, if needed, before being exported to the business application.

Production Transactions

Routes and bills of materials to make item master parts (or otherwise transform materials) can be entered into the business system and exported to the BellHawk or they can be setup directly in BellHawk. Jobs/Work orders can be initiated in BellHawk or the business system. Work orders from the business system can have their Bills and Routes specified as part of the export.

BellHawk exports the following transactional data relative to jobs:

1. Record material in to job step with quantity by part at actual cost
2. Record material returned from job step with quantity by part at actual/standard cost
3. Record material out from job with quantity by part at standard cost
4. Material expended on job step by part with quantity at actual cost

5. Labor expended on job step with hours at rate for employee
6. Resources/machine time expended on job step with hours at rate for resource
7. Job closed with residual WIP quantities.

BellHawk tracks the amount of materials used on a job/batch and adds their value to a WIP amount for the job, which it stores along with the job data. It also tracks the labor used, at the specified cost rate for the employee, and the resource/machine time used, at the specified rate/hour for the resource.

When materials are produced by the job, it records these into inventory at standard cost and also reduces the WIP amount for the job by the expected cost of producing the quantity of finished parts recorded out. This is based on the route for the finished part, using standard cost for the component parts, labor classes and resource classes specified for the route step.

The WIP amount for the job is based on actual costs. It is reduced by the expected cost of the material produced. At the end of the job, the difference between what the job actually cost and the expected cost is the residual amount in the job WIP amount. This is reported out to the business system as a manufacturing variance in the Job Close transaction.

As raw material is scanned into job steps and returned from job steps, this can be used to adjust inventory in the business system. The cost of material consumed should be added to a WIP account in the accounting system to avoid the "black-hole" effect of inventory value disappearing just because it was scanned into a job.

In general, it is preferable to wait until the end of the job step and use the net amount consumed transaction, which has been approved by the supervisor after he has made any needed corrections for data entry mistakes by his people. This does mean that the consumed material is still shown as available in inventory in the business system until the end of the job step. But if the business system is being used to capture costs and BellHawk is being used for real-time operational tracking (which is usually the case) this will normally cause far less problems than errors made in immediately recording erroneous material transactions.

At the end of each job step, after approval by the supervisor, the material, labor and resource time and cost can be imported by the external system and used to adjust the WIP account.

As materials are reported out from the job, they can be added to inventory. Also this transaction gives the corresponding cost by which to reduce the WIP asset account to account for the materials produced.

At the end of the job, when the supervisor deems the job complete in BellHawk, the Job Closed transaction can be used to zero out any residual cost attributable to the job in the WIP asset account and to add any discrepancy to the manufacturing discrepancy expense account.

The benefit of this approach is that the asset of value of inventory cleanly flows into WIP assets and then into finished goods with a proper realization of the "profit" made by manufacturing the goods for less than their standard cost or the loss made by excessive costs in the manufacturing discrepancy account.

All of the above assumes the use of costs and accounts tracked in BellHawk. Alternately BellHawk can simply be used to record the receipt, consumption, production and shipment of materials plus the labor and resource hours consumed on job steps. Then the data in the same transactions shown above can be used to perform all the cost calculations in the accounting system.

This can be beneficial, for example, if cost tiers are being used to account for the value of raw materials received at different values. BellHawk tracks the cost of the actual material consumed on a job or shipped to a customer whereas many accounting system want to account for this on a FIFO basis, irrespective of which materials are actually consumed.

Commentary

BellHawk has a very powerful set of features for integrating the data collected using wireless mobile computers, barcode scanners, RFID equipment and process control equipment with a wide range of accounting and ERP systems.

BellHawk provides an extensive middle-ware layer that is able to translate between the operational data captured in processing plants and warehouses and the business processes being tracked by accounting, ERP, CRM and human resources in the front-office.

As well as providing the data capture, middle-ware and business process interface software, BellHawk also provides consulting and software customization services to ensure that the resultant systems work seamlessly together with minimal human intervention.