



BellHawk Software Product Line Data Sheet

The BellHawk® product line consists of three base systems as well as a number of optional modules, enabling BellHawk to be configured for each client's specific requirements.

Base Systems

1. **BellHawk Material Tracking System (MTS)** contains all the features needed to do License-Plate-Number (LPN) tracking of raw, intermediate, and finished products in multiple geographically distributed warehouses, manufacturing plants, in-transit in vehicles, and at field sites.
2. **BellHawk Job Tracking System (JTS)** tracks batches of material as they progress through multiple manufacturing, processing, or repair operations on a work order. Can also captures labor expended on each operation as well as piece work quantities.
3. **BellHawk Real-Time Job and Materials Tracking System (JMITS)** incorporates both MTS and JTS plus adds the ability to track the transformation of materials through a sequence of work-order operations. Captures materials traceability data as raw material are transformed into finished good, including tracking work-in-process and its use on multiple jobs. Also captures cost data for making products by incrementally adding up the cost of labor and materials used in their manufacture.

Users can start with an JTS or MTS systems and subsequently upgrade to a JMITS system, simply with a license upgrade. Please see separate data sheets for each of these base systems and the options listed below for more details.

Warehouse Management Options

These optional modules can be individually added to the BellHawk MTS or to JMITS systems. Or, more usually, clients use the WMS (Warehouse Management System) bundle, which includes all the modules listed below, at a substantially lower cost.

Purchase Order Receiving Module (PO): Enables the entry or import of supplier purchase orders (POs) or advanced shipment notices (ASNs) for the receipt of customer owned materials. Produces POs that can be sent to suppliers by mail or Email and also barcoded receiving documents. Tracks and records receipt of materials against PO/ASNs. Note that simple receiving of materials is included in the base BellHawk MTS system.

Ship Order Module (SO): Enables the entry or import of ship orders, which are typically based on customer sales orders. This module includes generation of make-to-order manufacturing work orders based on the ship order lines. It can generate a barcoded picking sheet to record picking and packing of materials for a customer order when used with the PICK module. Please note that simple shipping of materials is included in the base BellHawk MTS system.

Picking Module (PICK): Enables generation of material picking and movement orders for ship orders, work-order operations, and material move tickets. Supports both self-directed and

system-directed modes of picking. Produces and uses a barcoded picking sheet for recording self-directed picking. Also enables material handlers to easily find materials and pick oldest materials first. System directed picking uses a tablet screen to direct material-handlers to move to different zones in the warehouse, and then directs them to pick all the needed materials in each zone. In both cases, BellHawk warns the material handler if they are trying to pick the wrong or potentially defective materials. It also automatically adjusts the picking instructions in real-time, for other material handlers, according to the amount of available inventory.

Shipping Dock Option (SDO): Tracks loading of customer orders onto trucks/trailers at a shipping-dock. Warns material handlers if they attempt to load pallets or other shipping containers onto the wrong truck. Gives shipping supervisors visibility of what has been loaded. Sets up data to generate Bills of Lading and Advanced Shipment Notices. Ideal for make-to-order and engineer-to-order organizations that need proof of what was shipped to customer sites and when. Requires the use of the SO and PICK options.

Inventory Auditing Module (IAM): Enables blind and semi-blind inventory taking for financial audit purposes without shutting down operations. Tracks material that has moved. Produces discrepancy reports and spreadsheets. Tracks follow-up discrepancy resolution by materials manager. Please note that non-blind inventory checking and adjustment, such as would be used for cycle counting, is included in the base BellHawk MTS.

Materials Traceability Options

Materials Traceability (TRACE): Enables users to interrogate materials history data captured by BellHawk JMTS to trace what materials went into each product, enabling trace back from defective finished products to source components and their suppliers. Also gives the ability to trace forward to find all containers of products that may be defective, the customers to whom they were shipped, and the remaining materials in company warehouses. Enables rapid investigation of the source of contamination or defects and the minimization of resultant recalls.

Quality Assurance Option (QC): Tracks the quality control status of materials from the time they are received to the time finished products are shipped. Prevents the use of materials that have not passed QC inspection in products or their movement to non-QC inspection areas. Tracks reason-codes for quality failure and handles statistical inspection of lots. Also tracks material that needs to be reviewed into MRB locations. When used with JMTS adds the capability to integrate test operations, with data capture, which result in pass or fail of tested units.

Operations Support Options

While all of these optional-modules work “out-of-the-box” they are often customized to meet the specific operational and decision support requirements of each organization.

Project Management (PROJ): Tracks jobs/project activities from design, through manufacture and assembly, packing and shipping, as well delivery and usage of materials at construction sites. Allows purchased and produced materials, as well as work orders, to be assigned to projects. Warns users if they attempt to use materials for wrong project or if they attempt to mix materials from different projects. This is very important for Department of Defense and other Engineer-to-Manufacture organizations. Provides project level reporting of PO, Work Order, and Ship Order status as well as inventory and work-in-process status.

Work Center Scheduling (WCS): Ideal for make-to-order or short-run, quick-turn manufacturers. Shows employees in each work center which work orders are waiting for them to work on, the date scheduled and the date wanted and the priority order for work orders. Employees or teams can then select the most important work order and the software assigns it to the employee or team. This helps ensure that employees are always working on the most important work order in their work center. This module also gives production supervisors the ability to view and to adjust the schedule by changing work order priorities and wanted dates.

Available Inventory Prediction (AIP): Tracks and predicts available inventory taking into account materials in stock, on order and scheduled to be produced and consumed on work orders. Typically used with SO and PO modules. This performs the complex calculations needed for materials requirements planning (MRP) in real-time but leaves the decisions as to what parts to make or materials to order to the user. This makes AIP ideal for make-to-order manufacturers and other industrial organizations that must respond quickly to customer demands.

Demand Driven Materials Requirements Planning Module (DRP): This provides real-time incremental demand-driven materials requirement planning capabilities (MRP) for make-to-order and small batch manufacturers, as new orders arrive. It enables work orders to make parts, or purchase orders to buy parts, to be automatically generated, under manual control, from ship order lines based on the predicted availability inventory of needed parts. If parts are to be made, then DRP uses the bills of materials for these parts to be used, under manual control, to create more work orders or purchase orders for required parts. This can be continued recursively until all the required work orders or purchase orders have been created.

Equipment Related Options

Equipment Tracking Option (ETO): This module tracks the status of equipment, machines, and/or production lines in real time. Also tracks the setup, run, down, and cleanup time for equipment, product lines and machines. It also tracks reason codes that equipment is down. This module includes allocating labor and equipment time, and materials consumed across the various work orders that are running at the same time on a piece of equipment or production line to get an accurate measure of production costs.

Barcode Label Printing (TAG): While BellHawk will work with preprinted rolls of LPN barcodes it is often needed to produce labels that also contain human readable information and other barcodes in addition to the LPN tracking barcode. This module adds the ability to print barcode

labels on demand using data stored within the BellHawk database, using user-defined rules. It can also preprint LPN tracking labels with human readable information for subsequent attachment to containers and parts. TAG code is normally installed in a Windows workstation or IIOT device in each facility so that it can print labels at high speed on barcode label printers in that facility while getting print requests from BellHawk located in a remote data center.

Weighing Scale Option (WSO): WSO runs as a background process in each Windows Workstation to which weighing scales are attached through an RS232 interface. WSO captures each stable weight of the weighing scale and relays it to BellHawk running in a remote data center. When weight inputs are required, in a transaction, BellHawk automatically inserts the weight into the appropriate data input box. Please note that the code that runs in the workstation or IIOT device may need customization for specific weighing scales.

RFID Option (RFID): Provides all the .Net software components needed to implement an interface to the electronic controller for an RFID portal such that the location of a container or serialized item is updated in BellHawk whenever it moves through an RFID portal or "Flashlight" zone. This is typically used with combination barcode and RFID tag labels, which can be printed out by the TAG module on a combination printer.

Please note that TAG, WSO, and RFID require separate Windows IOT based computers to run the software that interfaces between the BellHawk software and the physical label printing, weighing scale, or RFID portal devices. Also, each computer running a copy of TAG, WSO, and the RFID software requires a device access license (DAL) so that it has its own unique login to the BellHawk server, just like any other device.

MilramX Lite

A version of MilramX, named MilramX Lite, can be run on the same dedicated Windows IIOT or Windows Server computer as BellHawk. This version, unlike the Enterprise Version of the MilramX software does not have its own control and monitoring interface, but rather these capabilities are provided through the BellHawk system administrator screens.

This version of MilramX is limited to providing communications between the BellHawk database and other systems that are accessible over the local area network or through a web services interface over the Internet.

BellHawk Login Licensing

In addition to licensing the use of a base BellHawk system, and any required options, clients are required to license the use of the following:

Client Access Licenses (CALs) which are logins to the BellHawk website which are needed for operations manager/staff user logins. These CALs enable operations managers to do tasks, such as setting up work, picking, receiving and shipping orders, as well as running reports and generating Excel exports for performance analysis, which are not available to operators who use shared devices.

Device Access Licenses (DALs) which are for device logins. One login is required for each device, such as a PC, tablet or laptop equipped with an external barcode scanner. This also includes mobile computers and tablets equipped with integral barcode scanners. Device logins

are also required for external computers communicating directly with the BellHawk server computer through one of its external interfaces.

Each data collection device license can be used by an unlimited number of operators for transactional data entry. In this case, operators identify themselves by scanning barcodes on their badges when they perform transactional data entry.

View-only Client Access Licenses (VCALs) which are logins for view-only users of BellHawk, including customers and suppliers, to enable these users to selectively see the status of projects, jobs, customer orders, and inventory and to generate reports.