

SHARK WMS Hosted

Warehouse Management System

SHARK Cloud is a hosted WMS solutions supporting both static storage like ordinary shelving and pallets, as well as automation equipment like vertical lifts and conveyors.

The software is provided as a cloud service and paid quarterly. The number of users and options are flexible from 1 user and upwards and covering a broad range of requirements.



SHARK is designed from the idea that huge saving in cost and time can be achieved by optimising the performance of the warehouse by minimising the manual work that has to be done, this by finding optimal storage locations for each article, by controlling the sequence of orders to pick and by supporting advanced equipment that improves the speed. To achieve this, SHARK is based on advanced algorithms that optimise location usages, picking speed and space utilisation, all hidden for the normal user but still working to improve the working speed. Another important issue is the quality of the warehouse operations, it is expensive to pick the wrong article and therefore SHARK supports control functions, like barcodes, pick-to-light systems and other techniques that ensures the right article at the right place.

The system is very easy to use for the normal operator, fast to learn and with intuitive functionality, so new operators can be trained to the system with a short introduction.

SHARK supports work processes in the warehouse like:

- Goods Reception.
- Pick and put-away in shelves using PDAs or truck terminals.
- Pick and put-away in automats.
- Consolidation and shipment.
- Stock counting.
- Internal replenishment.
- General administration.

SHARK is special suitable for control of automated storage like vertical lifts (automats), where a long list of built-in functions optimises the picking speed, storage utilisation and support of advanced functions. SHARK's batch picking (picking more than one order at a time), improves picking speed dramatically, because waiting time can be reduced to a minimum or even removed completely. This is because SHARK optimises the sequence of order lines and orders, so the equipment can be operated as fast as possible. All equipment are operating in parallel, so

while the operator picks in one automat, the other machines are busy retrieving the next articles. As a part of the system configuration, it is possible to define walking distance between the automats, combining this with a calculation of the time it will take to retrieve a specific tray, SHARK is able to direct the operator in the most efficient way.

FEATURES

List of supported features.

Article Database

The master data for all articles are kept in the Article Database.

Article Master Data: Article number, alternative article number, description, dimensions, weight, preferred location types, EAN code, storage strategy (fixed, floating, FIFO), ABC (picking rate information), article groups.

Owner: Multiple article owners supported for third-part logistics. Articles with the same article number, but different owners will be kept separated.

Search function: Search for article by number, alternative number, description or EAN code.

Functions: Create new, delete, search, and change.

Batch number: Articles can be saved and retrieved with batch (lot) numbers. A date is also assigned to the batch number.

Serial numbers: Registration of serial numbers when picked and stored.

Replenishment Information: For each article, it can be specified in what location types the article should go, the quantity that fits on each location type and in which zones the article should be stored. Quantities can be calculated from the physical dimensions. For each zone minimum stock, replenishment quantity and maximum can be specified.

Package Size Information: Support for different package sizes.

Location Management

Location management is how SHARK manages the physical space of the warehouse.

Strategy: Fixed, floating (chaotic), FIFO (First-In First-out). A default value is set for the system, but the strategy can be set individually for each article.

Finding locations: Can either be automatically controlled where SHARK finds the optimal location or user controlled.

Barcodes: Barcodes can be used on locations, articles, etc.

Put-away (floating): SHARK suggest a new location at put-away. The operator may override the suggestion or split the operations on more than one location if required.

Put-away (fixed location): SHARK will always suggest the same location, this can be overridden by the operator.

Put-away (FIFO): SHARK will always suggest a new location to avoid mixing articles from different batches on the same location.

Zones: Multiple zones supported.

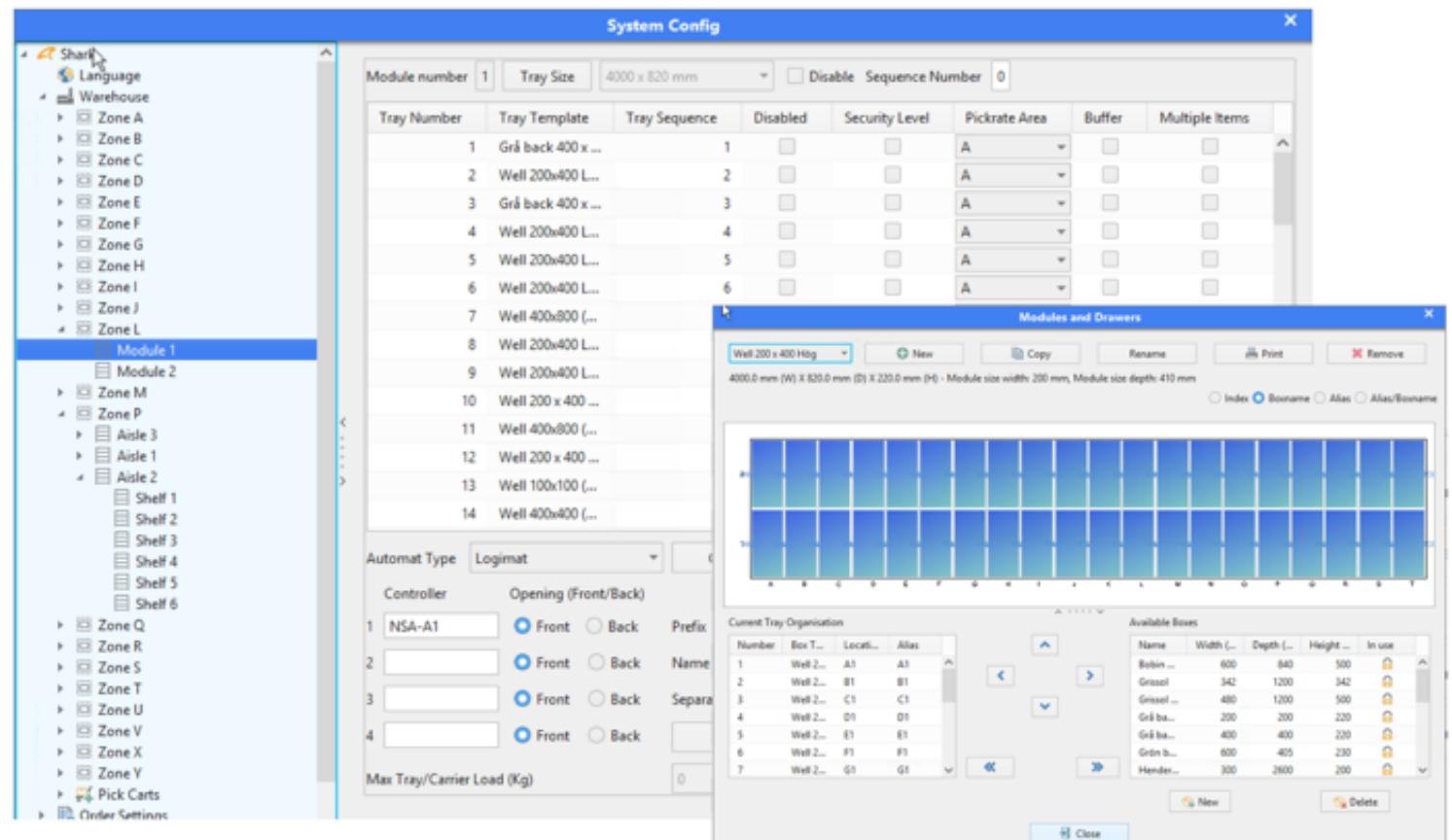
Location naming: max 7 levels.

1. Zone name - automat - tray - location on tray (row, col).
2. Zone name - aisle - section - shelf - location on shelf (row, col) Formatting rules can be defined to set the exact location address format. Example: A3-15-D3 (Zone A, Automat 3, tray 15, location in tray: D3).

Layout editor: A graphical environment/configuration tool makes it easy to define the warehouse layout.

Tray layout (vertical lifts): Default tray types are created using a graphical editor. This makes it easy to create even complex layouts.

Location concept: Each article type (SKU) on unique location. Each article type can be put on more than one location. In case batch/lot numbers are used, there can be stored none or one batch number per location. Mixed locations with multiple SKUs on individually locations is possible, but space management must then be handled manually.



Configuration of locations with graphical editor for tray layouts.

Manual Transactions

Functions for pick and put-away without orders and stock adjustment. This are all transactions performed without control from a host system.

Search: Find an article from number, description or location.

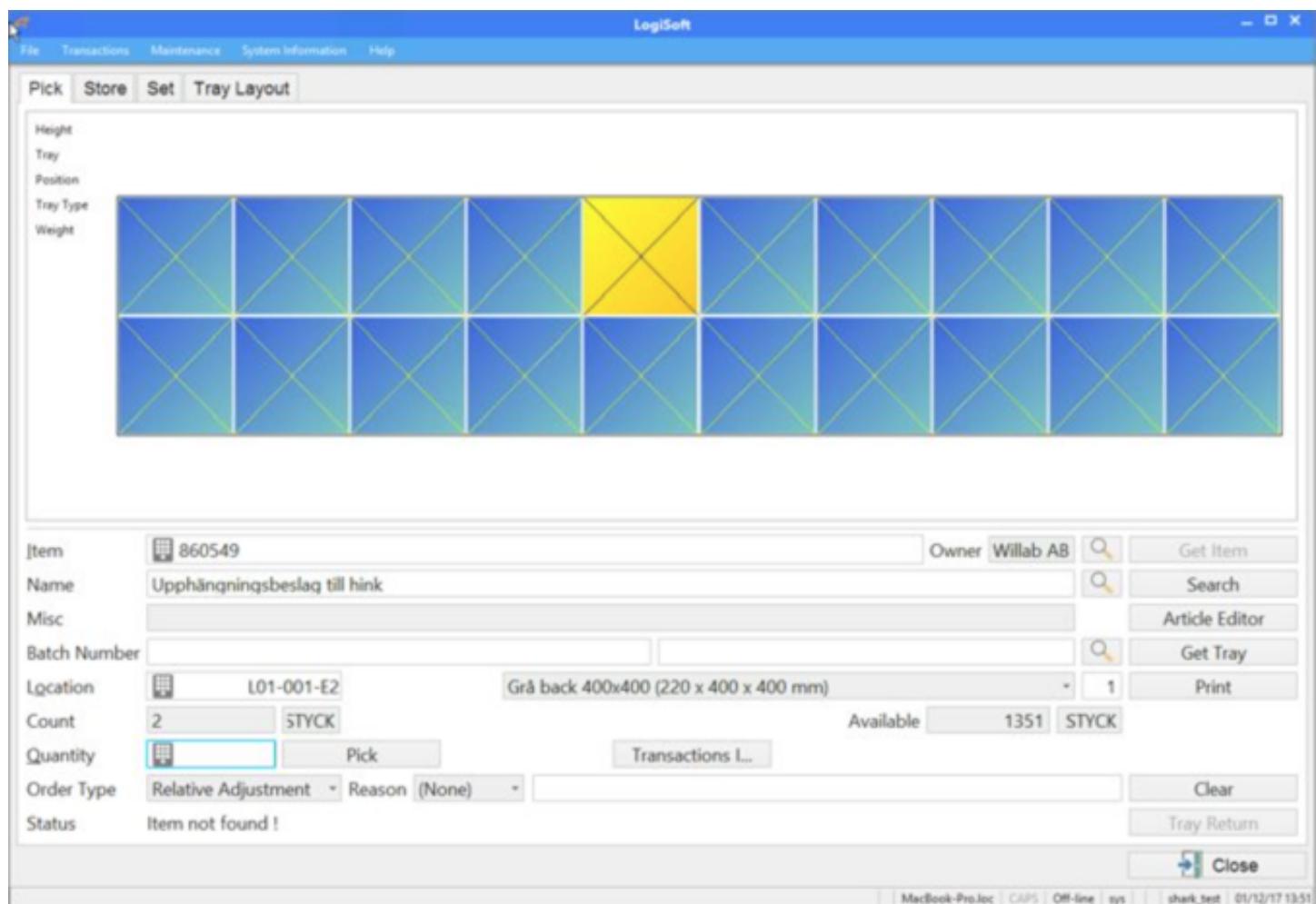
Pick: Simple picking without orders.

Search free location: Find a free location of the requested type.

Put-away: Articles can be stored based on existing locations or on new locations.

Stock Adjustment: The article count for a specific location can be adjusted.

Order attachment: It is possible to perform manual pick and put operations and assign them an existing order or create a new (PC only).



The Manual Transaction Window for the PC client showing a location in a vertical lift tray.



Pick Put Away Set List

Item	1247817
<i>Lampolja 1L 12st</i>	
Batch	
Batch Date	
Location	A01-01-01-A1
Box Type	Pall EUR
Qty	10/90
Order Type	Relative Adjustment
<input type="button" value="Pick"/> <input type="button" value="Clear"/>	

The Manual Transaction Window for the PDA Browser Client.

Transaction Log

All transactions and operations that influence the stock location or quantity are logged in the transaction log.

Sorting: The log is shown in chronological order.

Searching: It is possible to search in time intervals, for a specific article number, order number, location, transport box or by operator name.

Filter: See only one order, article or location.

Transaction types logged: All (pick, store, adjust in various types).

System Log

The system log is used for maintenance. For example will all errors from automated storage equipment be logged, files imported, etc.

Log: All SHARK modules use the same log, it is thereby easy to search for specific events and correlate events at different locations.

Sorting: The log is shown in chronological order.

Searching: Search for error source, error type, error number and in specific time intervals.

Language

Language: English, German, Spanish, Danish, Norwegian, Russian, Swedish.

Changing language: Program must be restarted after language is changed.

Language set by PC/PDA: Yes

Order Pick and Put-away

Picking and storing goods by orders.

Batch picking: Batch picking is supported where several orders are picked in parallel. The batch is floating meaning that new orders can be added and removed at any time. This ensures that the batch always contains a high number of lines for optimal speed.

Sequence Optimisation: The pick lines are sorted for optimal picking speed. For automats, picks from the same tray is picked together, then to minimise waiting time, automats are selected in sequence depending on when the trays are ready. The orders of trays are selected to minimize the time used to retrieve the trays. The location sequence can be set independent of the location address by a sequence number.

Confirmation: The selected method for pick confirmation can be selected freely. Supported are (one or more): by the enter key, article number, location code, order number, transport box number.

Order Creation: Orders are typically received from an external Host System, but they can also be created directly in SHARK.

Batch put-away: Articles can be put-away in a batch job with similar advantages as with batch picking.

Put-away Orders: A put-away order is used to define what to store. The order can be imported from an ERP system by SHARK link.

Finding new locations: SHARK has a number of methods to find the optimal location for the article. This might depend on picking frequency, relation to other articles, size, etc.

Confirmation: The selected method for confirmation of a transaction, can be selected freely. Supported are (one or more): by the enter key, article number, location code, order number, transport box number, batch number.

Labels: A label can be printed either automatically or by request at pick or put-away. The layout can be customized.

Pick Carts

Integrated support for pick carts (trolleys). A pick cart is typical a standard trolley with a number of positions, each with a box, but it can also be a pallet on a truck or similar methods of batching (grouping) orders used to move the goods around in the warehouse.



Number of pick carts: Unlimited.

Number of positions on the pick cart: Unlimited.

Boxes: Each position may contain one or more boxes. Each box contains one order. An order may be picked in one or more boxes.

Assignment of orders to a pick cart: Automatically based on order priority and release state. Manually selected by operator. Filter function for order type (only one order type, on one trolley).

Pick-by-light: Smart pick carts with pick-by-light functionality are supported. SHARK controls light indicators on the pick carts and confirmation is done using a push button. Thereby barcode scanning can be avoided.

User Management

Authentication: Users must logon to the system by user name and password (can be empty).

Authentication Levels: Operator, Administrator, System. Different operator groups possible, with individual access rights.

Login with Barcode: The system may print a special barcode supporting fast login without password. The barcode allows immediate user change without leaving the current function or previous logout.

Login with Card: By connecting a USB Card Reader, a standard card can be used for login. The card code must be registered.

Order Management

An order in SHARK is a collection of orderlines. Each orderline is again split into one or more transactions that specify how to pick or put one orderline. More than one transaction can be needed to fulfill one orderline (for example if more than one location is needed to pick the total required quantity).

Order main types: Pick, put and adjustments. Internal transport orders (stocking moving) is a combination of a pick and put order.

Order subtypes: For each major order type, sub ordertypes can be defined with specific order type information, default priority, name, etc.

Order priority: Each order has a default priority, an operator defined priority and a dynamic priority defined by the system. The later tries to collect orders that shares picking locations or trays to optimize the working process.

Order information: Order number, delivery note, delivery information (customer, address, etc), notes, delivery/created/received/pickstart/pickend dates, Misc fields 1-10, priority, shipment information, tour.

Basic order states: waiting, partly picked, cancelled, OK (finish), consolidated.

Order release: Orders must be *released* before they can be picked. This can be done automatically or manually. The order release functionality makes it possible to arrange for an administrator what to dispose next (for example all orders that must go with a specific tour).

PDA Application for Static Storage

User interface: The recommended interface for picking in static storage are hand-held online terminals (PDAs/iPads) or truck terminals.

Picking lists: Picking lists are supported. They are printed with a unique number (barcode) that later can be used for confirmation of the picking list. Picking lists may contain one or more orders.

Picking sequence: Optimised for shortest way and a minimum of operations.

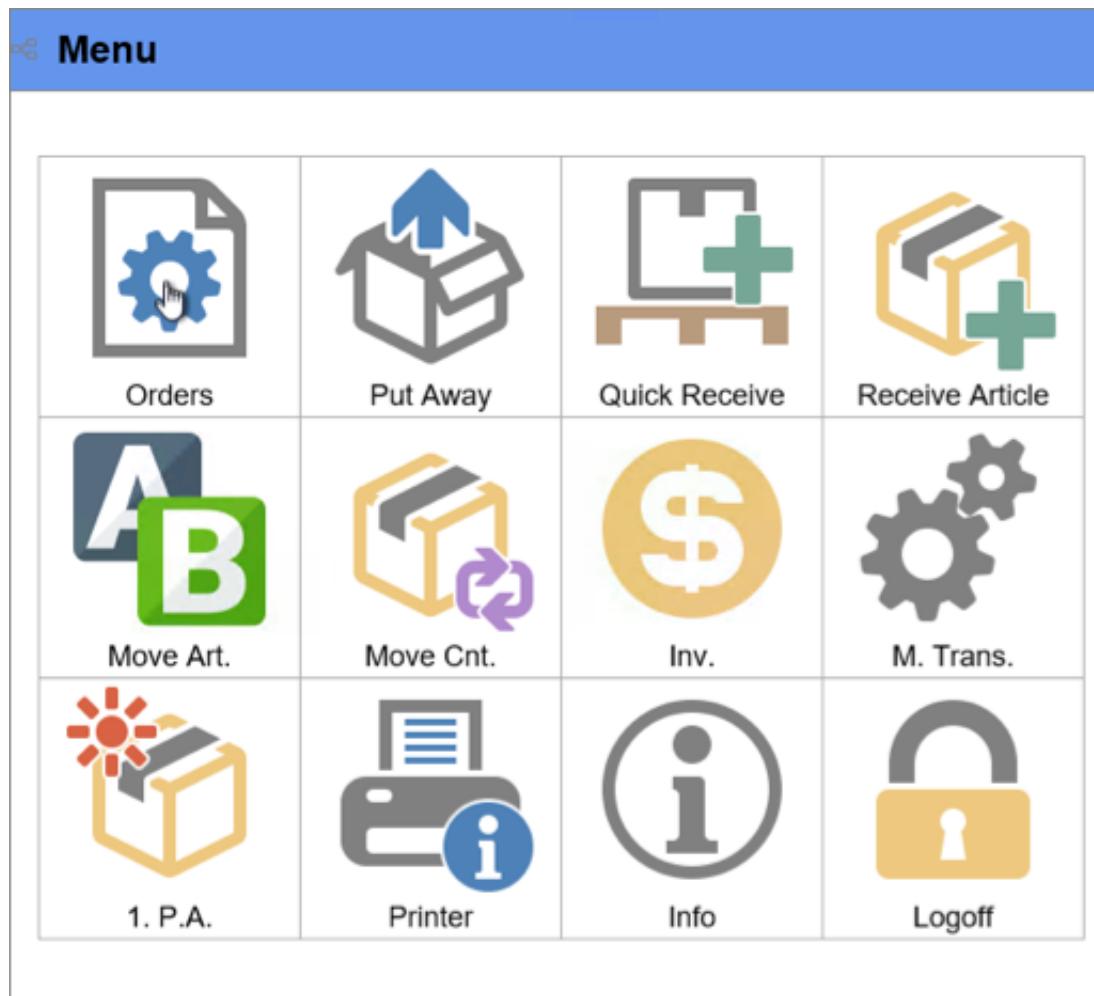
Layout: The layout is zone, aisle, shelves, trays, row/columns in tray.

PDA functions: The PDA has a smaller screen than an ordinary PC and no keyboard, so the functionality is designed for this. The PDA software is web based and is running in an Internet browser, due to this no specific software has to be installed on the PC ensuring easy maintenance. The following functions are available on the PDA:

- Order selection (batch pick).
- Batch pick/put window.
- Manual operations like pick/put and stock corrections.
 - Information: read a ordernumber, transport box number, article number or position number and the PDA shows known information about the item.
- Basic goods reception.

Real-time update: All information is updated immediately in the system and reflected for all other users.

Number of users: There is no limit on the number of operators in the fixed storage zones.



The PDA main menu.

Goods Reception

Module for goods reception and preparation of put-away operations. When more than one zone is used, it is in many cases practical with a Goods Reception function for handling incoming goods.

Advantages:

- Optimize the storing process.
- When using automats, some of the work load can be removed from the automats, so it does not block for other jobs.
- Split the goods to the correct zone and thereby minimize the work.
- Organize and mark all goods to make the rest of the put-away process seamless.

Order registration: A purchase or put-away orders are received from an ERP system or created manually. When received the operator enters the order number, the article number or EAN number and select the right order from a list if more than one matches the criterias.

Preparation: SHARK may find the locations for put-away automatically (by supplied replenishment information like zone, locationtype, package size) or the operator can select put-away zones manually. The articles can be put into a box with a barcode that later is used for fast identification in the put-away process.

Labels: Labels can be generated by SHARK for boxes and pallets.

Cross-docking: If one or more picking orders exists that wait for the article that are received, the operator can decide to pick the orders immediately in the goods reception window and thereby avoid a time and work costly put-away-pick process.

Consolidation and Shipment

In the consolidation and shipment module, articles picked in different zones for the same order are collected and optional checked if they are picked correctly. Furthermore they can be packed and labels can be generated for the packing.

The transport of goods from goods reception to the storage area and back again to consolidation are important to optimize. One simple solution is to use trolleys with boxes to organize and move the goods around. This is a fully supported strategy.

Paper: Delivery note or packing list. Address or box label.

Merging of picking boxes: Collect orders picked in several boxes or zones.

Integrated Inventorying

Optional module for continuous/cycle counting. Counting is done using orders.

Counting orders: An unlimited number of counting orders can be generated.

Counting with paper lists: Counting lists can be printed, optional with a barcode. The barcode can later be used to fast report back the result.

Counting directly on screen: Counting can be done directly on the screen, where the location can be shown and for automats, the tray can be retrieved automatically.

Re-counting: An unlimited number of recounts can be performed.

User administration: Normal users have no access to the actual stock level.

Stock update: The actual stock update is done under administrator control and first when the counting has been approved.

Reports: Difference reports can be generated.

ERP commitment: The final stock can be reported back to the ERP system.

Location management: The inventory system keeps track of last access time, store time and inventory time for each location.

No blocking: Yes. Locations are not blocked while counting.

Reports and Statistics

A number of reports can be generated by the system.

Stock: Lists of all articles in the system.

Tray statistic: Shows information about tray utilisation and picking rates .

System log: Log of all system events.

Transaction log: All transactions that influence the stock are logges and can be printed.

Pick statistics: Picks/puts per day/month/year/zone/user. Graphical displayed.

Printer: Reports can be printed to a Windows printer.

Export: Reports can be exported as CVS or Excel files.

Customed Reports: User specific reports can be designed.

Barcode scanners

In most cases barcode scanners are used in combination with SHARK.

Supported scanners: Intermec, Symbol or any other scanner with support for keyboard emulation. SHARK requires an end-of-line to be send after the scanned code.

Functions: Read article number, positions, box numbers, login names, etc. A number of general commands can also be activated by specific barcodes (like printing a label).

Label printers

Most label printers are supported for printing barcodes, order labels, pick labels, etc. The programming is done in the native language for the selected printer or by using external tools.

Supported types: Zebra, Intermec, MarkPoint, Compact4.

Connection: Via TCP/IP network (print server). RS232, parallel printer port, USB using Windows printer share.

Format: Standard format for Zebra printers at delivery. Can be modified by the user.

Templates: Label templates can be created in SHARK, so one label design can be used in many places and only has to be maintained at one location.

Host Link

External ERP and other Host Systems can be interfaced by files, using a shared folder or by FTP for file transfer.

File format: XML files in SHARK XML format or ASCII files in fixed length, CSV formats (using scripts). See the SHARK link documentation for further description.

XSLT: XSLT stylesheets is supported for easy integration with external XML formats.

Confirmation types: When order is completed, line-by-line, transaction-by-transaction, when order is consolidated.

Inventory: Stock counting lists can be imported from an external system (an ERP system can for example decide what to count). Stock status can be exported to an external system.

Synchronization: Selectable import delay, default 15 seconds, minimum is 5 seconds. Typical synchronization time is less than 30 seconds.

Customizations

Customisation like special functionality, reports, etc. can be made on request.

Technology

Hosting: The server is hosted in the cloud. Data is stored in a MicroSoft SQL Server Database.

Security: All Internet communication is through an encrypted connection (HTTPS).

Backup: Data are stored on several locations. On request a copy of the database can be provided.

Migration: On request the installation can be moved to a local server (on-premise).

System Requirements

Network Connection

A good Internet connection must be available.

PC Clients

Client PC: The PC running the SHARK Client software must have Windows 10/8/7, Windows Server 2003/2008/2012 installed and able to run a Java application. Minimum memory is 1GBytes of RAM and the screen resolution must as a minimum be 1024x768 (1280x1024 recommended).

The client is started by "Java Web Start" from an Internet Browser.

Terminals

Terminal can for example be iPads, Android devices or classical terminals from for example Motorola or Intermec.

Internet Browser: Minimum HTML5 browser supporter.

WiFi: Wireless network support is required.

Barcode Scanning: If barcodes are used, the terminal must support barcode scanners, either a built-in scanner or an external bluetooth scanner.

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