



LS RETAIL

Whitepaper

LS Retail 4.00

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1 Introduction

1.1 The purpose of this document

The purpose of this document is to list the functionality in LS Retail v4.00. The document describes the functionality but not the actual implementation or intended usage.

1.2 Definitions, Acronyms, and Abbreviations

Microsoft Navision	This refers to the Navision application as supplied by Microsoft Business Solutions.
Back office	This refers to the back office part of the LS Retail application.
POS	In this document the acronym POS (Point-of-Sale) stands for the LS POS.
Online	Refers to the POS Terminals when they are directly connected to the store database.
Offline	Refers to the POS Terminals when they are running on their own standalone database and not directly connected to the store database.
Standalone	See Offline.
Replication	The database replication mechanism provided by the LS Replicator or the LS Data Director.
NAS	The Microsoft Navision Application Server. This is a version of the Microsoft Navision client that can be run as a service.

1.3 References

For further explanations of the functionality offered by the LS Retail suite, please consult the following documents:

Release notes for LS Retail v4.00
Online help for LS Retail v4.00
LS Data Director White Paper v2.0
HandPoint for LS Retail White Paper

2 Overview of Functionality

2.1 Inventory

2.1.1 General

All the standard Microsoft Navision functionality regarding items, such as stock control, ordering and purchasing is available in LS Retail. In addition, LS Retail includes numerous features that concern item sales at the point of sale. Following is a list of the main features.

2.1.2 Items

Items are one of the fundamental units in LS Retail. An item in LS Retail is actually an item from the Microsoft Navision standard application, but with extensions that make it suitable for the retail industry. This way the item is compatible with the rest of the Microsoft Navision application while providing the features required by retailers. This includes:

- Specifying whether the item is a scale item or not.
- Specifying if, how, and when item price or quantity can be changed at the POS.
- If the item can be sold at a zero price.
- If the quantity of the item should be treated as negative.
- If it is possible to discount the item.

- On which level comparison prices are calculated (liter, kg, gallon, and so on).
- Whether the item is blocked for ordering or blocked for sale at the POS.
- If the sale of an item triggers the sale of another item (linked items).
- If the item has a serial number that needs to be entered at the POS.
- If the item has any special item attributes.
- If the item is a member of one or more special groups.

Order parameters for items can vary from one store to the other. By using the Stock Keeping Units (SKUs) the stores can have their own unit cost, reorder points, ordering quantities, maximum inventory, vendors, vendor numbers and lead times for items.

2.1.3 Barcodes and Variants

Each item can have any number of barcodes linked to it. It is possible to link the barcodes directly to the item or let them represent different units of measure for the same item, such as cases or packs. LS Retail also supports barcodes where the weight or the price of the item is included in the barcode. It is also possible to link a barcode to a specific variation of the item, which are commonly referred to as Variants.

Variants are a part of the Microsoft Navision standard application. In LS Retail the Variants have been extended so that they can have up to six different dimensions. The Variant creation process has also been modified in LS Retail, since Variants can be created automatically based on Variant Frameworks. It is also possible to create Barcodes representing the Variants at the same time, by assigning a Barcode Mask to the item.

The system can make sure that barcodes conform to the EAN standard.

2.1.4 Item Search

LS Retail has a special Item Search Window that allows the user to quickly search for items. Searches can be based on full or partial values of fields. The searchable fields consist of:

- Item Number
- Description
- Barcode
- Item Category
- Product Group
- Vendor Number
- Vendor Item Number
- Special Group
- Attribute Code and Attribute Value

2.1.5 Item Hierarchy

LS Retail has a four-level item hierarchy. At the top level are the Item Categories, which represent the most general grouping of items. The second level is the Product Group, which is used to categorize items within an Item Category. The third level is the Item itself while the fourth level is the Variant, which is used to represent variations such as color and size within the item.

Each item can belong to one Item Category and one Product Group. This relationship makes it possible to analyze sales on both group and category level. This also makes it possible to manage attributes common to all items within a group by changing the attribute at group level and then copying the change to all items within the group. It is possible to control a number of item related attributes this way, which in turn simplifies the maintenance of the item file. Item attributes that can be managed via Product Groups include:

- Barcode masks

- Variant Frameworks
- General Product Posting Groups, VAT Product Posting Groups and Inventory Posting Groups, Costing Methods and Tax Groups.
- Default profit percentage
- Default shelf and item labels
- Dispense printing groups

It is also possible to assign items to Item Families. Items within a family share the same sales and cost price. When a change is made to either price it can be copied to all items within the family.

The Special Groups make it possible to group items with similar properties. An item can be a member of many Special Groups at the same time, for example, a television set could belong to the special groups Large-TV and Flat-TV.

2.1.6 Item Distribution

LS Retail includes a functionality to control the ordering process. This is configured via Item Distribution, which in turn is configured at the store group level. Each item can have many item distribution lines. The stores select the appropriate distribution based on the priority of the store groups.

The two main functions of Item distribution are to specify:

- Where the item should be distributed
- To control the ordering process for the item

The ordering parameters consist of:

- Specifying if the item is active, on hold, not purchased again, out of stock, or blocked for sale.
- If ordering is by store or central
- If the ordering is manual or automatic
- The number of shelf facings for the item

2.1.7 Labeling, Text and Printing Setup

Each retail item can have a number of Item and Shelf labels associated with it. This allows different types of stores to have different types of labels. The printing of new labels is triggered whenever a retail item is created or its price changed.

It is also possible to link Extra Print Setup to an item, triggering the printout of additional information when the item is sold at the POS. This is commonly used to print out warranty cards.

2.2 Pricing

2.2.1 Prices

The pricing mechanism in LS Retail builds on the price structure in Microsoft Navision. This means that items can have multiple prices that are valid on different dates. Prices can be based on different Units of Measure or Variants and can be in different currencies.

Different stores can have different prices. This applies to customers as well. The application is able to compare store prices (including special offers) with customer prices in order to find the lowest possible price for the customer at the POS.

Prices can be based on Price Groups, which in turn can be based on different VAT Posting Groups. This makes it possible to have different prices that are valid for customers in different

VAT categories. This is useful in duty-free retailing or when dealing with restaurants that offer both dine-in and dine-out facilities.

Changes to prices, cost prices and purchase prices are logged in price history tables.

2.2.2 Special Offers

LS Retail supports four types of offers:

- Promotion
- Discount Offer
- Mix & Match
- Multibuy

Promotions and Discount Offers work similarly. The main difference is that Promotions work like a price reduction while the Discount Offer will show the reduction as a discount at the POS. This means that a Discount Offer can be triggered on top of a Promotion. Both offers can be based on specific Price Groups or Currencies. It is also possible to specify the date and time when the offers are active. Promotions and Discount Offers can be based on Item Department, Item Group, Item and Variant level. They can also be configured to include all items in the store.

Mix & Match is a more versatile type of offer since it can be triggered by a combination of factors, such as Items, Variants, Item Groups or Departments. Discounts can be in the form of a deal price, a discount amount, a discount percentage or be specified for individual Items. It is also possible to put a limit on how often a Mix & Match offer can be triggered. Like the other discount offers, Mix & Match offers can also be based on Price Groups, be in different Currencies and have different activation dates and times.

The last offer type is Multibuy. As the name suggests, a Multibuy offer gives different levels of discounts based on the number of Items the customer buys. In other respects it works in ways similar to the Discount Offer.

Items are not restricted to being included in just one offer at a time, since offers can be given different priorities. The offer with the highest priority will always be triggered first and the offer with the lowest priority is triggered last.

It is possible to test the effects of an offer via the Test Offer function. It is also possible to view the effects of an offer, such as number of items sold, total sales amount, profit amount and profit percentages.

2.3 Customer Loyalty and Gift Registration

2.3.1 Customer Loyalty

The customer loyalty functions found in LS Retail allow you to keep track of your customer's purchases. You can also assign loyalty points to your customers based on their purchases. The points earned can then be used as payment on the POS.

The loyalty point calculation can be based on a number of rules that are applied to the items the customer buys. Rules can be based on:

- Items, Item Categories and Product Groups
- Promotions and Periodic Discounts
- Tender Types
- Resources and Resource Groups

The calculation rules can have starting and ending dates as well as quantity limits. The rules can be based on the total amount or the number of items bought. It is also possible to assign a fixed number of points per rule.

The loyalty module supports magnetic cards, which makes it an easy option to issue loyalty cards to customers.

2.3.2 Gift Registration

Gift registration allows customers to register items they would like to receive as gifts, for example for a wedding. Each gift registration gets a unique number and is assigned to a person. This makes it easy to keep track of which gifts a person has requested.

Once the gifts have been registered it is possible to assign discounts to each gift and also the requested quantity. The system keeps track of which gifts have been bought in order to make sure that gifts are not bought many times.

2.4 Customers, Currency, Ordering and Budgeting

2.4.1 Customers

Two extra features have been added to Customers in LS Retail. It is possible to block a Customer from charging purchases to his account, although he still gets all the prices and discounts available to him as a registered customer. All purchases made by this particular customer will be registered, but he is not able to charge any of them to his account.

The other feature is that it is now possible to select whether customer purchases should be posted directly to his account or as a shipment. In case of a shipment, a shipment document is created, which makes it possible to use the Combine Shipment feature to invoice the customer at the end of the month.

2.4.2 Currency

It is possible to use multiple Currencies at the POS. Each Currency can have a POS exchange rate that is different from the exchange rate used in the Navision standard application. This allows the retailer to use another exchange rate for customers paying in foreign currency at the POS.

2.4.3 Sales and Purchase Orders

The sales and purchase ordering mechanism found in Microsoft Navision has been extended in LS Retail. The extension is done to make sales and purchases of Items with associated Variants easier by assigning collection on items, with each unit of measure. The system can then distribute the quantity to purchase to different Variants based on the collection. This function is commonly used in fashion retailing when ordering different sizes of the same item.

2.5 Infocodes and Data Entries

2.5.1 Infocodes

Infocodes are a powerful tool that can be used to capture data at the POS.

The system prompts the operator at the POS terminal for input that can be selected from a list or entered as a code, a numeric or free text. Infocodes can be linked to the sale of an item, a sale to a customer, a specific Tender Type. Infocodes can also be linked to a number of actions performed at the POS. Infocodes are commonly used to capture customer details such as the customers postal code, which can be used for sales/demographics analysis.

Some of the key features offered by Infocodes include:

- Infocodes can be linked, creating a list of queries.
- The prompt given to the POS operator when the Infocode is activated.
- Whether to display the selection list automatically on the POS.
- If input is required.
- Whether the Infocode can be used once or more within the same transaction.

- The minimum and maximum value if the input is numeric.
- The minimum and maximum length if the input is text.
- If the input value is either quantity or amount.
- The random factor specifying how often the Infocode is triggered.
- Whether infocode details should be printed on the receipt.
- Statistics showing the usage of the Infocode and amounts entered.

2.5.2 Subcodes

Each infocode can have a number of subcodes. A subcode is commonly used to present the POS operator with a list of available responses. Subcodes can also be used to trigger additional actions, such as the sale of an item, a discount or a change in the VAT calculations which is commonly used in duty-free retailing. Other uses for subcodes include staff discounts and the registration of damaged goods.

2.5.3 Data Entries

Data Entries are used to register the usage of Gift Cards, Vouchers and serial numbers. They are closely linked to Infocodes since Infocodes can be used to create Data Entries. Parameters found on the Data Entry Card include:

- The number series used by the Data Entry.
- If the amount entered should be validated against the amount registered in the entry.
- If the data entry number should be printed as a barcode on the receipt.
- The format of the data entry barcode.
- The number and amount of issued entries
- The number and amount of outstanding (open) entries.

By linking Infocodes to Data Entries it is possible to register when a Gift Card or Voucher is sold and when they are reclaimed.

2.5.4 Item Tracking and Serial Number handling

LS Retail supports the Item Tracking feature found in Microsoft Navision. This allows the application to keep track of items with unique serial numbers. Serial numbers can be entered when the item is sold on the POS. When performing the end-of-day procedure, the inventory is updated with the serial numbers of the sold items.

2.6 Store Management

2.6.1 Stores

The Store is one of the central items in LS Retail. It is used to control:

- The base currency used in the store.
- To select which functionality profile the POSs in the stores use.
- If this store should be included in the POS Inventory Lookup.
- Location codes, Responsibility Center codes, Department codes and Project codes that are used when posting sales from the store.
- Dimension codes that affect how General Ledger Dimensions are updated during the posting of sales.
- How the end-of-day procedure (Statement Posting and Tender Declaration) should be performed.
- Maximum limits for rounding amounts and difference amounts acceptable during the end-of-day procedure.
- The accounts where rounding and difference amounts should be posted.
- Whether end-of-day procedure is based on date/time or shifts.

- The default VAT Product Posting Group and General Product Posting Group for the store.
- The numbering of Periodic Discounts, Promotions, Gift Registrations, Items, Statements, Staff and POS Terminals created in the store.
- The initial numbering sequences used by the POS Terminals and during the end-of-day procedure.
- How the counting of cash should be performed.
- The messages that are printed at the top and the bottom of the customers' receipt.
- The number of safes present in the store.
- If the stock levels in the store can be viewed in other stores.

There is no limit to the number of stores that can be configured. Settings can be easily copied between stores by using the built-in copy wizards, which simplifies the management across a chain of stores.

2.6.2 Retail User

The Retail User is used to assign retail-specific properties to the user. These settings are used when performing inventory management tasks and affect which data is made available to the user. The settings included in the Retail User table include:

- Specifying to which store and location the user is assigned.
- Specifying to which Till Group the user is assigned (used by 3rd party till).
- Specifying if the user can view Inventory Reason Codes, Inventory Units and Inventory Locations.

2.6.3 Staff

LS Retail requires staff to be assigned to a store. A staff member can be of the type cashier, salesperson or both. This makes it possible to differentiate between the person working on the POS and the person assisting the customer within the store. It is also possible to see on which POS the staff member is currently logged.

The staff's personal details, such as home address, phone number and payroll number, can be registered. It is also possible to register if the staff member is left-handed, which in turn affects the layout of the POS screen.

Staff members can be assigned unique POS passwords. The system can force the staff member to change his password at the POS and can check that the length of the password is not less than the minimum length. Staff members can also log onto the POS with an ID-card.

Staff members can be assigned different privileges depending on their role within the store. This includes:

- Manager privileges.
- X-reporting allowed.
- Tender declaration allowed.
- Performing a float entry allowed.
- Suspension and voiding of transactions allowed.
- Member is allowed to change item quantities to a negative figure.
- Allow opening of cash drawer without performing a sale.
- Giving maximum line and total discounts is allowed.
- Allow the following: the price of an item can be raised, lowered, both raised and lowered or not at all.

These privileges can be managed per individual staff or via Permission Groups which can be assigned to the staff.

2.6.4 Tender Types

Tender types are used to control the different payment methods in a store. Tender Types can be of the following types:

- Normal – usually cash
- Card – either credit or debit
- Check
- Customer Account
- Tender Remove/Float
- Coupon

It is possible to define if the Tender Type requires manger privileges to be operated, if the POS drawer opens when the Tender Type is used, if the Tender Type requires a card or account number and the Tender Type needs to be counted during the end-of-day procedure. Each Tender Type also has a number of parameters that affect the usage of the Tender Type. This includes:

- If the Tender Type is a foreign currency
- If overtender and undertender are allowed.
- The maximum overtender amount.
- If returns and negative amounts are allowed.
- If keyboard entries are allowed or required for the Tender Type.
- If rounding should be done up, down, to the nearest allowed amount or not at all.
- The minimum rounding amount.
- The minimum and maximum amounts allowed for manual entry.
- The minimum and maximum amounts allowed for the Tender Type.
- If payment lines for the Tender Type should be compressed into one.
- If float entry is allowed for the Tender Type.

It is also possible to control how posting of different tenders is done. Each tender type can be posted to a separate General Ledger account. The same applies to differences between the actual amount and the counted amount when performing the end-of-day procedure.

Tender Types also have a number of parameters that affect the printing of receipts and endorsements. Usage of a Tender Type can trigger the printing of a Voucher or a Gift Card. Similarly, using a Tender Type may require the printing of an endorsement as in the case of payment with Check.

Each Tender Type can have two change-back Tender Types associated with it, which is used when overtendering. This is useful when dealing with Gift Cards. If the change amount is over a specified limit the change can be given in the form of a Voucher, else in cash.

Payments with credit or debit cards can be handled in a special way. It is possible to post payments made with different card types (Visa, MasterCard) to different General Ledger Accounts as well as difference accounts.

2.6.5 Income and Expense Accounts

Income and Expense Accounts are used to register petty incomes and expenses at the POS. An example is the payment for window washing which can be registered to an expense account. This is an effective way to manage the flow of petty cash at the POS Terminal.

A Store can have a number of Income/Expense accounts defined. Each account can be associated to a General Ledger Account and a VAT code. The usage of an account can trigger the printing of a special kind of receipt (Extra Print Setup). Posting to each account is done during the posting of Statement.

2.6.6 Sections and Shelves

A Store can be divided into sections and shelves. It is possible to assign Items and Item Groups to sections and shelves in order to track sales in different areas of the stores. This makes it possible to track sales by individual sections or shelves.

2.6.7 Work Shifts

Each store can have its own works shifts. Staff can be required to work on specific shifts. The end-of-day procedure can be configured to function on shift level, which simplifies the procedure in stores which are open after midnight.

2.7 POS Terminals

2.7.1 General

Each POS Terminal is assigned to a store. A store can have any number of POS Terminals associated with it. The behavior of a POS Terminal is defined via five main areas, the POS Terminal Card, the Functionality Profile, Hardware Profile, Menu Profile and the Interface Profile.

The POS Terminal Card contains the settings that are unique to a POS Terminal. This includes parameters such as:

- The POS Terminal number and which store it is assigned to.
- Which Hardware, Menu and Interface Profiles are assigned to the POS.
- If manager key is required when items are returned.
- If return is allowed within a transaction.
- What kind of receipt is printed when a return is performed on the POS.
- If the staff needs to log in after each transaction.
- The number of minutes before the POS performs an auto-logout.
- Whether the drawer is opened during a login or logout.
- The terminal and store number used in EFT transactions.
- The number of the last Z-report performed.
- Whether the POS is run in online or standalone mode.
- Which Staff is currently logged on the POS.

The POS inherits a number of settings from the Store it is assigned to. It is still possible to override some of these settings on the POS itself. This includes:

- The handling of the end-of-day procedure with regard to sales performed on the POS.
- If the POS uses the receipt printing specified on the store or overrides those settings.

It is also possible to define messages that appear on the customer display during idle time and the maximum length of the text to display.

Initial entry number series for Transactions can also be specified on POS level. Settings can be copied between POS Terminals.

The POS can be run in different modes (touch-screen or key) and resolutions based on the Interface Profile assigned to it.

2.7.2 Functionality Profiles

The Functionality Profile contains a number of settings that are common to all the POS Terminals within a store. The Functionality Profile is assigned to the Store the POS belongs to.

The functionality profile contains parameters such as:

- If staff members must use a card to log on to the POS.

- Minimum password length for the staff.
- If a new price must be keyed in if the price of an Item is zero.
- If the total amount of the transaction should be displayed in a secondary currency.
- If it's allowed to print X/Y-reports on the POS.
- Whether the POS should disable the comparison of retail prices and customer prices in order to give the customer the lowest price.
- How long transactions should exist on the POS and when to issue a cleanup warning.
- Whether training transactions should be retained as regular transactions or treated as voided transactions.
- Whether logins and logouts should be registered as transactions.
- Whether the POS compresses multiple scans of the same items into one line or creates a line for each scanning.
- If periodic discounts are calculated on-the-fly or when the total button is pressed.
- If sales quantity limitations are in effect.
- How items are ordered on the receipt.
- If a sales person should be registered at the start of each transaction.
- If a stock posting should be updated at the end of each transaction.
- If sales orders should be created at the end of each transaction.
- The default customer used when creating sales orders.
- The language used on the POS.
- Which staff ID to use if the POS logs on automatically.
- If the POS should display a keypad when a tender key is pressed.

The Functionality Profile also contains a number of settings that control VAT handling and how the POS formats and rounds amounts. This includes:

- If the company's VAT registration number is printed on the receipt.
- If VAT amounts are printed on the receipt.
- If no VAT is used or the POS should add VAT to the retail prices.
- The currency symbol used and the multiple items symbol.
- The amount and price rounding parameters.
- The format in which decimal numbers are displayed and printed.
- The maximum price and quantity allowed on the POS and if these limits are active.

2.7.3 Hardware Profiles

The Hardware Profile contains settings used to control the behavior of the POS hardware. It is possible to run many different POS hardware platforms with LS Retail by creating a hardware profile for each platform. LS Retail uses OPOS drivers extensively to communicate with POS Hardware and the Hardware Profile contains settings such as drivers that are use to communicate with each peripheral. The Hardware Profile also has settings that affect how the peripherals function when connected to a POS that is run via Microsoft Terminal Services or Citrix Metaframe. Settings on the POS Hardware profile include:

- The x and y coordinates where the POS screen is drawn on the display.
- If a screen keyboard is available and if the company logo should be displayed.

The Hardware Profile also contains a number of parameters that affect how peripherals connected to the POS work. This includes:

- Printer. The layout of the receipt, print commands used for formatting text, if the printer is shared between terminals, how logos are printed on the receipt and which character set the printer uses.
- Line Display. The messages displayed on during a transaction, character sets and delay between messages.
- Magnetic Stripe Reader. How events from the reader can be enabled and disabled.
- Cash Drawer. How open/close messages are read from the drawer.
- Scanners. How events from the scanner are received.

- Scale. If manual input is allowed.
- Keylock. How keylock messages are received.
- Keyboard. How decimals are handled, if enter repeats last item.
- Tone. The various tones generated by the POS speaker.
- EFT. Parameters that affect the communication between the POS and the EFT server.

It is possible to test each OPOS device from the Hardware Profile.

Keyboard mappings are also configured via the Hardware Profile. This allows the POS to use various POS keyboards by mapping the keys to regular PC-keyboard codes. This also allows certain keys on the PC-keyboard to be disabled or mapped to other key combinations.

The logo that is printed on the receipt can be stored in the Hardware Profile. Settings can be copied between profiles.

2.7.4 Visual Profiles

The Visual Profile controls the visual appearance of the POS. Each POS can have its own visual appearance but profiles can also be shared between terminals.

The main function of the Visual Profile is to define the menus displayed on the POS. The Visual Profile also contains settings such as:

- Macros, which are a set of POS Commands that can be performed in sequence.
- Which set of menus the user is presented with when the POS is started.

Menus that are required for the POS to operate can be specified on the Visual Profile. This includes:

- Start Menu
- Additional Menu 1
- Additional Menu 2
- Additional Menu 3
- Sales Menu
- Payment Menu
- Tender Operations Menu
- Negative Adjustment Menu
- Physical Inventory Menu
- Journal Menu

The Visual Profiles can be set up to handle both touch-screen and function-key POSs. The visual configuration of each menu type is done via the POS Menu.

The POS Menu is divided in two, the POS Menu Header and the POS Menu Lines. The POS Menu Header is used to configure parameters such as:

- The number of rows and columns on the menu.
- The menu type. Available options are: Menu, fixed key, modifier menu, top line menu and column menu.
- If enter can be mapped to a special POS Command.
- If manager privileges are required to operate the menu.

Each POS Menu Header can have a number of POS Menu Lines. Each line corresponds to a button on the POS. Each line contains the following parameters:

- Key Number, representing the number of the button within the menu.
- A description which is displayed on the button.

- A POS Command and a parameter for the command. POS Commands are used to trigger actions when a button is pressed. For a full list of POS Commands please refer to Appendix A.
- A Post Command and Post Parameter. A Post Command is run after the primary POS Command has finished processing.
- A POS Help Command. Help commands can be linked to the buttons on the POS allowing users to access online Help while operating the POS.
- The translation of the Description field in different languages.

The POS Menu can be designed in two ways, either via the Menu Editor or via the Visual Menu Editor. The Visual Menu Editor makes it possible to assign foreground and background colors to the buttons. The description can be displayed in different colors and with formatting such as bold and italic. Pictures can also be displayed on the buttons. Pictures can be aligned center, left, right, top, bottom. Pictures can also fill the button or be scaled to fit. The system accepts a number of different picture formats such as .bmp, .jpg, .gif and .ico.

Button properties can also be accessed by right-clicking the button in the POS client. To do this, the user must have super-user rights in the Retail User Setup.

2.7.5 Interface Profile

The Interface Profile is used to select the visual layout of the POS. The Interface Profile makes it possible to configure different user interfaces for different POS hardware – most notably touch-screens and function-key based POSs.

The main feature of the Interface Profile is to select which parts of the interface are active. The interface is divided into the following parts:

- Journal – displays a list of items being sold
- Main Menu – the main button menu
- Additional Menu 1, 2 and 3 – additional button menus
- Number pad – the numerical keypad
- Bitmap – the company logo
- Input – the input field of the POS
- Information – the information lines displaying messages for the user
- Total – displaying the total amounts for the transaction

Each of these parts can be resized and moved. This can be done by entering a new width, height and location for the part manually or by using the more visual Interface Designer.

The Interface Profile specifies which colors are used to display different types of messages on the POS. The color selection is limited to the following items:

- Status Line
- Disabled Button
- Normal Line, Voided Line and Refund Line
- Multi-buy and Mix & Match
- Total Discount
- Income/Expense
- Line Selection and Free Text

In addition to this, the Interface Profile controls the following settings:

- If the Navision Menu and Title bar should be hidden during POS operation.
- If the mouse cursor should be hidden.
- If the Description, Quantity, Price, Discount %, Amount, Number and Scroll Bar are visible in the Journal menu.

2.7.6 POS Actions

The POS Actions are used to run user-defined actions on predefined triggers on the POS. This allows the user to intercept certain events on the POS in order to add to the processing. The following triggers are available:

- Start of Transaction
- Send to Suspension
- Retrieve from Suspension
- End of Transaction
- Tender
- Tender Declaration
- Void Transaction
- Negative adjustment
- Refund Sales
- Discount at Total
- Mark Down Line
- Mark Up Line
- Override Price in Line
- Quantity Change
- Negative Sales Line
- Line
- Total

Events can be triggered at the beginning or end of the trigger. Events can also be tied to specific Items, Item Categories, Product Groups, Customers, Resources or Vendors. Each trigger can have one or more actions associated with it. The following actions are supported:

- None – do nothing
- Stop/Error – stop with error
- Infocode – run a specified infocode
- RunObject – run a specified table, form, report, dataport, xml port or codeunit
- Message – Display a message

POS Actions can be linked to specific Functionality Profiles or have a global effect.

2.7.7 Modes of operation

The POS can operate in three different modes. They are:

- Standalone. The POS runs on its own local database and is not dependent on a central server. This requires that data is replicated both to and from the POS. This configuration gives the highest level of resilience in regards to server downtime or network failures.
- Online. The POS is connected to a central database which is shared among two or more POS. Sales processing is done on the POS itself while the data resides on the server.
- Online via Terminal Services. The POS is run via a terminal server client. This is a variation of the online mode but in this case the data is both stored and processed via the terminal server.

The POS can also be configured to post sales to inventory at the end of transaction. This means that the decrease (or increase) in inventory is registered at the end of the transaction – as opposed to during the statement post during the end-of-day routine.

A new option is to create a sales order from POS, which then can be posted via the sales order posting method, or retrieved again later at POS. An invoice can also be posted directly at the POS with the sales order posting method.

2.7.8 Transaction services

The Landsteinar Transaction server is used to allow the POS to make online enquiries to a central database while running in standalone mode. This gives the POS a very high level of resilience while still having access to data in a central database. The services provided by the Transaction server include:

- Send Transaction. Transactions are sent to the central database as soon as they are finalized on the POS.
- Void Posted Transaction. This allows the POS to fetch a transaction from the central database in order to refund it.
- Suspend/Retrieve. Transactions can be suspended to a central database and picked up later by another POS.
- Customer. Validates that the customer has not exceeded his balance and is not blocked.
- Data Entries. Allows central validation of Data Entries such as Gift Cards and Vouchers.
- Staff Validation. Makes sure a staff member is only logged onto one POS at a time and also validates the staff password to the central database.
- Floating cashier. Allows the cashier to work on multiple POS but still be able to run X- and Z-reports on any POS.
- Inventory Lookup. Makes it possible to look up stock levels for items in other stores.
- Serial Number Validation. Checks if the serial number (item tracking number) entered on the POS exists in the back office database.

It is possible to specify a timeout for the Transaction Server so that when a network failure occurs, the performance of the POS will be unchanged.

External POS Commands

External POS Commands are used to integrate external modifications into the POS and make them appear as POS Commands. This means that external modifications can be set to follow exactly the same configuration process as standard POS functionality.

External POS Commands must be linked to a codeunit, where the actual command processing takes place. As with regular (internal) POS Commands, it is possible to specify if manager permissions are required to run the command, if the command can be run via a menu and if scanners and magnetic card readers should be disabled while the command is run.

Each command can have a number of parameters associated with it. The parameters have the following properties:

- Parameter Type – text, numeric, amount, date and file
- Table and field links – linking the parameter to a field in a table.
- Default value, minimum and maximum values.
- If the value is required or not.

2.7.9 POS VAT Codes

The POS has its own set of VAT codes that are printed on the receipt.

2.7.10 POS Colors

The POS has a number of predefined color codes that are used when displaying actions such as the triggering of an offer on the POS.

2.7.11 Run Objects

The POS can be configured to run other parts of the Microsoft Navision application. This is referred to as the Run Object function. An example is when a customer is created at the POS then a Run Object is used to display the Customer Card.

2.7.12 Extra Print Setup

Extra Print Setup is used to print information that can not be printed on the regular receipt. This includes items such as warranty cards and gift cards. The setup of the Extra Print Setup is flexible and can accommodate a number of parameters such as:

- The rotation of the document.
- Whether the document should be printed on the receipt printer or a document printer.
- The number of times the document should be printed.
- Whether the receipt header and footer should be printed on the document.
- Whether infocodes should be printed on the document.

Each line in the document can be aligned left, right or center and can have a formatting of wide, high, bold or italic. Printing of the following parameters from the sales line is also supported:

- Barcode on Appl. Entry
- Number on Appl. Entry
- Amount in Line
- Amount in Line Text
- Description
- Date
- Number in Line
- Price in Line
- Quantity in Line
- Transaction Gross Amount
- Transaction Discount Amount

Extra Print Setup can be assigned to Items and Tender Types.

2.7.13 POS Help Texts

It is possible to define help texts that can be linked to individual buttons on the POS. This help functionality is available during the operation of the POS.

2.8 End-of-Day procedure

2.8.1 Statements

The end-of-day procedure involves the posting of a Statement. A statement is used to calculate the sales done in the store, comparing the sales amount to the payments in the cash drawer and posting the results to the Inventory and General Ledger modules.

Statements are created per store. They can include sales registered by POS Terminals or staff members. Statements can be based on date/time or work shifts.

The counting of money from the cash drawer can be done via the statement or by making a Tender Declaration at the POS. In case of a Tender Declaration the counted amounts are read in when the statement is calculated.

Calculated statements can be posted partially or entirely. A partial posting only posts item sales and does not post any financial information. This part of the posting process can be

automated. The finance posting can then be done at another time. A full posting posts both stock movements and updates the finance part at the same time.

It is possible to use the Navigate function on a posted statement. This reveals all entries generated by the statement posting such as Item Ledger Entries, Value Entries, General Ledger Entry, Customer Ledger Entry, and so on.

The posting process depends on parameters configured in the Store and in the Retail Setup Table. Among those are:

- The posting of discounts. If total discounts, line discounts, infocode discounts, customer discounts and special offered discounts are posted separately.
- If the sales date or the statement posting date is used as a base date for the posted entries.
- Whether customer purchases are posted directly to the customers' account or as a shipment.

2.8.2 Cash Management

Cash management is used to manage cash pickups from the POS Terminals. These pickups can be viewed in the back office and registered to a safe via the Cash Management module. Movements in and out of the safe are registered making it possible to view the contents of the safe at any time.

2.9 Inventory Management

Inventory Management provides a simple method of collecting data for stock control. The processes are designed to make the task in hand as simple as possible for the user. By creating a consistent look and feel for the user in all worksheet processes, the system ensures that the process is completed according to the process configuration. This produces more reliable data in the system as the user is always led through the process.

2.9.1 Product Distribution

The system offers the facility to determine the product range offered at the store. This narrows the store's view on the item master. For example a store that only has a range of 2000 items can only work (view, order) with these items, even though the company has 30000 items. This will simplify the view for the store and give head office more control of what is being offered at each store. Head office can then produce list of items that have not been ordered by store, according to the product distribution.

2.9.2 Worksheets

The worksheet gives the user a common look and feel for all journal stock-keeping processes. For each worksheet there is a Mask record that controls the behavior of the worksheet and worksheet lines. The worksheets work on top of standard Microsoft Navision item journal lines and requisition lines, and the system uses worksheet lines for journals not offered by Microsoft Navision. The worksheets are defined for specific stores. This makes it possible to define a specific configuration for each store.

The user belongs to a store when he logs onto the system and when he then looks at the worksheet list he will only see the worksheet assigned to his store. Once the user enters a worksheet he will most likely only need to enter the item number or barcode and then the quantity as the worksheet will inherit all data from the worksheets mask record.

Mask record configuration:

- The system fills in some of the data automatically, for example Global Dimension 1-2, Store Code and Location Code and other.
- Configurable posting and printing processes.
- Settings for Radio Frequency handheld terminals, for example: Screens, search method and others.
- Reason Code - used mostly for shrinkage.

- Inventory Adjustment Group – if shrinkage lines are to be posted to a specific Inventory Adjustment Account.
- Data filtering according to vendor and product group
- Which Unit of Measure to use in worksheets lines (Base, Sales and Purchase)
- Conditioned data entry regarding items in distribution; order at store or by hand
- Define if the vendor or original vendor is to be used in Purchase Return worksheet lines.

The Mask record can be created by entering the type, journal name and store number or the user can go into very specific control configuration.

Worksheet types:

- Purchasing – works on the requisition lines and the item entry can be controlled by the stores item distribution (product range)
- Purchase Returns – works on the worksheet liens and will create one Purchase Return Document for each vendor.
- Transfers journal – works on the item journal lines. Standard behavior except for the worksheets automatic data entry.
- Stock counting – works on the item journal lines. Can work with stock counting areas with special stock counting area management form. Can automatically take a reason code.
- Positive adjustment – works on the item journal lines. Almost standard behavior except for the worksheets automatic data entry.
- Negative adjustment (shrinkage) – works on the item journal lines. Can automatically take a reason code for the shrinkage.
- Label ordering – works on the worksheet lines. To order printing of shelf edge labels. Used mostly by scanning the items with a handheld terminal and then imported to the worksheet.
- Price Check (competitors) – works on the worksheet lines. Used to enter competitor prices.
- Receiving (offline handheld terminals) – a worksheet mask is created so the batch handheld terminals can connect the scanning to a receiving document. The worksheet mask is deleted when the receiving document is posted
- Picking (offline handheld terminals) - a worksheet mask is created so the batch handheld terminals can connect the scanning to a picking document. The worksheet mask is deleted when the picking document is posted

2.9.3 Stock Transfer

The system simplifies the usage of the Navision Standard Transfer Documents by organizing documents in four groups:

- Request – The store user creates a request by entering item he wants. Executes the send function that moves the document to the 'Sent Requests' and is visible at the shipping store in the group 'To be picked'.
- Sent Requests – Can see all transfer requests.
- To be picked – The transfer documents that are to be picked at that store. When posting the shipping of the document, the document is visible in the 'To be received' at the receiving store
- To be received – Transfer documents that are waiting to be received.

The grouping gives the store staff a simpler view of the transfer documents pending.

2.9.4 Picking Documents

A picking document gives the functionality to pick items against a Sales Order, Purchase Return Order or Transfer Out Documents. The form will display all discrepancies between the picking document and the original document. These can be:

- Too many – Picked quantity is higher than specified in the original documents. The quantity in the original document will be adjusted at posting.

- Not enough – Quantity missing. The quantity in the original document will be adjusted at posting.
- Not ordered – Item is not in the original document. The item will be added to the original document at posting.

When using a radio frequency handheld terminal for picking, the system will notice the discrepancy at the time of scanning and when closing the picking the system will inform the user about the discrepancies on the handheld terminal and offer an opportunity to correct. When using a batch handheld, the user will not see the discrepancy until he imports the data to the system.

Also offered is the function to pick a Sales Order, Purchase Return Order and Transfer Out Order where the picking document creates the original document when posting the picking document.

2.9.5 Receiving Documents

A receiving document gives the functionality to receive items against a Purchase Order, Sales Return Order or a Transfer In Documents. The form will show the user all discrepancies between the receiving document and the original document. The discrepancies can be:

- Too many – Receiving quantity is higher than specified in the original document. The quantity in the original document will be adjusted, at posting, to a different location.
- Not enough – Quantity missing.
- Not found – The barcode is not found in the system and can be configured to put in a default 'Not Found' item number.
- Not ordered – Item is not in the original document. The item will be added to the original document at posting.
- Return – It is possible to return some or all of the quantity with a reason code. At posting the system will move the quantity to a return stock location and create a Purchase Return Document.

When using radio frequency handheld terminals for receiving, it will give the user the discrepancy at the time of scanning and when closing the receiving, the system will inform the user about the discrepancies on the handheld terminal and offer an opportunity to correct. When using a batch handheld, the user will not see the discrepancy until he imports the data to the system.

Also offered is the function to scan the items into an order and enter quantity to the receiving document and the system will create the Purchase Document at posting.

2.9.6 Handheld Terminals

All processes in Inventory Management can be performed by handheld terminal. Using handheld terminals vastly increases productivity and simplifies data collection.

There are three types of handheld terminal connection:

- Generic handheld terminals – A handheld terminal without a master file where the only use is to collect barcodes and quantity. The handheld terminal data needs to be imported to a specific worksheet before the handheld terminal can be used for a different process.
- handPoint handheld terminals – Master and worksheet data can be downloaded to the handheld terminal. It is possible to carry out many processes in different worksheets without importing data to worksheets. When data is imported from handheld terminal then the data is delivered to corresponding worksheets selected on the handheld terminal.
- Radio frequency handheld terminals. The RF handheld terminal leads the user through the handheld processes and gives real-time response on errors or information. It can update the worksheet lines directly or use transaction queues to buffer the handheld.

2.10 3rd Party POS

The 3rd Party POS system offers the ability to connect other POS system to LS Retail. The system provides a logging and management structure where there is only need to create an import and export module for each 3rd Party POS system. The system can handle many types of 3rd Party POS systems at the same time even within the same store. Connections for POSIS and HGB-POS 5.1 are included in the standard system.

2.10.1 Logging of changes

The module will log all data changes that need to be exported to 3rd Party POS system. The data change is logged to each till group within a store. In most cases there is only one till group in a store.

2.10.2 Exporting to 3rd Party POS

Each export module is customized for each type of 3rd Party POS. This method makes it simple to customize for a new 3rd Party POS system.

2.10.3 Importing from 3rd Party POS

There are three ways of importing data from a 3rd Party POS system. The import methods are:

- Import through a Citrix/Terminal connection – The store user connects to the central system through a Citrix/Terminal connection and the user imports the data file from the 3rd party POS to the import module that creates processed transactions.
- Central import – The store user connects to the central system through a Citrix/Terminal connection and the user does an EOD process that moves the sales file to a central location. Then a central overnight process imports the sales data file and processes.
- Transaction header/lines/payment replication – The EOD process in the POSIS system will create Transaction header/lines/payments which are then replicated to corresponding tables in the central system. The transactions are posted through the statements. This is available only for POSIS.

It is simple to customize an import module for a new 3rd Party POS system that would import the sales data to the Data Pool table which is processed by a standard process which creates item journal entries, general journal entries and/or sales order documents. These transactions can be posted automatically as part of the import process.

The import process creates time statistic information.

2.11 Distribution

2.11.1 Structure

LS Retail is built on a Head Office – Store structure. This means that data can be replicated between the stores and the Head Office and vice versa. The application supports a number of configurations which include (but are not limited to) the following scenarios:

- Single store with either online or standalone POS.
- A Head Office with either online or standalone POS.
- A Head Office and a store databases with either standalone or online POS.

When either the POS or the store databases are standalone, the system uses the LS Data Director or the LS Replicator to move data between the databases. These modules are fully integrated with the LS Retail application and support a number of different modes of transfer. For more information on these modules, please consult the LS Data Director White Paper.

2.11.2 Store Grouping

Store grouping allows treating groups of stores as a single entity. A store group can consist of any number of stores, groups can be specified containing from one store to all stores. Store groups can be used to:

- Specify the distribution of items
- Specify the distribution of promotions and offers
- Specify the distribution of customer price groups
- Specify which stores should receive data when replicating data to the stores

2.11.3 Actions, PreActions and Table Distribution

LS Retail has a built-in logging mechanism, allowing the application to keep track of changes made to data in the database. These changes are logged to tables named Actions and PreActions.

The Actions and PreActions can be used as a log in order to know which data needs to be sent to the stores. This removes redundant data from the transmission process and makes the transmission both fast and efficient.

The main difference between Actions and PreActions is that Actions contain information on how the data should be distributed that the PreActions do not have. This distribution information allows the system to send the data only to the locations where it is actually needed.

The distribution mechanism depends on a set of rules that define where to send the data. These rules are named Table Distribution. The table distribution allows the distribution of data to be linked. This makes it possible to link the distribution of barcodes to the items they represent.

The Table Distribution and the Actions are the backbone of the distribution mechanism. The Table Distribution provides the general rules on how to distribute the data while the Actions provide the details on how individual records should be distributed.

2.11.4 Scheduler

LS Retail has a built-in scheduling mechanism that can be used to run batch jobs. The scheduling mechanism is also used to schedule transfers of data between head office and store or from store to POS terminals. These transfers can be done either with the Landsteinar Replicator or the Landsteinar Data Director.

The Scheduler is a flexible tool that can operate according to a number of parameters. Jobs can be scheduled to run on certain dates and times or with regular intervals.

The Scheduler can be run as a part of a Microsoft Navision client or as a part of the Microsoft Navision Application Server.

2.11.5 Scheduler Jobs and Subjobs

Please refer to the Landsteinar Data Director White Paper for more information on the functionality provided by the Scheduler Jobs and Subjobs.

2.12 Reporting

2.12.1 General

LS Retail provides extensive reporting capabilities. Reporting can be done in a number of ways but is always based on one of three levels. These are:

- Transaction level. The transactions generated by the POS provide the most detailed level. On this level it is possible to analyze the contents of individual receipts.
- Statistics level. The system can generate statistical data based on POS Terminal, Staff, Payment and Item sales. The frequency and details of how these statistics are generated can be configured. This data provides a good overview of the performance of individual staff members or POS, and can be used to analyze sales by hour within the store.
- Sales history which is based on stock and finance entries generated by the end-of-day routine. This data is usually generated once a day and thus does not provide much detail but can be used for longer term analysis.

Based on these three levels, the system provides a number of reporting options, both in the form of online analysis or in the form of reports.

Both report and online analysis provide support for Navision specific features such as Filters and FlowFilters. This allows the user to quickly filter the data the reports should be based on. The online analysis also supports period-based reporting, allowing the user to select the days, weeks, months, quarters or years the report should be based on. Custom date filtering is also supported.

Sales reporting is available on the following levels:

	Transaction	Statistics	Inventory	Gen. Ledger
Item Category	Yes	Yes	Yes	
Product Group	Yes	Yes	Yes	
Item	Yes	Yes	Yes	Yes
Variant	Yes		Yes	
Store	Yes	Yes	Yes	Yes
POS Terminal	Yes	Yes		
Staff	Yes	Yes		
Tender Type	Yes	Yes		
Infocode	Yes			
Data Entry	Yes			
Customer	Yes		Yes	Yes
Income/Expense	Yes			
Receipt	Yes			

Transaction and Statistics level reporting can also be done on time basis giving the possibility of analyzing the sales flow throughout the day.

In addition to this, sales on Item and Store level can be displayed in graphical format using the PlusGraph component.

2.12.2 Advanced Statistics

The Advanced Statistics module contains additional reporting options for use on statistics level. This allows the user to set up his own analysis view on the data, similar to the Account Schedules module in the General Ledger module. Additional analysis features made available in the Advanced Statistics module include:

- Analysis of sales related data such as number of customers and total sales.
- Analysis of non-sales data such as number of voids, open drawer and returns.
- Comparison between different periods.
- User defined calculations based on the results.
- Colored high/low alerts.
- Customized formatting.
- Results can be copied to Microsoft Excel.

2.13 Maintenance

The application includes a clean-up and archiving mechanism that is used to control the growth of the database by either deleting or archiving redundant data. This includes:

- A method to delete old actions and preactions.
- A method to delete old scheduler logs and Data Director logfiles.
- A method to archive old transactions.

Appendix A – POS Commands

The POS Commands provide a good overview of the functionality provided by the POS. Below is a list of the commands in the POS application:

Function Code	Description	Prompt
ALPHANUM_K	Keyboard entry	
AMOUNT_K	Amount key	
AUTOUPD	Auto Updated by Recipe	
BACKSPACE	Backspace	
CANCEL	Cancel	
CANCEL2	Hard cancel	
CARD	Payment with card	Card no.
CARDEXTRA	Extra card data	Extra data
CARDT_K	Card type	
CARDTYPE	Combicard (Valgkort)	Debit, Credit (0,1)
CHECK	Price check	Price check
CONTROL	Manual auth. code	Auth. control code
COUPON	Coupon key	
COVERS	Cover count	
CURR_K	Currency key	
CURRENCY	Payment with currency	Amount
CUSTOMER	Customer	Customer no.
DEFMENU	Default menu	
DISCAM	Discount amount	
DISCPR	Discount %	
ENTER	Enter	
ERRCHK	Error state	Error Expires end of (MMYY)
EXDATE	Expiry date	
FIND	Find (Dial)	
FINDNAME	Find Name	
FINDNO	Find Number	
FLOAT_ENT	Float entry	
GO_FIRST	First	
GO_LAST	Last	
GR_CHECK	Print Global Refund Check	
GUEST	Current guest number	
GUEST_CHG	Change guest allocation	
GUEST_TGL	Toggle guest view	
HELP	Help	
IMENU	Menu (Idle state)	
IMMEDIATE	Immediate Mode	
INCEXP	Income/Expense accounts	
INFO_K	Infocode key	
INFOCODE	Infocode	Infocode
INSTR	Instructions	
INV_LOOKUP	Inventory Lookup	
ITEM	Item state	Item no.
ITEMNO	Item number key	
LASTMENU	Back to last menu	
LINE_DN	Line down	
LINE_UP	Line up	

LINK2PAR	Last parent	
LOGOFF	Logoff	
LOOKUP	Lookup	
MACRO	Macro	
MARK	Mark Line	
MARK_ALL	Mark all lines	
MENU	Menu	
MGRKEY	Manager login	
MODMENU	Modifier menu	
NEG_ADJ	Negative Adjustment	
NEG_QTY	Return / void quantity	
OK	OK	
OPEN_DR	Open drawer	
OPERATOR	Change Operator	
PAGE_DN	Page down	
PAGE_UP	Page up	
PASSWORD	Authorization password	Auth. password
PAYM_ACC	Payment Into Account	
PAYMENT	Payment state	Amount
PHYS_INV	Physical Inventory	
PLU_K	PLU / Item key	
POST	Post transaction	
PRICE	Set price	Key in price
PRICECH	Change price	
PRICECHK	Price check	
PRINT_C	Print slips form last trans.	
PRINT_IC	Print invoice from last trans.	
PRINT_K	Print kitchen slips	
PRINT_SL	Print Pos slip	
PRINT_X	Print X report	
PRINT_Z	Print Z Report	
PURGE	Purge transactions	
QTY	Quantity	
QTYCH	Change quantity	
QUANTITY	Set quantity	Quantity
REC_TGL	Receipt print toggle	
REFUND	Start refund sale	
REM_TENDER	Remove tender	
ROUND_TGL	Toggle Round view	
RUNOBJ	Run Navision object	
SALESP	Sales Person	Enter Sales Person Number
SPLIT_BILL	Split bill	
SPLIT_ITEM	Split item	
START	Start sale	
SUSPEND	Suspend	
TABLE	Table	
TENDER_D	Tender declaration	
TENDER_K	Tender key	
TENDNO	Tender number key	
TENDOP	Tender decl./Float entry/Tender remove	Amount
TOTAL	Total	
TOTDISCAM	Total discount amount	
TOTDISCPR	Total discount %	

TOUCHKEYB	Touchscreen keyboard	
TOUCHNUMP	Touchscreen numpad	
TRAINING	Activate / deactivate training	
TRANS_TBL	Transfer to table	
UNMARK_ALL	Clear all marks	
UOM	Set unit of measure	
VARIANT	Variant	Key in variantcode
VOID	Void transaction	
VOID_L	Void line	
VOID_TR	Void / transaction register	
WEIGHT	Weight	Put item on scale
ZERO_CHK	Check zero balance	
ZOOM_TABLE	Zoom table	