

## Fujitsu StoreCENTER

### 1. StoreCENTER – for Centralised Value Chain Management

Continually changing business environment and needs set completely new requirements for retailer's IT solutions. As well as supporting separate functions, IT solution has to support entire integrated business processes. The main objective of Fujitsu's retail solution, which consists of in-store retail system **GlobalSTORE™** and of **StoreCENTER™** solution for centralised value chain management, is to support the following tasks all related to business processes, performance and results:

- Getting real-time sales information via web browser – from any location.
- Ensuring data validity and integrity.
- Process efficiency with enhanced connectivity. Enabling flexible connections to suppliers and other business partners' applications and business processes.
- Higher flexibility and adaptability of business processes.
- More resources to sales and customer service by decreasing the time used for IT operations in-store.
- Minimising overhead by streamlining operational efficiency both on store level and on chain level.
- Decreasing hardware costs related to in-store backups and other IT operations.
- Centralising valuable and essential IT competence to the chain level.
- Increasing security level of operations.

Together, **GlobalSTORE** and **StoreCENTER** outline a complete solution in order to answer these central requirements. The focus is intentionally widened from traditional in-store systems to cover even multi-store systems, allowing them to be efficiently managed from the chain level.

**StoreCENTER** is a general-purpose retail hub solution intended to efficiently join individual stores with the host systems, thereby forming an integral and easily manageable network. In addition to the integration task, it functions as a single connection point between the stores and external business systems.

Summarised, **StoreCENTER** consolidates information from the stores for added value processing and minimises routine work on the store level. **StoreCENTER** also enables complete management and control over the whole retail value chain - from the suppliers to a single store.

## 2. StoreCENTER – the Main Functional Objectives

### 2.1. Real-time Information

Centralised chain management solution enables rapid access to sales information, electronic journal information, and, of course, customer, promotion, product, and merchandise information, without time-consuming processes and procedures. All this is possible regardless of location, via web browser.

### 2.2. Process Efficiency with Enhanced Connectivity

The focus of Enterprise Application Integration (EAI) has more and more moved from internal application integration towards connections with external business partners' business processes. Internal and external connections often form a complicated point-to-point architecture where a simple change in one system has an effect on other linked systems as well.

StoreCENTER supports process integration with its hub structure. As a centralised integration hub, StoreCENTER handles efficiently all connections between various internal and external systems by its effective one-to-many architecture. StoreCENTER enables retailers to develop well-organised business processes and to seamlessly integrate Point-of-Sales systems with Enterprise Resource Planning systems (ERP) or Customer Relationship Management systems (CRM), or even with other suppliers' in-store systems than Fujitsu's. StoreCENTER thereby provides a possibility to combine business functions and offer services to company's business partners. Seamless integration is assured by using modern connection methods, such as Web Services, and by performing the needed data format conversions centralised in StoreCENTER. XML (eXtensible Markup Language) files are used for information transfer. They improve the functionality by providing flexible and adaptable information identification.

Network connections between various business partners can be complex and tricky to manage. In order to respond and manage this complexity, StoreCENTER incorporates a built-in data flow control mechanism through Fujitsu's GlobalSTORE Connectivity Services. It monitors data delivery from the source to the destination. Connectivity Services ensures one-time delivery as well. If errors should occur, data is automatically re-sent, or alternatively, an operator at chain level is alerted to manually handle the situation. The operator can manage and steer all data flows through a web-based monitoring interface.

### 2.3. Adaptability to Changes

System interfaces often form a complex environment which is based on so-called "point-to-point architecture". Under these circumstances it is possible that a modification in one system has an effect on numerous other systems. StoreCENTER solves this problem by offering a functional "one-to-many" interface, which makes the environment more manageable.

Companies are never exactly alike: business environment is continually changing and developing due to new markets, new products, new organisations etc. Thus, it is essential that any system that is linked to retailers business system has got the flexibility to adapt to these changes. **StoreCENTER** allows centralised format conversions and flexible linking between the systems. The business environment can more easily be adapted to changes in business processes thereby allowing new competitive ideas and innovations to be rapidly realised. The integration is based on modern methods and standards, such as Web Services and XML.

## 2.4. Operational Efficiency and Cost Reduction with Centralised Functions

Many store level administrative tasks can be arranged more efficiently by using centralised services. Typically, these administrative tasks include the following:

- Category management
- Assortment control
- Pricing and promotional activities
- Electronic journaling
- Business reporting
- System configuration
- IT operations, e.g. receipt archiving and in-store data recovery

When these tasks are managed and supported on chain level, sales and customer service can be better supported and improved, because the time spent on IT operations in-store is reduced. Streamlining of operations also minimises overhead and decreases hardware costs related to in-store backups and other such IT operations.

## 2.5. Security

**StoreCENTER** provides built-in security features with the option to customise access and authorisation controls. Each employee is given a specified role (or several roles), which further define store and/or chain level functions available for the user. Further, data security is implemented on a data object level for selected objects. This means that each data object “knows” what each user group is allowed to do with it. For example, chain managers are allowed to insert, update, and delete data objects; and store managers are allowed to modify only their store specific data.

## 2.6. User Identification and Access Control

User identification in **StoreCENTER** is by default based on Microsoft Windows authentication. The users log on to the system by using standard operating system logon method. If corporate level Active Directory (AD) system is available, the information about the users and equipment can be included into this structure. Alternatively,

StoreCENTER and the stores connected to it can form their own AD hierarchy. Furthermore, it is possible to define individual stores as separate AD entities.

If some POS terminals only need basic POS functionality, it is possible to allow these terminals to log on to the system by a predefined identification number and password and to only allow cashier functionality to be available for these POS terminals.

It is also possible to restrict the access to StoreCENTER by using CallSign authentication method, which is included in Fujitsu's mPollux product. This kind of procedure is useful for example when StoreCENTER applications are used behind a corporate firewall.

When using StoreCENTER functions locally, within one store only, AD services are not always available. For this kind of environment, there is a further alternative to use a proprietary StoreCENTER logon function which uses authentication method provided by GlobalSTORE RAFT.

The StoreCENTER functions are invoked via function oriented homepage. In a traditional, hierarchical menu system, several steps are often required to reach the function to be performed. In the StoreCENTER homepage, the most frequently used user functions are gathered in a single place onto the homepage and grouped into logical function groups. The homepage content is automatically adjusted by the access rights of the logged in user.

## 2.7. Location independence

One advantage of the browser based user interface is *location independence*: functions and responsibilities can be local or centralised according to need. Both local and centralised information can be accessed from any workstation within the enterprise network where the network access is available and the required access rights have been granted to the workstation user.

## 3. StoreCENTER – Structure

The cornerstones of the StoreCENTER solution are:

- Standard ARTS compliant database model
- Layered application software structure
- Browser based user interface
- Fujitsu RDC .NET Framework, which provides architectural guidelines, efficient development environment, and runtime services for retail solutions on top of the Microsoft .NET platform
- Microsoft .NET Framework
- Microsoft Windows 2003 / 2000 / XP environment
- Microsoft SQL Server database engine

The StoreCENTER solution consists of these main parts:

StoreCENTER Overview

- **StoreCENTER core solution:** the systems software platform, database engine, and connectivity services
- **StoreCENTER standard modules:** these provide the standard visible functionality. It is possible to choose to which extent they are actually used in a particular environment.
- **StoreCENTER optional modules:** these components are installed separately as needed.

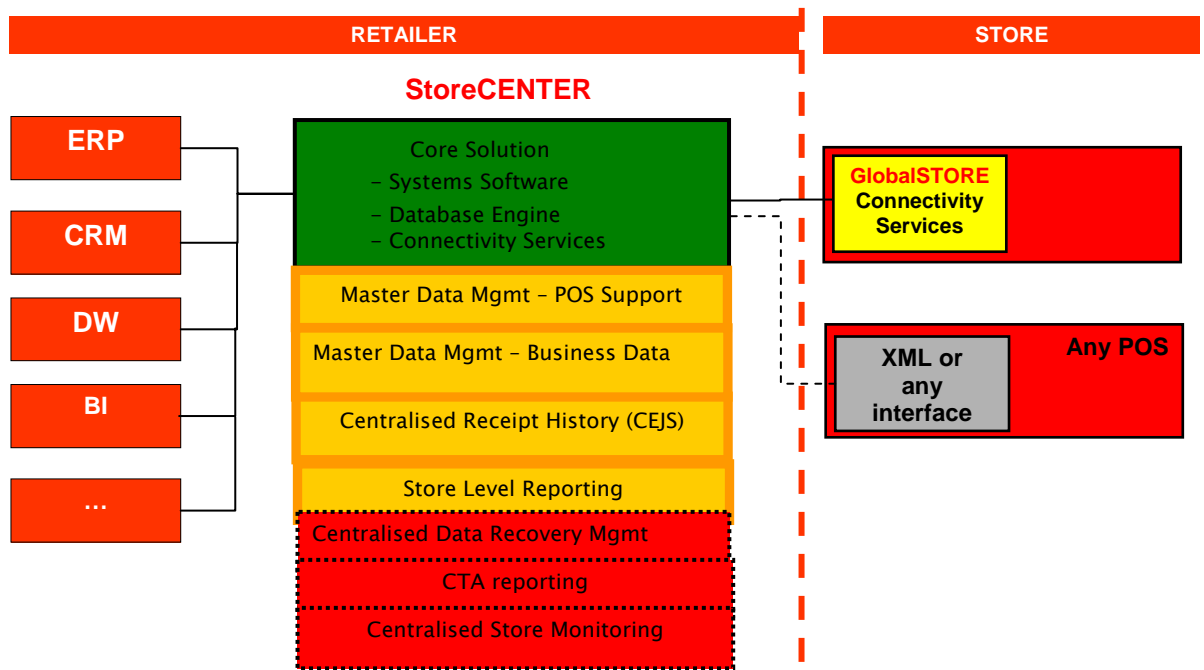
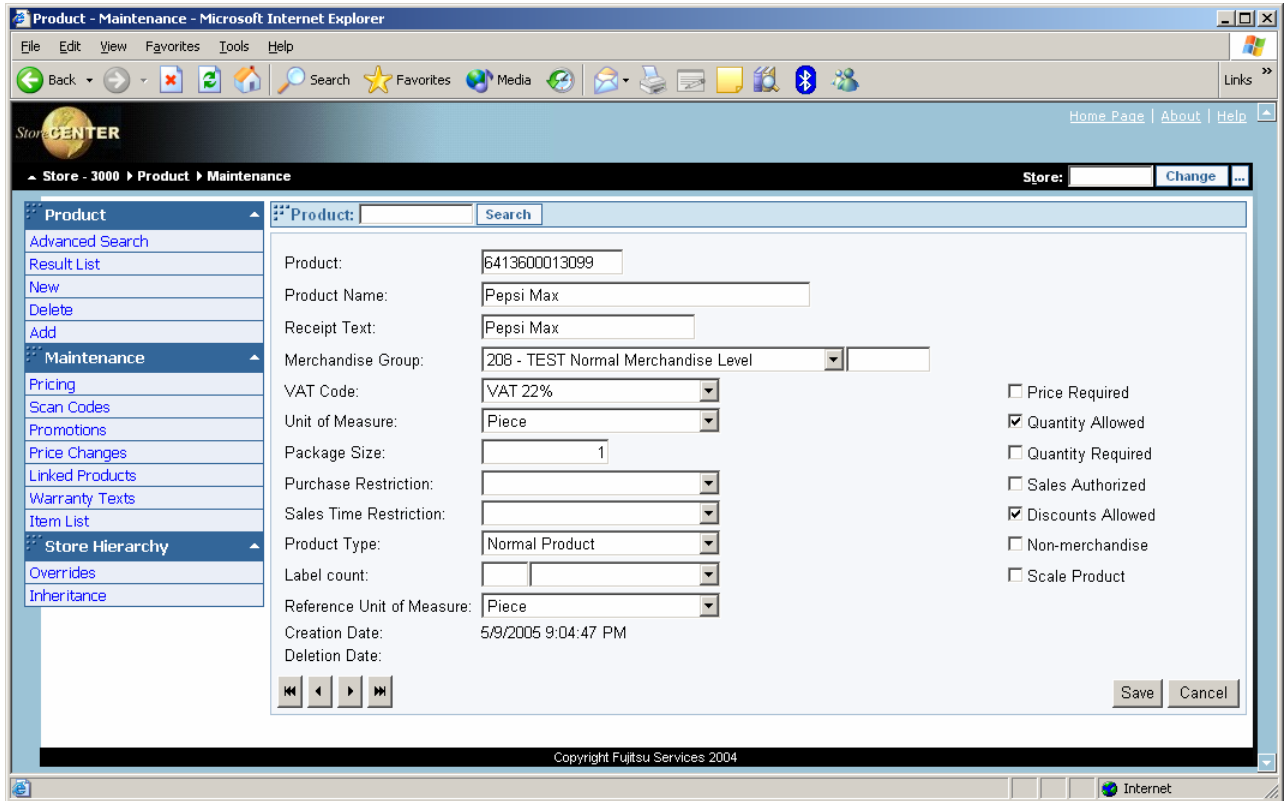


Figure 1. StoreCENTER module structure

The same StoreCENTER application functions can be used either in the local GlobalSTORE in-store system or in the centralised StoreCENTER system. GlobalSTORE in-store system and StoreCENTER centralised system work together seamlessly.



**Figure 2.** StoreCENTER user interface example

Connections with Fujitsu’s POS system rely on **GlobalSTORE** Connectivity Services. Web Services, http or traditional FTP can be used for information transfer between the centralised and in-store systems. Modern EAI tools, like Microsoft BizTalk Server Framework and BizTalk Server 2000 can be used for external Business-to-Business connections.

**StoreCENTER** can be linked with other suppliers’ POS systems through its XML based external interfaces for inbound and outbound data transfer.

## 4. StoreCENTER – Core Solution

### 4.1. Data Router and Focal Point

The Core Solution functions as a powerful retailer’s hub or focal point. It controls data communication in the entire retail chain and administrates all data connections along the chain or network. This node integrates and controls systems and data communication:

- Between the stores and the chain level **StoreCENTER**
- To the other external systems, for example customer’s ERP and CRM systems

The Core Solution supports and controls both internal and external data transfer between business partners. For external connections, some EAI tool can optionally be utilised, if available.

## 4.2. Centralised Format Conversions

Another important task of the Core Solution is to centralise data format conversions to the chain level, thus hiding all third party interfaces from the stores. This means that even large modifications in the company's information systems do not necessarily cause changes to the in-store systems. And vice versa, changes in the in-store systems do not provoke adjustments to other business systems.

## 4.3. Data Validation and Integrity

**StoreCENTER** Core Solution centrally controls data integrity and is able to detect and correct errors in the data content. This means that corrupted or inaccurate information can be centrally corrected before it streams further to the POS systems to the stores and causes troubles. Thus, in-store activities are not interrupted by incorrect data. Consequently, in-store sales operations become more viable and stable.

Another basic task of the Core Solution is to provide guaranteed end-to-end data delivery, that is, to ensure the transactions really flow to their destination. Data buffering and automatic re-sending techniques are used for this purpose, where appropriate.

## 4.4. Dynamic Data Model

The dynamic data model of **StoreCENTER** database solution enables flexible hierarchy handling, for example product hierarchies or store structure hierarchies. Both the product and the store hierarchy depth can be adjusted.

It is essential for the data exchange between external host systems, such as ERP or CRM systems that the data models employed are mutually compatible. **StoreCENTER** external connectivity services define a logical Business Data Model, through which the host systems can communicate. This data model enforces the rules and validations implied by the business logic, and consequently, the database integrity cannot be violated. Dynamic data model also protects the connector modules from structural changes, allowing them to remain compatible and valid even with future software versions and system customisations.

## 5. StoreCENTER – Functional Modules

In addition to the Core Solution, **StoreCENTER** contains a set of standard functional modules. These modules are meant to support and streamline the Back Office functions by implementing them partly on chain level. The standard functional modules are:

- Master Data Management - POS Support

- Master Data Management – Business Data
- Centralised Receipt History (CEJS)
- Store Level Reporting
- Centralised In-Store Data Recovery Management

Each module can be used with the Core Solution independently of the other modules.

### 5.1. Master Data Management - POS Support

This module contains those functions which deal with any information needed to support selling on the POS, but which does not deal with actual business data.

#### Store Hierarchy Maintenance

Combined with **StoreCENTER**'s dynamic data model, this function enables versatile and flexible definition and maintenance of the store chain structure. This, network-like, multi-level hierarchy can be as deep as necessary. Examples of the possible store hierarchy structures:

- Various retail chains
- Various store profiles
- Area organisation
- Language regions
- Country regions

A certain store can belong to as many groups as required. Data contents to be used at the stores are assigned to the store level according to the defined chain structure model. Identical data can be distributed to the entire chain and the diverging contents can be assigned only to chosen store groups or individual stores.

#### Store Configuration Maintenance

Defining store connections means facilities to establish and maintain data transfer links and connection rules between **StoreCENTER** and retail stores. Data transfer configuration is carried out through Store Configuration user interface.

#### Store Parameter Maintenance

A selection of various store parameters can be modified through user operations in order to allow adjustment of store features. These parameters are related to the store identification, store configuration and store level practices and policies.

## PoS Register Group Maintenance

PoS register functionality is configured at register group level. All POS terminals belonging to the same register group have the same kind of functionality.

PoS register group definitions are always established for the entire store chain. Thus the structure is flat and hierarchical store group or store level definitions cannot be made. It is of course always possible to define a register group that is exclusively used in one store only.

## Receipt Text Maintenance

The receipt header texts and footer texts can be maintained with this function. The receipt texts are defined for each register group separately.

## PoS Register Maintenance

Register grouping makes register configuration easy, because POS properties are primarily determined according to the register group. When a new POS register is created in the system, it is assigned to a register group. Assigning a register to a group sets the principal register properties.

## Store Options Maintenance

There are several options that affect the functionality of the PoS register. Part of them may be changed in store, but only an expert is usually allowed to change the settings.

Options are divided to store options and register group options. Store option values are identical for all POS registers in a store, but different register groups may have their own values for the register group options.

## POS Register Group Options Maintenance

POS register group maintenance is used to maintain values for various POS Register group specific parameters. Options cannot be dynamically added, because they depend on the application code.

## Tender Type Maintenance

After initial system setup, the set of tenders is normally quite stable for a store chain. **StoreCENTER** includes pre-configured support for a wide range of different tenders. Because most tenders must be handled with specific program logic, new tender types

cannot be added through user interface, nor can unused types be removed. However, it is possible to set tenders inactive. Properties of the existing tenders can also be modified with this facility.

### **Tax / VAT Maintenance**

Tax / VAT maintenance application is used to define Tax / VAT (Value Added Tax) classes. With the Tax / VAT maintenance function the user can:

- Select a store or store group for editing or viewing (head office users only)
- Create a new Tax Class
- View and / or edit tax classes.
- Delete a Tax Class. Deletion is not allowed if there are items that are attached to the tax class.

### **Employee and Operator Information Maintenance**

This functionality is used to define employees and PoS operators who are authorised to use various PoS related application functions.

The function maintains employee information, employee connections to security group(s), POS operator ID and password, identification cards, discount groups, and user roles. The employee information can optionally be added to the Active Directory through the same user interface.

Depending on the chain organisation, the employee data can either be maintained centrally, or locally in the store.

### **Selection List Maintenance**

Selection list is a collection which can be opened on the POS screen and which contains either PLUs or merchandise group items. This function is used to define the hierarchical selection lists. The lists can be used for registering items at POS terminal when a readable barcode is not be available and quick product codes cannot be used for some reason.

## **5.2. Master Data Management – Business Data**

- This module can function as a primary tool for business data management. In this context, *business data* is defined to include the following retail information needed on the POS:
  - Merchandise group information
  - Product information

- Price changes
- Events, promotions, and automatic discounts
- If business data management is not arranged within company's ERP system, the module can function as a principal source of business data for the stores in the chain. Even in the case where an ERP system is available, this module can be used in conjunction with the ERP system.
- The business data changes may arrive to **StoreCENTER** from an external source (ERP) or they may be made using **StoreCENTER** maintenance functions. In both cases, update messages are sent to the stores affected by the change.

The standard store update policy is **automatic**: the information about immediate changes made in **StoreCENTER** database is sent to the stores and applied to the store database without delay and without any user influence. Additionally, **timed changes**, like price changes or campaigns, can be defined for several pieces of business information. The information about timed changes is distributed to the stores immediately, but the price change or campaign takes effect according to the specified start / end date and time.

Depending on the retailing practices and chain integrity level, there may also be some information which is **maintained locally** in the store database and not centrally.

### Product Maintenance

The Product Maintenance function handles basic information of the products. Subfunctions are available for things like searching products, general maintenance, defining EAN codes for the product, adding a new product, defining future and immediate price changes, defining linked product information (deposit), and defining warranty texts.

A PLU item is a sellable object having a predefined price and other attributes which affect to the procedure how the item is sold to a customer. A PLU item always has a primary code according to which it is recognised by the system. Depending on requirements a PLU can also have other codes associated with it. These other codes – often EAN codes – are used for identifying the item when sold on the POS.

### Event Maintenance

With the Event Maintenance function the user may create, maintain, and remove events which are valid during a limited period of time.

Promotion definitions and merchandise group discounts are associated with events. Predefined event “Always” can be used for defining permanent customer group discounts for merchandise groups.

### Promotion Maintenance

StoreCENTER support the creation and maintenance of a wide variety of product, merchandise group, and basket promotions, including the ability to assign promotions to specific customer groups, for example a 10% transaction discount for 'Gold Card' loyalty customers. Promotion events may, of course, be assigned only to specific stores within the chain, in common with StoreCENTER's other maintenance features.

## Product Group Hierarchy Maintenance

Product group hierarchy structure is used to divide articles to different groups. Products can be grouped by for example product group and department. Database model does not limit the number of hierarchy levels. The hierarchy level depth configuration is done on system installation and changes to it may involve program adjustment as well.

The product group management functions consist of the following functionalities:

- Searching for existing product hierarchy groups.
- Creating a product hierarchy groups.
- Cloning a product hierarchy groups.
- Viewing an existing product hierarchy groups.
- Modifying existing product hierarchy groups.
- Deleting a product hierarchy group.
- Attaching product hierarchy node to another product hierarchy node in product hierarchy

### 5.3. Centralised Receipt History (CEJS)

Centralised Receipt History module of StoreCENTER enables straightforward electronic journaling and simple viewing of the archived receipts via web browser from any location, both on the store and chain level. With centralised EJS solution, archiving routines can be relocated from the stores to the headquarters, or even to the service provider.

Receipt searching is usually done either for business or for audit purposes. In-store POS applications store up both the visual layout of the original customer receipt, and an audit receipt, called electronic journal information, for each sales transaction at the point-of-sales. While browsing the receipts, the user may select between these two alternative views. Electronic journal information is quite similar to the customer receipt, but it also contains enhanced information about voids, price changes, security authorisation and other functions not displayed on the customer receipt. Both two views can be printed on paper or copied to another application, e.g. word processing or e-mail application, through clipboard.

StoreCENTER Centralised Receipt History module provides versatile search criteria. Transactions may be searched by:

- Transaction date and time
- Cashier number
- Terminal number
- Receipt number
- Tender type (cash, credit card, currency...)
- Store number

After successful search, the receipts that match the criteria are listed in the main window. The last criterion, store number, can only be used on the chain level. Consequently, this feature functions as a security attribute: a user at store can only browse concerned store's receipts. Complete viewing facilities are only available on the chain level.

Customer receipts are stored in XML format and can thereby be easily sent to some third party, if required.

#### 5.4. Store Level Report Management

The centrally archived receipts in **StoreCENTER** form a unique basis for both store level and chain level reporting. Store level reporting can be arranged with this reporting module. When **GlobalSTORE** is used, even real-time inquiries are possible via web browser from the store level. After the reports have been generated, their output is stored in XML format and can be later reviewed at any time, of course within predefined storage time.

**StoreCENTER** Store Level Report Management includes the following general services:

- Report selection menu: used for selecting the report to be produced.
- Report range criteria setting: used for setting the reporting criteria for the report to be produced.
- Report print mode and storage option selection screen: used for defining either drill-down or plain print mode; report saving and storage time options and free descriptive text can additionally be defined.
- Later review of reports: the list of saved reports is divided into monthly sublists, which can further be sorted according to report producer, date/time, and report type. The list can be limited to user's own reports, own and public reports, or all available reports can be included in the list.
- Search facility for saved reports: reports may be searched according to: store, report type, username, report descriptive text, and creation date/time.

Various control reports are needed to directly assist the daily store management. These reports may contain information about the financial flow of the store and figures describing checkout line loads or the operator performance. Control reporting can also

be used to provide static data contents information, like price lists or daily promotions. If the store management is also responsible for assortment control, more extensive reporting functions are needed.

**StoreCENTER** basic set of reports contains the reports described below.

### Control Lists

- Product Detail List:** The list is printed for a range of products in order to present detailed product information.
- Employee List:** The report is printed for a range of cashiers in order to present detailed employee or POS operator information.
- Merchandise Hierarchy List:** The report is printed for a range of merchandise hierarchy in order to present item hierarchy structure and merchandise group details.

### Store Performance Reports

- Location Performance Report:** The report details various key figures of the checkout lane / POS performance.

### Sales Structure Analysis Reports

- Product Sales Report:** The report details various product level sales counters. If produced for a merchandise group range, each output level is totalled with a full total at the end of the report.
- Merchandise Sales Report:** The report details sales counters for the selected hierarchy range. Each output level is totalled with a full total at the end of the report.
- Promotion Sales Report:** The report details promotional sales figures. Each output level is totalled with a full total at the end of the report.
- Tax Sales Report:** The report details sales and tax counters for the selected hierarchy range. Each output level is totalled with a full total at the end of the report.
- Comparing of Group Sales Report:** The report compares selected sales performance figure (profit-%, profit value, total sales, net sales, refunds or discounts) of the store with the store group and chain figures.

## 6. StoreCENTER – Optional Modules

### 6.1. Centralised In-Store Data Recovery Management

**StoreCENTER** is used for centralised control of the in-store systems. It can at the same time handle the Recovery Management of the most important in-store data. When a store is totally chain managed and all the changed data is backed up centrally by **StoreCENTER**, the store does not have to do much in recovery situations: most restoring activities can be performed at the chain level. **StoreCENTER** database contains all the essential information for in-store operation. Transaction data is automatically and properly secured as soon as it has been transferred from the stores to the chain level. If the store database hereafter has to be reconstructed, it can be accomplished by downloading the necessary information from **StoreCENTER**.

This module can only be used with Fujitsu's in-store systems. The store-specific data volume and the available communications bandwidth must be considered before including any other data to the centralised backup than the data found in the store database.

## 6.2. Cashier Transaction Analyser (CTA) Reporting

Centralised transaction data can also be utilised for specialised reporting.

- ❑ Centralised database provides improved possibility to statistically analyse certain critical POS incidents, like voids, corrections, returns, manual discounts, and personnel sales. The analysis functionality enables detection of deviations from the predefined normal levels and patterns, for example deviations in the transaction frequency or incident value. The deviations are highlighted and the reason for them can be searched with drill-down reporting.

Cashier Transaction Analyser (CTA) reporting provides means to quickly identify abnormal employee transactions at the Point of Sale. CTA is a value-added solution based on **StoreCENTER** transaction database, which contains all the transaction data of the entire chain. CTA complements remote control of store surveillance systems. With CTA, company internal audit can be easily focused on desired targets. CTA system provides the following benefits:

- ❑ Quicker perception of discrepancies
- ❑ More accurate detection of problem areas
- ❑ Recognition of fraudulent employees
- ❑ Knowledge of such monitoring discourages employees from trying illegal operations
- ❑ Helps to spot potential training problems, equipment problems, lack of cashier productivity

CTA provides a number of predefined statistics concerning critical incidents on the POS. Reports allow the loss prevention specialist to easily examine operator and store-level activity using incident frequency, incident value, and incident percentage compared to statistical average and sales volume and value. CTA reports can be viewed interactively with multiple drill downs, and saved for future examination or printed. The following reports are included:

- Over Average Report: shows the occurrences and values of a defined incident type for a selectable period. Operator figures are compared either against store average values or the average values of the entire chain.
- Excess Activity Report: shows peak daily occurrences and values of a defined incident type for a selectable period. Provides means to identify abnormal repeated activity or bursts of high values.
- Transaction Track Report: lists all occurrences and possible values of a defined incident type for a selectable period. Operators are ranked according to count or cumulated value of a specific incident.
- Trend Report: operator figures are presented as a function of time.

### 6.3. Centralised Store Monitoring

The tools available for Centralised Store Monitoring include Connectivity Tracker and Notification Tracker. These are browser-based applications that can be used from any remote location in the customer's retail network.

Connectivity Tracker function shows the status of different connectivity activities, for example sent and received files, at a very detailed level.

Notification Tracker function shows the changes made to business objects, like products or merchandise groups. The user information, timestamp and other details about the made changes are stored in the system and can be listed according to need. Flexible search criteria are available.

Checking routines can be set up which monitor the important data streams between **StoreCENTER** and the stores or host systems. For example, the receipt flow from the stores to **StoreCENTER** can be monitored. If a problem is found which the system cannot solve by itself, an alarm e-mail message can be sent to the Help Desk e-mail address according.

Centralised Store Monitoring routines may be combined with alarm and monitoring facilities of a third party system management package.

## 7. StoreCENTER – Customer Specific Projects

Should your company have requirements of a more specific nature, **StoreCENTER** can easily be modified to suit your business practices. Such modifications will still be fully integrated with standard **StoreCENTER**, because of the structured modular system design. The next paragraphs present some examples of customer specific projects.

## 7.1. Connections/Interfaces

Tailoring the network of external connections and required interfaces between various business partners must naturally be performed as a customer specific project work. Examples of some typical connection types include:

- Data transfer from corporate host systems, such as ERP or CRM systems, to **StoreCENTER**
- Data transfer from **StoreCENTER** to corporate host systems
- Data transfer from **StoreCENTER** to other suppliers' in-store systems

Since the data formats, exchanged between different external systems, vary even more than the file transfer methods, integration hub has to support many different file formats. Microsoft BizTalk Server is used for this purpose.

When implementing a new interface to the retail system, the implementation is based on so called connectors. Via appropriate connector, **StoreCENTER** can exchange files with the host system using FTP (File Transfer Protocol), or some other preferred file transfer method. **StoreCENTER** provides a set of available services for easy implementation of specific connector modules needed for different file formats. A sample set of connectors is included with **StoreCENTER** and these connectors can then be used as references when writing new, customer specific connectors.

Besides the different connectors, **StoreCENTER** Connectivity services are used with these interfaces. The integration between connector modules and the rest of the system is taken care of by the Connectivity services. These services support both time triggered and data triggered connectors.

Additionally, the functionality and architecture of **StoreCENTER** support the Web Services concept. With Web Services, the customer has a possibility to share business information with its business partners in a more flexible way, thereby automating activities in their supply chain.

## 7.2. Management Reporting

Centralised transaction data enables rapid information flow to the corporate host systems, such as ERP and CRM systems, or even to the business partners.

Management information needs are strongly dependent on the organisation structure. Chain level reporting, as a customer specific project, provides a wide range of possibilities to reach competitive advantage.

External chain level reporting can be implemented with customer's Business Intelligence (BI) solution (e.g. Cognos) or Data Warehouse system (e.g. SAP Business Warehouse). The interface to the **StoreCENTER** database can be implemented by for example OLAP Info Cubes.

It is also possible to implement customer specific chain management oriented reporting directly in **StoreCENTER**, using the standard reporting facilities and tools.

### 7.3. Customer-centric Supply-chain Management (ECR)

Last example of the customer specific project product is related to ECR (Efficient Customer Response) concept. Customer-centric supply-chain management can be related to three common co-operation and development areas of the retail industry:

- Management of Supply
- Management of Deliveries
- Enabler technology

**StoreCENTER** can support these three areas of ECR concept as a technical enabler for efficient Supply-chain Management (SCM) - and efficient SCM requires the option to implement ECR. **StoreCENTER** can handle forecast information provided by company's customers. As delivery schedule represents your customer's own forecast, it is likely to be more accurate than forecasts based on your own old sales statistics.

The idea of building customer specific ECR solution with **StoreCENTER** solution is that the following three activities could support the optimisation of supply and delivery:

- Real-time transmission of sales to **StoreCENTER**
- Sales statistics of chosen products and chosen stores
- Transmission of the sales statistics to suppliers via web or in batches