

Athena



White Paper

Supporting the fulfilment process
Including programming of tokens





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Introduction

Fulfilment is in this document defined as the process of handling one-time password generators (tokens) from delivery, shipment to end user and return of used/warranty items from the end user.

Athena Logistics Software has been created to support a number of alternative configurations of the fulfilment process. In order to create a generic document a standard process has been defined, and is used in this white paper to illustrate the process supported by Athena.

This document has been created primarily to show how Athena can be used together with and in support of a fulfilment process in order to achieve a high degree of efficiency combined with business intelligence data that can be used for purchase planning and negotiation.

The process described in this document can be changed for local requirements. In order to validate if the software supports a specific process configuration, please contact Verisec directly.

Background

Athena has been developed for tailored fulfilment processes to support large scale deployments of security related products (such as Vasco tokens, EMV Readers or PIN Mailers). At present Athena is in use at two of the largest Swedish banks: FöreningsSparbanken (Swedbank) and SEB. Case studies are available for download at www.verisec.se. A visit to the existing deployment sites can be arranged, and Verisec can also arrange for reference calls with both banks. In both facilities Athena is used for inventory, programming, tracking, RMA (Return Merchandise Authorisation) and for delivery (DHL, Swedish postal services).

Athena coordinates the various activities and forms the link between the logical and physical processes of deployment and returns. Since all data is collected in one system the entire life cycle can be traced from arrival in inventory through to delivery and returns handling. The integrated reporting feature enables forecasting, historical statistics, real time statistics (e.g. tracking individual deliveries) and recycle reporting in accordance with environmental requirements.

Fulfilment Process

An installation of Athena is intimately associated with the particular process chosen for managing the fulfilment service. Athena is designed to support a number of alternate process configurations, and can be adapted to support a host of customised alternatives.

Due to the flexibility available in Athena, a generic process has been chosen for this particular white paper. Diagram 1 below is a generalised schematic of a typical fulfilment process supported by Athena.

The fulfilment process has for the sake of clarity been divided into a Logical and Physical process. To manage all the data Athena is using an SQL Server DBMS¹. All data collected and stored in the database can be used to generate reports using any standard reporting package, or the built in standard reports.

A short description of each process is included below:

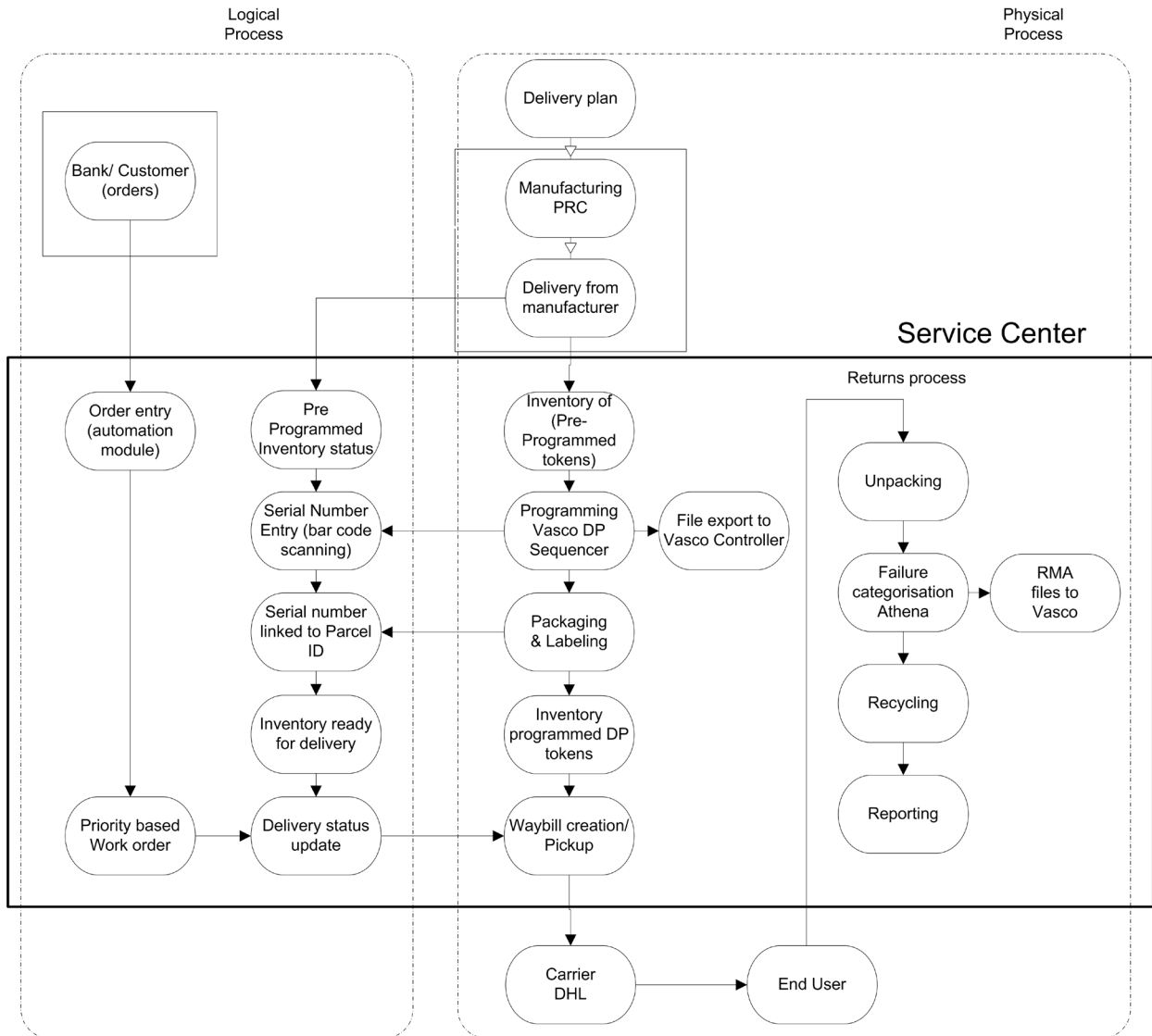


Diagram 1. Sample fulfilment process supported by Athena Logistics Software

Logical Process

The logical process can be subdivided into two separate processes: order handling and product handling. These two process chains come together to form the work order and input to the physical packaging process.

¹ Database structure and functions included in the database schema such as triggers or stored procedures for input validation are outside the scope of this document.

Order handling

Order files

For an order to exist in the system, it needs to be entered in real time or batch. A manual alternative exists for small number of orders or corrections.

The logical order process starts with an order file being electronically transferred at any given time from the Banks order management system, thereby creating an order in Athena.

Large batch order files may be protected using some form of encryption (e.g. PGP for file encryption or Virtual Private Network, VPN for channel encryption). This protection is outside the scope of the Athena software package, but can easily be implemented in the overall system architecture.

Orders are stored in the database, and form the basis of a work order (package and shipment instruction).

Product handling

Inventory and Serial number tracking

The second part of the logical process consists of managing inventory levels and tracking the individual serial numbers. Inventory level is really a function of the physical process (described below) and begins with the delivery from the manufacturer.

Tokens (e.g., DP300C, DP260, DP850) or other articles such as manuals are entered into the system on delivery, forming the basis of the inventory management. As the tokens are programmed using the manufacturers programming equipment (Sequencer / Digilink Array) the token serial numbers are entered into the system using a bar code reader. In the database the serial number is stored together with the type of token (if customer requires multiple hardware types), programming date, programming station and parcel ID associated with the particular unit.

When the tokens have been programmed they are ready for export into the bank system (Vasco controller), and flagged as “ready for delivery to end user” when the export has been approved into the Internet banking system. In conjunction with the export a number of error checks can be performed on the token batches. By comparing the Digipass Sequencer Export files (e.g. DPX) with the information stored in Athena, manual and hardware errors can be avoided².

The two logical processes (order handling and product handling) come together at this stage: work order and tokens ready and approved for delivery.

Physical Process

Inventory and programming

The physical process has its source in the delivery schedule agreed upon with Vasco, in addition to possible contingency stock. According to the delivery schedule, readers are delivered into stock and registered (e.g. number of tokens, model, delivery date, batch numbers).

From the inventory, unprogrammed tokens are “checked out” and programmed at one or more programming stations³. As each unit is programmed using the Digipass Sequencer the bar code

² Error management is outside the scope of this document. Validation algorithms have been designed based on experience of typical errors that may appear in large deployments.

³ A station in this case is defined as a Digipass Sequencer, Digilink plus an instance of the Athena Client software.

on the back of the token is scanned into Athena using a bar code reader. When the box or parcel is complete, a parcel ID label is printed with a unique serial number in human readable as well as a barcode. This ID is used to track which token serial numbers are in each parcel⁴. Parcels can be standard (as delivered by Vasco) or customised for specific purposes.

When tokens have been programmed and been exported into the Internet banking system they form the inventory with tokens ready for delivery.

Delivery and shipping

When a work order is created in the system a physical delivery needs to take place. Using the Shipping module an operator can process orders by assigning parcel ID's to fulfil a particular order. Since shipping carriers (e.g. local postal carriers, DHL, UPS, etc.) differ between markets, additional integration may be needed. By integrating communication between Athena Shipping and the carrier's system, functions such as parcel tracking can be made automatic.

A processed order results in one or more parcels with a waybill being printed and attached to the package.

Parcels are collected by local carriers, and depending on the degree of IT support from the carrier, information can be collected and stored in Athena⁵.

User Activation status

On activation of the token in the Internet bank application, a message can be sent to Athena in order to flag the particular serial number as activated. From a reporting perspective this option gives the opportunity to report stock levels at branch offices, thereby allowing for automatic generation of additional orders or as a basis for intelligent ordering decisions.

Returns Process

A part of the physical process is managing returned tokens. Returns may be due to any number of reasons ranging from wrong addresses to faults in the hardware, or battery expiry.

Managing returns gives control over the types of errors that are experienced by the end users allowing a more environmental friendly recycling process.

Depending on the chosen process, returns can be managed in different fashions. Athena supports RMA number generation and tracking which allows branch offices to place an "order" for a returns investigation⁶. A local branch can enter their clearing number / office details directly into the system, and receive an RMA number that can be used for tracking.

As packages arrive to the returns facility, the RMA number is used to track which offices have sent which tokens. As each token is classified according to error type (Vasco standard error types are supported, and new categories can be defined), this information is also stored in the database, thereby allowing for reports covering the entire life cycle of the token device.

4 A parcel is defined as a package with one or more tokens. Vasco typically delivers boxes of 50 or 100 units that can be used for shipping to local branch offices. Tokens can also be packaged individually or in smaller quantities. The types of parcels in the system need to be defined on installation.

5 For example, in the case of DHL data can be collected electronically with information about tracking numbers, time of delivery, recipient (signature) etc. This information can be stored in Athena and used for reporting and support issues related to delivery.

6 If RMA procedures are not necessary, this functionality can be turned off.

Reports can also be generated for crediting purposes (for instance, if a local branch office returns faulty units that are covered by warranty). These reports can be adapted depending on the internal pricing model adopted by the bank.

For warranty purposes, Vasco typically requires the RMA described above. Athena supports out of the box reporting in the required Vasco defined format.

Reporting

Since all data pertaining to the fulfilment is stored in a central repository in Athena, reporting can be managed through the central reporting and forecasting module. All data is stored in an SQL database, which allows for reporting on all imported and otherwise created data fields.

Each token can be tracked from its arrival in stock and through programming, shipment, return, and error classification. Data stored in Athena allows for forecasting based on historical order levels correlated with return levels, delivery reports, returns reporting as well as internal personnel reports (time at station, number of units programmed, error frequency).

Athena Hardware Requirements

Server

- PC with 2 GHz or higher processor clock speed recommended; (single or dual processor system)
- 1024 megabytes (MB) of RAM or higher recommended.
- 6 gigabytes (GB) of available hard disk space
- Super VGA (800 x 600) or higher-resolution video adapter and monitor
- CD-ROM or DVD drive
- Keyboard and Microsoft Mouse or compatible pointing device
- Microsoft SQL server 2000 SP3
- Apache Jakarta Tomcat 5.0 or later
- Exchange user account and Outlook client

Clients

- PC with 800 MHz or higher processor clock speed recommended; (single or dual processor system)
- 512 megabytes (MB) of RAM or higher recommended
- 1.5 gigabytes (GB) of available hard disk space
- Super VGA (800 x 600) or higher-resolution video adapter and monitor
- CD-ROM or DVD drive
- Keyboard and Microsoft Mouse or compatible pointing device
- .NET Framework 2.0
- Label printer (e.g. Zebra TLP 2844, S-600)
- Bar Code scanner (ean39,128 and interleave2/5) Laser scanner Preferred

Athena System Specifications

Clients

The clients are written in Visual Basic .NET, and require framework version 2.0. Communication with the database is via MDAC. The system contains the following clients:

1. **Registration.** Used during programming of tokens together with a barcode scanner (for entering the token serial numbers into the database) and a barcode label printer (for marking boxes with an internal box ID).
2. **Shipping.** Used for shipment of orders, connected to a barcode scanner (for linking internal box IDs with the shipper's parcel ID/tracking numbers) and a printer for address labels (this can be a specialised label printer or a standard laser printer depending on solutions supplied by the carrier). The shipping client also interfaces with the shipper's/carrier's EDI module. Multiple carriers are supported.
3. **Returns handling.** Used for returns and warranty handling. Connected to a barcode reader (to register the serial number of each token).

Server

The server is comprised of two components. These may be located on the same or different systems:

1. The **Database server.** Contains most of the business logic and consistency checks, also handles the e-mail interface.
2. **Web application.** Used among others to handle administrative tasks (export creation, manual order management), survey order and stock status, and generate reports.

External Interfaces

E-Mail

The database server contains an e-mail module that connects to a mail server via MS SQL Server's Mail interface. The mail interface is used for the following:

1. Interfacing with the Customer: Automatically importing **Orders** and order **cancellations**, and sending order and order modification acknowledgements and packing slips back to the customer.
2. Interfacing with the Bank: Receiving **Export acknowledgements**.
3. Sending **Alerts** to operator personnel.
4. If available from the shipper, import **tracking** data from the shipper, to maintain the delivery status of each dispatch.

Shipper's EDI

The shipping client interfaces with the shipper's EDI solution. The interface solution typically differ with each shipper.

Exports

Token data is typically exported in encrypted batches. Both automatic and manual sending of export files is supported. In both cases, an export is initiated by making an export control procedure to ensure correctness of the data exported and that present in the database.

Reports

A number of reports can be generated for internal or external use. These are available in HTML or as Excel data sheets.

Contact information

For questions related to this document please direct your enquires to:

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