



AFIS® Product Brief

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AFIS® is our automated fingerprint Identification system that runs on the Orbita® web application framework. It is the application software that harmonizes and converges most of our other biometric solutions.

Introduction

Automated fingerprint identification is the process of automatically matching one or many unknown fingerprints against a database of known and unknown prints. Automated fingerprint identification systems are primarily used by law enforcement agencies for criminal identification initiatives, the most important of which include identifying a person suspected of committing a crime or linking a suspect to other unsolved crimes.

With greater frequency in recent years, automated fingerprint identification systems have been used in large scale civil identification projects. The chief purpose of a civil fingerprint identifications system is to prevent multiple enrollments in an electoral, welfare, driver licensing, or similar system. Another benefit of a civil fingerprint identifications system is its use in background checks for job applicants for highly sensitive posts and educational personnel who have close contact with children.

Seamfix has created an enterprise back-end system for processing fingerprints in jpeg, template format and industry standard WSQ formats.

Seamfix AFIS® Enterprise suite offers a powerful and affordable application software and middleware solution with an opportunity for businesses and organizations to solve their identity management challenges and derive benefits offered by robust biometric technology options for solutions to long lasting business problems.

Features of Seamfix AFIS® Server

A.) Automatic collation capabilities

AFIS® collates basic and biometric data from the client terminals deployed all over different capture points. The underlying collation technology consists of object synchronization from the client nodes back through an IP network to the AFIS® enterprise servers. Deployed technologies for his collation include RMI, HTTPS and SFTP. We will expound a little on the mechanism and security for data collation, viz:

Data integrity: For all records synchronized from the client database to the back-end AFIS® server, integrity checks using the known and tested MD5 is used to run checksums and redundancies. There is no opportunity for serialized files to be altered during data transport. This feature guarantees data integrity and safety throughout the transport phase of object synchronization to the AFIS® servers.

Data encryption: AFIS® decrypts using AES. All client nodes are built in with special encryption engines that ensure data is encrypted with AES. This feature checks against possibility of man in the middle attack on data passing through IP networks. In the events, packets are sniffed; there is little chance of decrypting the AES encryption within reasonable time. In addition, the transport protocol is FTP which sends file data in fragments as much as the network bandwidth can carry. This also makes the chances

of reconstructing data through sniffing more difficult. Finally, even when data is reconstructed, byte codes will be reconstructed since objects are the entities traversing these networks; it gets next to impossible to get the data from an object stream since these are not meaningful files that have header signatures. All these make AFIS® very secure and best used for critical applications like the military and forensic technology purposes.

Auto Object replication: Synchronized data to the AFIS® server back-end does not need any form of human intervention to reconstruct into the AFIS® database schema. The process is error free and each of the records has a unique signature that enables all the tables to be updated appropriately in the RDBMS system. This automatic data replication over IP and APN networks makes AFIS® very functional in the collation of data sets that run into millions of records spanning sparse and distant geographical landscapes e.g. an entire country! AFIS® is optimized for military, government, civil and corporate enterprises.

N-Stage Collation Mechanism:

Many times in practice, it is difficult to synchronize records from the capture nodes directly to the AFIS® server in the back, in scenario like this AFIS® sub servers are used to create intermediary stop shots for data collation. This is called N-stage collation technique. This is possible because the Seamfix AFIS® is able to synchronize data N times through different IP based media to arrive to the final RDBMS destination. Each of these stages has all security mechanisms, data integrity checks, data encryption and auto object replication. AFIS® is tailored to meet your needs!

B.) Speed

AFIS® is optimized in software and in the hardware processor running the matching and data processing. Speed of matching comes into play especially when the AFIS® has to perform its function as an AFIS engine which is an $N \times N$ scan.

Seamfix AFIS® solution can perform $N \times N$ scan of 12,000 records in approximately 1.30 hrs in a normal core 2 duo, 4 gig RAM desktop stations. This speed is achievable thanks to the optimization at the thumbprint miniature layers and lossless compression algorithms running prior to template storage.

C.) Scanning Mechanisms

AFIS® enterprise suite can achieve three different scanning mechanisms, they are

- **1 × N**: This is the scanning of one record against the entire super set of records within the AFIS® database.
- **n × N** : This is the scanning of a subset of records against the entire super set of records within the AFIS® database.
- **N × N**: This is the scanning of the entire database of collated records against itself in an effort to achieve synthesis of duplicate records and fish them out.

AFIS® enterprise application software can help an organization clean up records gotten from data capture. It runs within the Orbita® web application framework and as such derives all the inherent features.

D.) Customization and integrations

The AFIS® server suite in some business environment may require slight modifications in application flow and business rules. We have also had scenarios where integrations and middleware solutions need to be developed on a case by case basis to be able to achieve smooth and seamless data processing and flow.

E.) Management reports and Dashboards

AFIS® suite is coupled with many analytics and report dashboards that enable management make quick decisions for the good of the business. These dashboards reveal critical measures of productivity e.g. *Correlations between dimensions that reveal patterns and unknown relationships between data.*