Electronic Identification

SOFTWARE DEVELOPMENT TOOLS FOR DIGITAL FINGERPRINT SYSTEMS BY AWARE

KEY FEATURES

- **Standards-based software development tools for digital fingerprint systems**

- **Provides FBI- and ANSI/ NIST- compliance for those components that require it**

- **Shortens the required time and expense to build standard-compliant systems**

- **Used worldwide by system integrators, AFIS and Livescan vendors, and State, Local, and Federal Governments**
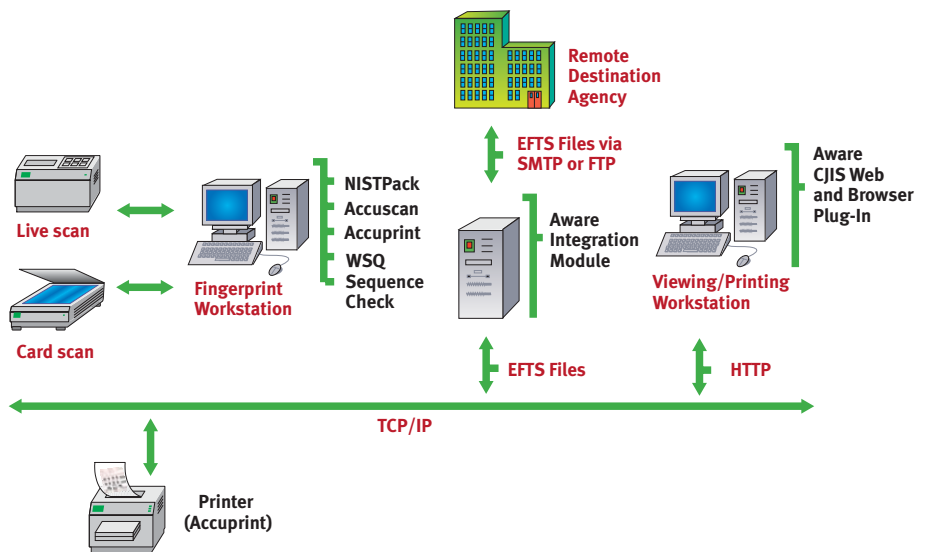
CRIMINAL OR CIVILIAN APPLICANT REFERENCE DESIGN

Aware provides all of the software components necessary to quickly build a system to generate FBI and NIST compliant electronic fingerprint-based criminal or civil applicant background checks. With software provided by Aware, you can design, prototype, and test a system from the ground up within a few days. All of our tools include a C callable function library, a set of ActiveX controls, and example programs with source code.

Proven in thousands of systems worldwide, Aware software components provide a unique, customizable solution designed to fulfill the growing demand for generating, sending/ receiving, and viewing/archiving electronic criminal or civil applicant background checks.

WSQ BY AWARE

Widely used around the world, WSQ by Aware is specifically designed for the compression and management of high-resolution, grayscale fingerprint images. As the first officially certified WSQ vendor, Aware guarantees FBI compliance with every WSQ license. Aware provides WSQ and other IAFIS compliant software solutions to a diverse customer base, including major system integrators, livescan and AFIS vendors, as well as local, state, and federal government agencies.

AWARE PROVIDES THE SOFTWARE COMPONENTS NECESSARY FOR SYSTEMS INTEGRATORS AND OEMS TO BUILD A FULLY FBI CERTIFIED SYSTEM TO ACQUIRE, PRINT, VIEW, AND ELECTRONICALLY EXCHANGE DIGITAL FINGERPRINT (EFTS) FILES. THIS DIAGRAM SHOWS WHERE EACH AWARE COMPONENT RESIDES IN THE REFERENCE DESIGN.

Remote Destination Agency

EFTS Files via SMTP or FTP

Aware CJIS Web and Browser Plug-In

Live scan

NISTPack Accuscan Accuprint

WSQ Sequence Check

Fingerprint Workstation

Card scan

Aware Integration Module

Viewing/Printing Workstation

EFTS Files

HTTP

TCP/IP

Printer (Accuprint)

AWARE

Section of a digital fingerprint image that has been compressed 15:1 with the JPEG algorithm. Note the block artifact that is inherent in the algorithm. The image has been zoomed by 4.
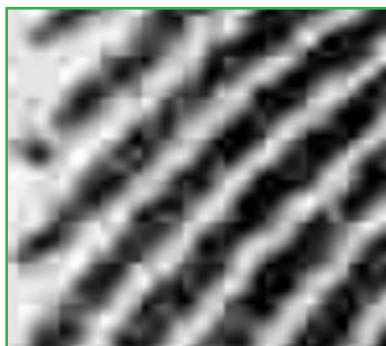

Section of the same fingerprint image that has been compressed 15:1 with the WSQ algorithm. Note the absence of the block artifact. The image has been zoomed by 4.

A typical rolled, live scan acquired, fingerprint image

The same fingerprint images showing the color coded output image of the Aware WSQ image quality API. This feature is designed to provide immediate visual feeback on the determination of fingerprint image quality.
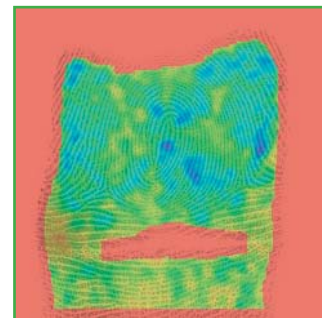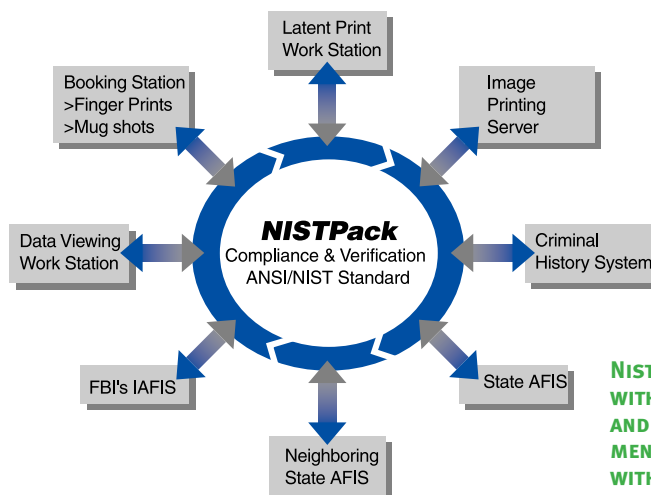
POOR   GOOD   EXCELLENT

NistPack by Aware

NISTPack enables law enforcement agencies, systems integrators, and vendors of fingerprint and mug shot systems to easily comply with the ANSI/NIST standard: "Data Format For The Interchange Of Fingerprint, Facial, and Scar/Mark/Tattoo Information," and the FBI's implementation of it: "Electronic Fingerprint Transmission Specification." NistPack is the only COTS product that enables the capability to read, write, edit, validate, and view all of the demographics and image data held within an electronic ten print card. (NIST or EFTS file)

NISTPack supports the digital ten print card format (NIST format) of the FBI, RCMP, UK Home Office, Interpol, and all 50 US states. It supports all of the image and demographic record types required to generate or parse a single, standard-compliant file that is designed to hold the following information:

Supported Data Types

type 1 & type 2 records	demographic data
type 4 records	500 dpi livescan or card scan ten print images
type 7 records	user defined grayscale images
type 8 records	digitized signature
type 9 records	fingerprint minutiae data
type 10 records	facial, scar/mark/tattoo images
type 13 records	variable resolution latent fingerprint images
type 14 records	variable resolution ten-print images
type 15 records	high resolution palm print images
type 16 records	user defined testing records

Latent Print Work Station

Booking Station
>Finger Prints
>Mug shots

Image Printing Server

Data Viewing Work Station

NISTPack
Compliance & Verification
ANSI/NIST Standard

Criminal History System

FBI's IAFIS

State AFIS

Neighboring State AFIS

NistPack provides compliance with the ANSI/NIST standard and ensures the law enforcement data can be exchanged with other systems

NistPack by Aware (cont'd)

Image Compression Engines

NISTPack is bundled with several standard-compliant image compression engines to facilitate the efficient transmission and archival of the data. These compression engines include the following:

WSQ	for type 4, type 14, and type 15 records (fingerprint images)
JPEG	for type 10 records (facial and scar/mark/ tattoo images)
Lossless JPEG2000	for type 13 records (latent fingerprint images)
G4 Fax	for type 7 and type 8 records (for scanned documents and signatures)

Sequence Check by Aware

Sequence Check by Aware provides matching and image quality measurement for multi finger live scan and card scan systems. It is an API designed for those systems that must incorporate a high level of fingerprint image quality assurance as part of the work flow.

The Sequence Check API provides the following capabilities:

✔ **Slap Segmentation**

✔ **Fingerprint Image Quality**

✔ **Fingerprint Image Encoding**

✔ **Fingerprint Image Matching**

IMAGE SHOWING ENCODING AND MINUTIA MARKING COMPONENT OF SEQUENCE CHECK. THE RED MARKS SHOW THE CORE OR DELTA REGION OF EACH FINGER- PRINT IMAGE, THE BLUE SHOW THE BIFURCATIONS, AND THE GREEN SHOW THE RIDGE ENDINGS. THE LOCA- TION AND TYPE OF EACH POINT IS EXPORTED BY AN API FUNCTION.

AccuScan by Aware

AccuScan is a NISTPack add-on software module that provides FBI "Image Quality Specifications" compliance for low cost, off-the-shelf, flatbed scanners. With AccuScan, a non-specialized scanner can be used to digitize and format inked cards so that they can meet the FBI's rigorous image quality requirements.
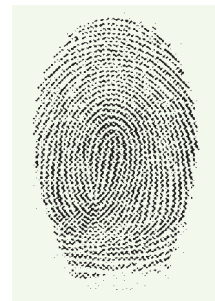
AccuPrint by Aware

Accuprint by Aware is a specialized fingerprint image printing library designed for systems integrators and law enforcement agencies that must generate high-quality printouts of digitized fingerprint images.

As a software based fingerprint image printing method, Accuprint provides an affordable solution that has been designed to work with off-the-shelf laser printers. Accuprint can print a single fingerprint image or an entire agency specific ten-print card with text and graphics.
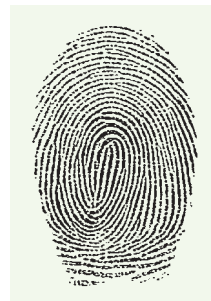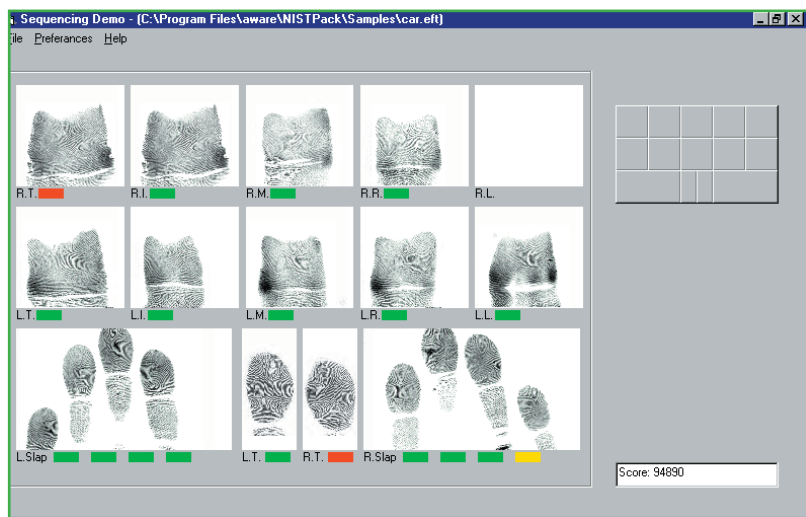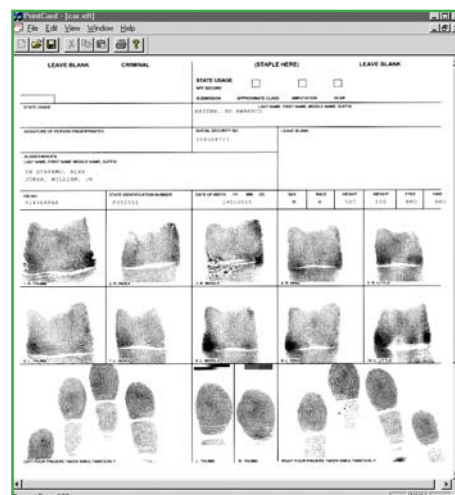
ACCUPRINT USER INTERFACE CAN DISPLAY A COMPLETED TEN-PRINT CARD BEFORE PRINTING

ACCUPRINT BY AWARE   **STANDARD MS WINDOWS**

EXAMPLE OF SEQUENCE CHECK PROGRAM THAT OPERATES ON A TEN-PRINT CARD. COLOR CODES BELOW EACH IMAGE DESIGNATE A MATCH (GREEN), NO MATCH (RED), OR MATCH PENDING (YELLOW). FOR EACH TWO FINGER MATCH ATTEMPT, A SCORE IS RETURNED. A MATCH/NO-MATCHTHRESHOLD CAN BE SET THROUGH THE "PREFERENCES" PULL-DOWN MENU."
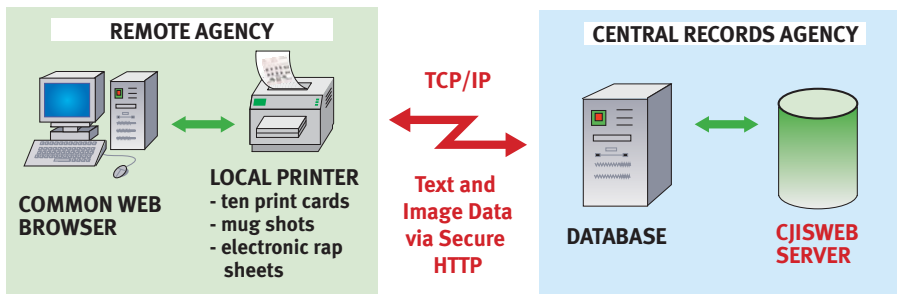
Integration Module

The Aware Integration Module is a mini store and forward framework that provides an electronic communication gateway between a live scan, card scan, or mug shot system and remote agencies. The Integration Module is an application that runs on a Windows NT/2000 server and it supports SMTP, FTP, and HTTP. It's user interface provides configuration options, status of incoming/outgoing transactions, and transaction viewing.

CJISWeb by Aware

CJIS Web provides a secure web browser/server based method by which privileged individuals can remotely access a digital fingerprint archive and database. The database is queried from a web browser and all image data is sent to the browser in compressed form where they are decompressed and displayed. CJIS Web supports fingerprints, palm prints, latent prints, facial images, scanned documents and text files. The fingerprint, palm print, and latent images are displayed at the same quality and resolution at which they were acquired. All demographic data associated with the image data can be accessed as well. FBI compliant ten-print cards can be printed directly from the browser to a local printer.

CJIS Web enables web access to remote criminal justice data

REMOTE AGENCY

COMMON WEB BROWSER

LOCAL PRINTER
- ten print cards
- mug shots
- electronic rap sheets

TCP/IP

Text and Image Data via Secure HTTP

CENTRAL RECORDS AGENCY

DATABASE

CJISWEB SERVER

WSQ plug-in's image processing capabilities: A high-quality magnification window can be dragged around the image with a mouse

About Aware

Aware, Inc., a pioneer and recognized leader in wavelet technology, provides compression solutions targeted to tele-radiology, video surveillance, remote sensing, seismic data, FBI-compliant fingerprint images, and still image multimedia. Please contact Aware for more information.

AWARE