Fingerprint Matching System (FMS)

A robust, reliable, scalable and high-speed 1:N fingerprint-matching system for quick customization and deployment of biometric identity applications.
Fingerprint Matching System

NEC Fingerprint Matching Server (FMS) is a software-based, high-speed 1:N fingerprint-matching system designed based on COTS (Commercially Off-The-Shelf) hardware and system software platform. It utilizes an array of industry standard Windows and/or Linux servers for parallel processing to achieve high-speed 1:N matching using highly accurate and reliable NEC fingerprint matching algorithms.

With the multi-tier software design and advanced job queue and resource management functions, FMS deployment is fully scalable from small system with just one single server to large scale matching system with hundreds of servers. Very high system availability is achieved by advanced load balancing and build-in automated error detection and recovery feature.

For ease of biometrics application software development, maintenance and best system performance and matching accuracy, it is recommended that FMS shall be applied together with other NEC biometrics software products such as SPID (Smart Positive Identification SDK), PALS (Portable AFIS Livescan Station) and BAF (Biometrics Application Framework), Mobile ID, etc, to form a versatile platform for rapid fingerprint applications development and implementation.

Features and Benefits

- World’s most accurate fingerprint matching technologies as illustrated in independent NIST tests.
- Reliable and field proven in numerous deployments world-wide from small to very large applications.
- Pure software-based solution running on COTS platforms and no proprietary hardware matching processors needed. Easy and timely upgrade to new and more powerful processor.
- Leverages on fast advancing and high performance industry standards multi-core processor technologies.
- Multiple matching algorithms support to achieve high matching accuracy for varying fingerprint images qualities and profiles.
- Multiple databases support to allow consolidation of biometrics data from multiple application system into a unified database.
- Scalable configuration from small to large-scale system, for both database and matching capacity.
- Allows mixture of Search Engine of varying hardware models available from time to time.
- Easy expansion of matching capacity by adding more Search Engine.
- Allows dynamic adding and removal of Search Engine without disruption to system operation.
- Reliable matching solution using built-in load balancing and fully automated error detection and switch-over features.
- Fast application software development and integration using Web Services calls.
- Additional support for Facial Recognition using Facial Recognition plug-ins.
The FMS Application Architecture consists of 3 architectural layers: FMS Server, FMS Search Engine and FMS Web Services.

**FMS Server**
This is the FMS manager software that receives the search requests from client applications, supervises the matching resources to execute the search requests and returns the search results to the respective client applications.

**FMS SE**
FMS SE is a fingerprint Search Engine which performs the 1:N fingerprint matching functions. A FMS System may be configured with one or multiple SEs to achieve the desired matching speed requirement.

**FMS Web Server**
Web Server is the server to host the FMS Web Services server software. Client applications can call the Web Services via the Web Server to submit search request to FMS and receive the search results.
Online monitoring facility provided for remote monitoring and control of search jobs, such as changing job priority, canceling jobs, browsing hits list, etc. and control of search engine status start/stop, etc.

Support concurrent processing of multiple search jobs with advanced job management functions such as priority control, batch and online jobs management, etc.

An online reporting module provided for daily statistics reports, system reports and other audit trails.

Supports Cold Search and Filtered search which can be set as system default and/or dynamically changed for individual search job.

Supports various filtering parameters which are classified in three major categories:
(a) Automated Fingerprint Classification
(b) Standard filtering parameters including sex, race, religion, nationality, range of height, range of weight, range of birth date.
(c) User defines parameters – up to 40 codes can be defined by user.

Special Features and Out-Of-Box Services

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<tr>
<th>System Component</th>
<th>Recommended Hardware</th>
<th>Recommended System Software</th>
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<tbody>
<tr>
<td>FMS Server</td>
<td>Intel or AMD Quad-core Processors with 32GB RAM or higher 2 x 146GB FC-Disk (2 sets recommended for high availability configuration.)</td>
<td>Windows Server 2008.</td>
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<tr>
<td>FMS SE</td>
<td>Intel or AMD Quad-core Processors with 32GB RAM or higher 2 x 146GB FC-disk Number of SE depends on matching capacity requirement. At least two SE recommended for HA configuration.</td>
<td>Windows Server 2008</td>
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<tr>
<td>Web Server</td>
<td>Intel or AMD Quad-core Processor Configuration depends on transaction workload and performance requirement.</td>
<td>Windows Server 2008 IIS or equivalent</td>
</tr>
<tr>
<td>DB Server</td>
<td>Intel or AMD Quad-core Processor Configuration depends on transaction workload and performance requirement.</td>
<td>Windows Server 2008 Oracle 11g or SQL Server</td>
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About NEC Asia Pacific Pte Ltd

Singapore-based NEC Asia Pacific is the regional headquarters for NEC Corporation (HQ: Japan) in the Asia Pacific region (South and Southeast Asia, and Oceania). As a leading infocomm technology provider and systems integrator offering regional sales and services support and consultancy, NEC APAC develops solutions on carrier network, global identity, RFID, enterprise server, unified communications, multimedia display, and contact centre, as well as provides outsourcing and managed services.

To leverage on its technological expertise in the field of public safety, NEC APAC has established a Regional Competency Centre (Public Safety) to expand its capabilities and expertise to support businesses in the Asia Pacific region.

In line with the NEC Group Vision to realize an information society friendly to humans and the earth, NEC also embarks on corporate social responsibilities (CSR) initiatives to support and "make a difference" to the Nature (environment), Education and Community.

For more information, visit [www.nec.com.sg](http://www.nec.com.sg) or contact us at public_safety@nec.com.sg

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