

APL-AEL Server—A Case Study



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Automated APL-AEL Request & Distribution System

A. Summary of Accomplishment

Weekly Hard Copy APL/AEL Process-The Problem

US Navy's Naval Supply Systems Command through the auspices of the Navy Inventory Control Point (NAVICP-M) located in Mechanicsburg, Pennsylvania is responsible to supply the fleet, shipyards and defense contractors with accurate and timely information for both Allowance Parts Listings (APL) and Allowance Equipage Listings (AEL).

Though a CD-ROM distribution is made of the complete APL/AEL Bank to all subscribers on a quarterly basis, the information contained therein quickly becomes obsolete. In order to deal with this obsolescence, a system referred to as the Weekly Hard Copy APL/AEL Process was implemented.

The Weekly Hard Copy APL/AEL Process consisted of the following elements:

- Customers must call or email requests to Process Point of Contact (POC)
- All requests accumulated for a period of one week
- Data extracted weekly from Weapon System File (WSF)
- Extraction generates hardcopy reports
- Process POC manually sorts reports and matches them to customers
- Distributes reports via FAX or USPS
- Cycle time typically two weeks from request to delivery of information

Though the customers ultimately received their requested information, there were numerous problems with the Weekly Hard Copy APL/AEL Process. They were:

- Turn-around time approximately two weeks long
- Process POC required to fulfill requests
- Manual sorting of report data with requestors
- Poor quality of FAX copies delivered

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- Slow delivery of printed reports via USPS
- Due to manual nature of system, volume request capacity limited

Automated APL-AEL Request & Distribution System-The Solution

In order to address the system deficiencies as earlier delineated, personnel from NAVICP-M consulted with the Defense Automated Production Service personnel located at the Mechanicsburg location. DAPS supplied the laser imaging for the printed reports needed for the Weekly Hard Copy APL-AEL Process. The approach was based around taking full advantage of the fact that all customers and potential customers of *Automated APL/AEL Request & Distribution System* had access to Email and the Internet.

Capitalizing on this popular and prolific infrastructure was the focus for any potential solution. Once conclusions were reached, the project was organized into three parts: (1) NAVICP-M would be responsible for project definition and management, (2) NAVICP-P would be responsible to build a web page through which requests for report data could be entered and; (3) CRTechnologies, Inc. was requested to develop the main part of the new system. The main criteria for a solution was:

- Eliminate hard copy & FAX
- Ensure that the received reports are of the highest quality and maintain 100% image fidelity
- Eliminate Process POC & all related manual sorting operations
- Dramatically improve turn-around time for requests
- Increase the potential number of requestors to be virtually unlimited

Work on a prototype solution commenced during the 4th quarter of the Fiscal 2001 and the new system went into production during the 2nd quarter of Fiscal 2002. Since its implementation, the frequency of fulfilling requests has gone from weekly to daily and the number of users has more than tripled. Instead of taking up to two weeks to receive report data; it now takes 24 hours. This new system reflects sustained project performance, meeting and exceeding the *entire* project specified criteria.

Automated APL-AEL Request & Distribution System-Step by Step

On a daily basis, an eligible member of the Department of Defense, or the Defense Contractor establishment may log into the APL-AEL Request Web Page and enter their requests for APL or AEL report data, with a virtually unlimited number of requests per user allowed per day. The process then proceeds as follows:

- This web site will generate a file that contains the relevant information about the requestor (including their email address) and their report requests.
- The requestor file is sent via FTP to the IBM mainframe where the Weapon System File is housed

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- The IBM mainframe will process the requestor file in order to generate the APL report file, the AEL report file & the correlation file that correlates requests to reports.
- All four files are then sent via FTP to the Automated APL-AEL Request & Distribution Server (located at DAPS-Mechanicsburg)
- The four files are imported into the APL-AEL data base (files are Xerox DJDE formatted line reports)
- Files are parsed to split report files by requestor
- All resultant files are converted to Portable Document Format (PDF) (including automatic book marks) with report forms that exactly match laser imaged forms
- PDF report files provide virtually 100% image fidelity
- All requests are matched with resultant PDF reports and emails are created including the reports as external attachments
- All requestors receive either their reports or email messages explaining why no report data is available, i.e., erroneous request based on input or current Weapons System File data base
- Users may view their reports with the free Adobe Reader and print any or all of the report pages, as desired.

Other APL-AEL System Features

The system includes a user-friendly client application that in addition to performing the tasks outlined above provides the following functionality.

- Any Windows knowledgeable operator can manage the system
- Operator may conduct database searches by requestor no., email address, APL or AEL number, etc. in order to identify any problems reported by the users.
- Should an error occur with a user not receiving a particular email, selected past reports may be easily identified and re-distributed with a couple of mouse clicks.
- Automatic generation of statistics and accounting information is provided. A spreadsheet is automatically populated so billing information is immediately available
- Application is ODBC compliant
- All error-type emails are customized with variable data so that the requestor will get all the information he/she requires necessary to understand why no report was generated for their request.
- All system features are user supportable.

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B. Technology Used

The intent of the design besides achieving the application-specific functionality required, was to utilize and maximize standard features and applications that all users would have available on their desktop. Consequently, accessing the web to place their orders, receiving email to get the results and utilizing a universally available viewer provided an opportunity to put the solution in place without requiring the customers to install any custom software or submit to any type of training. Naturally, this approach also relieves NAVICP from providing *any* software support or training for the field—a significant advantageous concept.

The innovative aspects of this application are numerous: (1) the implementation of this solution *did not require* any changes whatsoever to the programs or procedures on the IBM mainframe where the Weapon System File is housed, (2) the customers needed no additional software or training in order to use the new approach, (3) the product delivered was of a tremendously higher quality, (4) the customers now receive their reports in a portable, transportable electronic format in lieu of paper, and; (5) the need for a Process POC with intimate knowledge of the deliverables has been eliminated.

The table below provides all of the technology used to create the *Automated APL/AEL Request & Distribution System*.

Technology	Role
<i>Compaq Proliant Server</i>	Host Platform for APL-AEL database & APL-AEL client application & email software
<i>Windows 2000 Server</i>	Operating System for APL/AEL Server
<i>Microsoft SQL Server 2000 Relational Database Management & Analysis System</i>	Houses APL-AEL database
<i>Over-Site Suite</i> – Designed for Windows NT Technology & the Microsoft COM Architecture	CRTechnologies, Inc.’s Windows Suite for automating & transforming print stream data to PDF
<i>Pager</i> -Robust Composition Engine from Datalogics, Inc.	Converts input reports to PDF including the use of fonts, forms and PDF book marking features
<i>APL-AEL Request & Distribution Client Application</i>	Written by CRTechnologies, Inc. utilizing Microsoft Visual Studio using C++
<i>Microsoft Outlook</i>	Manages the email automatically sent to it from the <i>APL-AEL Request & Distribution Client Application</i>

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Technology	Role
<i>Microsoft Exchange Server</i>	Distributes the email generated by application. Running on a previously existing Mail Server
<i>Adobe Acrobat Reader</i>	Allows requestor to view their APL and/or AEL reports on their own platform. PDFs generated by the application provide navigational bookmarks as well as virtually 100% image fidelity with the printed copies.

C. Impact

As a result of this solution, NAVICP is able to serve a virtually unlimited number of qualified customers with the new system. Since system implementation, the number of users has *tripled*. The turn-around time for requests has gone from up to two weeks to *less than* one day. Whereas before, the Process POC (barring sick days, personal days, vacations, etc.) had to wait for the printed reports, manually match reports to requestors, fax or mail them, all this work and printing has been completely eliminated. The reports go out daily, initiated by any computer literate operator—no Weapon System File experience required.

The system provides real significant monetary savings for the Navy over the previous method. The ROI for this system is one year, based on the user volume *prior* to system implementation. The costs to the Navy in order to now serve three times as many customers in less than 1/14th the time is incrementally insignificant.

The current daily production utilization time for *APL-AEL Request & Distribution System* is approximately two hours from start to all emails and reports delivered. This allows the current system to handle future requestor volume growth without any system enhancements for the foreseeable future.

The entire customer audience has benefited substantially from this solution. Instead of working with obsolete information or waiting up to two weeks for their updated reports, they are able to get on with their work in less than 24 hours of their request. Additionally, the reports that they receive are in electronic format, which allows them to better manage the updated material than previously possible with FAX or printed copies.

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D. References

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