THE AS/400 IN DEPTH

Introduced in 1988, the IBM AS/400 remains a highly popular operating platform for mid-size and larger transportation operations. Many of these companies first operated mainframe systems like the IBM System 34 or 36 in the late 1970s and early 1980s before upgrading to the AS/400, referred to by some users as “a mainframe in a mini.”

Over the years, a wide range of new AS/400 series have been introduced. In addition, IBM has consistently updated the hardware, making the AS/400 a very mature and stable platform. Other reasons for the AS/400’s ongoing popularity include its ability to adapt readily to open standards and a design that enables it to easily grow with an enterprise’s needs. For example, the AS/400 can be scaled to handle as many as 7,000 simultaneous users and process as many as 45,000 transactions per minute.

The basic design of the AS/400 consists of a central processor that serves a group of terminals or workstations. In this arrangement, power and database are maintained centrally, making it easy for larger companies to control data flow. The AS/400’s operating software, OS/400, is a text-based language that, for many users, is still the fastest method of inputting large amounts of information.

Adding to the AS/400’s flexibility is software that lets OS/400 run in a Windows environment. This provides for a best of both worlds scenario — the functionality of a desktop and a database under the tight control in a very stable architecture. This also enables users to deploy the AS/400 as a client-server system, where the operating system stores the database and serves a network of desktops. Under this arrangement, any PC can act as a terminal for an AS/400 using an emulator card and network hook-up, allowing OS/400 to run in a Window while other programs are also running on the PC.

The reliability of the AS/400 is legendary. According to data collected by IBM over the past two years, a single AS/400 system delivers an average of more than 99.9% availability. AS/400 users, IBM also reports, have experienced less than 9 hours on average of unplanned downtime per year. Looking at AS/400 hardware reliability another way, on average an AS/400 will experience a problem just once every 61 months.

The AS/400 platform’s reliability stems in part from integration. IBM designs, creates, builds, tests, and services the AS/400 as a single entity, including the hardware, operating system, database, and the other middleware facilities that make up a complete system. Another key component is that the systems are assembled on the manufacturing floor per the customer order. Once assembled, each AS/400 is tested for approximately eight hours. This testing includes repeatedly powering on and off the machine, writing and reading data to the entire surface of the disk drives, and exercising all the components in the machine. These tests are specifically designed to find any questionable part that does not meet high quality standards before the AS/400 is shipped to the customer.
To continually look for ways to improve reliability, AS/400 Development and Manufacturing teams track all aspects of availability, including system, which includes the hardware, operating system, and database, as well as component levels. The company also provides support and service for the vast majority of AS/400 systems. This single point of service enables IBM to track worldwide AS/400 system reliability on a daily basis and take corrective actions if necessary. For example, reliability data is received daily on 87,957 AS/400s installed in the US.

**Value Proposition**

The consulting group IDC recently conducted a study of organizations that deployed enterprise solutions across multiple server platforms. The study’s goal was to determine the total cost of ownership when comparing the IBM eServer iSeries-AS/400 with competing solutions, including Unix and SIAS (Standard Intel Architecture Server platforms, formerly called PC servers. As a category, SIAS systems are Intel-compatible servers running a variety of server operating systems, including Microsoft Windows NT Server, Microsoft Windows 2000, Novell NetWare, Unix, and Linux, databases and packaged applications.)

The IDC study concluded that the iSeries-AS/400 enjoys significant total cost of ownership (TCO) advantages, as well as advantages in the areas of availability of data and applications, IT staffing productivity, and user productivity. Specifically:

> In a five-year calculation, Unix servers showed a 91% higher TCO compared to iSeries-AS/400. SIAS servers running line-of-business applications had a 95% higher TCO. For larger implementations, the five-year TCO was 58% greater for comparable Unix servers and 72% greater for comparable SIAS server solutions.

> The iSeries-AS/400 enjoys productivity advantages. The study found user downtime to be five times less than comparable Unix server–based solutions and 16 times less than comparable SIAS server–based solutions.

> The iSeries-AS/400’s strong showing in the area of staffing levels is a major contributor to its superior TCO results. A single operations staff person can support more users and more servers in the iSeries-AS/400 environment than with either Unix or SIAS-based servers. The study clearly shows the iSeries-AS/400’s ability to support large numbers of end users at less cost than comparable Unix servers and to support more users with higher levels of data availability than comparable SIAS servers.

> The iSeries-AS/400 has an integrated architecture with database and management tools that are designed to support robust and easy-to-maintain solutions. This is especially vital for applications that require the IT staff to focus on business solutions rather than on availability and integration. The challenge for Unix and SIAS-based server solutions is that integration often must be done across more “moving parts” that increase the total staff time associated with these tasks, and can result in higher levels of downtime.

> According to IDC, recent system enhancements in the iSeries-AS/400 server platform continue to build on the AS/400’s reputation as a strong platform for running business applications. For example, IBM recently improved the clustering and high-availability features in the series to protect both the data and applications that run on the platform. The high-availability software reduces downtime and boosts employee productivity.
The emerging area of ebusiness has brought a new wave of software applications to the platform, including support for end-to-end ebusiness transactions, ecommerce shopping, and Internet-enabled supply-chain and CRM. This study found that of the iSeries-AS/400 sites surveyed, 42% were running ebusiness applications on their server platform, compared with 14% of the SIAS server sites surveyed and 38% of the Unix sites. Most importantly, the iSeries provides a single, system-wide security system that ensures the integrity of ecommerce business transactions over the Internet.

In another development, IBM’s highly successful WebSphere Application Server now provides iSeries-AS/400 with a middleware framework for linkage between incoming Web transactions and core business data and logic. As a result, the platform supports the expansion of an ebusiness infrastructure. For these new applications to benefit a corporation’s bottom line, users need a platform that has the scalability, ease-of-use, and high degree of integration necessary for successful, large-scale, mission-critical applications.

“Customers already view the IBM eServer iSeries-AS/400 as a solid platform that can deliver on mission-critical business applications, as well as a wide variety of Internet-enabled applications,” the IDC report concludes. “The iSeries-AS/400’s scalability, availability, and staffing efficiencies are even more important in today’s business environments. The iSeries-AS/400 TCO story continues to be a strong one, combining high staff productivity with reduced ongoing costs that are due to a highly integrated, cost-effective server platform.”

Building Blocks
The introduction of the newest AS/400 design, the iSeries, has led to some apprehension that the AS/400 will be discontinued. However, this myth is quickly dispelled by Frank Soltis, AS/400’s founding father. Speaking to the iSeries Network, Soltis discussed the iSeries, its AS/400 building blocks and common architecture:

Why did IBM decide to change the name?
The reason for the name change was to indicate the convergence among the diverse servers. The idea was that we would have only one brand, and that brand would be eServer. And under that brand we'd have four servers—iSeries, or AS/400; pSeries, or RS/6000; zSeries, or S/390; and the Intel-based xSeries, or Netfinity. The idea is to show that we have one, single brand of servers and distinct implementations—that our products, not only hardware but also software, converge on a common base.

What are the main advantages the iSeries-AS/400 currently offers its users?
One of the things we’ve noticed in the last few quarters, with a depressed economic environment, is that iSeries-AS/400 sales are growing. Many companies have discovered that consolidating multiple servers can reduce their operating costs enormously.
REAL WORLD VIEW
Why is TL2000 the best dispatch and operations software for the AS/400 platform? The following challenges and solutions presented by TL2000 users provide the answers:

“Beyond its functionality and inherent benefits, TL2000 allows for expansion of our operation. Regardless of how many vehicles we operate or how many users are logged on to the system, it can handle the workload without slowing down. We don’t think there is any way we’ll ever outgrow the capabilities of this advanced enterprise solution.”

Steve Salituro
Director of Finance
Dallas & Mavis Specialized Carriers

TL2000 Successes

CASE HISTORY #1
A trucking company’s desire to preserve its investment in its relatively new AS/400 server, which was also hosting other software, made TL2000 the logical choice. With the TMW AS/400-based solution, a server change would not be required nor would the need to switch other systems be necessary.

> TL2000’s functions were similar to the previous enterprise solution in place, shortening the learning curve for dispatch and other personnel.

> The TL2000 accounting package is significantly more robust than the carrier’s previous system.

> Features of TL2000’s payroll/settlement module were especially attractive. Most important to the company was the high level of automation that eliminated a significant amount of manual processes required previously.

> Designed by TMW, a fuel card interface integrated to the settlements function, was deemed one of the most important TL2000 capabilities. The interface allows the carrier to authorize and track fuel purchases, as well as provide cash and payroll funds to drivers automatically.

> Integration capabilities for a variety of on-board communications and satellite tracking systems are proving highly useful. In addition, the company is making extensive use of a fully integrated EDI capability to enhance customer service.

Since the implementation of TL2000, training and support services from TMW have also proven beneficial. Training for the carrier's staff has taken place in TMW’s Indianapolis facility as well as at the carrier's locations. Support, according to the company, has been very good, including prompt responses to problems — even those requiring the services of a programmer. TMW also gets high marks for providing timely and consistent progress reports and updates.

After evaluating TMW Systems’ TL 2000 enterprise solution over an 18-month period, this carrier chose the AS/400-based information management system rather than investing heavily in updating its existing software. Plans call for utilizing all components of TL2000 to handle accounting, dispatch, settlements, invoicing and other functions. In addition, several integrations are planned and a maintenance module may be adopted as well.

Looking ahead, the company is working closely with TMW to facilitate the use of TL2000 for its LTL operation. By year’s end, the company plans to manage both divisions on the same AS/400 platform. Currently, it is discussing with TMW developers and programmers the modifications and programming that will have to take place to utilize the TL2000 enterprise solution in an LTL environment.
After determining that it would best meet the company’s needs for seamless integration of data and provide the ability to develop customized, in-depth analyses, the TL2000 software was purchased at the very beginning of 2001. Implementation took just 90 days. TMW was instrumental in the smooth transition as well as training its staff.

**CASE HISTORY #2**

This company is using the TMW TL2000 system to manage all of its operations, including dispatch, load planning and maintenance. Integration to accounting and other systems is in effect and the system is also connected to the company’s on-board satellite tracking and communications systems. A fuel network interface is planned for the near future.

Among the benefits of TL2000 identified by this customer are:

> better information for in-depth analysis of its operation that will lead to more effective programs and practices,
> the ability to access data from all parts of the system,
> the seamless integration of various modules and third-party systems that enables a smooth flow of data from dispatch all the way to financial statements, and
> TMW’s strong support network, including a proactive approach that was very helpful during the first few months of operation.

This company reports enjoying a range of benefits from the use of TL2000 software. Among the advantages the company has identified are a smoother driver settlement process, better vehicle tracking capability from the dispatch function, more paid miles for owner-operators, and easier tracking of costs using the system’s accounting capabilities.

“The strength of TMW’s enterprise system is that it doesn’t just concentrate on the operations functions of our business. With TL2000, all of the information we need to run our business and service our customers flows efficiently because TMW took the time to integrate correctly and make the system flexible. This product is clearly user driven and the company is customer oriented. TMW has been a good fit for us in many ways, especially because its staff has a good trucking sense.”

Lori Brown
Director of MIS
PGT Trucking

**CASE HISTORY #3**

Yet another company identifies a number of benefits it derives from TL2000 and from its relationship with TMW Systems. For instance, TL2000 is highly adept at enabling effective matching of resources, including drivers and vehicles. The integration features of TL 2000 are seamless, including the fleet’s dispatch system, on-board satellite communications technology and payroll function, which is outsourced. These examples illustrate TMW’s ability to work effectively with all types of third-party system and technology vendors.

TMW’s help desk is highly customer and service oriented, responding quickly to high priority issues and handling other requests effectively as well. On-going training for employees in various parts of its operation is essential. TMW’s efforts in this area have been effective and beneficial, especially as staff is transferred to different areas and as the company expands.

“TMW’s support services are excellent. Their level of expertise is great, especially in terms of implementation of our TL2000 system and the training we needed to bring our staff up to speed. This system really works. We’re very happy with it.”

Tim Neid
MIS Manager
Admiral Merchants
TMW IS DEDICATED TO KEEPING TL2000 ON THE LEADING EDGE

“If you’re going to choose AS/400 you’ve got to choose TMW.”

Released in late 2000, TL2000 Version 6.1 incorporates the most extensive update ever created for the AS/400-based enterprise system. Currently installed in 65% of the TL2000 user base, this version includes 2,500 hours of enhancements and modifications for most modules that improve speed, efficiency and data integrity. In addition, recent changes include improvements to brokerage and partial truckload modules.

Beginning in early 2002, TMW Systems undertook development of Version 7.0 of the TL2000 enterprise system and expects to put over 2,000 hours of development time into the release. TMW developers have already added substantially to the TL2000 database to enable additional fields that may be required in future modifications and development of new versions. In addition, two areas of focus are being addressed:

Enhanced Data Analysis and Reporting— A data warehouse file is being created in the TL2000 data library. The records in this file are created dynamically, maintaining data in real-time and are rewritten when an order is created or modified, when a load is dispatched or delivered, when manifest dates or times are changed or when a bill is released or credited. Previously, retrieving this data would require access to more than 22 files. The data warehouse pulls all the data together, enabling a user to write reports with very little knowledge of the database structure. In addition, a report module will be designed using Crystal Reports. Included will be operational and financial reports as well as graphical analysis capabilities.

Communications with TL2000 users remains integral to on-going development efforts. At our web site, www.tmwsystems.com, a forum for the exchange of ideas is available. Additionally, a key component of TL2000 development is the TL2000 Steering Committee. This group of users is instrumental in defining and prioritizing enhancements and changes to the enterprise solution.

“We wanted to work with an enterprise system supplier that would continue to keep pace with the industry. In TMW, we found an organization that is moving forward and will be able to meet our needs in the future. We’re very confident in TMW Systems and that the investment we made in TMW software was the right choice.”

Jim Kerr
Executive Vice President
Ameri-Co Carriers

Why these AS/400 users companies chose TL2000

“While we are very pleased with the performance of our AS/400 server—it never goes down—we were not receiving the support we needed to continue using our existing enterprise system. With TL2000, we’re looking forward to having a fully integrated, highly advanced solution that is well supported by TMW, and that will grow with us.”

Dave Clark
CFO
Zumstein

A user of another AS/400 trucking software solution for about seven years had made significant modifications to its enterprise system. In addition, the company reports, it had “learned to live with certain drawbacks” to the solution that could not be modified or corrected.

With 2000 approaching, the company was informed that its supplier would not modify its current program to meet Y2K requirements. Subsequently, the company decided it was not interested in investing in the effort or expense that would have been required to further modify their current system on its own, or purchase a different system from that supplier.
White Paper: Managing your enterprise information on the AS/400

Why choose TMW’s TL2000 for your AS/400 system?

A carrier utilizing an alternative AS/400 application, while pleased with the AS/400 architecture, came to the conclusion that the software it had been using does not meet its current or future needs. The company was not able to run the latest updates from the supplier and felt that the investment it would have to make in time and money to maintain the system was not worthwhile. In addition, a lack of support from the supplier has become a growing cause for concern.

Another carrier been utilizing an alternative AS/400 application for eight years, this fleet grew increasingly discouraged with the lack of updated programs, the inability of the supplier to provide customized solutions and the rising cost of maintaining the software. In addition, a desire to use the information system’s data to generate in-depth analyses was not being fulfilled.

After purchasing an AS/400-based system three years ago, this company began implementing the management information software supplied by another provider. Significant drawbacks in the supplier’s implementation and training process led to a decision to drop the system within just one month.

About TMW Systems, Inc.

Founded in 1983, TMW Systems is a leading developer and integrator of enterprise management software for the transportation industry. The company currently serves more than 500 trucking industry clients of all types and sizes. Its products help transportation and logistics companies leverage the technologies of their choice to easily collect, analyze and manage information for maximizing dispatch efficiency, and for delivering improved productivity and superior customer service. TMW has strategic business alliances worldwide including Guangdong South Satellite Telecommunications Service Co., Ltd. (SST) for the People’s Republic of China, TMW International for Europe and MTP Consulting for Mexico.

TMW’s product lines include TL2000™ for the AS/400 platform and TMWSuite for Windows client/server architecture. For the past nine years, TMW has been named to the Weatherhead 100, an award given by the Case Western Reserve University Weatherhead School of Management recognizing the 100 fastest growing companies in Northeast Ohio. The company has also received the NorthCoast 99 award as one of the best companies to work for in Northeast Ohio for the past two years.

Tom Weisz and TMW Systems also received the 2001 Ernst & Young Entrepreneur of the Year Award for Business Services (Northeast Ohio). The award is sponsored nationally by CNN, the Kauffman Center for Entrepreneurial Leadership, NASDAQ and USA Today.