

**The SAS® System for the Macintosh**  
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## ABSTRACT

For several years, the most requested new platform on the SASware Ballot® has been the SAS® System on the Macintosh. This user interest, coupled with new technology, such as the Macintosh's new System 7 Operating System and the Power Macintosh, have prompted SAS Institute to develop the SAS System for the Macintosh. Production release for this port is scheduled for late 1994. This paper provides an overview of current and future development directions.

## INTRODUCTION

When the Institute first began investigating a port of the SAS System to the Macintosh several years ago, System 6 was the operating system for the Macintosh. However, with a 24-bit address space limit, System 6 was not robust enough to accommodate the SAS System. In addition, the many System 6 add-on features and maintenance fixes made it difficult to ensure a stable porting environment.

With the release of System 7 and the availability of larger, more powerful Macintosh models, the technology now exists to run the SAS System on the Macintosh. System 7 offers 32-bit address space support and has incorporated all of the add-on features and fixes of System 6. Apple has also expanded its line of Macintosh models to add more power and capability, making the "easy-to-use" interface of the Macintosh a very viable platform for larger and more resource-intensive applications. As such, the Macintosh has also become a popular platform for implementing client workstations to tie into data servers for organization-wide client-server applications. Finally, with the advent of PowerPC® technology—represented by the joint agreement between Apple, IBM®, and Motorola—a foundation has been solidly established for Apple and SAS Institute to build powerful and effective solutions.

Since the demonstration of a prototype of the SAS System for the Macintosh via an ASCII driver at SUGI 18 in NYC, SAS Institute has received inquiries from more than 270 users. More than 45% of these users (a phenomenal response rate) have completed and returned a survey detailing their organization's computing environment, experience with the SAS System, and expectations for the Macintosh port. While these users cover the spectrum of industry profiles, including government and universities, they all share one unique desire: incorporating the Macintosh into their organization's SAS computing environment.

This strong interest in the Macintosh port is more than understandable when you consider what the SAS System and the Macintosh have to offer. SAS Institute has built its reputation on a modular family of quality software tools to meet enterprise-wide application needs—from access, management, analysis, and presentation of data to a robust suite of fourth-generation language (4GL) application development tools. Apple Computer has built a similarly unique reputation for providing a highly graphical and easy-to-use tool with the Macintosh. Recent developments in Macintosh technology and a new era of "open systems" has enabled the SAS System running on the Macintosh to be a valuable as well as a viable scenario.

## RELEASE 6.11 OF THE SAS SYSTEM FOR THE MACINTOSH

### What it is

Beginning with Release 6.11, the SAS System will support both the Macintosh 680X0 and the Power Macintosh in native mode. In addition, this release offers the full implementation of SAS System functionality on these two architectures, enabling SAS System users to integrate the Macintosh into their SAS application environment.

SAS software users on the Macintosh are assured of full SAS System functionality because of MultiVendor Architecture™ (MVA™), the SAS System's underlying design. With MVA, 90% of the SAS System's 6+ million lines of C code are immediately portable to any new environment, including the Macintosh and Power Macintosh. This will enable users to port SAS System applications among platforms with little or no modification. The remaining 10% of the SAS System's code is host system specific, enabling users to take advantage of the windowing and other operating system nuances of given platforms such as Workplace Shell™ or Motif.

All of the newer, more powerful Macintosh models have built-in support for Ethernet. As such, TCP/IP will be the communication protocol supported for Release 6.11 of the SAS System on the Macintosh. Users will benefit from the true significance of MVA as they connect their applications across multiple platforms and operating systems for distributed client-server computing. In particular, SAS software sites that license the Macintosh port will be able to:

- maximize their previous investments in the SAS System, hardware and data sources, to port current SAS System applications to the Macintosh
- develop new SAS System applications on the Macintosh
- include the Macintosh as a client in distributed applications

On the host-specific side of MVA, Release 6.11 fundamentally adheres to Apple's Human Interface Guidelines. Macintosh users running the SAS System can expect their SAS applications to look and act like native Macintosh applications. More specifically, the four core AppleEvents (OAPP, ODOC, OPRT, and QUIT) created by the Finder are supported and SAS software will respond appropriately. Release 6.11 will also provide minimal support for issuing and receiving AppleScript instructions between SAS System and other non-SAS System applications.

Informational drag and drop is another way of sharing information between applications. Apple is planning to add this capability to the System 7.5 operating system release, the operating system for the Power Macintosh. System 7.5 is scheduled for availability at the end of 1994 and will be provided as an extension to the current System 7.1 operating system. While it is uncertain at this time if Release 6.11 of the SAS System will support informational drag and drop, customers will need System 7.5 for support of this feature if implemented.

### What it is not

Because only 10% of the code in the SAS System is dedicated to the host system layer, this release offers the full functionality of the SAS System with a SAS "look and feel" vs. a Macintosh "look and feel". When porting to the highly unique Macintosh interface, there are differences between the way the SAS System is

structured and a true Macintosh application. Complete compliance with Apple's Human Interface Guidelines requires a major rewrite of the portable code in the MVA model. This would change the appearance of the SAS System on each different host platform. More importantly, this rewrite would considerably limit the portability of our customers' existing SAS applications. Because MVA ensures that the SAS System always looks and runs the same across platforms, the implementation of a more Macintosh-like interface will be weighed with more consideration against this model in future releases.

**FUTURE SUPPORT**

With Release 6.11, SAS Institute continues its commitment to provide Version 6 technology across all major operating systems and hardware platforms in the industry. The port of the SAS System to the Macintosh and Power Macintosh, however, represents only the first step in putting the SAS System to work on Apple's unique architecture. Direction is already being set for future capabilities to be supported. Needless to say, we will be looking to our loyal and vocal user community to guide us in establishing development directives.

Some of the areas already identified for further development are:

- adding additional scripting support
- implementing the SAS System on the range of chips in the Power Macintosh family
- adhering to AOCE
- providing direct and transparent data access methods to industry standard databases

**CONCLUSION**

With beta testing of the SAS System on the Macintosh scheduled for Summer 1994, SAS Institute would like you to assist us in establishing an effective structure for keeping you apprised of our progress and for receiving your comments and suggestions. Specific steps include:

- Identify Your SAS Institute Account Manager and Site Representative** Your Institute Account Manager will be your site's direct contact at the Institute. Inquiries regarding system requirements, pricing, licensing and needs assessment can be directed to the Institute Account Manager. Likewise, the Institute Account Manager will communicate with a primary contact at your site to collect and distribute information.
- Complete a Macintosh User Survey** Our development team would like to know more about your site's Macintosh computing environment and your needs in using the SAS System. A survey has been designed for collecting this information and is the basis for our development database. This database will also enable us to contact your site with regard to alpha and beta timeframes.
- Work With Us** We would like to extend an invitation for you to participate in the development and quality assurance process by working with us during alpha and beta testing. While this does not involve a direct monetary commitment, it does require a certain time and resource commitment on your part. If you are interested in becoming a part of this important phase of product development, contact your

Institute Account Manager for more information. This type of involvement enables us to provide our customers with the quality products and services synonymous with SAS Institute.

**Assess and Budget Now**

Work with your site representative to get a jump on anticipated hardware upgrades and software budgeting in time for production. Your site representative can contact your Institute Account Manager for additional information on pricing discounts and licensing issues.

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