SAS® Software Distribution Issues - An Academic Perspective

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ABSTRACT

The SAS software consultant for a university is often faced with the tremendous task of distributing the SAS System to faculty, staff, and students of the university. These faculty, staff, and students generally request the SAS System for a variety of operating systems. As the SAS System continues to grow, the SAS software consultant must decide which software distribution methods will work the best in a heterogeneous environment. This paper will review the methods used by the North Carolina State University (NCSU) Computing Center (CC) to distribute the SAS System to campus users.

INTRODUCTION

The purpose of this paper is to give the SAS software consultant an overview of the various software distribution methods that can be used in distributing SAS software at a large university. The paper will focus on network, CD-ROM, tape, disk, and other distribution methods that are used by the North Carolina State University Computing Center to distribute SAS software to their users.

WHAT IS IT YOU HAVE TO DISTRIBUTE?

The SAS System consists of some twenty plus products which take up approximately 268+ MB of disk space. Additionally, there are some eighteen plus specialty products independent of the SAS System. The SAS System, and these other SAS software products are available for various operating systems, and are distributed on various types of media.

WHO ARE YOUR CUSTOMERS?

At most academic institutions, the SAS software consultant, or some other campus entity (i.e. Campus Bookstore) is responsible for licensing the SAS System to faculty, staff, and graduate students. At the NCSU CC, the licensing of SAS software to the campus is administered by two designated SAS software consultants. All faculty, staff, and graduate students at NCSU, who want to license SAS software, are required to complete and sign a SAS registration form.

The NCSU SAS registration form, as well as, other information pertaining to SAS registration at NCSU, can be found at the following address : http://www2.ncsu.edu/ncsu/cc/pub/site-license/sitelic-sas.html. Hard copies of the registration form are also available from the NCSU CC's Information Center. The SAS registration form contains information including, but not limited to the following: applicant's name, applicant's address, applicant's on and off campus phone number, applicant's email address, serial number of computer being registered for SAS software, internet protocol number of computer (if the computer is connected to the campus network), whether or not the computer is a fileserver or stand-alone computer, the computer's operating system version, and the SAS software products desired.

Requiring faculty, staff, and graduate students to register for SAS software, allows the SAS software consultant to track the SAS software users. The completed SAS registration forms are entered into a database and a tracking system, where they can be easily accessed by the SAS software consultants and other CC consultants for modification, updating, or other purposes. Since through tracking , the SAS software consultant has information regarding who and where their SAS users are located on campus, the distribution of new releases of the SAS System, and the distribution of setinits during the SAS System expiration period is more easily managed.

DISTRIBUTION METHODS - WHICH ONE IS BEST FOR YOU?

Because of its multi-vendor architecture (MVA), the SAS System supports various hardware platforms and diverse computing environments. This MVA support, thus leads to a variety of installation media from floppy disks to compact discs (CDs). The type of media chosen by the SAS software consultant has a direct influence on the ease or difficulty in the task of distributing the software to the campus.

There are many methods in which the SAS System and SAS software products can be distributed. The distribution method you choose will depend on some of the following factors: money, time, available human resources, the type of hardware and software your customer base has, the type of installation media available from SAS Institute, the type and cost of the installation media you choose to order, and many other factors both internal and external to the organization in which you work.

The CC uses a variety of methods to distribute the SAS System to the campus community.   Some of these methods include network distribution, CD-ROM and tape distribution, disk distribution, and other methods. As the popularity of the internet increases, we foresee the web becoming a possible distribution tool. However, since the security, licensing, and legal issues for web software distribution are still being developed and researched, this method of distribution is not currently being pursued by NCSU.

NETWORK DISTRIBUTION

Network distribution is our preferred and fastest method of distributing the SAS System for UNIX, Windows, and the Macintosh to our campus. Because no disks, CDs, or other media are required for network distribution, the often time consuming media problems associated with floppy disks are non existent. The network distribution of SAS software at NCSU does require that a department/college have a connection to the campus network through a Novell fileserver, or a UNIX workstation.

Using the network distribution method, NCSU registered SAS users can log-in to the CC's Novell fileserver (named "CHAOS"), using the designated username of "sas", and a password to gain access to the required SAS software installation files. In addition to housing the SAS System installation files, the CC's fileserver ,CHAOS, also serves as a repository for the SAS setinits that we distribute to registered SAS users on our campus.

 Security issues relating to network distribution can be handled using features built into the Novell Netware operating system. On the UNIX side, these security issues are automatically handled by the kerberos authentication process that is part of our UNIX based campus computing environment. It is highly recommended that the SAS software consultant work closely with the systems and network administrators when distributing the SAS System using a campus network or a fileserver connected to the campus network.

CD-ROM AND TAPE DISTRIBUTION

CD-ROM and tape distribution is our second preferred method for SAS software distribution to registered campus users, and like network distribution it is also quick. Our distribution of the SAS System for UNIX, Windows, and the Macintosh is done primarily by checking out SAS tapes and CDs, respectively to registered SAS users.

The NCSU CC also duplicates copies of the SAS CDs to registered users who provide us with a 650 MB/ 74 min CD recordable. The duplication of the SAS CD-ROM is done by using a CD-ROM recorder, and CD-ROM

duplication software.   There are many brands of recorders, and just as many CD-ROM duplication software products. We use a Direct Connections 4 speed CD recordable unit attached to an Apple Macintosh Quadra 660 AV. We also use the Toast CD-ROM Pro version 3.0 software by Astarte .

Before purchasing any hardware or software, be sure to conduct an extensive review of the literature for CD recorders, and recording software. A useful internet site is the CD Archive homepage located at the following address: http://www.cdarchive.com. The Flow Cytometry Consortium Web Page located at: http://www.cber.nih.gov , sponsored by the Division of Cellular and Gene Therapy within the National Institutes of Health (Bethesda,MD) also contains a link to a collection of articles on CD-R technology entitled "CD Recordable in the Literature".

In addition to duplicating CDs, we have occassionally used the Media Duplication Service offered by SAS Institute's Customer Service Department.   See the next section, for more details on the Media Duplication Service.

Occasionally, as with any installation media, we have had problems with CDs becoming scratched or unreadable. Some of the problems are due to slight differences between the alignment of CD-ROM drives, the quality of CD recordables, the quality of the CD recorder being used to perform the duplication, and other unforeseen problems. In spite of this, CD problems are very rare in comparison to the problems we experience with diskette distribution of the SAS System.

We have found that buying various brand names of recordable CDs is recommended, and that you should stay with whatever brand works the best with your CD recorder, CD duplication software, and campus community.

MEDIA DUPLICATION SERVICE FROM SAS INSTITUTE

All of the major media types are offered by the Media Duplication Service. Furthermore, you can also order a SAS CD-35[3] , which is a non-executable CD used for creating diskette masters only. Making use of SAS Institute's Media Duplication Service, is another way in which the SAS software consultant can ease the distribution process. The Media Duplication Service is available for all operating systems supported by the SAS System. Additionally, by using the Media Duplication Service, the SAS software consultant will be able to:

1)   distribute the software using the most current media available (i.e. SAS CD, or SAS CD-35[3])
2)   order large quantities of the SAS System in any media type, as your SAS software site license agreement allows
3)   spend time on the technical support of SAS software for campus users, as opposed to making duplicate copies of the software
4)   insure some level of quality control in the distribution process

Some faculty and staff SAS users at NCSU have used the Media Duplication Service. Students wishing to license SAS software can not use the Media Duplication Service since it requires authorization for a departmental or college purchase order, which students can not get.

For those choosing to use the Media Duplication Service, additional paperwork is required. SAS Institute requires the completion of a Media Duplication Service Order Form. Moreover, a purchase order number must be indicated on the Media Duplication Service Order Form.

 At NCSU, departmental paperwork must be completed, before a purchase order number can be issued. After the purchase order number is issued, there is generally a two to four week time lag before the duplication order is processed at SAS Institute's Customer Service Department. Because of the extra layer of paperwork required by departments and colleges at NCSU to obtain a purchase order number, and the additional time lag for processing of the actual order by SAS Institute, many SAS users forgo using the Media Duplication Service.

DISK DISTRIBUTION

The disk distribution method is the least desirable, and most time consuming method for SAS software distribution at NCSU, and for most SAS software consultants at large sites. Unfortunately, due to a relatively large base of DOS SAS users, the NCSU CC is still having to handle disk distribution. However, this will probably change within a year or two at which time, we will probably discontinue renewals for the SAS System for DOS.

Disk distribution of SAS software is often an administrative and distribution problem due to some of the following reasons:

1)   too many installation disks - the SAS System consist of some seventy plus installation disks.
2)   infected installation disks - installation disks often become infected with computer viruses received from other computers on campus. Thus, the CC is faced with the task of having to scan all returned installation disks before they are checked out, and after they are returned to us.
3)   disks problems - installation disks have to be constantly checked using utility programs (i.e. Norton Utilities) for bad blocks, bad sectors, etc..

Though the disk distribution method is our least favorite method for SAS software distribution, we do use this method frequently when distributing the JMP software . Due to the small number of installation disks required by JMP, the disk distribution method in this case works reasonably well.

To aid us in the process of disk duplication for SAS software and other site licensed software that we distribute to the campus, the NCSU CC purchased a disk duplicator (Tracer ST300 series) from Trace Corporation. The disk duplicator equipment provides high -accuracy bit placement control and drop-out detection. The duplicator also uses quality verification steps to assure maximum interchangeability of the final product.

Because of its accuracy in the formatting and copying process, and in the amount of time it saved us in the formatting and copying of Macintosh and DOS disks, we found that the duplicator paid for itself in less than two months after we bought it. We are so dependent upon the Tracer ST duplicator now, that we can not live without it. For large campuses or sites that handle disk-based software distribution, it is strongly recommended that you invest in some type of duplication equipment to ease your software distribution process.

OTHER TOOLS TO AID THE DISTRIBUTION PROCESS

With the popularity and relatively low cost of internal and external storage and backup devices, the NCSU CC has begun to heavily use Iomega ZIP drives, Iomega JAZZ drives, MicroSolution's Backpack portable CDROM drives, and other storage devices to assist us in SAS software distribution, and installation for our campus community. These devices are an excellent alternative to using disks, for departments and colleges that do not have an ethernet connection to our campus network.

CONCLUSION

There are many methods for distributing SAS software at large sites, and there are advantages and disadvantages with all of the methods. The method(s) chosen by the SAS software consultant should reflect what is best for the majority of the SAS users at the site. Due to the popularity and usefulness of the internet as an information delivery tool, SAS Institute offers licensing options for use of the SAS System on the Internet and intranets. These Internet/intranet licensing options are accomodations to their standard licensing agreements. Information regarding licensing the SAS System on the Web can be found at the following address: http://www.sas.com/feature/3qweb/license.html, and you can also contact your SAS account representative for more details.

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Astarte
http://www.astarte.de
info@astarte.de
(0)721-98550

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Direct Connections
7668 Executive Drive
Eden Prairie, MN 55344
800-572-4305
sales@directdc.com

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132 West Lincoln Highway
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815-756-3411
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