PROBLEM TRACKING AT SAS INSTITUTE
Margaret Adair, SAS Institute Inc.

Abstract

A new system has been implemented at SAS Institute to track user-reported problems. This paper will discuss the new procedures and requirements that are necessary when contacting the Institute regarding a problem with SAS® software.

Introduction

Last summer, it became obvious that the methods previously used by SAS Institute's Technical Support Department were insufficient to meet the needs of a growing user community. As the number of user inquiries increased to 300 per day, the system was beginning to break down. Users were having to wait too long before a consultant became available; consultants were having to spend increasing amounts of time dealing with the problems of the growing number of new users; and the questions raised by more experienced users were becoming more complex, requiring more time to investigate.

Two changes were necessary if the needs of users were to be met: (1) the customers must take greater responsibility for providing SAS consulting services to their users, and (2) the structure of the Institute's Technical Support Department must be reorganized. The first change can only take place with the cooperation of the user community. The Institute is now actively encouraging customers to set up their own consulting staffs. To this end, (1) release 82.3 of the SAS System included a HELP SITEINFO facility that can be employed to inform users of the existence of local support groups; (2) the Education Division at the Institute, in cooperation with the Technical Support staff, now offers training for SAS consultants; and (3) the Institute soon plans to require that a SAS consultant (as well as an installation representative and a training coordinator) be identified on each site's contract.

Departmental Reorganization

The reorganization of the Technical Support Department began last summer, with the division of the department into two levels. The members of the staff at that time were classified as "second-level consultants," or technical support representatives. Each of these representatives has a field of specialization and is responsible for investigating reported problems, testing software, and assisting with documentation within the specialty area. Seven entry-level people have been hired to serve as "first-level" or associate, technical support representatives. Past experience indicated that a large percentage of the calls received by the department are general questions that can be answered from the Institute's publications or from six months' experience in using the SAS System. The associates have, therefore, been assigned the responsibility of handling all initial contacts with users, answering the general type of questions, and referring more specialized questions to the appropriate "second-level" representative. The associates completed an intensive four-month training program and began answering the telephones last fall.

Automated Tracking System

If the reorganization of the Technical Support Department was to be successful, an efficient method of problem logging was required. An automated tracking system has been designed and implemented to log all calls coming into the department. It serves as an electronic "note-pad" for recording details about problems, and provides data that permits the Institute to gather statistics on the types of problems encountered by users. Such a system requires a formalized approach to information-gathering, and this requirement has a direct impact on users who call the Institute with problems.

A user calling the department about a new problem will typically be greeted by an associate and asked for his or her name and site number. The site number is an eight-digit number that is used to keep track of products in the field. The number is printed in parentheses following the name of the installation on the second line of the SAS log. The second through the fifth digits are the pertinent portion of the site number, since they uniquely identify an installation to the Institute's Technical Support staff. The site number permits the technical support representative on duty to gain access to the problem tracking system (see Figure 1).

Once the Institute's contracts are modified to require sites to specify a local SAS consultant, the names and phone numbers of all the local consultants will be made available to the tracking system, and this information will be displayed on the screen when the user's name and site number are entered. If appropriate, the user will be referred to his or her local SAS consultant. If the caller is one of the listed local consultants, the problem will be flagged as coming from an authorized SAS consultant and will be given a higher response priority than a similar problem from a general user.

After determining if the caller is an authorized SAS consultant, the associate representative must classify the problem. There are presently 19 problem categories defined in the system (see Figure 2). It is important that the problem be classified correctly, since the category selected determines the specialist who will be assigned the problem if it cannot be resolved or initial contact.

Additional information needed by the associate
representatives includes the release level of the SAS System, the host operating system, and a complete description of the problem (see Figure 3). The release number is printed on the same line of the SAS log that contains the site number. It is helpful if the caller can also identify the release of the host operating system on which the SAS system is being run. For example, if a problem is occurring under VM/CMS, the Technical Support staff may need to know if the site is running CMS release 2 or CMS release 3. In describing the problem, the caller should be prepared to give the statements involved in the pertinent section of the SAS code and the complete text of any error messages generated by the SAS supervisor or the host operating system.

Response Priorities

If, at this point, the associate representative is unable to answer the question, the problem must be assigned to a specialist. The associate will ask for the caller's telephone number and will assign a response priority to the problem. There are currently four priority categories (see Figure 4). The highest priority is reserved for system failure: occasions when the SAS System will not run in a production environment. Priority 1 would be assigned, for example, if a site's production release of the SAS system is failing with "ERROR: 341" (contract agreement has expired), and the SETINIT supplied by the Institute to extend the expiration date will not work. An example of a priority 2 problem (installation problem) is a case where a SAS installation representative is installing a new product or changing the options on the current release and is having difficulties. Priority 3 problems include failure of the SAS System when running new or modified application programs; this priority level is limited to failures where the system does not perform to documented standards. Priority 4 includes all other types of problems, such as questions about the capabilities of the SAS system, requests for clarification of documentation, and questions concerning algorithms used in statistical procedures.

The response time given in Figure 4 for each of these priorities represents the time frame during which a specialist can, under normal workload conditions, be expected to contact the caller. Note that the response time goal is for the initial callback; resolution of the problem may take much longer. These response time goals apply to problems originating with authorized SAS consultants. The same priority classification scheme will be applied to calls from general users, but callbacks to general users will not be attempted until all calls from SAS consultants have been returned.

The Tracking Number

After the associate representative has finished entering the problem description, the tracking system will assign a "tracking number" to the problem (see Figure 5). All problems that are not resolved during initial contact will have a tracking number; if the associate fails to give the tracking number, the caller should ask for it before hanging up. The tracking number will be associated with the problem as it moves through the system from the associate to the specialist and, if necessary, to the Research and Development staff.

If a member of the Technical Support staff requests that the user send a tape, a dump, or a program listing, the materials sent should be clearly labelled with the tracking number. If the user needs to call the Institute with more details on the problem, he or she should give the tracking number to the Institute's main switchboard operator, who will direct the call to the proper receptionist in Technical Support. The receptionist will put the call through to the specialist handling the problem or will take a message.

It is best not to call to check the status of a problem, since too many such calls will overload the switchboard and responding to them will delay specialists in making their callbacks. Also, it is important to realize that a tracking number is assigned to a problem, not to an individual, and that the tracking number will become inactive once the problem associated with it has been marked "resolved." When a new problem arises, it will be necessary to begin again at the first level.

Conclusion

We realize that some users find the new organization of Technical Support inconvenient, but we feel that the tracking system and the reorganization have accomplished most of the goals for which they were designed. Since the tracking system has been in place, approximately 40% of all incoming calls have been resolved on initial contact (that is, at the associate level); the length of time users must hold before reaching a technical support representative has been cut by about 50% to 70%; and the specialists have been freed to concentrate on problems in their areas of expertise. With our customers' increasing cooperation in setting up local support contacts, we believe that the support we can offer will continue to improve.

Acknowledgements

Jerry Mock, of the Education Division at SAS Institute, designed and implemented the tracking system and provided assistance in the preparation of this paper. Thanks are also extended to all the members of the Technical Support Department who reviewed the paper and offered many valuable suggestions.

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------------------- SAS CONSULTANT REPORT -------------------

SITE NUMBER =======> 1234
USERS NAME =======> JOHN DOE
USER CAN CALL:

1. GENERAL  8. OS/SYSTEMS  15. SAS/ETS
2. GENERAL/DATASTEP 9. GRAPH/DEVICES  16. SAS/OR
3. PROCEDURE 10. GRAPH/PROCS  17. PROC WRITING
4. CMS/SYSTEMS 11. FSP  18. IMS
5. VSE/SYSTEMS 12. MACRO  19. CICS/REPLAY
6. VAX/SYSTEMS 13. IBM GRAPHICS  20. RESERVED
7. AOS/SYSTEMS 14. SAS/STAT

-------------------- SHORT DESCRIPTION OF PROBLEM ---------------------

SELECT CATEGORY ==> 14_(1 THRU 18)

SAS CONSULTANT   TELEPHONE NUMBER   AREA
MOUNTAIN

FIGURE 1 -- INITIAL PROBLEM TRACKING SCREEN
<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>SHORT DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENERAL</td>
<td>Any problem that does not fit another category</td>
</tr>
<tr>
<td>DATASET</td>
<td>Problems with the DATA step compiler</td>
</tr>
<tr>
<td>PROCEDURE</td>
<td>Problems with PROCs in the SAS USER’S GUIDE: BASICS</td>
</tr>
<tr>
<td>CMS/SYSTEMS</td>
<td>Problems interfacing with VM/CMS systems</td>
</tr>
<tr>
<td>VSE/SYSTEMS</td>
<td>Problems interfacing with DOS/VSE systems</td>
</tr>
<tr>
<td>VAX/SYSTEMS</td>
<td>Problems interfacing with VMS™ systems</td>
</tr>
<tr>
<td>AOS/SYSTEMS</td>
<td>Problems interfacing with AOS/VS systems</td>
</tr>
<tr>
<td>OS/SYSTEMS</td>
<td>Problems interfacing with OS systems</td>
</tr>
<tr>
<td>GRAPH/DEVICES</td>
<td>Problems interfacing with graphics devices other than IBM32xx series</td>
</tr>
<tr>
<td>GRAPH/PROCS</td>
<td>Problems with SAS/GRAPH® procedures</td>
</tr>
<tr>
<td>FSP</td>
<td>Problems with SAS/FSP® procedures</td>
</tr>
<tr>
<td>MACRO</td>
<td>Problems with the SAS® macro facility</td>
</tr>
<tr>
<td>IBM GRAPHICS</td>
<td>Problems with IBM32xx series devices</td>
</tr>
<tr>
<td>SAS/STAT</td>
<td>Problems with PROCs in the SAS USER’S GUIDE: STATISTICS</td>
</tr>
<tr>
<td>SAS/ETS</td>
<td>Problems with SAS/ETS™ procedures (except COMPUTAB)</td>
</tr>
<tr>
<td>SAS/OR</td>
<td>Problems with SAS/OR™ procedures</td>
</tr>
<tr>
<td>PROC WRITING</td>
<td>Problems developing user-written procedures</td>
</tr>
<tr>
<td>IMS</td>
<td>Problems with the SAS/IMS–DL/1® interface</td>
</tr>
<tr>
<td>CICS/REPLAY</td>
<td>Problems with the SAS/REPLAY—CICS™ product</td>
</tr>
</tbody>
</table>

FIGURE 2 -- PROBLEM CATEGORIES
--- CONSULTING PROBLEM REPORT --- SELECT OPTION

SELECT OPERATION ===> 3
1 BROWSE USAGE NOTES
2 RESOLVED DURING PRIMARY CONTACT
3 TRACK THE PROBLEM

--------------------- SAS RELEASE 82.3 ---------------------

SITE ID ===> 1234
SYSTEM ===> MVS
PHONE # ===> 111/222-3333
EXTENSION ===> 
PRIORITY ===> 
SEVERITY ===> 
CONSULTANT RESP ===> ADAIR, MARGARET
WEIGHT
REG
 CONTRIBUTED

--- REPORT PROBLEM BELOW ---

HOW IS THE STANDARD ERROR OF ESTIMATE COMPUTED WHEN A WEIGHT STATEMENT IS USED?

--- FIGURE 3 -- SECOND PROBLEM TRACKING SCREEN ---
<table>
<thead>
<tr>
<th>PRIORITY</th>
<th>TYPE OF PROBLEM</th>
<th>RESPONSE TIME GOAL (HOURS)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SAS System Failure -- Production Environment</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Installation Problems</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>SAS System Failure -- Nonproduction Environment</td>
<td>&lt;24</td>
</tr>
<tr>
<td>4</td>
<td>All Others</td>
<td>24</td>
</tr>
</tbody>
</table>

*Response time goals apply to problems originating with authorized SAS consultants.
REPORT TO USER

TRACKING NUMBER ASSIGNED  ==>  11828
CONSULTANT RESPONSIBLE     ==>  ADAIR, MARGARET
USER REPORTING PROBLEM     ==>  JOHN DOE
USERS TELEPHONE NUMBER     ==>  111/222-3333

FIGURE 5 -- TRACKING NUMBER ASSIGNMENT SCREEN