STATISTICAL ANALYSIS OF GLOBAL GROWTH (SAGG)

TECHNICAL MANUAL

Version 2.0

July 1998

Revised July 2007

Revision History

Documentation Revisions

The following table displays the revision history for this document. Revisions to the documentation are based on patches and new versions released to the field.

Date	Description	Author
07/1998	Initial Statistical Analysis of Global Growth (SAGG) V. 1.8 software documentation creation.	SAGG Development Team and Thom Blom, Oakland OIFO
01/2005	Reformatted document to follow current ISS standards. Reviewed document and edited for the "Data Scrubbing" and the "PDF 508 Compliance" projects. **Data Scrubbing**—Changed all patient/user TEST data to conform to HSD&D standards and conventions as indicated below: • The first three digits (prefix) of any Social Security Numbers (SSN) start with "000" or "666." • Patient or user names are formatted as follows: KMPDPATIENT,[N] or KMPDUSER,[N] respectively, where the N is a number written out and incremented with each new entry (e.g., KMPDPATIENT, ONE, KMPDPATIENT, TWO, etc.). • Other personal demographic-related data (e.g., addresses, phones, IP addresses, etc.) were also changed to be generic. **PDF 508 Compliance**—The final PDF document was recreated and now supports the minimum requirements to be 508 compliant (i.e., accessibility tags, language selection, alternate text for all images/icons, fully functional Web links, successfully passed Adobe Acrobat Quick Check).	Thom Blom, Oakland, CA OIFO
07/2007	Patch SAGG v2.0 updates the SAGG PROJECT package to version 2.0. This version removes support for DSM/MSM and now uses API's from the CM TOOLS package that are not SAGG specific. The only operating systems now supported are Cache for Windows and Cache for VMS. Other documentation updates: • The KMPS-SAGG mail group is no longer in use. The KMP-CAPMAN is now used for all notifications.	Robert Kamarowski from the SAGG Development Team; Susan Strack, Oakland Office of Information Field Office (OIFO)

	• There are no new options, and they all work the same except for [KMPS SAGG STATUS]. This option now uses ListManager to the display is different.	

Table i: Documentation revision history

Patch Revisions

For a complete list of patches related to this software, please refer to the Patch Module on FORUM.

Contents

Contents

Tables and Figures

Orientation

How to Use this Manual

Throughout this manual, advice and instructions are offered regarding the use and implementation of the Statistical Analysis of Global Growth (SAGG) software and the functionality it provides for Veterans Health Information Systems and Technology Architecture (VistA) software products.

This manual uses several methods to highlight different aspects of the material:

- Various symbols are used throughout the documentation to alert the reader to special information. The following table gives a description of each of these symbols:

Symbol	Description
	Used to inform the reader of general information including references to additional reading material.
	Used to caution the reader to take special notice of critical information.

Table ii: Documentation symbol descriptions

- Descriptive text is presented in a proportional font (as represented by this font).

- Conventions for displaying TEST data in this document are as follows:

  - The first three digits (prefix) of any Social Security Numbers (SSN) will be in the "000" or "666."

  - Patient and user names will be formatted as follows: [Application Name]PATIENT,[N] and [Application Name]USER,[N] respectively, where "Application Name" is defined in the Approved Application Abbreviations document and "N" represents the first name as a number spelled out and incremented with each new entry. For example, in Kernel (KRN) test patient and user names would be documented as follows: KRNPATIENT,ONE; KRNPATIENT,TWO; KRNPATIENT,THREE; etc.

- HL7 messages, "snapshots" of computer online displays (i.e., roll-and-scroll screen captures/dialogues) and computer source code, if any, are shown in a *non*-proportional font and enclosed within a box.

  - User's responses to online prompts will be boldface type. The following example is a screen capture of computer dialogue, and indicates that the user should enter two question marks:

```
Select Primary Menu option: ??
```

- The "**<Enter>**" found within these snapshots indicate that the user should press the Enter key on their keyboard. Other special keys are represented within **< >** angle brackets. For example, pressing the PF1 key can be represented as pressing **<PF1>**.

- Author's comments, if any, are displayed in italics or as "callout" boxes.

> Callout boxes refer to labels or descriptions usually enclosed within a box, which point to specific areas of a displayed image.

• All uppercase is reserved for the representation of M code, variable names, or the formal name of options, field and file names, and security keys (e.g., the XUPROGMODE key).

How to Obtain Technical Information Online

Exported file, routine, and global documentation can be generated through the use of Kernel, MailMan, and VA FileMan utilities.

> Methods of obtaining specific technical information online will be indicated where applicable under the appropriate topic.

Help at Prompts

VistA software provides online help and commonly used system default prompts. Users are encouraged to enter question marks at any response prompt. At the end of the help display, you are immediately returned to the point from which you started. This is an easy way to learn about any aspect of VistA software.

To retrieve online documentation in the form of Help in any VistA character-based product:

• Enter a single question mark ("**?**") at a field/prompt to obtain a brief description. If a field is a pointer, entering one question mark ("**?**") displays the HELP PROMPT field contents and a list of choices, if the list is short. If the list is long, the user will be asked if the entire list should be displayed. A **YES** response will invoke the display. The display can be given a starting point by prefacing the starting point with an up-arrow ("**^**") as a response. For example, **^M** would start an alphabetic listing at the letter M instead of the letter A while **^127** would start any listing at the 127th entry.

• Enter two question marks ("**??**") at a field/prompt for a more detailed description. Also, if a field is a pointer, entering two question marks displays the HELP PROMPT field contents and the list of choices.

• Enter three question marks ("**???**") at a field/prompt to invoke any additional Help text stored in Help Frames.

Obtaining Data Dictionary Listings

Technical information about files and the fields in files is stored in data dictionaries. You can use the List File Attributes option on the Data Dictionary Utilities submenu in VA FileMan to print formatted data dictionaries.

For details about obtaining data dictionaries and about the formats available, please refer to the "List File Attributes" chapter in the "File Management" section of the *VA FileMan Advanced User Manual*.

Assumptions About the Reader

This manual is written with the assumption that the reader is familiar with the following:

- VistA computing environment (e.g., Kernel Installation and Distribution System [KIDS])
- VA FileMan data structures and terminology
- Microsoft Windows
- M programming language

It provides an overall explanation of configuring the Statistical Analysis of Global Growth (SAGG) interface and the changes contained in Statistical Analysis of Global Growth (SAGG) Version 2.0. However, no attempt is made to explain how the overall VistA programming system is integrated and maintained. Such methods and procedures are documented elsewhere. We suggest you look at the various VA home pages on the World Wide Web (WWW) for a general orientation to VistA. For example, go to the Veterans Health Administration (VHA) Office of Information (OI) Health Systems Design & Development (HSD&D) Home Page at the following Web address:

http://vista.med.va.gov/

Reference Materials

Readers who wish to learn more about the Statistical Analysis of Global Growth (SAGG) software should consult the following:

- *Statistical Analysis of Global Growth (SAGG) Installation Guide*
- *Statistical Analysis of Global Growth (SAGG) User Manual*
- *Statistical Analysis of Global Growth (SAGG) Technical Manual* (this manual)
- Capacity Planning (CP) Services' Home Page (for more information on Capacity Planning) at the following temporary Web address:

  http://vista.med.va.gov/capman/CP_Tools.asp

  This site contains additional information and documentation.

VistA documentation is made available online in Microsoft Word format and in Adobe Acrobat Portable Document Format (PDF). The PDF documents *must* be read using the Adobe Acrobat Reader (i.e., ACROREAD.EXE), which is freely distributed by Adobe Systems Incorporated at the following Web address:

http://www.adobe.com/

For more information on the use of the Adobe Acrobat Reader, please refer to the *Adobe Acrobat Quick Guide* at the following Web address:

http://vista.med.va.gov/iss/acrobat/index.asp

VistA documentation can be downloaded from the Health Systems Design and Development (HSD&D) VistA Documentation Library (VDL) Web site:

http://www.va.gov/vdl/

VistA documentation and software can also be downloaded from the Enterprise VistA Support (EVS) anonymous directories:

- Albany OIFO — ftp.fo-albany.med.va.gov
- Hines OIFO — ftp.fo-hines.med.va.gov
- Salt Lake City OIFO — ftp.fo-slc.med.va.gov
- Preferred Method — download.vista.med.va.gov

This method transmits the files from the first available FTP server.

DISCLAIMER: The appearance of external hyperlink references in this manual does *not* constitute endorsement by the Department of Veterans Affairs (VA) of this Web site or the information, products, or services contained therein. The VA does *not* exercise any editorial control over the information you may find at these locations. Such links are provided and are consistent with the stated purpose of this VA Intranet Service.

1. Introduction

This distribution contains the Statistical Analysis of Global Growth (SAGG) Version 2.0 software. This version of the software can be installed over any previous versions of SAGG without any adverse problems. The current version of the software is compatible with all current operating system platforms at the medical centers and has minimal impact on the Information Resource Management (IRM) support staff. This software operates on Cache for Windows and Cache for VMS system platforms.

The Veterans Health Administration (VHA) developed the Statistical Analysis of Global Growth (SAGG) software in order to obtain more accurate information regarding the current and future Veterans Health Information Systems and Technology Architecture (VistA) database growth rates at the VA Medical Centers (VAMCs).

SAGG is a fully automated support tool developed by the Capacity Planning (CP) team, which entails the monthly capture of global database, software, and file size information from participating sites.

Installing the SAGG software creates the collection process mechanism and other necessary components of the software. The fully automated data collection cycle entails capturing all production global, software, and file specifics at the site into a temporary ^XTMP("KMPS") collection global. Once collected, the information is converted into an electronic mail message that is automatically transferred via network mail and merged into a CP National Database. The temporary collection global is then deleted from the site's system. The site also receives a summary of the global statistical data in the form of an electronic turn-around message.

2. Implementation and Maintenance

After the initial setup procedures are performed as detailed in the patch description for KMPS*2*0, the collection process basically operates transparent to IRM with minimal impact on system resources. The software uses the Kernel supplied TaskMan utility to schedule the initial global collection cycle, and it is then rescheduled to capture on a regular monthly basis. The monthly time frame for data accumulation was chosen in order to enhance global, software, and file trend analysis.

Implementation and System Requirements

Software Dependencies

This distribution of the Statistical Analysis of Global Growth (SAGG) software Version 2.0, Patch KMPS*2*0, is dependent on Patches KMPD*2.0*6 and XU*8.0*456. Patch KMPS*2*0 is a Kernel Installation and Distribution System (KIDS) software release. SAGG Installation Instructions can be found in the description for Patch KMPS*2*0, located on the Patch Module (i.e., Patch User Menu [A1AE USER]) on FOURM.

Upgrading From a Previous Version of SAGG Related to Patch XU*8.0*456

 If your site is upgrading from a previous version of SAGG, Patch XU*8.0*456 MUST be installed for SAGG 2.0 to work with Cache Version 5.2.

Virgin Installations of SAGG Related to Patch XU*8.0*456

 If your site is installing SAGG for the first time, Patch XU*8.0*456 MUST be installed for the SAGG Master Background Task Option [KMPS SAGG REPORT] to work.

Namespace

Capacity Planning (CP) has been given the KMP* namespace for both routines and global(s). The SAGG software utilizes the KMPS namespace for its routines and global.

Maintenance

Information throughout this manual is meant to help IRM in the maintenance of the software. The discussion that follows covers the options available to assist IRM in that maintenance.

IRM staff should be aware that the SAGG PROJECT file (#8970.1) must be updated any time a volume set is added to or deleted from their system configuration. IRM should utilize the Edit SAGG Project File

[KMPS SAGG FILE] option in order to accomplish this task. Additionally, IRM should use this option whenever the location of the ^XTMP global has been changed.

The SAGG software uses the KMP-CAPMAN mail group for distribution of reports and error messages.

The accuracy of the global information from the site is dependent on the SAGG Master Background Task option [KMPS SAGG REPORT] running every 28 days. IRM staff should ensure that the background task is scheduled to run by reviewing the Check SAGG Environment option [KMPS SAGG STATUS]. If necessary, the background task can be rescheduled with the Schedule/Unschedule Options option [XUTM SCHEDULE] located under the Taskman Management menu.

3. Globals

Global	Description
KMPS	This global contains data for the SAGG PROJECT file (#8970.1).
	This global only contains the SAGG PROJECT file (#8970.1) and is minimal in size. Therefore, this global will not grow large.
	The global should be journalled and translated, if the operating system supports these functions.
	Journaling: Mandatory
XTMP("KMPS")	The ^XTMP global is the storage location for inter-process temporary data. The SAGG software uses the ^XTMP("KMPS") sub-node to temporarily store global, software, and file data during the collection cycle. The contents of this sub-node are deleted after completion of the collection cycle.
	Per *Kernel V. 8.0 Technical Manual*: The ^XTMP global should not be journalled. However, the ^XTMP global should be translated, if the operating system supports this function.
	Journaling: *Not* recommended

Table 3-1: SAGG global information

4. Files

Files

File Number	File Name	Global	File Description
8970.1	SAGG PROJECT	^KMPS(8970.1	This file contains the location information for the temporary ^XTMP global and the names of all production volume sets on the system. No data comes with the file.

Table 4-1: SAGG file list

Templates

The SAGG software does *not* contain any templates within this version.

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Version 2.0   Revised July 2007

5. Routines

Name	Description
KMPSGE	Master collection routine which is invoked through the TaskMan scheduling options. This routine coordinates the collection of global, software, and file data; then, it will network the collected data to the Capacity Planning (CP) National Database.
	NOTE: This routine has been updated to be compatible with Cache 5.2.
KMPSLK	Routine that permits the capture of specific VistA software and file data including system configuration information.
	NOTE: This routine has been updated to be compatible with Cache 5.2.
KMPSUTL	A utility routine that provides several management functions.
	NOTE: This routine has been updated to be compatible with Cache 5.2.
KMPSUTL1	A utility routine that provides several management functions.
	NOTE: This routine has been updated to be compatible with Cache 5.2.

Table 5-1: SAGG routine list

6. Key Variables

Name	Description
KMPSMGR	The name of the MGR UCI as determined by the ^%ZOSF("MGR") variable.
KMPSPROD	The name of the Production UCI as determined by the ^%ZOSF("PROD") variable.
KMPSSITE	The station number of the site as determined by $P($$SITE^VASITE(),U,3).
KMPSX1	The type of M platform as determined by the ^%ZOSF("OS") variable.
NUM	The current date in M internal format as given by the +$H system variable.

Table 6-1: SAGG key variables

7. Exported Options

SAGG Project Manager Menu [KMPS SAGG MANAGER]

The KMPS SAGG MANAGER menu is located under the Capacity Planning menu [XTCM MAIN]. The XTCM MAIN menu may be assigned to the IRM staff member(s) who support(s) this software and other capacity planning tasks. The SAGG Project Manager Menu contains the following options:

```
SAGG Project Manager Menu                          [KMPS SAGG MANAGER]
    Check SAGG Environment                          [KMPS SAGG STATUS]
    Edit SAGG Project File                            [KMPS SAGG FILE]
    Stop SAGG Collection                              [KMPS SAGG STOP]
```

Figure 7-1: SAGG menu options

Edit SAGG Project File Option [KMPS SAGG FILE]

The Edit SAGG Project File option allows you to edit the information contained in the SAGG PROJECT file (#8970.1). Use this option to input the location information for the temporary ^XTMP global and the names and location of all production volume sets on the system.

Stop SAGG Collection Option [KMPS SAGG STOP]

The Stop SAGG Collection option informs the SAGG software collection routines to begin an orderly shutdown process. Each collection routine stops after reaching an appropriate break point.

The Check SAGG Environment option [KMPS SAGG STATUS]
The Check SAGG Environment option [KMPS SAGG STATUS] will check the environment of the SAGG (Statistical analysis of Global Growth) Project. In addition to providing information regarding the SAGG collection routines, this option will check the status of SAGG patch installation at the site.

Options *Without* Parents

The following option does not appear on any menu:

SAGG Master Background Task Option KMPS SAGG REPORT

The SAGG Master Background Task option is not assigned to any menu. This option is scheduled through TaskMan to start the SAGG software's master collection routine in the background. This option should be rescheduled with the Schedule/Unschedule Options option [XUTM SCHEDULE] under the Taskman Management menu for every 28 days to ensure same day-of-week collection cycles. If this option does not execute properly, a warning message will be sent to the KMP-CAPMAN mail group.

Menu/Option Assignment

The KMPS SAGG MANAGER menu is located under the Capacity Planning menu [XTCM MAIN]. The XTCM MAIN menu may be assigned to the IRM staff member(s) who support(s) this software and other capacity planning tasks.

Protocols

The SAGG V. 2.0 software does *not* export any protocols.

8. Archiving and Purging

Archiving

The SAGG V. 2.0 software contains the SAGG PROJECT file (#8970.1). This file will be minimal in size and will *not* experience any growth. Since the SAGG software maintains minimal data at the site, archiving functions are *not* necessary and are *not* provided.

Purging

The SAGG V. 2.0 software contains the SAGG PROJECT file (#8970.1). This file will be minimal in size and will *not* experience any growth. Global data information is accumulated into the ^XTMP("KMPS") global and is killed after uploading to a mail message, which is forwarded to the Capacity Planning (CP) National Database. Since the SAGG software maintains minimal data at the site, purging functions are *not* necessary and are *not* provided.

9. Callable Routines

The SAGG V. 2.0 software does *not* provide any callable entry points that are available for general use.

10. External Relations

The SAGG V. 2.0 software relies on the following external VistA software to run effectively:

Software	Minimum Version Needed	Patch Information
Kernel	8.0	Fully patched
VA FileMan	22.0 (or higher)	Fully patched
MailMan	7.1 (or higher)	Fully patched

Table 10-1: SAGG-required VistA software

This version of SAGG utilizes Kernel %ZOSVKS-namespaced routines that utilize system specific calls. The Kernel %ZOSVKS-namespaced routines were introduced with the issuance of Kernel Patch XU*8.0*90.

All operating system interfaces on which the SAGG software is dependent have been encapsulated into the Kernel %ZOSVKS-namespaced routines. The %ZOSVKS* routines contain code that enables use of the VIEW command and $VIEW function to get information from the operating system.

DBA Approvals and Database Integration Agreements

The Database Administrator (DBA) maintains a list of Database Integration Agreements (IAs) or mutual agreements between software developers allowing the use of internal entry points or other software-specific features that are not available to the general programming public.

The SAGG V. 2.0 software is *not* dependent on any agreements.

11. Internal Relations

:

All options in the SAGG V. 2.0 software under the SAGG Project Manager Menu [KMPS SAGG MANAGER] can function independently. Only the Schedule/Unschedule Options option [XUTM SCHEDULE] under the Taskman Management menu can invoke the SAGG Master Background Task option [KMPS SAGG REPORT].

Relationship of SAGG Software with Kernel

This version of SAGG utilizes Kernel %ZOSVKS-namespaced routines that utilize system specific calls. The Kernel %ZOSVKS-namespaced routines were introduced with the issuance of Kernel Patch XU*8.0*90.

Namespace

The SAGG V. 2.0 software has been assigned the KMPS namespace.

Additionally, this version of SAGG utilizes Kernel %ZOSVKS-namespaced routines that utilize system-specific calls. The Kernel %ZOSVKS-namespaced routines were introduced with the issuance of Kernel Patch XU*8.0*90.

12. Software-wide Variables

The SAGG V. 2.0 software does *not* employ the use of software-wide variables.

For the key variables that are employed within this software, please refer to the "Key Variables" topic in this manual.

13. SAC Exemptions

This version of the SAGG software does *not* employ any exemptions from the Programming Standards and Conventions (SAC). Also, this version of the SAGG software utilizes Kernel %ZOSVKS-namespaced routines that utilize system-specific calls. The Kernel %ZOSVKS-namespaced routines were introduced with the issuance of Kernel Patch XU*8.0*90.

14. Security

Keys

This version of the SAGG software does *not* contain any security keys.

VA FileMan File Protection

#	Name	DD	RD	WR	DEL	LAYGO
8970.1	SAGG PROJECT	@				

Table 14-1: SAGG file protection

Glossary

BLOCK	A unit of measure of the size of the disk used by both the operating system and M platforms.
CAPACITY PLANNING	The process of assessing a system's capacity and evaluating its efficiency relative to workload in an attempt to optimize system performance.
COLLECTION CYCLE	Occurs when the SAGG background task begins obtaining data regarding the size and efficiency of the globals on the monitored volume sets. Additionally, software and file information is collected. Normally, a site should schedule the collection cycle for every 28 days.
COMPLEXITY LEVEL	A ranking order for sites based on calculated workload needs. Four levels exist with 1 being the largest and 4 being the smallest type facility.
DATA BLOCK	A component of the global tree-structure that is used by the M platform to contain the actual information.
DATABASE	A set of information, consisting of at least one file, which is specific for a given purpose. The VistA database is composed of a number of VA FileMan files.
DISK MODEL RANK	A ranking order for sites based on calculated disk capacity needs.
GLOBAL	Tree-structured system of nodes containing common data. M platforms store data on the disk in the form of global arrays. A global is composed of both pointer and data blocks.
GLOBAL EFFICIENCY	Determines the amount of space utilized within the entire block structure of a particular global. A higher efficiency indicates that the global is compacted and, therefore, using less disk space.
GLOBAL SIZE	Determines the amount of pointer and data blocks used by a particular global.
MAP	Composed of subunits called blocks. A map consists of 400 blocks.
MODEL RANK	A ranking order for sites based on calculated VistA workload needs.
POINTER BLOCK	A component of the global tree-structure that is used by the M platform to find the location of data blocks.
SAGG	Statistical Analysis of Global Growth. A fully automated support tool developed by the Capacity Planning (CP) team, which entails the monthly capture of global, database, software, and file size information from participating sites.
SESSION NUMBER	Timestamp of when the collection cycle was run. The session number is defined from the +$H system variable.
TURN-AROUND MESSAGE	The mail message that is returned to the KMP-CAPMAN mail group detailing the database and global growth over the previous reported session.

ZEROTH NODE   The number of file entries is stored within the zeroth node of VistA
                                 software files. This information is used to determine software file
                                 growth statistics.

For a comprehensive list of commonly used infrastructure- and security-related terms and
definitions, please visit the ISS Glossary Web page at the following Web address:

http://vista.med.va.gov/iss/glossary.asp

For a list of commonly used acronyms, please visit the ISS Acronyms Web site at the following
Web address:

http://vaww.vista.med.va.gov/iss/acronyms/index.asp

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