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Case Study: Implementing and Administering SAS® Enterprise Guide® across the Enterprise as a Solution for Data Access Security

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ABSTRACT

This paper presents a case study detailing why and how the SAS® Enterprise Guide® client was chosen, approved by UCF's security office, and rolled out to selected power users and unit IT shops in the university community as the solution to replace two distinct data access and reporting tools. The selection increased the number of SAS Enterprise Guide users across the university by a factor of five.

WHO WE ARE

The mission of Enterprise Decision Support (EDS), a division of Institutional Knowledge Management (IKM), is to provide data integration services and actionable information solutions to support executive and operational decision-making and planning at the University of Central Florida (UCF) through the delivery of business intelligence applications and other knowledge management tools. The EDS team delivers information and reports in various formats tailored to user need and technical aptitude, and is responsible for system support, administration, and security of the university data warehouse and functional reporting data marts.

INTRODUCTION

Concern over aging hardware which housed the widely used enterprise MS SQL-Server based Student Administration (SA) Reporting Data Mart and expanded UCF security policies provided the stimuli for our department to explore new hardware and reporting software support for this data mart. At that time, the SA enterprise data mart provided data to users in varied ways including a web accessible Query library, comprised of MS EXCEL and ACCESS based SQL queries, and data table access via ODBC (read only). At this same time, UCF security policies also mandated that any new data systems were required to use MS Active Directory.

During this same period a client based query tool to the Student Administration transaction system that required ODBC to access data tables was going to be discontinued due to security access concerns. Functional power users had acquired extensive experience with and relied heavily on this tool to meet daily operational ad-hoc data query needs.

This paper presents a case study detailing why and how the SAS Enterprise Guide client tool was chosen, approved by UCF's security and rolled out to selected power users and unit IT shops in the university community as the solution tool for both of these issues, increasing the number of Enterprise Guide users by a factor of five.

ENTERPRISE GUIDE AS THE SOLUTION

Enterprise Guide and our customized SAS® Information Portal® developed into the foundation of our solutions for both the Reporting Data Mart queries and the SA transaction client based query tool.

The SA data mart now resides within the Enterprise Domain on an MS SQL-Server farm. Using Enterprise Guide, the web based query library was converted to SAS stored processes and is accessed via the customized SAS Information Portal, organized into portlets on one portal page. Users' customized EXCEL and ACCESS queries were converted to either Enterprise Guide projects or stored processes to provide them with continuing access to their data. Enterprise Guide has also been installed on clients throughout the enterprise to support custom conversions and ad hoc data query development.

The university's Information Security Officer has approved Enterprise Guide as the client tool for use with the SA transaction system to replace the ODBC ad-hoc query tool for functional power users.

INTEGRATING SYSTEMS WITH ENTERPRISE GUIDE

SAS SERVER AND SYSTEM ADMINISTRATION

Our SAS server administrator configured the server to communicate securely with the Reporting Data Mart within its new environment. Since Enterprise Guide uses 'host based' authentication we were able to employ the Integrated Windows Authentication (IWA) feature for EG users within the university Enterprise Domain and the manual entering of the user name and password for users who had not yet converted to the domain. IWA is the means to force the use of Kerberos on the client for authentication.

SAS metadata security groups and Access Control Templates control the access to the converted query library and varied customized queries converted to stored processes, both available via the portal, ensuring data security and privacy.

QUERY AND CUSTOMIZED SOLUTION CONVERSIONS

Our data warehouse development team converted over 50 Reporting Data Mart queries to stored processes and configured a portal page specifically to present and control access to these new stored processes. The result of each of these processes is an Excel file which can be either downloaded or opened. Also, all the customized reporting data marts which were previously processes in Excel or Access were converted to either SAS stored processes or Enterprise Guide projects to provide a seamless transition of access to the data.

ODBC DATA EXTRACT CONVERSIONS

During initial meetings with the Reporting Data Mart user groups we discovered many departments and colleges had been using shared ODBC connections to download large amounts of data from the data mart to be used by complicated Access programs or other systems, e.g. a sophisticated PHP application. Scheduled tasks were designed to run batch SAS programs to provide the data extracts as an interim solution, which allowed the in-house system to continue to service the data and reporting needs of the users until a preferred solution could be developed. After investigating alternative solutions, it was determined that the preferred method of delivering data was running Enterprise Guide projects as scheduled tasks. To successfully run the scheduled task, due to Windows requirements, the Enterprise Guide user account must be a member of the local Administrators Group on the machine where the software is installed. We are currently in the process of setting up the data extract users so that they can run the scheduled tasks from Enterprise Guide, our preference being that the data consumers manage their own extract schedule and data requirements. This provides them with greater flexibility to meet their data needs and reduces support overhead on the EDS team.

SECURITY

The expanded use of Enterprise Guide added new dimensions to security.

For secure and manageable user access, Enterprise Guide was integrated with UCF's enterprise domain Active Directory. This provided the ability to utilize IWA, which enabled us to implement university security best practices for access to enterprise systems in a more user-friendly manner, as credentials no longer had to be entered multiple times. The use of Enterprise Guide has strengthened system security with the integrated passage of encrypted user credentials and data between server and client.

New groups were created in both Active Directory and SAS metadata to control access to Enterprise Guide and to restrict data library access. Additionally, a custom role limiting Enterprise Guide capability was developed to reduce the options available to the general EG user to ensure system integrity and security. A new business process for Enterprise Guide security access requests was implemented which incorporated the submission of an online eForm, which is tied to an approval workflow through multiple levels including department security administrator, the university Data Administrator and the university Information Security Office (ISO). FERPA (Family Educational Rights & Privacy Act) training is required for Enterprise Guide access and the eForm automatically checks for FERPA completion when the form is initially entered. If the person for which the security is being requested hasn't completed FERPA training, the eForm is prevented from being submitted for approval.

Enterprise Guide was able to resolve the security challenges related to units being on multiple domains. Individuals with computers not on the central IT Net Domain are required to log in to Enterprise Guide with their assigned Net user ID and password at each login. Individuals with computers on the Net Domain use IWA as the means of authentication to access the Enterprise Guide client.

Another important aspect of using Enterprise Guide to query university Oracle and MS SQL Server data stores is that there are no longer individual ODBC connections to these resources. Access to the university's new SQL cluster environment of the ODBC data store is now accomplished via a Windows service account to integrate data into the data warehouse and over Windows authentication in Enterprise Guide. For data downloads from the data store to an external individual database, a local library reference to the database is created using the SAS Access® to ODBC engine, and a table in the unit's individual database is created using the Enterprise Guide query output.

USER SUPPORT

The SAS development team, in addition to responsibility for the enterprise SAS data warehouse, SAS system maintenance, and Business Intelligence development, works closely with the new Enterprise Guide users, providing help desk and troubleshooting support. The support activities provided by the team that have contributed to the success of the Enterprise Guide initiative include: (a) individual installations of Enterprise Guide and initial orientation by the SAS Systems Administrator ; (b) individual Enterprise Guide training provided by the SAS development team; (c) facilitation of hands-on workshops for new Enterprise Guide users; (d) creation of an Enterprise Guide User's Quick Start Guide, plus an Enterprise Guide Training Resources document that refers users to the SAS Enterprise Guide online tutorial at support.sas.com, Enterprise Guide books available through SAS Publications, and the online SAS webinar for Enterprise Guide training. Additionally, an Enterprise Guide Users portal page was created within the SAS Information Portal to provide EG users with a one-stop location to find help for using SAS Enterprise Guide.

One of the challenges faced by the development team was the widely varied query skill sets among new users. Most had good skills and the friendly GUI interface of Enterprise Guide enabled these users to jump right in and start developing data collection projects and process flows. Other users required one-on-one training with a team member to become a successful user.

ADMINISTRATION OF ENTERPRISE GUIDE

The Enterprise Guide initiative has also resulted in new developments for the administration of EG. During the past six months, the number of Enterprise Guide users has increased from less than 20 to more than 70. Due to this significant increase of individual Enterprise Guide users, a depot has been created so that new Enterprise Guide installations have the latest patches and consistent properties. A properties file is stored in the depot so that the applications installed will be equivalent for all workstations.

The Systems Administrator has also worked on automating the setting of options inside of Enterprise Guide that are predefined for use within the UCF environment. This is accomplished by using the EGOPTIONS.xml file which sets options such as: (a) the order of default output libraries; (b) restricting tables from opening automatically; (c) reduced autosave time; and (d) adding the SAS local server automatically to server list. By utilizing this installation methodology, the amount of time spent by the systems administrator manually installing the Enterprise Guide client was significantly reduced, as was the potential for inconsistent installations.

An MS SharePoint site restricted to Enterprise Guide users and unit IT tech support for SAS was created to provide maintenance schedules and other technical information related to current SAS systems, Enterprise Guide, and the Information Portal.

Future administration development includes identifying unit IT techs to serve as points of contact to handle unit Enterprise Guide issues, and maintaining a filtered IP listing of all EG users to control distributed Enterprise Guide installations. The significant increase of Enterprise Guide and Information Portal users has also resulted in the need for enhanced monitoring of server performance. The SAS Enterprise BI APM® tool is scheduled to be installed to accomplish this requirement.

CONCLUSION

Enterprise Guide has proven to be a powerful and versatile application, which enabled it to become the solution of choice to meet a variety of university reporting needs across the enterprise. The use of Enterprise Guide combined with the Information Portal and Business Intelligence Analytical Tools suite is continuing to grow and expand as demand for access to data and information increases.

296-2012 Implementing & Administering Enterprise Guide...Data Access Security, continued

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