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Improving Performance: Using SAS[®] Merchandise Planning Release 6.1.3 to Get the Most! Gain the Value!

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ABSTRACT

Are you tired of waiting for data to refresh? If performance is becoming more of a challenge in your organization, then look at your current SAS[®] *Merchandise Planning* deployment and leverage the benefits of *release 6.1.3*. This SAS Merchandise Planning release offers many benefits over previous releases, including improvements to recalculations, which enhance performance when you open a worksheet. Thus, your organization can be more efficient during the planning process.

Through the latest case studies, this paper demonstrates the value that is delivered from the simplified metadata calculations and faster worksheet performance and helps you visualize how your organization can achieve improved productivity.

Basic metrics are used to show how you can get the most from the performance improvements and gain the value by leveraging the benefits of release 6.1.3 (and maintenance releases) in your organization. The discussion includes these topics:

- performance improvement metrics
- recent metadata simplifications
- batch processing
- platform-supported technologies
- case study experiences

INTRODUCTION

Today's demands for a more granular planning process require greater performance capabilities. The challenge that many retailers face during the planning process is being able to handle large volumes of data. In this economic climate, budgetary limitations are influencing how retailers allocate money for new software purchases. As a result, retailers are thinking strategically about how they can better use the software that they already have deployed.

SAS Merchandise Planning uses a multi-tier, Web-based architecture with a traditional two-tier client and server architecture. This architecture has a common user interface. Although the multi-tier architecture has not changed much from release 5.6 to release 6.1.3, it has been redesigned to better handle large volumes of data, manage data more intelligently to reduce memory constraints, and support fail-over in the application as the number of users that are involved in the planning process grows. Release 6.1.3 also leverages the SAS[®]9 platform by integrating the reporting capabilities and the ability to share data across your enterprise. Figure 1 shows a typical SAS Merchandise Planning Release 6.1.3 deployment.

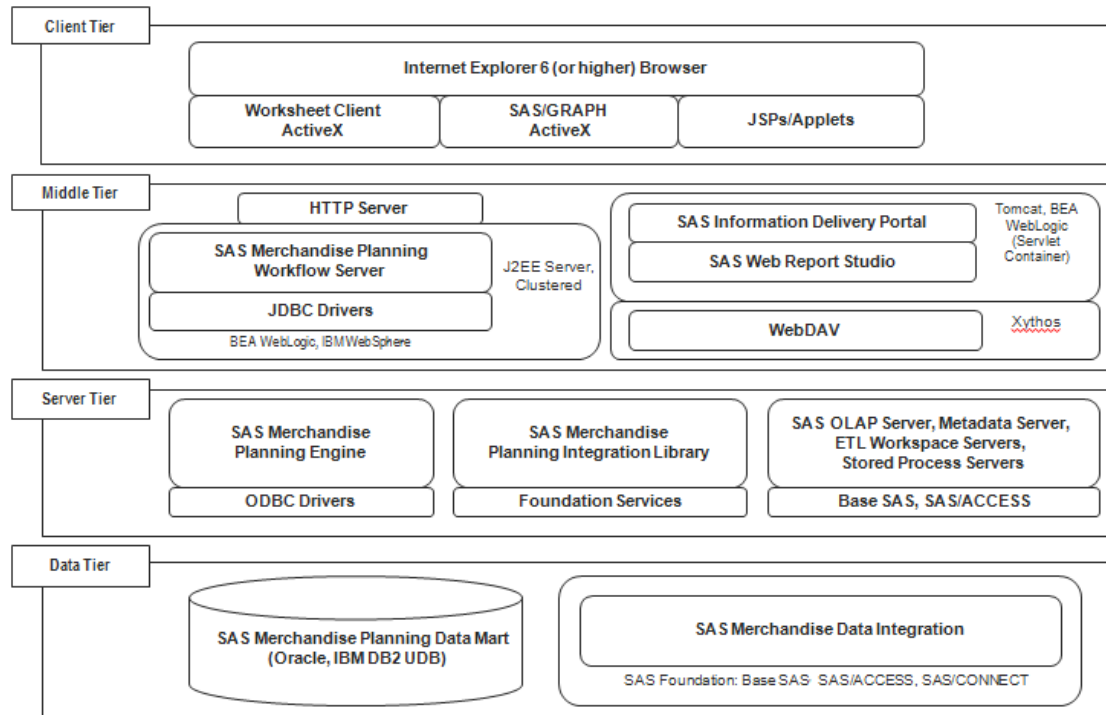


Figure 1. SAS Merchandise Planning and Analysis Architecture Release 6.1.3 Deployment Tiers

Retailers who have deployed SAS Merchandise Planning might not be aware of all the benefits that the current release offers over previous releases of the software. Thus, they are not effectively and strategically taking advantage of the full capabilities of the software. Leveraging these benefits can enable retailers to become more efficient during the planning process, by conducting activities faster and smarter, and improve their decision-making processes. Therefore, they are getting the most out of their current software deployment.

This paper presents a high-level overview of some of the challenges that today's retailers face day-to-day and how improvements to SAS Merchandise Planning helps retailers overcome these challenges. Some of the cumulative improvements that have been made to SAS Merchandise Planning release 6.1.3, up to release 6.1.3M5, are further discussed in more detail. This discussion shows how the advances to each maintenance release deliver the ultimate value to retailers. Improvements to performance are also discussed, as well as support for other technologies. Finally, case studies demonstrate how SAS customers have extended the value of their current deployment by leveraging the benefits of SAS Merchandise Planning 6.1.3M5.

CHALLENGES AND SOLUTIONS

Here are some of the challenges that today's retailers face and some of the current improvements to SAS Merchandise Planning that address these challenges.

- Increasing volumes of data create difficult demands on retailers who must manage the required operational window of time in which data must be loaded.

The data integration features of SAS[®] 9 that are leveraged within SAS[®] Merchandise Data Integration help deliver a faster, easy-to-deploy data management system which greatly improves the data-loading times.

- Many retailers struggle to manage the increased volume of worksheet data and the growing number of users that are needed to perform the additional planning tasks.

Improved computational efficiency and data management promotes better performance and a better overall user experience. Improvements in these areas include limiting data loading visibility only to key performance indicators (KPIs), performing calculations only for the currently executed task, and simplifying the data management by using paging, where large volumes of data are broken into more manageable pieces of data.

- Overall performance and application response challenges retailers to balance the power of the desktop and the interaction with the data.

The worksheet client was rebuilt to efficiently channel the power of your desktop to provide an effortless utilization that increases performance, navigation, and the interaction with your data.

- Keeping up with current IT solutions challenges not only users, but also software developers, to implement the latest advances in technology.

The planning engine was redesigned and tuned to leverage the full capabilities of the 64-bit platform by increasing the optimal performance without the limiting, inherent constraints of a 32-bit application.

- Performance degradation from network latency that is commonly found with dial-up and wide-area networks challenges any organization's network effectiveness.

A redesign of the interfaces and the communication between the desktop and server to use less bandwidth helps produce less vulnerability in performance degradation. Extreme care was taken during the redesign to ensure that optimal dialog between client and server is achieved. The improvement significantly minimizes the network latency for the users.

The following section provides specific details about how SAS Merchandise Planning addresses these challenges.

SAS® MERCHANDISE PLANNING 6.1.3 IMPROVEMENTS

PLANNING PROCESS ADVANCES

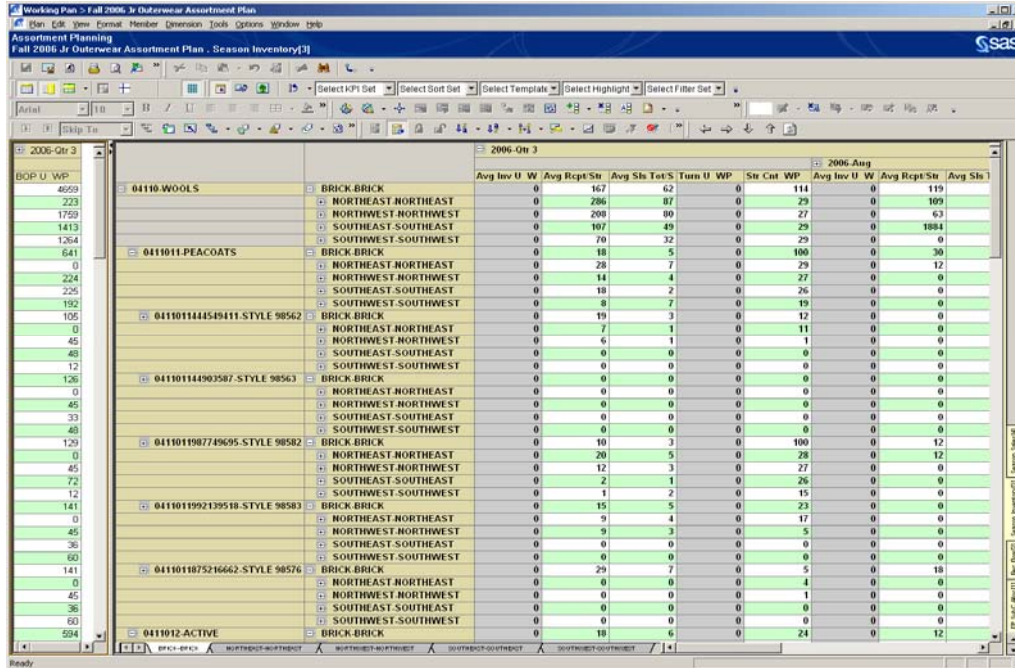
Many of the improvements to SAS Merchandise Planning 6.1.3 through the latest 6.1.3M5 release focus on expanding usability during the planning process and improving performance. The user interface is similar to the interface for Microsoft Excel. The interface has the ability to provide maximum visibility of data at the planner's finger tips. Therefore, decision-making capabilities are more efficient. In addition to a sophisticated navigation capability, the plan management dashboard provides a clear view into the many favorite or assigned worksheets, which are available at a glance (Display 1).

The screenshot shows the 'Merchandise Planning - Dashboard' interface. At the top, there are navigation tabs: Home, View, Modules, Tools, Administration, and Help. Below this is a 'Worksheets' section with a search bar and filter options. A table lists various worksheets with columns for Favorite, Assignment, Name, Analytic Request, Cluster Method, Commit, Description, From Location Name, From Merchandise Name, To Merchandise Name, From Time Name, To Time Name, Last Updated Date, Seeding Rules, and Metadata Version. At the bottom of the table are buttons for Open, MakeFavorite, RemoveFavorite, Reset, Print, and Help.

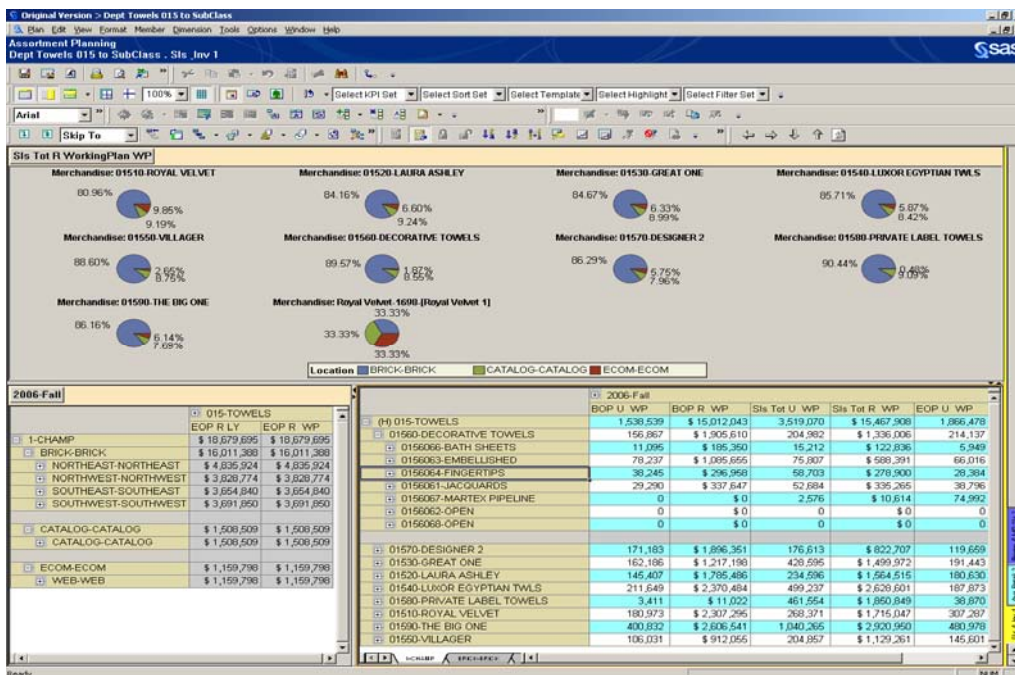
Favorite	Assignment	Name	Analytic Request	Cluster Method	Commit	Description	From Location Name	From Merchandise Name	To Merchandise Name	From Time Name	To Time Name	Last Updated Date	Seeding Rules	Metadata Version
<input checked="" type="checkbox"/>		D041 Outerwear	None	Volume	14355	Region	Channel: BRICK - ECOM	Set-Department: OUTERWEAR	Style	Season: Fall 2006	Month	03/15/2006	History LY;	AP
<input checked="" type="checkbox"/>		D041 Outerwear - 2	None	None	13950	Region	Channel: BRICK - ECOM	Set-Department: 041 - OUTERWEAR	Style	Season: Fall 2006	Month	03/16/2006	History LY;	AP
<input checked="" type="checkbox"/>		Demo Assortment Plan	None	None	223344	Selling Location	Total Company: 1 - CHAMP	Class: 11520 - STORAGE	Style	Year: 2005 2005	Week	12/08/2005	History LY;	AP
<input checked="" type="checkbox"/>		Dept 100	None	None	95625	Selling Location	Channel: BRICK - ECOM	Department: 016 - CLASSIC SPORTSWEAR	Subclass	Season: Fall 2005	Month	12/07/2005	History LY;	AP
<input checked="" type="checkbox"/>		Fall 2006 Jr Outerwear Assortment Plan	None	None	2100	03/17/2006 Region	Channel: BRICK - ECOM	Set-Department: OUTERWEAR	Style	Quarter: Qtr 3 2006	Month	03/17/2006	History LY;	AP
<input checked="" type="checkbox"/>		Fall 2006 Jr Outerwear Assortment Plan 02	None	None	2100	Region	Channel: BRICK - ECOM	Set-Department: OUTERWEAR	Style	Quarter: Qtr 3 2006	Month	03/17/2006	Working Plan Loc: BU Total Company; Merch: TD Total Company; Time: Week;	AP
<input checked="" type="checkbox"/>		Jr Outerwear D041	None	None	14355	Region	Channel: BRICK - BRICK	Set-Department: OUTERWEAR	Style	Season: Fall 2006	Month	02/08/2006	History LY;	AP

Display 1. The Merchandise Planning Dashboard

The newly developed worksheet client is a user-friendly interface that helps non-technical users work more cost-effectively and proficiently. Administrators manage the user capabilities by preconfiguring templates and business views for planners to use during the planning process. This saves time while, at the same time, gains efficiencies. Many worksheet configurations and layout options are available to help users find the best way to effectively and efficiently maximize their planning time and to help planners make the best decisions for their organization. The flexibility to configure a simplified worksheet or a more detail-oriented view delivers a nice balance for an organization who wants to use a simplified view versus an organization who wants to expand its level of detail (Displays 2 and 3).



Display 2. An Essential Layout Showing the Ease of Use and Maximum Visibility of Planning Data



Display 3. An Advanced Layout Showing Increased Levels of Detail to an Individual Planning Task

The usability elements found in SAS Merchandise Planning Release 6.1.3 benefit users by saving time and enhancing the total user experience. The paging option divides the worksheet into smaller segments to streamline the user's approach to managing the worksheet data. Additional benefits include enhanced navigation features such as shortcut menus, customizable toolbars, and shortcut keys. Searching a large worksheet with the increased volume of data can be accomplished using features such as **Go to**, **Find**, and **Replace**. Lastly, having the ability to undo worksheet and calculation changes without waiting for the worksheet to recalculate saves time. All these usability elements benefit and help retailers work effortlessly and smoothly through the merchandise planning process.

AGGREGATION PERFORMANCE IMPROVEMENTS

The SAS Merchandise Data Integration release 6.1.3M2 data aggregation function was rewritten to improve performance of full-week data loads and partial-data loads. The aggregation code for two processes was customized and tuned to aggregate presorted fact data.

Measuring performance gains depends on many factors such as the volume of data, shape of the hierarchy, hardware, and third-party software. To compare the performance of SAS Merchandise Planning release 6.1.3 with release 6.1.3M2, SAS tested a full-week load of inventory data with 4M and 16M input records per week using IBM AIX 5.3. This was tested against Oracle 10g on low-end hardware with four 1.5 GHz CPUs and 16GB RAM. The difference between the start and end times, called the *elapsed time*, was plotted. Figures 2 and 3 show the change in elapsed time and the improvement in the load runtimes compared to the overall performance when running full-week loads.

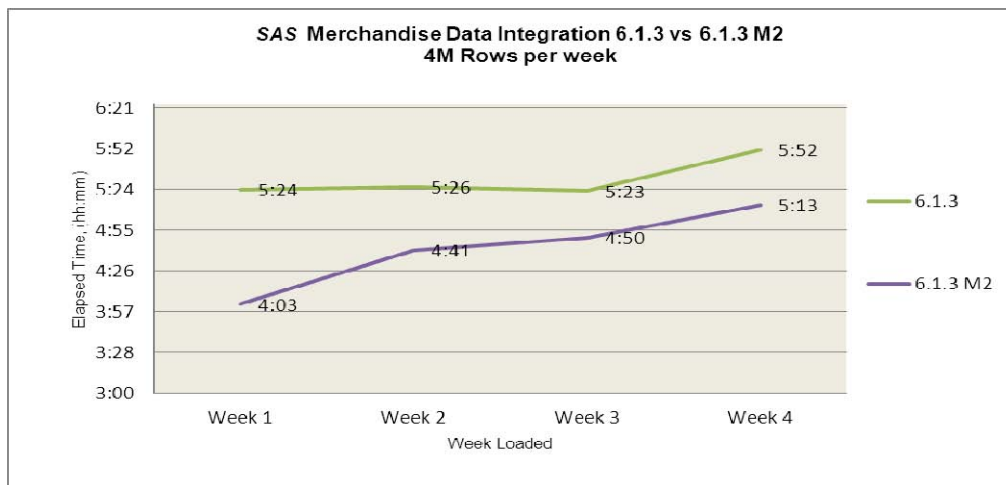


Figure 2. The Performance Gains for 4M Input Rows per Week

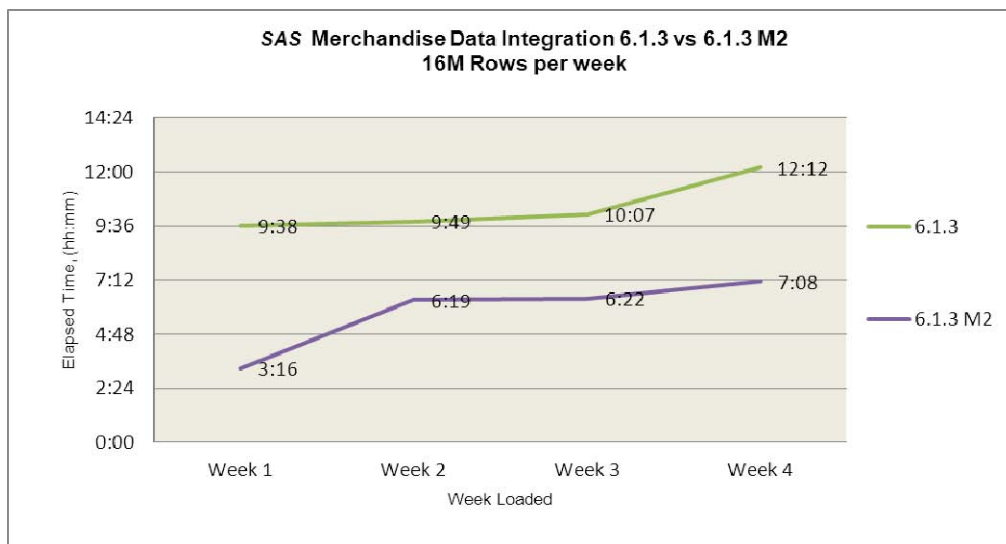


Figure 3. The Performance Gains for 16M Input Rows per Week

SAS Merchandise Data Integration release 6.1.3M2 improvements were similar for a low volume (4M) versus a higher volume (16M) full-week load, achieving a 10-15% performance gain across all four weeks.

There are two important resource utilization improvements that are evident when using this new aggregation algorithm:

- the memory that is used for each SAS aggregation process—there is an improvement of the same amount or less
- the disk space for release 6.1.3M2 compared to the previous release—there is an improvement of same amount or less

METADATA ADVANCEMENTS

In SAS Merchandise Planning release 6.1.3M5, several new metadata-related advancements were introduced to improve efficiency. These metadata advancements seamlessly streamline the user experience during the merchandise planning process by providing faster response times when opening a worksheet, recalculating a worksheet, or making changes to a member in the hierarchy. The improvements in performance benefit retailers significantly by enabling users to work faster and more cost-effectively through their merchandise planning process.

DYNAMIC CALCULATIONS FIELDS

Dynamic calculation fields have special calculations that occur on an as-needed basis or when they are visible in the worksheet. Dynamic calculation field categories include the following: Virtual (V) fields with an aggregation rule of Calc/Calc/Calc (which states the specified calculation should be executed on all three hierarchies) and not a dependent of another field; time-based fields that are not included in the calculation of another field; and calculated (C) fields, which are not defined in the mapfile.

ROLLUP INDIRECT DEPENDENT

Rollup indirect dependent is a change in the spreading and rollup aggregation logic. The change in logic simplifies the field calculations by considering both indirect and direct dependents during the spreading and rollup aggregation process. In the *rollup aggregation process*, dependents of a rollup field are evaluated during aggregation but do not need to be evaluated during spreading. *Spreading logic* means that a spread set that contains a rollup field will be removed from the spreading configuration at levels above the user-defined rollup levels, known as *pinned fields*. A *spread set* tells the application to eliminate the evaluation of the dependent fields, because they will be re-evaluated during rollup aggregation.

The rollup dependents that are considered by the rollup aggregation process are calculated fields that are defined in the rollup principles, such as beginning of period/end of period (BOP/EOP) fields, PREV and NEXT fields including aggregation rule values, Calc, CalcPlug, CalcPlugHold, CalcPlugDown, SumCalcSum, and SumCalc. Furthermore, summing fields are not included in rollup aggregation.

BOP/EOP LOGIC CHANGE

Changing the BOP/EOP logic means changing the BOP change request. *Change request* refers to an edit in the application that signifies that a recalculation is needed for a KPI. In the previous logic, the BOP KPI always created a change request for time siblings. The BOP/EOP logic change is a change request and is introduced for BOP time siblings only if the BOP KPI value is changed at the same time as the sibling level.

For example, if a change is made to a BOP KPI time sibling value, the consecutive month value will not change and there is no calculation. Previously, any change made to a BOP KPI time sibling value automatically resulted in a calculation.

IMPROVEMENTS TO TIME-BASE CALCULATIONS

Improvements to time-based calculations were made to improve efficiency and minimize the negative effect on the transfer of data to the client. Most time-based calculations, such as C fields, calculate dynamically, meaning as needed.

For most situations, the methodology is to locate the starting and ending cells which presents a strong node-to-node iteration where caching does not improve the process. Moreover, in some situations, the methodology is to replace address lookups with index lookups where navigation outside the worksheet is not feasible.

The following calculations have changed:

CT_Prev	CT_IterativeNext	CT_InvAvg
CT_Next	CT_IterativeNextP	CT_InvAvgRoll
CT_ForwardNext	CT_IterativeIncludeP	CT_IterativeInclude
CT_ForwardInclude	CT_CumToDate	

Note: Even though the PREV and NEXT calculations have dependents that affect other calculations and are not time base calculations, they will benefit from this change.

Preliminary testing during a standard review and evaluation of time base calculations was performed. Several recalculation operations (a seeding calculation, the first recalculation, and the second recalculation) were used to look at the difference between the baseline value and the actual performance of the time base calculation for release 6.1.3M3 compared to release 6.1.3M5. The testing process used the same worksheet and information that was captured from the recalculation trace files.

The results of the baseline value and the actual performance of the time base calculations for both releases are shown in Figure 4.

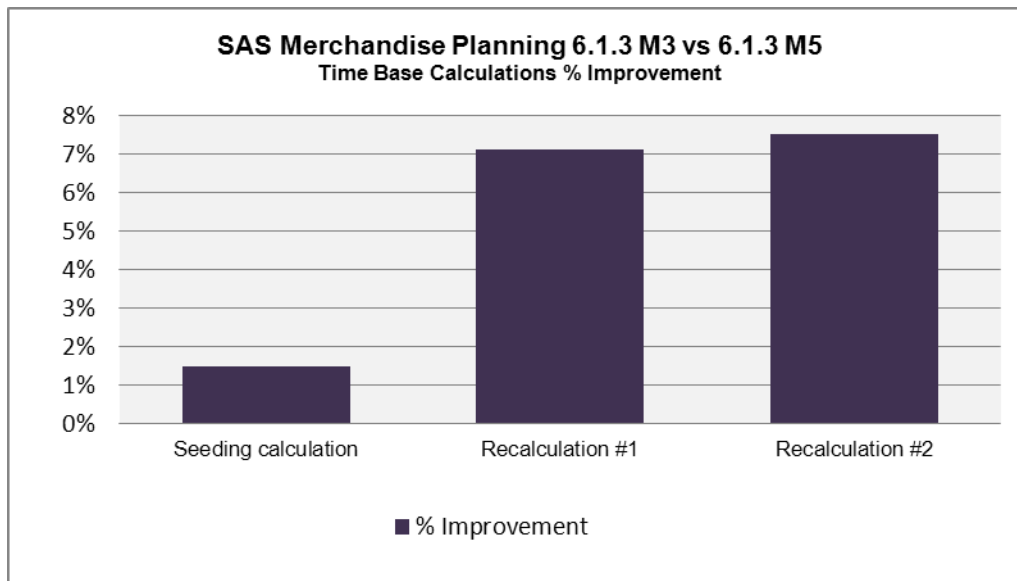


Figure 4. Time Base Calculations % Improvement

The preliminary tests for time base calculations improved in release 6.1.3M5 by more than 1% for seeding calculations and more than 7% for recalculations.

NEW METADATA FUNCTIONS

The focus of the new metadata functions is to provide field value retrieval metadata functions that increase run-time efficiencies and support simplified metadata. These new metadata functions increase several worksheet operations, such as faster worksheet opening times, quicker recalculation outcomes, and faster worksheet rendering when performing a task switch. This is due to the streamlined calculations in the metadata.

DVVAL is a function that is used to retrieve a specific data version value for a history or forecast field in a working plan field calculation. The syntax is `DVVAL(kpi_dv_id, field_reference)`. The *kpi_dv_id* is the data version ID for the specific history or forecast period. The *field_reference* is a normal formula field for the history or forecast field that is taken from the mapfile.

HIERVAL is a function that provides a way to retrieve level-dependent field values, such as merchandise member attributes. The syntax is `HIERVAL(entity, app_id)`. The *entity* is the working plan entity. The *app_id* is the days in period application ID.

VARDV is a function that is used to calculate the variance for any two data versions. The syntax is `VARDV(kpi_dv_id, {field_ref1}, kpi_dv_id1, {field_ref2})`. The *kpi_dv_id* is the data version ID for the specific history or forecast period. The *field_ref1* and *field_ref2* are normal formula fields for the history or forecast field taken from the mapfile.

UPDATED METADATA FUNCTION

The *ISLOADED* function has been enhanced to include a data version. The syntax is `ISLOADED(kpi_dv_id, {field_reference})`. The *kpi_dv_id* is the data version ID for the specific history or forecast period. The *field_reference* is a normal formula field for the history or forecast field taken from the mapfile.

APPLICATION MODIFICATIONS

Several modifications were made to SAS Merchandise Planning release 6.1.3M3 that resulted in additional improvements to the application usability and functionality and progressively helped improved performance overall.

A new feature Calculate Over Time Editor was introduced to end the restriction on editing a parent time member that has current date-restricted children. This feature enables users to edit KPI values at a summary level of merchandise, location, and time, calculating the children of time first for those KPI values. It is forced to work with KPIs that are correctly summed up the time hierarchy. It works automatically with certain KPIs based on their aggregation rules, but there are conditions for specifying other KPIs.

The New SKU Resolution window and workflow process for resolving new SKUs to live SKUs was enhanced, focusing on responsiveness and usability. The previous requirement for resolving new SKUs to models was at the SKU level by SKU name, although most customers did not create their models at SKU level. This process resulted in system-generated models with names unknown by the users.

The New SKU Resolution window includes a new field New SKU's Parent Display Level. Based on the parent that is already selected, the user can then select the particular parent display level, such as Class. In addition, the paging option has been added to the New SKU Resolution window to improve the response time for retrieving new SKUs. During the replacement process, a new window that is already filtered to the New SKU's Parent Display Level from the main display enables the user to quickly locate their model SKUs; the enhanced system-generated name propagates down from the member name that is given by the user. These improvements enable users to generate models at levels above SKU and to filter data by the model SKU name.

Another update corrects the information about the Batch processor status that is available in the Batch Monitor and Plan Management areas. The incorrect status typically appeared when the process of generating the cluster history failed. Synchronization between the batch processor and the actual statuses that are displayed to the user have been implemented. In addition, the new statuses give the user a finer depiction of the actual worksheet statuses. Other improvements include improved error messaging and the ability to more easily stop the Process Server when jobs are still running.

PERFORMANCE IMPROVEMENT METRICS

With the cooperation and help from our customers, metrics were generated to evaluate the performance of SAS Merchandise Planning release 6.1.3M1 and release 6.1.3M5.

Metrics to evaluate performance were generated using specific system functions, such as worksheet recalculation, worksheet open, and worksheet task switch. The assessment utilized an internal customer metadata and customer's on-site information. Each function was performed and the time improvements were captured in seconds. Worksheets were generated using a combination of standard hierarchy, merchandise dynamic level, and merchandise/location/time sets.

The metrics for the worksheet recalculation process were captured at the member levels within the hierarchy, such as root node (top member), mid-level member, and lowest-level member. Correspondingly, the metrics for the worksheet task switch and the worksheet open process were captured using three different sizes of worksheets with a range of cell counts as follows:

Large worksheet -	160,000 to 190,000
Medium worksheet -	100,000 to 125,000
Small worksheet -	26,000 to 55,000

The results of the customer timings for each system function and the range of improvement by percentage are shown in Tables 1, 2, and 3. The tables show the speed at which release 6.1.3M5 performed a recalculation, task switch, and worksheet open.

Customer	M1	M5	% Improvement
Customer A (Root Node)	26.6 seconds	6.2 seconds	47% - 79%
Customer B (Mid-level)	26.5 seconds	13 seconds	33% - 70%

Table 1. Timing Results Based on a Worksheet Recalculation

Customer	M1	M5	% Improvement
Customer C (Medium Worksheet)	93 seconds	1 second	76% - 90%
Customer A (Large Worksheet)	785 seconds	92 seconds	76% - 90%

Table 2. Timing Results Based on a Worksheet Task Switch

Customer	M1	M5	% Improvement
Customer B (Large Worksheet)	241 seconds	129 seconds	29% - 46%
Customer C (Medium Worksheet)	83 seconds	62 seconds	5% - 25%

Table 3. Timing Results Based on a Worksheet Open

Improvements in worksheet recalculation and task switch operations topped 70% or more in release 6.1.3M5 productivity, enabling customers to gain significant efficiencies in business processes. Large worksheet open time improved 30-40%.

PLATFORM-SUPPORTED TECHNOLOGIES

In order to keep up with some of the latest technologies in the marketplace, SAS Merchandise Planning release 6.1.3 maintenance releases M1 and M4 added support for several new technology levels. Each of these new technologies helped improve the overall performance of the SAS Merchandise Planning application and platform.

In SAS Merchandise Planning release 6.1.3M1, IBM WebSphere Application Server is supported on IBM AIX 5.3 TL 7.3 and Sun Microsystems Solaris 9 operating systems.

Subsequently, SAS Merchandise Planning release 6.1.3M4, introduced support for SAS[®] 9.2. This required SAS 9.2 to be installed when using SAS Merchandise Data Integration for loading and managing data, with the following components: Base SAS[®], SAS/ACCESS[®] as the database, and SAS/CONNECT[®]. Furthermore, when installing under Windows, you must install Subsystem for UNIX-based Applications (SUA).

In addition, when you are using SAS[®] BI Server, SAS 9.2 is required to be installed with the following components: Base SAS, SAS/ACCESS, SAS/CONNECT, SAS Workspace Server, SAS[®] Metadata Server, SAS[®] OLAP Server, and Web application servers that are supported by SAS 9.2. Furthermore, if SAS[®] Business Intelligence functionality is necessary, then the following components are required: SAS[®] Web Report Studio, SAS[®] Information Map Studio, SAS[®] Management Console, and SAS[®] Add-In for Microsoft Office 4.2.

Supplementary support for the following components was introduced in SAS Merchandise Planning release 6.1.3 M4:

- BEA WebLogic Server 10gR3
- IBM WebSphere Application Server Network Deployment 7.0 FP3
- Sun Microsystems Solaris 10
- Oracle 11.1.0.7

The following areas are supported with SAS Merchandise Planning 6.1.3 M5:

- **Application Servers:** BEA WebLogic Server 10gR3 Premium and IBM WebSphere Application Server Network Deployment 7.0 FP 3
- **Operating Systems:** IBM AIX 6.1 TL2.and AIX 5.3 TL7 SP3, Sun Microsystems Solaris 9 Sun Solaris and 10 with patch set as of 4-22-09,and Microsoft Windows Server 2003 R2 x64 SP2 (on EM64T)
- **Databases:** Oracle 10.2.0.4 and 11.1.0.7 and IBM DB2 UDB 9.5 FP 3a
- **ODBC Driver:** DataDirect Technologies 5.3

CASE STUDIES EXPERIENCES

This section provides a brief overview of the recent customers who have deployed SAS Merchandise Planning release 6.1.3M5, their reasons for choosing this release, and the benefits they gained during the deployment process. The case studies discuss a new customer and a long-term customer to SAS Merchandise Planning and illustrate the benefits that can be gained from the new functionality and performance advancements.

NEW CUSTOMER

A new customer implemented SAS Merchandise Planning release 6.1.3M5 for the first time to improve their current business process and financial results. They previously used an Excel-based planning process. This planning process was not integrated and limited their overall view of the planning data. This made the planner's job more time consuming, labor intensive, and less efficient.

They implemented a simplified, integrated Assortment Planning process to help track historical performance and performance to plan results. The *Assortment Planning process* identifies which items should be planned and made available, where, and in what quantities. This new integrated planning process provided increased and maximum visibility into their planning data, thereby giving the customer the ability to make solid purchasing decisions.

The planning process uses multiple templates with tasks that are designed to facilitate editing specific plan metrics and to assist in executing the business process. Unlike an Excel process, the user can easily maneuver between the tasks that are designed for each specific planning process and quickly enter the working plan values across all hierarchy levels that are defined in the worksheet. In addition, merchandise and, in some cases, location sets were used to help streamline the setup process and maintain consistency between departments.

Because this customer is new to SAS Merchandise Planning, a baseline was not established for worksheet opening, worksheet recalculation, and worksheet task switch. However, the benefit to this customer's overall planning process and the improvements to SAS Merchandise Planning release 6.1.3M5 clearly provided a quicker and more efficient planning process as well as improved performance.

LONG-TERM CUSTOMER

A long-term customer upgraded from SAS Merchandise Planning release 5.6 to release 6.1.3M5 to improve their overall planning process and to take advantage of the improved functionality. This customer was challenged with poor opening times for larger worksheets, poor navigation within the worksheet including searching, inadequate performance during the seeding process, and limited functionality. As this customer's needs grew with increases to their users base and their need to increase productivity, they looked to SAS for answers.

This customer is a prime example of how the increased number of users and volume of worksheet data created many struggles and challenges. The previous version of the software reached its limit as the challenges intensified over time. Although the software was becoming a challenge, the already beneficial value of the SAS Merchandise Planning solution prompted this customer to pursue upgrading to the most recent release 6.1.3M5.

The larger worksheet opening time was significantly improved so that this customer could now open larger worksheets that they could not open previously. The new simplified metadata configuration in which the seeding process loaded the worksheet data only for visible KPIs clearly improved the overall opening times of the their worksheet, mainly the larger worksheet. Navigation was another pain point for this customer causing difficulty maneuvering around the increased worksheet data. Users were frustrated with the continuing navigation struggles that they were encountering.

The current release introduced favorites so that the users could save worksheets as a favorite and then once they log in to the application the dashboard displays these favorites. User could now manage their workloads immediately when they logged in to the environment. The increased volume of data produced worksheets with many pages of data presenting the users with the daunting task of trying to organize and manage their worksheet data. The paging option in which the worksheet data was split into manageable pieces enabled the users to manage the enormous amount of worksheet data, page by page. These new aspects gave this customer an advantage of improved productivity, a better way of managing their worksheet data and an overall better user experience.

Furthermore, the ability to copy and paste worksheet data, find and replace, undo calculation changes, and display worksheet components such as customizable toolbars and shortcut keys are some of the software improvements. These improvements positively affect the usability of the software resulting in cost-efficient and time saving practices. Another new quality in managing worksheets is the ability to create templates and tasks, which can be built and reused by all users. This ability saves added configuration time and allows the user to focus their time on the planning process.

SELF HELP RESOURCES AND DOCUMENTS

In addition to the technical information that has been presented so far, it is just as important to have an awareness of the resources that are available to supplement your knowledge about SAS Merchandise Planning software. Here are several resources that you can consult for this information.

SAS NOTES

SAS notes are available from the Knowledge Base on the SAS Customer Support Center (support.sas.com). They provide information about SAS software installation, problems, or usage. From the SAS Customer Support Center, you can search on a specific SAS note number or a specific topic.

DOCUMENTATION

Each SAS product has User and Administration guides. Furthermore, Release Notes provide specific information that is related to the release. To access this information use the SAS Product Documentation Web site: (support.sas.com/documentation/onlinedoc). From there you can select the SAS Product for which you need information. Accessing this Web site requires a user ID and password to retrieve the SAS product documentation and this is provided only to licensed customers.

ONLINE HELP

Online Help, which is provided within each software application, has documents in a PDF format that are based on the user guides. These PDF files are available from the Help menu in the application.

SAS RETAIL USER GROUP (SRUG)

The SAS Retail User Group (SRUG) is a forum for retailers that is led by a steering committee and advisors as a way to share information. Using the internet and e-mail, SRUG provides guidance and education on new functionality and enhancements for future SAS software releases (both short and long term). It is a forum that provides ideas, information, and a best-practices exchange between SAS and its retail solution users. Furthermore, it is a forum that helps user group members research and educate themselves on innovative methods and techniques for using SAS software. This forum includes panel discussions and presentations by users group members on what they are doing with the solutions.

To join SRUG, go to www.sas.com/events/cm/166169/register.html.

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