Branding SAS® Web Applications for Your Enterprise

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ABSTRACT

Integrating the appearance of SAS® Web applications with your organization's brand is important to the acceptance of the new tools and information they provide. With the release of SAS® 9.2, the SAS Theme Architecture provides a single point for the definition and deployment of your organization's brand across SAS Web applications. This paper will discuss the new tools and processes added in SAS 9.2 for creating and maintaining custom themes. Examples from the SAS Enterprise BI Web applications (SAS® Web Report Studio and the SAS® Information Delivery Portal) will be shown to illustrate some of the possibilities available with the release of SAS 9.2.

INTRODUCTION

SAS Enterprise Business Intelligence (EBI) web applications are often called on to integrate with your organization's overall web presence in such a way that there is a single coherent look-and-feel to a user's overall experience. Using the techniques and procedures described in this paper to customize the appearance of the SAS applications, they will blend into your web environment, and be readily accepted by users across your organization.

Beginning in SAS 9.1.3, it was possible to brand each of the EBI web applications, although each application had its own techniques for defining and deploying the customizations. One of these techniques, the SAS Theme web application, was employed to brand the SAS Information Delivery Portal in SAS 9.1.3. With the release of SAS 9.2, the SAS Web Application Theme System becomes a single point of control for managing the branding of all of the SAS EBI web applications. In 9.2 SAS Themes have undergone a major transformation, to simplify the creation and management of new themes.

In this paper, we will look at the new SAS 9.2 web application architecture, to understand how the SAS Themes fits into that architecture. We will survey the new tools for creating and deploying a custom SAS Theme that will apply your organization's brand to the SAS EBI web applications. Then we will demonstrate some aspects of the SAS EBI web applications which can be customized using the SAS Web Application Theme System.

SAS THEMES AND THE THEME SERVICE

A SAS Theme is a central repository of resources that control the appearance of the applications. In SAS Web applications, these resources include cascading stylesheets (CSS), images, theme descriptors (XML), and HTML templates. A themed application is one that can look up these resources from a central repository and apply them appropriately.
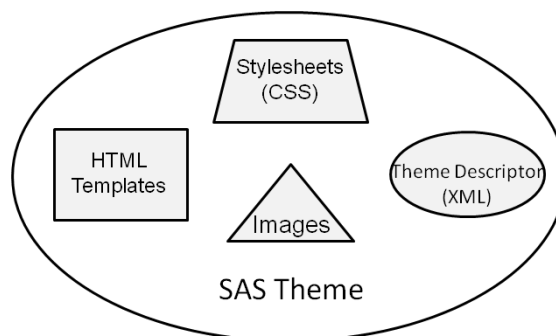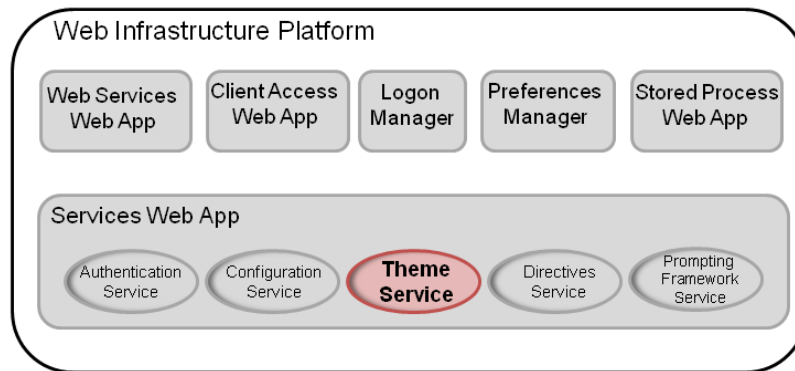

Figure 1. Components of a SAS Theme

Figure 1 shows the components of a SAS Theme. Stylesheets drive much of the look and feel of SAS Themes, so most of the theme changes will be focused in this area. The stylesheets specify the color pallet, as well as font styles and sizes. Images in a SAS Theme include logos and background images, as well as a variety of icons which are displayed in the body of HTML pages. Your organization's logos and background images can replace the default images, and standard image editing software can be used to modify the appearance of the supplied icons. HTML templates are fragments of HTML that render small, specific portions of a resulting larger HTML page.

The SAS Theme Service provides access to theme definitions for presentation assets used in SAS 9.2 Web applications. The Theme Service is a component of the SAS 9.2 Web Infrastructure Platform (WIP) which is a collection of mid tier services and applications that provide basic integration services for all SAS 9.2 Web applications.

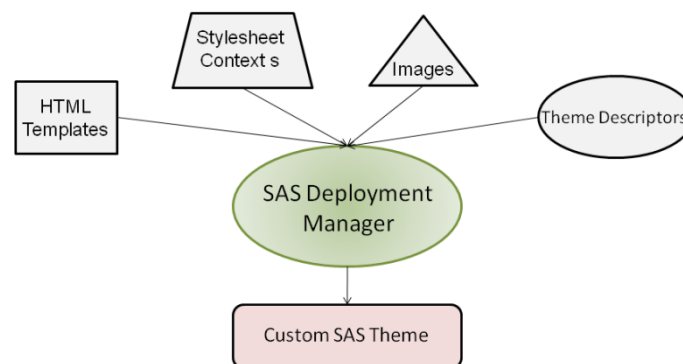**Figure 2. SAS 9.2 Web Infrastructure Platform Components**

With the release of SAS 9.2, there is now a single process for defining a theme, and a single point of access for all SAS 9.2 Web applications to discover and consume these theme definitions.

TOOLS FOR CREATING CUSTOM THEMES

As a part of the SAS Theme installation and configuration process, a folder called SASThemeExtensions is created in the SAS configuration directory. This directory contains the tools needed to begin creation of a new theme:

- NewTheme script - This script creates a directory structure for your new theme, and populates it with the configuration files which you will modify to create your theme definition. The new theme is based on the SAS default theme which ships with the product.

- Specs folder – this directory contains documentation of the general color palette, as well as color and image information specific to each user interface component. You will refer to this document frequently as you are designing and defining your custom theme.

In SAS 9.1.3, creating a custom theme involved editing long and complex CSS files. It was difficult to figure out how all the style classes defined in the CSS were used in the various themed SAS products. The process to define these properties for a theme in SAS 9.2 takes a new approach, accomplished through templating the CSS files, which removes the need to modify large and complex CSS files directly. You modify the template files, which are used to generate the contents of the custom theme configuration files.

Figure 3. Construction of a Custom Theme from the definition files

As illustrated in Figure 3, once all of the customizations have been applied to the custom theme, the SAS Deployment Manager is used to construct the new custom theme's Web Archive (WAR) file. The custom theme WAR file is packaged into an Enterprise Archive (EAR) file, along with the SAS default theme, which is delivered with the initial installation.
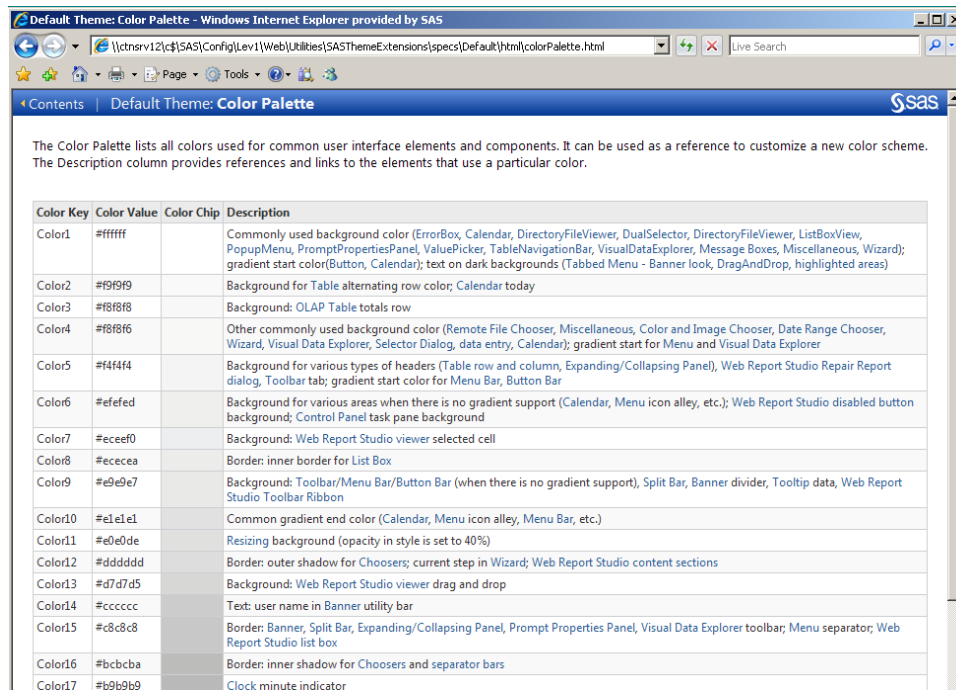
CREATING A NEW THEME

The remainder of this paper will be devoted to walking you through the process of designing, defining, and deploying a custom theme using the process outlined in the previous section.

DESIGN THE NEW THEME

The first step in creating a new theme is to come up with a design. Usually the new theme will be based on an existing design, your organization's intranet standards, another in-house written application, or a purchased application or solution. Some organizations have a standard color palette which specifies what colors should be used. Whatever the starting point, you will need to establish a set of colors which are compatible with your organization, and decide on what images (logos, banner images, etc.) you will want to use in the new theme.

Once you have established a source of a color palette, SAS provides information in the <configuration directory>\Lev1\Web\Utilities\SASThemeExtensions\specs directory that documents the theme specification.

The Color Palette page lists all 55 color keys of the default theme, with the default hex color value for each, and provides links to documentation on each user interface element where that color is applied.

Figure 5. SAS Default theme color palette

When you create your new theme, you have the 3 options to define your theme:

- Using the color palette – replacing the 55 SAS default colors with your organization's palette. The colors will automatically be applied across the user interface.

- Specify the color to be used for each interface component. You must specify the color for each context key of the user interface component. This takes more time, but provides maximum flexibility and control.

- Start with the color palette, and then make individual changes to selected user interface components, to override the way that the color palette is applied in some cases.

If you choose to set colors for the context key of each user interface component, then the documentation provides tools to assist you with this process as well:
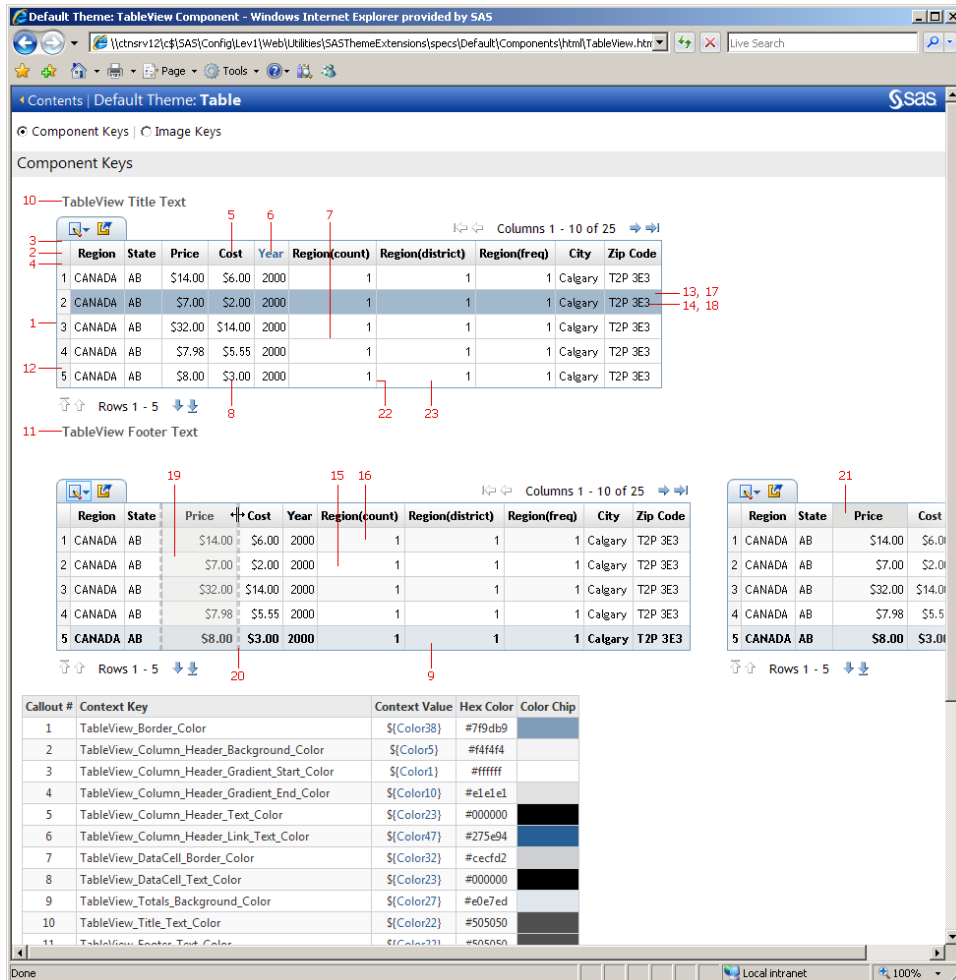

Figure 4. Example of SAS Theme specifications delivered with SAS 9.2

The various pages of the specification detail each user interface component, match it to a context key in a context file, and indicate the color value in the SAS default theme. Also, images used in the interface are specified, with their corresponding image key. Using these pages in combination with your organizations color specifications, you can construct a mapping of your color palette to the elements of the SAS user interface. If you need to replace or modify images used in the application, you can decide on those changes as well, before you begin to build the new theme.

CREATE THE NEW THEME

Once the theme is designed, it is time to start implementing the design. First, you need to generate the baseline for your new theme. This is accomplished using the NewTheme script file. There are Windows and UNIX versions of this script supplied with the SAS Theme installation, the Windows script will be used for the examples in this paper.

In the <configuration directory>\Lev1\Web\Utilities\SASThemeExtensions folder you will find the NewTheme.bat script. To create the new theme, run that script, supplying a name for your theme:

```
NewTheme.bat <theme name>
```

If you wish to use the color palette option, add a parameter to the command:

```
NewTheme.bat <theme name> true
```

No spaces are allowed in the theme. A baseline for your custom theme will be created in the SASThemeExtensions\themes\<theme name> location. In the rest of this paper, this will be referred to as <NewTheme_home>.

UPDATE STYLESHEET CONTEXT FILES

The next step to create your theme is to modify these files, replacing the default color for each context key with your corresponding color. The best way to do this is to work through the specification pages, modifying all context keys on each page. The file associated with each page of the specification is listed on the page:
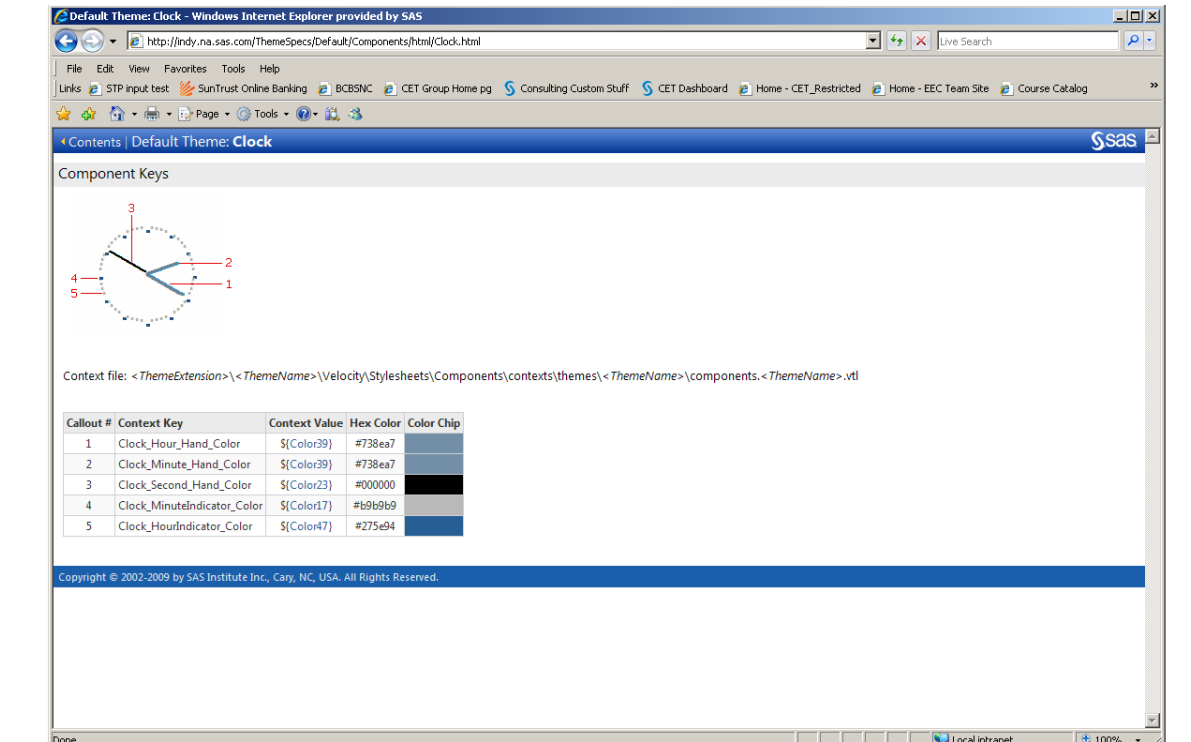

Figure 6. Matching Context Keys to Template (vtl) files

For example, to modify the clock context keys, you would navigate to

```
<New Theme home>\Velocity\Stylesheets\Components\contexts\themes\<theme name>
```

and edit

```
components.<theme name>.vtl
```

Find the context keys in this file

```
#--------------------------------------------------------------
# Clock component
#--------------------------------------------------------------
Clock_Hour_Hand_Color=#738ea7
Clock_Minute_Hand_Color=#738ea7
Clock_Second_Hand_Color=#000000
#-- Indicators are the dots around the clock circle which
#-- the hands point at
Clock_MinuteIndicator_Color=#b9b9b9
Clock_HourIndicator_Color=#275e94
```

and modify the hex color numbers to the color number that corresponds to your color pallet. Step by step you will repeat this process until you have changed all the context keys to your hex color numbers.

UPDATE IMAGES AND DESCRIPTORS

You will probably want to replace some of the images used in the default theme, with your own. Typically these include the company logo (the SAS logo for the default theme), as well as the banner background image. To find information about the images used by the applications, you can again consult the specification for the default theme that ships with SAS 9.2. Clicking on the image key radio button shows this information:
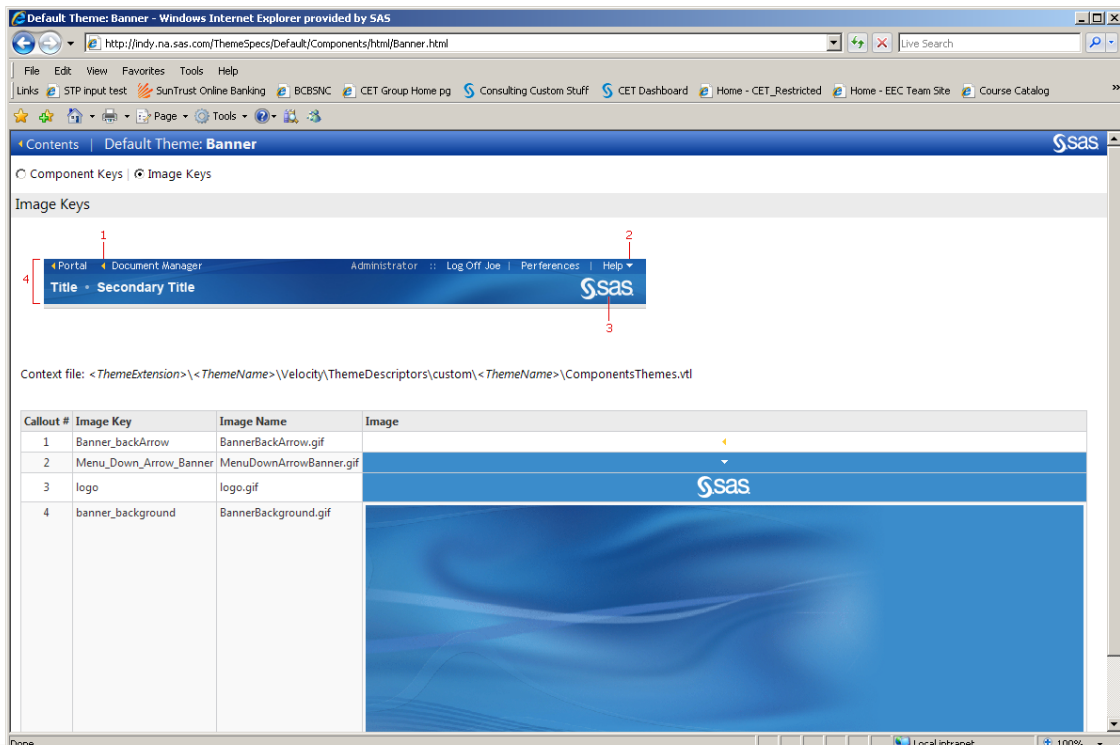

Figure 7. Image Key Mappings

The image files are located at

        <New Theme home>\themes\<theme name>\images\

in one of three sub-directories:

        Common, Components, WRS

The properties of each image are defined (to the SAS applications) in configuration files called Theme Descriptors. The Theme Descriptors files are located at

        <New Theme home>\Velocity\ThemeDescriptors\custom\<theme name>

To replace an image, you should copy your new image file into the directory where the image you wish to replace is located. If the new image is the same format (jpg, gif, etc), has the same dimensions (in pixels) as the original, and the file has the same name, then you can just replace the original image with the new one. However, if you need to change the size, image file name, or image format, then you will need to modify the Theme Descriptor.

For example, if you were replacing the logo.gif with myLogo.jpg, and your new logo was 300 x 70 pixels, you would need to go to the ComponentsThemes.vtl file, find the logo entry:

        <Image name="logo" description="SAS Logo" altTextKey="desktop.logo.txt"
        appliesTo="ALL" width="62" height="24" file="logo.gif"/>

And modify it to change the width, height, and file specifications:

        <Image name="logo" description="My Logo" altTextKey="desktop.logo.txt"
        appliesTo="ALL" width="303" height="70" file="myLogo.jpg"/>

Not all of the images support height and width specifications, but the logo and banner images will allow you to modify their size.

In addition to replacing standard images with your custom images, you may need to modify the colors of some of the default images, to match your color palette. This can be done using purchased image editing software, or open source image editors, such as GIMP (GNU Image Manipulation Program). Edit your images, and replace them in the images folder for your new theme.

REBUILDING THE SAS THEME APPLICATION

Once you have completed all the changes to the baseline theme for colors and images, added new images, or replaced existing images with your images, you must rebuild the SAS Theme application. Each theme that is defined will be packaged up as the sas.theme.<theme name>.war file. The WAR files will then be bundled into an EAR file, sas.themes.ear. This process is accomplished using the SAS Deployment Manager (SDM) application. You launch the SDM by executing

```
<SAS Home>\SASDeploymentManager\9.2\config.exe
```

This will bring up the SAS Deployment Manager Wizard. You will select Rebuild Web Applications
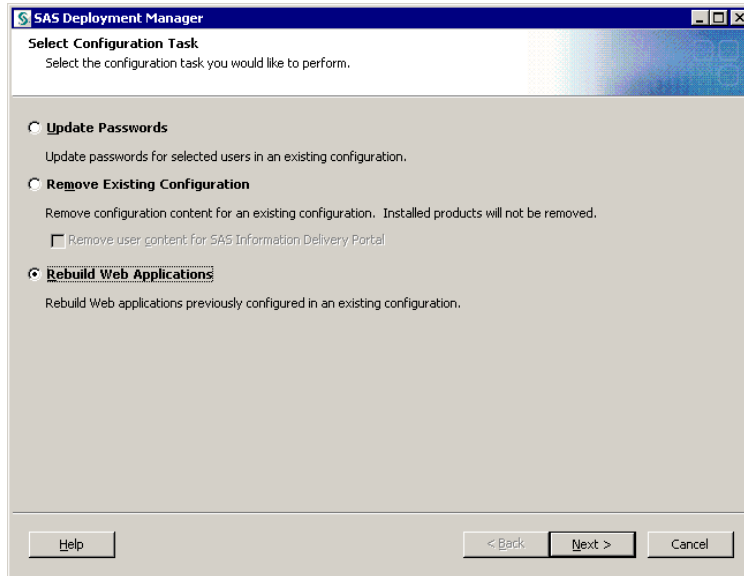
Figure 8. SAS Deployment Manager Options

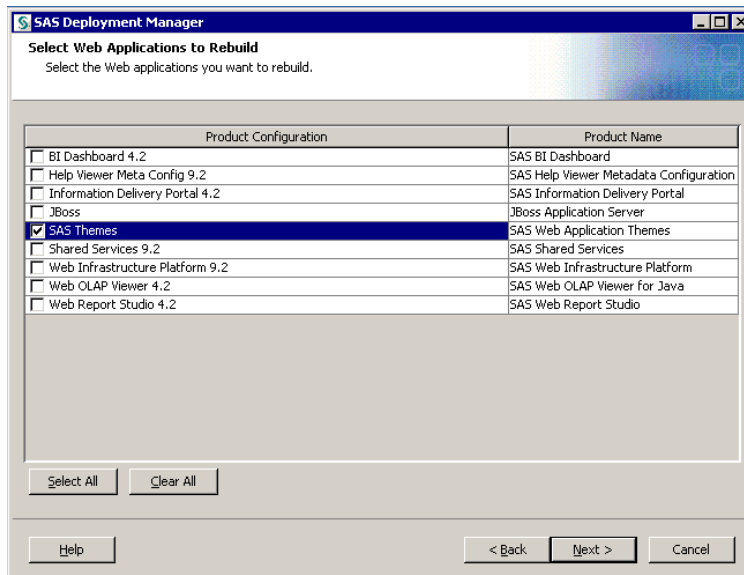Then select the SAS Theme Application to be rebuild

Figure 9. Rebuild Applications Selection List

When this process completes, the new sas.themes.ear will be placed in

```
<configuration directory>\Lev1\Web\Staging
```

To re-deploy the sas.themes.ear file, follow the process outlined for the Web Application Server software used by your organization. You will also need to restart the SAS Remote Services server associated with your installation, so that it will pick up the new theme definitions, and make them available to the deployed web applications.

MAKING USE OF THE NEW THEME

The SAS Deployment Manager also registers the new theme in the Metadata. After the process is complete, your new custom theme will be available for use by the SAS EBI web applications. For example, if you followed this process for a custom theme named Orion, when you logged into the SAS Information Delivery Portal and opened the Preferences dialog, you would now see the new theme available to users:
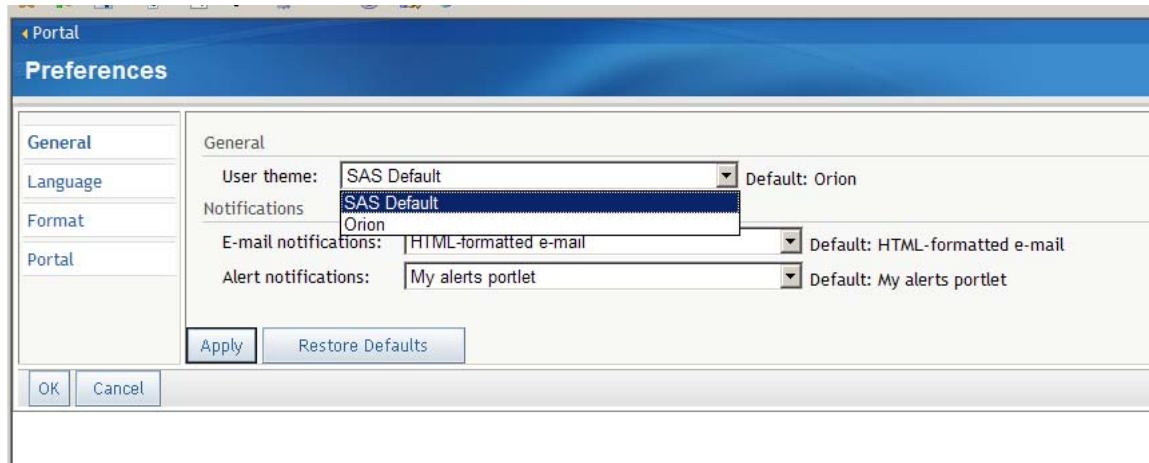

Figure 10. Set User theme

You may also change the default theme for all of the SAS EBI applications, by accessing the SAS Management Console with an administrative account, and navigating to Application Management > SAS Application Infrastructure > Properties, modifying the value of Default theme on the settings tab.
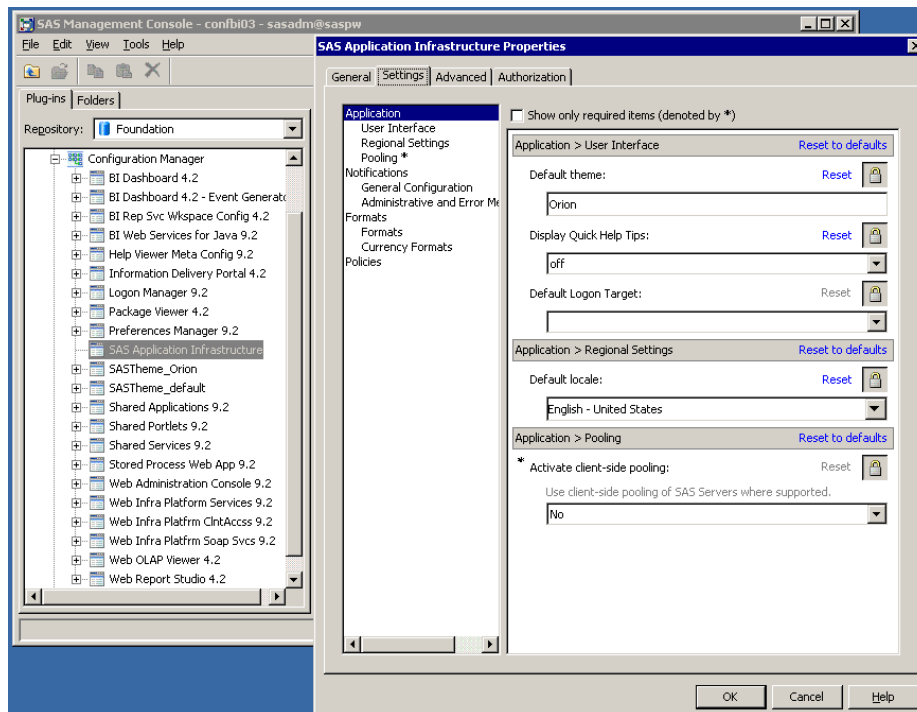

Figure 11. Set Default Theme for All Applications

You must restart SAS Remote Services and the SAS Web Infrastructure Platform application for the change of default theme to be recognized across the environment. This will change all applications from the SAS default theme to your new custom theme.
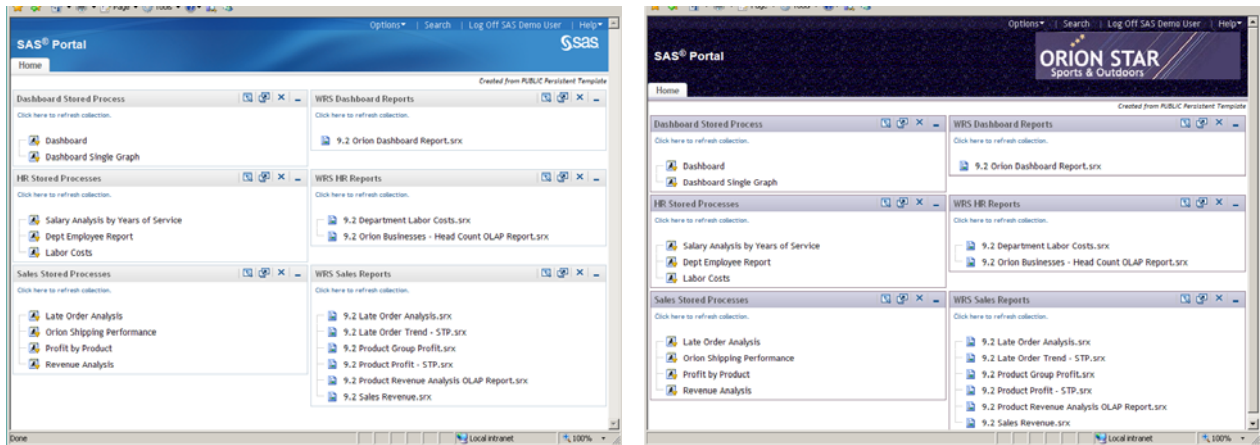

Figure 12. SAS default theme (left) and new custom theme (right)

DEFINING THE THEME USING THE COLOR PALETTE

As mentioned earlier, if you invoke the NewTheme.bat with the 'true' runtime parameter, the new theme baseline is configured to use a color palette context file. This file is located at

```
<New Theme home>\Velocity\Stylesheets\_shared\contexts\themes\
```

The context file is <theme name>.vctxt, and provides a list of 55 color variables which are mapped by the various context files to the context keys of the new theme.

```
#-------------------------------------------
# Default SAS Theme styles
#-------------------------------------------

# Default link color (anchor)
Default_Link_Text_Color=#275e94

# Color palette
Color1=#ffffff
Color2=#e3e3ee
Color3=#fff0fd
Color4=#d5d5e6
Color5=#d5d5e6
Color6=#d5d5e6
Color7=#e3e3ee
Color8=#e3e3ee
Color9=#e3e3ee
Color10=#bbbacd
```

You can modify some or all of the 55 colors defined in the color palette, and these values will be propagated to the corresponding context keys in the context files, and ultimately into the stylesheets of the new theme WAR file.

If there are specific context keys that you want to vary from the color palette, you may also modify their specific values in the appropriate context file, just as was discussed earlier in the paper.

The process for building and deploying the new theme in this case is exactly the same as was outlined earlier.

RELATED TOPICS

Creating a custom theme to change the look and feel of the SAS EBI web applications is a major step towards integrating the SAS environment with the rest of your organization's web presence. There are two more areas that you should consider, in addition to creating a custom theme.

STORED PROCESS OUTPUT

If you execute a stored process from the SAS Information Delivery Portal or SAS Web Report Studio, you will want the output which is displayed to have the same look and feel as your custom theme. This is most easily accomplished for stored processes by using a custom SAS Output Delivery System (ODS) style to control the formatting of stored process output. The details of how to create a custom ODS style and example code are included in the *SAS® 9.2 Output Delivery System: User's Guide.* Consult the *SAS 9.2 Stored Processes: Developer's Guide* for information on how to specify a custom ODS style to format the output of a stored process.

WEB REPORT STUDIO OUTPUT

SAS Web Report Studio allows you to define a custom report style that is used by WRS to format the reports you can generate with the application. This custom report style can be defined to use the same colors and images as your new custom theme. Information on designing and deploying custom styles for WRS is detailed in Chapter 16 Customizing SAS® Web Report Studio Report Styles of the *SAS® 9.2 Intelligence Platform Web Application Administration Guide.*

CONCLUSION

SAS 9.2 provides enhanced support for custom themes through the theme service, and delivers new tools and documentation to facilitate the creation and deployment of custom themes that allow you to brand the SAS Enterprise Business Intelligence applications with your organization's look and feel. For a complete discussion of the process outlined in this paper, please review Chapter 12 Administering SAS Web Application Themes in the *SAS® 9.2 Intelligence Platform Web Application Administration Guide*.

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RECOMMENDED READING

Details on the process of creating a custom theme is in Chapter 12 Administering SAS Web Application Themes in the *SAS® 9.2 Intelligence Platform Web Application Administration Guide.*

Creating custom ODS Styles is documented in the *SAS® 9.2 Output Delivery System: User's Guide.*

Creating a custom SAS Web Report Studio style is discussed in Chapter 16 Customizing SAS® Web Report Studio Report Styles of the *SAS® 9.2 Intelligence Platform Web Application Administration Guide.*

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