ABSTRACT

You can provide access and visibility to SAS® BI Dashboards, SAS® Stored Processes, and SAS® Visual Analytics through the use of SAS® Web Parts for Microsoft SharePoint. In many organizations, the administrators who are responsible for SharePoint and SAS are different. Provides best practices for the deployment of the SAS Web Parts. Bridging the gap between SharePoint and SAS is especially important for people who are not familiar with SharePoint administration. This paper also provides tips for co-existence between SAS Web Parts 6.1 and 5.1. (The 5.1 release is available in SAS 9.3. The 6.1 release is available in SAS 9.4.) Finally, this paper provides some guidance on DNS, permissions, and installation techniques -- the fine points that make or break your deployment!

INTRODUCTION

In many organizations, both SAS and SharePoint contribute directly to the IT infrastructure. SAS provides insight through analytics, and SharePoint offers a platform for collaboration. These two tools work together to ensure that users have the information they need when they need it. However, despite these complimentary roles, SAS and SharePoint often reside in different parts of the IT house. The SAS administrators often work at a distance from SharePoint, and SharePoint farm administrators might not be well-versed in SAS.

SAS Web Parts for Microsoft SharePoint brings these two products together, so SAS users can easily surface SAS data in a SharePoint site. This paper shares some tips on making the SAS Web Parts available to your users. Though these web parts are not difficult to install (if you know both platforms), there are some ways to make the partnership most amicable.

THE SAS WEB PARTS

First, let us briefly look at the SAS Web Parts. In SAS 9.4, two web parts are available: the SAS Content Viewer Web Part and the SAS Central Web Part.

You can think of the SAS Content Viewer Web Part as a collector of sorts. It makes your SAS Business Intelligence information quickly accessible. In the SAS Content Viewer Web Part, you can view reports created in SAS Visual Analytics, the results of a stored process, or a BI Dashboard. The SAS Content Viewer
Web Part provides a smooth conduit for surfacing your data in SharePoint. The SAS Content Viewer Web Part displays analytic data within the SharePoint page. The display updates when the page is opened or refreshed, which makes it easy for users to get updated information.

For example, here is how a SAS Visual Analytics report looks in a SAS Content Viewer Web Part:

Display 1: A SAS Visual Analytics Report in the SAS Content Viewer Web Part

For another example, the star (circled in the following screenshot) indicates that this report has been saved as a favorite. Favorites are easily accessible when a user views the page that contains the SAS Content Viewer Web Part.
The SAS Central Web Part, on the other hand, displays a report in a separate window. Here is an example of the SAS Central Web Part:
When you select a SAS Visual Analytics report, the report opens in a new window.

Display 4: SAS Visual Analytics Report in a New Window
SAS Web Parts 6.1 for Microsoft SharePoint is available with SAS 9.4. SAS Web Parts 5.1 for Microsoft SharePoint is available with SAS 9.3 and 9.2. In the 5.1 release, the two SAS Web Parts were called the Stored Processes Web Part and the Dashboard Web Part. SAS Web Parts 6.1 contains all of the functionality from the 5.1 release and more. Although much of this paper applies to both releases, it focuses primarily on the 6.1 release. This paper also notes some differences in the setup of the 6.1 and 5.1 releases. (Note that in the first maintenance release of SAS 9.4, the latest SAS release, the release number for SAS Web Parts is 6.11. This paper refers to 6.1 generally, but see the note about upgrading from 6.1 to 6.11 at the end of this paper.)

THE BIG PICTURE

Let us look at an overview of what is required to install the SAS Web Parts from the point-of-view of the SharePoint administrator. First, set up a site to serve as the SAS Web Parts Service for Microsoft SharePoint. This service runs in a separate Microsoft Internet Information Server (IIS) application from SharePoint. You can host this web service on your SharePoint server or another Microsoft Windows machine that is running Microsoft Internet Information Server. This service runs on the SAS Integration Technologies client. In general, most organizations with both SAS Web Parts 5.1 and 6.1 will migrate their users from the old release to the new release. If you need to use both releases for some time, create service sites for both releases. Note that the SAS Web Parts Service 6.1 is not backward-compatible with the 5.1 version.

When the SAS Web Parts are installed, they connect to the SAS Web Parts Service, which connects to the SAS Metadata Server. Because you do not want unauthorized users accessing data, the connection to the SAS Web Parts Service is both secure (using SSL) and authenticated. The authorization given to the user’s account determines what the user can see. A common way to architect this setup is to have your web parts access a SAS Web Parts Service that is outside of your SharePoint farm. Although this method works, the down side of this structure is that to be fault-tolerant you need three different servers running the SAS Web Parts Service in at least two different data centers. (This assumes that fault-tolerance is an important objective for you.)
Another way to structure this architecture is to create a SAS Web Parts Service on each of your SharePoint web servers (often called Web Front-Ends, or WFEs in the SharePoint vernacular) and to have each WFE refer to the SAS Web Parts Service on the same machine. This architecture accomplishes two goals:

1. Because you are using your SharePoint WFEs for both SharePoint and the SAS Web Parts Service, you do not have to find other servers to host the latter. If your SharePoint farm has four WFEs, you can then have four SAS Web Parts Service sites without having to deploy additional machines.

2. Your references to the SAS Web Parts Service from the SharePoint WFE can take place on the same server. Thus, you avoid the latency and the complication of going across the network.

This second point deserves closer examination. If you are using multiple SharePoint WFEs, you are probably using some load-balancing mechanism to parcel out the HTTP requests, either by round-robin or some load-based algorithm. When a request comes in to the SharePoint server and that request requires an access of the SAS Web Parts Service, we do not want the inefficiency of accessing the SAS Web Parts Service on another machine when
the service is running on the very same server. The easiest way to prevent this is to create an entry in your etc\hosts file for the service. Assume that your service is called “webpartssvc.acme.com”. Your etc\hosts file would have an entry like this:

```
127.0.0.1 webpartssvc.acme.com
```

Now when SharePoint needs to access the SAS Web Parts Service, SharePoint uses the service that is installed on the same server that received the SharePoint request. This technique avoids network latency and eliminates a possible source of failure (that is, going out on the network to access another machine). In addition, if our load-balancer has marked a SharePoint server as unavailable, the load-balancer transitively makes the SAS Web Parts Service unavailable on that server too.

![Diagram of SharePoint Server and SAS Web Parts Service](image)

Figure 2. Example of SharePoint Server and SAS Web Parts Service on the same machine

To reiterate, all of this is not to say that you need to put your SAS Web Parts Service site on your SharePoint web front-ends. Some SharePoint farm administrators might want to limit the third-party products that are installed on their SharePoint servers. If this is the case, you can install the SAS Web Parts Service on servers external to your SharePoint farm and simply point the SAS Web Parts to these locations when they are installed.
The installation process is well-documented in the *SAS Web Parts 6.1 for Microsoft SharePoint: Administrator’s Guide*, but here is an overview:

1. Create an IIS site to host the Web Parts Service. You need to bind this site to an SSL certificate.
2. Start the SAS Deployment Wizard from your SAS Software Depot.
3. For the Deployment Plan, choose one of the EBI Server installations, and from the drop-down list in the Deployment Step, select “SharePoint (Optional).”
4. Configure the SAS Web Parts Service. You can do this configuration as part of the deployment, or you can uncheck this option in the SAS Deployment Wizard and perform this configuration later. Whether you configure the service with the SAS Deployment Wizard or afterward, you need this information:
   - the name of the site where you want to install the SAS Web Parts Service
   - the site’s Application Pool name
   - the port on which the site is running
   - the physical directory that is home for the site

If you choose to manually configure the SAS Web Parts Service, here is an example of that command (run from the SASHome\SASWebPartsServiceforMicrosoftSharePoint\6.1 directory):

```
cscript .\webpartssvc_config.vbs -AppPoolName webpartssvc -SiteName webpartssvc.acme.com -SitePort 443 -PhysicalDir "d:\virtualdirectories\webpartssvc"
```

To verify that your SAS Web Parts Service is installed correctly and accessible via SSL, you can visit the site on the web server with this URL (Substitute your site name):

https://webpartssvc.acme.com/SASWebPartsService/Service.svc

**INSTALLING THE SAS WEB PARTS**

With the SAS Web Parts Service installed, you can now install the SAS Web Parts for Microsoft SharePoint. To complete this installation, you need the following information:

- URL for the Metadata Server
- URL for the SAS Web Parts Service
- URL for deployment site (unless deployed to all)
- SAS Trusted User account and password
- the SASDemo account credentials (if used)

The first three options are self-explanatory, but let us look at the last two options more closely. (This information is specific for SAS Web Parts 6.1 for Microsoft SharePoint. The concepts are the same for the 5.1 release.) When you add the
web parts to a site, you also add a profile that is used to access the SAS Metadata Server. This profile and password is your SAS Trusted User account, which is used to access the SAS Metadata Server. However, the access to content on the SAS Metadata Server is determined by the permissions of the user viewing the page. Thus, if the user “marysmith” were to go to a page with the SAS Web Parts installed, the SAS Metadata Server is accessed using the SAS Trusted User account. If the marysmith account has no further permissions, she would not see anything beyond the top level of the server.

What you need are the credentials for the SAS Trusted User for your SAS Metadata Server. In your world, this might be a somewhat delicate matter. Let us say that you administer the SharePoint site but not the SAS Metadata Server. If the information on the SAS Metadata Server is not sensitive, the server administrator might provide the credentials to you. On the other hand, the SAS Metadata Server administrator might prefer to keep the credentials for the SAS Trusted User account private. If that is the case, then you need to work with the SAS Metadata Server administrator. For example, you might need to set up a time together so that the SAS Metadata Server administrator can enter the credentials for the SAS Trusted User account at a command prompt.

Regarding the Impersonation ID account, this parameter (sometimes called a SASDemo ID) is optional, but if this parameter is present, all access to the SAS Metadata Server is through this user. If you use this option, you should either confirm that no sensitive information is accessible, or configure your SharePoint permissions so that the page where the SAS Web Part is installed is accessible only to authorized users.

After you have decided how your users access the SAS data on the SAS Metadata Server and assuming you did not install the SAS Web Parts using the SAS Deployment Wizard, you can now use PowerShell to do the installation. The SAS Web Parts module for PowerShell is called SASWebPartsModule.psm1. Like other PowerShell modules, you import this module into your SharePoint Management Shell:

```
Import-Module .\SASWebPartsModule.psm1
```

Now you can use the Install-SASWebParts.ps1 script for the installation. (For a full description of the installation options, see SAS Web Parts 6.1 for Microsoft SharePoint: Administrator’s Guide.) The script contains placeholders for the values we previously collected. Substitute your values for the placeholders and then run the script:

```
.\Install-SASWebParts.ps1 .\SASWebParts.wsp
```

**BEHIND THE SCENES**
To help us understand how the SAS Web Parts work, let us examine what happens during installation. First, the SASWebParts.wsp solution is added to the SharePoint farm. Using the values for our site, a profile is added to a hidden list in the SharePoint site. The profile is used by the SAS Web Parts to access the SAS Metadata Server. (When you configure the SAS Web Parts, you can choose a profile, if there is more than one profile in the list.) In addition, running the PowerShell script adds a line to the “SafeControls” section of the web.config file. The web.config file is located in the physical directory of the site where you added the web parts. This step is necessary for SharePoint to enable the SAS Web Parts on the site.

More than likely, you will not install the SAS Web Parts on one SharePoint site with one profile and be done. Therefore, there are commands provided to carry out additional functions. Here are some examples:

To activate the SAS Web Parts on an additional site collection after the solution has been installed:
```powershell
Enable-SASWebParts -SiteUrl http://mysite.com
-ServiceUrl “https://webpartssvc.acme.com/SASWebParts/Service.svc”
-ServerName server-name
<-Port port-number> -SASTrust “SASTrust@saspw” <-Password password>
<-ProfileName “default-profile”> <-PackageFile ‘path-to-SASWebParts.wsp’>
<-ImpersonationID user-ID>
```

To add an additional profile to access the SAS Metadata Server:
```powershell
Add-SASProfile -SiteUrl http://mysite.com
<-ProfileID profile-ID>
<-ProfileName “default-profile”>
-ServiceUrl “https://webpartssvc.acme.com/SASWebParts/Service.svc”
-ServerName server-name <-Port port-number>
-SASTrust “SASTrust@saspw”
<-Password password> <-ImpersonationID user-ID>
```

To view the available profiles for a site collection:
```powershell
Get-SASProfiles -SiteURL http://mysite.com
```

To remove a SAS profile for a site collection:
```powershell
Remove-SASPProfile -ProfileId profile-ID
-SiteUrl ‘http://mysite.com’
```

You can use these commands in combination to accomplish various tasks. For example, if the SAS Trusted User password changes, use the Remove-
SASProfile command to remove the old profile. Then use the Add-SASProfile command to add the profile with the new password. (Since the password in the list of profiles is encrypted, you cannot simply change the password in the list.)

ENJOYING THE FRUITS OF YOUR LABORS

After you installing the SAS Web Parts Service and the SAS Web Parts, you can add the SAS Central Web Part or SAS Content Viewer Web Part to your SharePoint pages. This is done the same way you would add any other web part.

Display 5: Adding the SAS Central Web Part

In this example, the SAS Central Web Part was added. After the SAS Web Part is added, click Browse to select which report you want to view. You can also click Recent to quickly access any reports that you recently viewed. If SAS Visual Analytics is configured to enable thumbnails, these thumbnails appear in the SAS Central Web Part, and you can use the thumbnails to select reports.
WRAPPING UP WITH A FEW LAST POINTS

- You can view the helpful Diagnostics page for your SAS Web Parts with these URLs:
  
  For SAS Web Parts 6.1:
  
  For SAS Web Parts 5.1:
  http://webapp.com/_layouts/SAS.webparts/diagnostics.aspx

- If you are using host-named site collections for SAS Web Parts 6.1 (as opposed to path-named site collections), you should not encounter any special problems. Accessing this information for SAS Web Parts 5.1 could be problematic unless all site collections use the same SAS Metadata Server and SAS Trusted User account.

- To update the SAS Web Parts 6.1 to the current 6.11 release, the -upgrade parameter is available in the Install-SASWebParts command. This upgrade replaces the solution (WSP) file in the Farm Solutions store.

- If you update the web parts via the Software Deployment Wizard from the first maintenance release of SAS (as opposed to running the Install-SASWebParts command mentioned in the previous bullet), it will perform the update automatically, so you do not have to re-add your profiles. Basically it calls install with the -upgrade parameter for you.
The installation of the SAS Web Parts is not particularly disruptive to your farm, but remember that anytime the web.config file is updated, an Application Pool recycle is triggered. As a result, you might want to do the installation after hours.

CONCLUSION

By making your important business data available in a collaborative platform, SAS Web Parts for Microsoft SharePoint increases the value of your investment in SAS and Microsoft SharePoint. By thinking through your SharePoint farm architecture, your goals for high-availability, and your security needs, you can make the best choices for the deployment of the SAS Web Parts.

REFERENCES


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