

# **Wow, I Could Have Had a VA! – A Comparison of SAS® Visual Analytics to Other SAS® Products**

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## **ABSTRACT**

SAS® Visual Analytics (VA) is one of the newer SAS products with a lot of excitement surrounding it. But what is SAS VA really? By examining the similarities, differences, and synergies between SAS VA and other SAS products, we can more clearly understand SAS VA.

## **INTRODUCTION**

SAS VA is an exciting new product. If you travel to a SAS conference or interact with a SAS Sales person, or visit the SAS web site, you will definitely have been exposed to at least the name. But how do you know if it is right to deploy in your analytics environment? How do you know if you should acquire it to replace your current SAS products or enhance them? This paper intends to fully explain the SAS VA product, compare it to other SAS products, and present potential synergies between SAS VA and other SAS products. The audience for this paper should be those interested in or with light exposure to SAS VA. This paper is not intended for those with an intimate technical knowledge of SAS VA. This is more of a high level introduction.

## **UNDERSTANDING SAS VISUAL ANALYTICS**

The brief explanation of SAS Visual Analytics is that it is a SAS environment with a rich collection of web interfaces for administration, ETL, data exploration, report building, and report viewing. What makes it different from other SAS products is that the data that is leveraged for data exploration and report building is loaded into memory. The result is faster response time due data access from memory is dramatically faster than data access from hard disk.

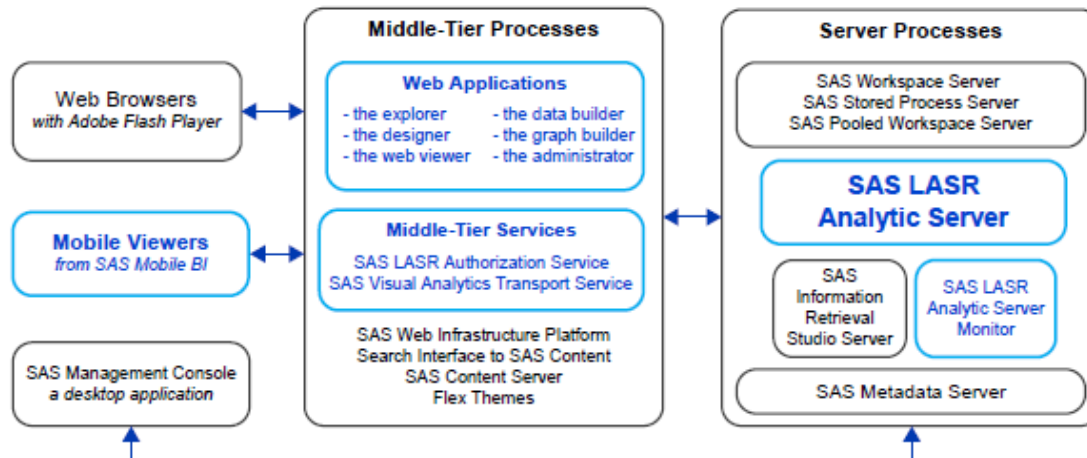
SAS Visual Analytics can be licensed and implemented in two different scenarios; non-distributed and distributed. Now we will examine what these two different scenarios look.

### **SAS VA Distributed Environment**

- SAS LASR Analytics Server with SAS High Performance Analytics root and server nodes
- A co-located data provider
  - Teradata Managed Server Cabinet
  - EMC Greenplum
  - SAS High Performance Hadoop
  - Cloudera Hadoop.
- SAS VA Server environment
- SAS VA Middle Tier

### **SAS VA Non-Distributed Environment**

- SAS LASR Analytics Server without SAS High Performance Analytics
- No co-located data provider
  - Data is loaded into memory from traditional sources.
- SAS VA Server environment
- SAS VA Middle Tier



**Figure 1 – Simplified SAS VA Architecture**

After learning about the SAS VA environments at a high level, there are a few new terms we should discuss further.

### **SAS LASR Analytic Server**

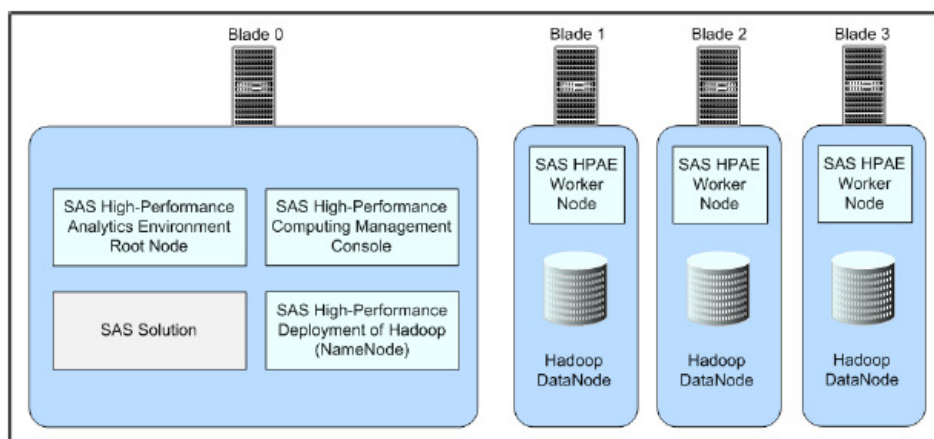
The SAS LASR Analytic Server is a software server that provides multi-user access to data that has been loaded into memory.

### **SAS High Performance Analytics**

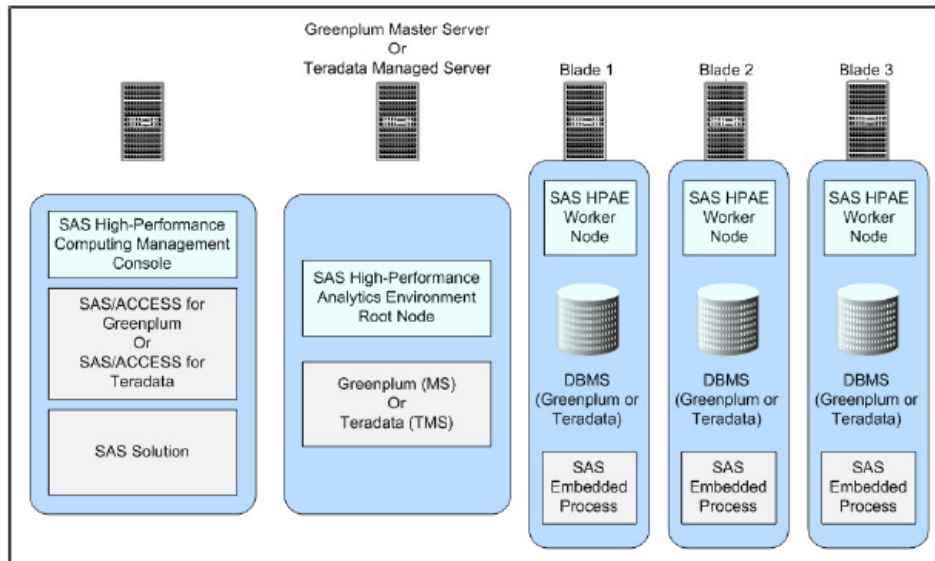
The SAS High-Performance Analytics infrastructure consists of tools for analytic tasks in a high-performance environment that is characterized by massively parallel processing (MPP) and symmetric multiprocessing (SMP) on a distributed database system or a Hadoop Distributed File System.

### **Co-Located Data Provider**

One of the unique benefits of the SAS Visual Analytics platform is that it can leverage data from a co-located data provider. In this scenario, the SAS LASR Analytic server works together with a third party data provider such as Hadoop, Teradata, or EMC Green Plum. The data is spread across the worker nodes such that the data has redundancy and the SAS LASR Analytic server can take advantage of parallel processing to read the data from memory. Figures 2 and 3 represent how SAS VA is architected with a co-located data source.



**Figure 2: SAS High Performance Analytics Infrastructure on a Hadoop Machine Cluster**



**Figure 3: SAS High Performance Analytics Infrastructure on a Supported Data Appliance**

## COMPARING SAS VA TO OTHER SAS PRODUCTS

There are many different SAS products/solutions that SAS VA could be compared to but we will address just a few in this paper. The primary SAS product that we will be comparing to SAS VA will be SAS Enterprise Business Intelligence (EBI) Server. We will also be discussing SAS Enterprise Miner and SAS Forecast Server briefly.

### SAS EBI

SAS Enterprise BI Server and SAS BI Server are software offerings that comprise a suite of development products. These offerings serve as a platform for environments which consist of a mixed of advanced skill sets in ETL, code development, reporting, analytics, and portal development.

### SAS ENTERPRISE MINER

SAS Enterprise Miner streamlines the data mining process to create highly accurate predictive and descriptive models based on analysis of vast amounts of data from across the enterprise. Forward-thinking organizations today are using SAS data mining software to detect fraud, anticipate resource demands, increase acquisitions and curb customer attrition.

### SAS FORECAST SERVER & SAS FORECAST STUDIO

SAS Forecast Server is a client-server application that enables organizations to plan more effectively for the future by generating large quantities of high-quality forecasts quickly and automatically.

SAS Forecast Studio is the client component that provides a graphical interface to the SAS Forecast Server Procedures.

### SAS VISUAL ANALYTICS

SAS Visual Analytics enables you to gain insight from all of your data, no matter the size of your data, with no need to subset or sample the data.

On the surface, SAS Visual Analytics is an integrated suite of web applications that offers intuitive, drag-and-drop interactions, rapid, highly visual responses, and role-based access to functionality.

Behind the scenes, SAS® LASR Analytic Server applies analytics to big data. The server functions as an analytic platform, providing speedy, secure, multi-user access to in-memory data in a distributed computing environment. The server also handles smaller data sets and supports an alternate, single-machine configuration.

At the foundation, SAS Visual Analytics is built on the SAS® Intelligence Platform, which provides a robust, metadata-centric environment for a wide range of business intelligence and analysis activities.

## USING SAS VISUAL ANALYTICS

Using SAS VA is very straightforward. Here are the high level steps:

- Launch the main page for a SAS VA user is the SAS Visual Analytics Hub. From here one can choose to prepare data, create a report, explore data, or open an existing report, exploration, or query.

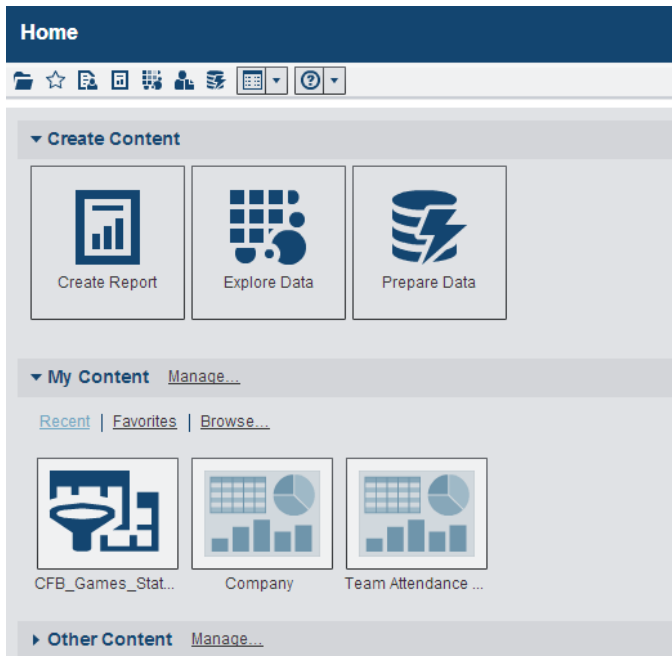


Figure 4: SAS Visual Analytics Hub

- Prepare an analysis data set that you would like to visualize
  - Can use an existing data set or prepare one using the Visual Data Builder

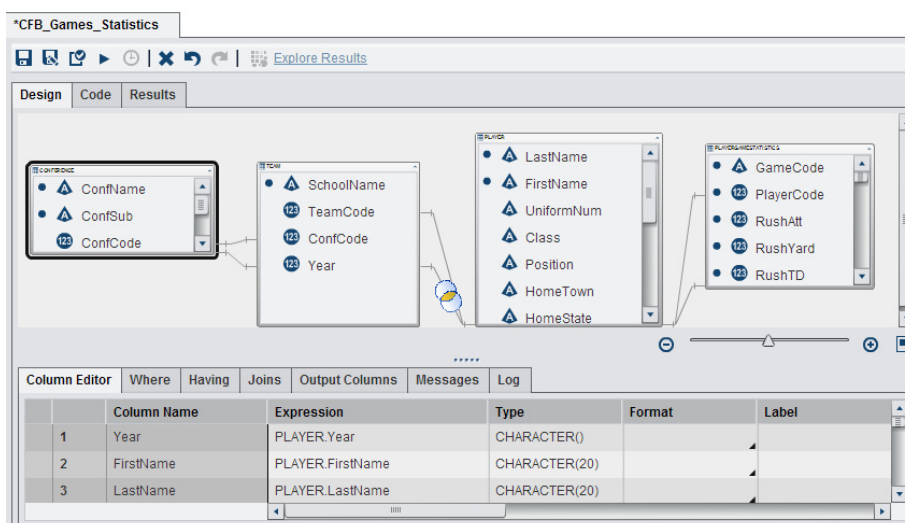


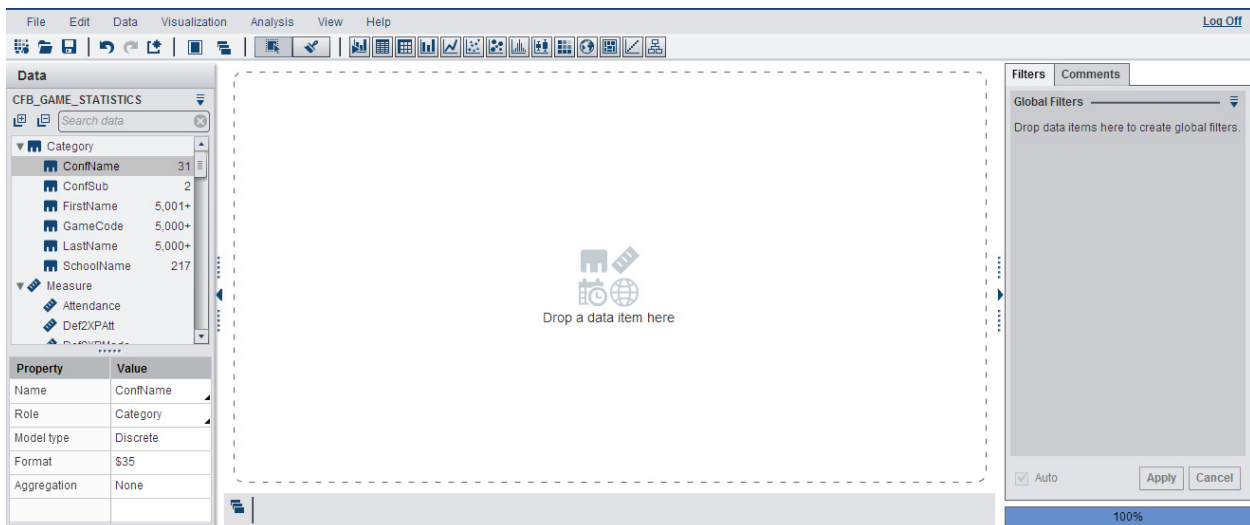
Figure 5: Visual Data Builder

- From the SAS Visual Analytics Administrator, one can manage which data sets are loaded in memory. There is also a tab to manage and track mobile device connections. Typically the person designated as the SAS Visual Analytics administrator will perform these actions for you.

Tables by Server Component	Status	Host	Port	Started By	LASR Name	Description	Rows	Columns
LASR Analytic Server - KALSA...						SAS LASR Ana...		
Public LASR Analytic Server - ...						Visual Analytics...		
Connection: Public LASR A...	●	KALSASVA01...	10031	sasdemo				
Visual Analytics Public ...					PUBLIC	Visual Analytics...		
CFB_GAME_STATIS...	●				PUBLIC.CFB_...	Loaded on Mon...	443223	66

**Figure 6: SAS Visual Analytics Administrator**

- Explore your data!



**Figure 7: SAS Visual Analytics Explorer**

Using the SAS Visual Analytics Explorer is easy. Variables are interpreted as either a category or a measure. The variable properties can be adjusted through this interface if necessary. To begin building an exploration, a user can drag a variable into the middle area or click on one of the buttons across the top.

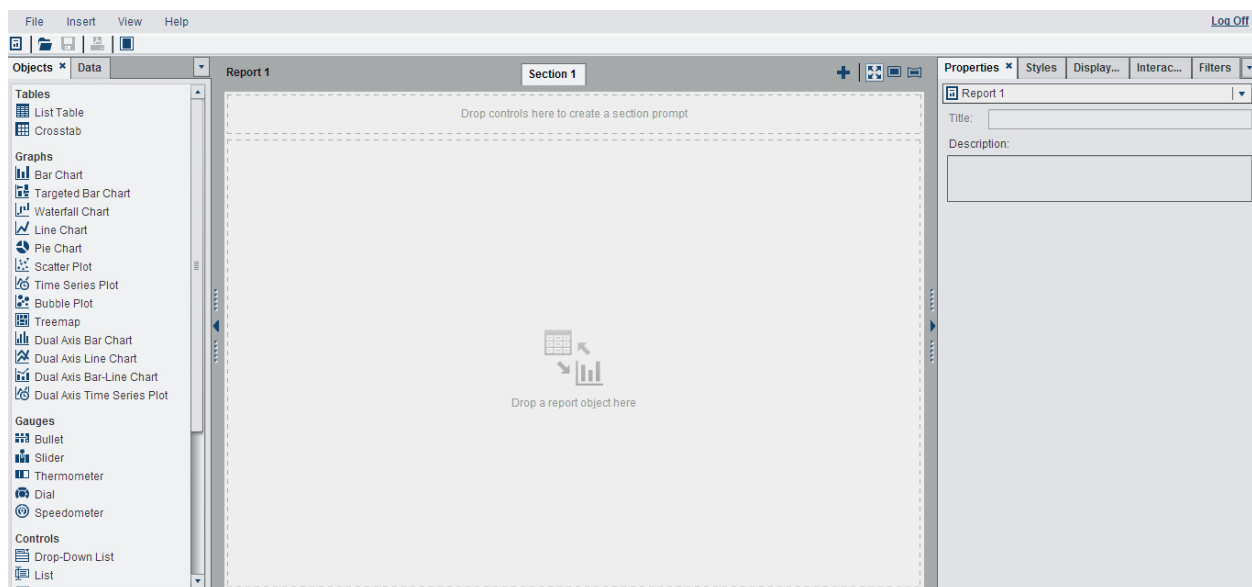


The buttons (shown above) from left to right represent the following type of visualization:

Automatic Chart, Table, Crosstab, Bar Chart, Line Chart, Scatter Plot, Bubble Plot, Histogram, Box Plot, Heat Map, Geo Map, Tree Map, Correlation Matrix, Decision Tree

On the analysis side, there are three main different types of analysis:

- Correlation
- Fit Line
  - Linear
  - Quadratic
  - Cubic
  - Penalized B-Spline
- Forecasting
  - Models
    - Damped-trend exponential smoothing
    - Linear exponential smoothing
    - Seasonal exponential smoothing
    - Simple exponential smoothing
    - Winters method (additive & multiplicative)
  - As long as the data uses standard intervals, cyclical patterns are considered in the forecast
- Report on your data!



**Figure 8: Visual Analytics Designer**

Reports can be constructed to include the following objects:

- Tables
- Graphs
- Gauges
  - Include KPI type gauges in your report such as Bullet, Slider, Thermometer, Dial, and Speedometer type gauges.
- Controls
  - Give users control for filtering, slicing and dicing using controls such as Drop-Down Lists, Button Bars, Text Input, and Range Sliders.

## CONCLUSION

SAS VA is perfect for a group of analysts that are not necessarily trained in advanced analytics. It allows users to visualize results in a quick comprehensive way that “tells a story”. SAS VA is a great sandbox area to explore, build reports, and share the results with others. It also has the advantage of being able to slice and dice extremely large amounts of data quickly by the ability to leverage data stored in memory on one or distributed across many servers.

SAS VA is the perfect complement to other SAS products such as SAS foundation tools and SAS EBI. In addition to needing tools for advanced ETL, analytics, and reporting, companies also need an environment for business analysts to explore and visualize large amounts of data.

SAS VA puts the power of self-service data analysis into the hands of non-statisticians. This tool will facilitate collaboration between business analysts and statisticians which results in more well-rounded business insight from the data.

To put a ribbon on the whole discussion of comparing SAS VA to other SAS products, we can come to the following conclusion:

SAS VA is designed for a different type of user than the SAS Foundation, SAS EBI, SAS Enterprise Miner and SAS Forecast Server tools. The closest product to SAS VA is probably SAS Web Report Studio, which is part of the SAS EBI platform.

Regardless of what SAS products you license, SAS VA is automatically relevant as a complementary product.

## REFERENCES

SAS Visual Analytics Product Documentation: <http://support.sas.com/documentation/onlinedoc/va/index.html>

## ACKNOWLEDGMENTS

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## CONTACT INFORMATION

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