



# APM – Audit and Performance Management

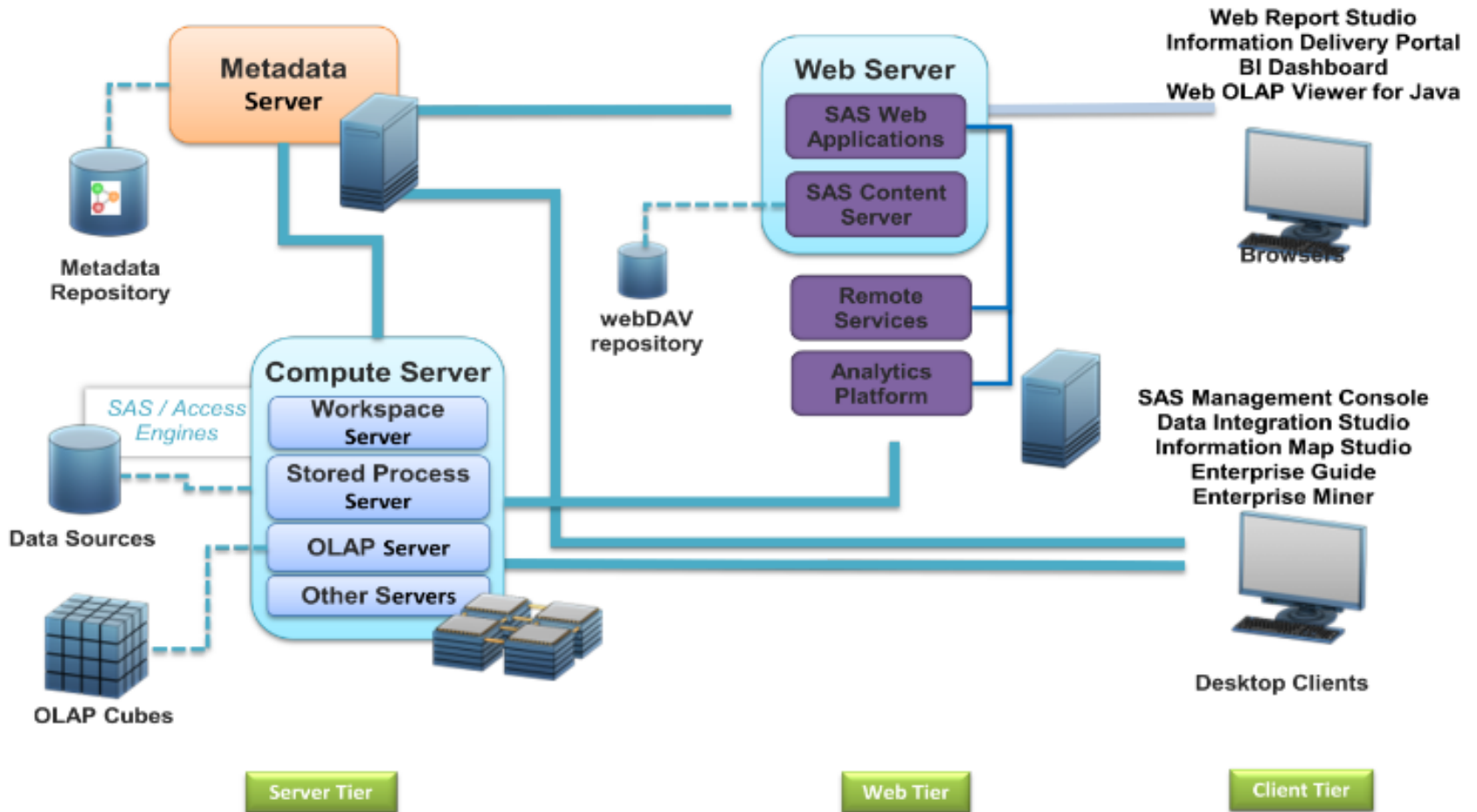
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Denologix

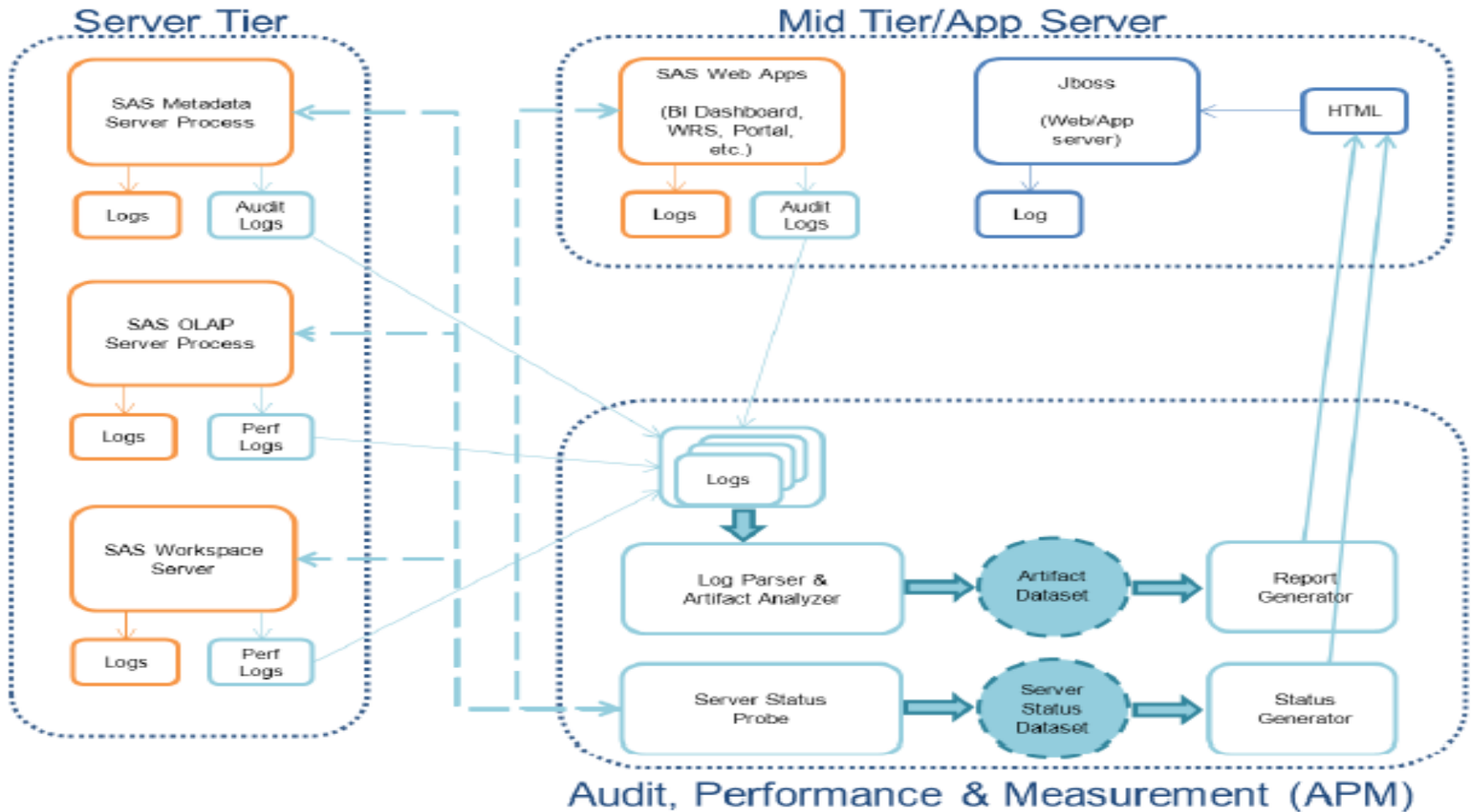
# Overview

- Free download from SAS
- Allows SAS enterprise BI site to monitor the SAS 9 BI architecture
- Audit authentication reports for regulatory compliance
- Report on the performance and usability of the SAS 9 BI analytic server environment

# Typical EBI Architecture



# APM Deployment



# Features

- Reports accessible via web
- Dashboard style easy to understand reporting
- SAS server status reports
- Metadata Server Audit Reports
- Server usage and resource consumption reports

# SAS server status Reports

- Web application server and services availability
- Analytic server tier availability
- Analytic server tier response time reporting
- Real-time alert feature for failure state conditions

# Metadata Server Audit Reports

- Administrative authorization and authentication modifications
- Administrative group and user id access control modifications
- User id authentication and authorization patterns
- User id authentication and password failure attempts

# Server usage and resource consumption reports

- PROC and DATA library reports
- SAS OLAP server cube usage
- SAS StoredProcess server usage
- SAS analytic server processor utilization



# Data Collection

- SAS server configurations modified to write audit information and performance metrics to their respective log files
- Batch process extracts performance and artifact usage data from log files
- Leverages ARM standard to generate performance metrics.

# What Data is Collected

- ArtifactUsageDetails table - primary data source created by the batch processing
- Each row within the table describes a specific event within the SAS environment.
- An event can be
  - A specific end user action (e.g. user accessing a library)
  - Processing performed by a SAS server to respond to request
- Information extracted from multiple SAS servers
- A single user request may generate multiple events within the table

# Usage Example

Row #	Time*	Artifact Artifact Type	Usage Type Usage Subtype	Parent ID*	Current ID*	Level	User	Host	Source	Description	Unique ID
1	1:17.00	SASApp-WorkspaceServer	EXECUTE		BAB	40	sasdemo@mySrvr	mySrvr	arm.log	Server:SASApp-WorkspaceServer, ProcessId:8820, HostName: mySrvr	arm.log:1.1.1
		SERVER	WorkspaceServer								
<i>Other Processing Occurs</i>											
2	1:18.00	SORT	TASK	BAB	BAG	25	sasdemo@mySrvr	mySrvr	arm.log	Server:SASApp-WorkspaceServer, ProcessId:8820, HostName: mySrvr	arm.log:1.3.6
		SERVER	PROCEDURE								
3	1:18.00	HMEQ.HMEQ_TEST.DATA	ACCESS	BAG	BAH	40	sasdemo@mySrvr	mySrvr	arm.log	Server:SASApp-WorkspaceServer, ProcessId:8820, HostName: mySrvr	arm.log:1.2.7
		TABLE	MVA_DSIO.OPEN_CLOSE								
4	1:18.00	HMEQ.HMEQ_TEST.DATA	ACCESS	BAH	BAJ	40	sasdemo@mySrvr	mySrvr	arm.log	Server:SASApp-WorkspaceServer, ProcessId:8820, HostName: mySrvr	arm.log:1.2.8
		TABLE	MVA_DSIO.OPEN_CLOSE								
5	1:18.00	WORK.SORTED.DATA	ACCESS	BAJ	BAK	40	sasdemo@mySrvr	mySrvr	arm.log	Server:SASApp-WorkspaceServer, ProcessId:8820, HostName: mySrvr	arm.log:1.2.9
		TABLE	MVA_DSIO.OPEN_CLOSE								
6	1:18.27	WORK.SORTTMP0000.DATA	ACCESS	BAK	BAL	40	sasdemo@mySrvr	mySrvr	arm.log	Server:SASApp-WorkspaceServer, ProcessId:8820, HostName: mySrvr	arm.log:1.2.10
		TABLE	MVA_DSIO.OPEN_CLOSE								
<i>Other Processing Occurs</i>											
7	1:25.47	SASApp-WorkspaceServer	EXECUTE			20	sasdemo@mySrvr	mySrvr	arm.log	Server:SASApp-WorkspaceServer, ProcessId:8820, HostName: mySrvr	arm.log:abc-def
		SERVER	WKSP_SESSION								
<p>NOTE: The information in the table is a subset of the data collected during the sample SAS Enterprise Guide session. Additionally, some fields have been modified for descriptive and formatting purposes. Full descriptions of the all of the fields are included in the section "The ArtifactUsageDetails Data Set" below.</p>											



# Usage Example Details

- (Row #1) Start of the workspace server session that handled the end user's SAS processing.
- (Row #2) SAS procedure (PROC SORT) is submitted and executed in the workspace server session.
- (Rows # 3-6) Data access activity. Name and type of the data sources accessed is identified. Data sources correspond to the input and output data sets used by the procedure
- (Row #7) summarizes the performance metrics for all of the activity that occurred during the workspace server session

# Performance Example

Row #	Artifact	Usage Type/Usage Subtype	Level	User CPU			System CPU			Total CPU	Real Time	Total IO Count	Total Memory Usage
				Start Time	Stop Time	Elapsed Time	Start Time	Stop Time	Elapsed Time	Elapsed Time	Elapsed		
1	SASApp-WorkspaceServer	EXECUTE/ WorkspaceServer	40	0.0781	.	.	0.2500	.	.	.	.	.	
Other Processing Occurs													
2	SORT	TASK/ PROCEDURE	25	0.3438	0.3594	0.01563	0.7031	0.71875	0.01563	0.03125	0.0780	1,912,633	4,396,184
3	HMEQ.HMEQ_TEST.DATA	ACCESS/ MVA_DSIO.OPEN_CLOS E	40	0.3594	0.3594	0.0	0.7031	0.71875	0.01563	0.01563	0.0470	.	.
4	HMEQ.HMEQ_TEST.DATA	ACCESS/ MVA_DSIO.OPEN_CLOS E	40	0.3594	0.3594	0.0	0.7031	0.71875	0.01563	0.01563	0.0470	.	.
5	WORK.SORTED.DATA	ACCESS/ MVA_DSIO.OPEN_CLOS E	40	0.3594	0.3594	0.0	0.7031	0.71875	0.01563	0.01563	0.0470	.	.
6	WORK.SORTTMP0000.DA TA	ACCESS/ MVA_DSIO.OPEN_CLOS E	40	0.3594	0.3594	0.0	0.7031	0.71875	0.01563	0.01563	0.0160	.	.
Other Processing Occurs													
7	SASApp-WorkspaceServer	EXECUTE/ WKSP_SESSION	20	0.0781	2.2188	2.14063	0.2500	3.3125	3.0625	5.20313	4,035.55	.	.

# Performance Example Details

- (Row #1) Information on the starting CPU times
- (Row #2) provides metrics for the PROC SORT processing
- (Rows # 3-6) CPU times for the entire descendant workload data access activities
- (Row # 7) Metrics for the entire workspace server session

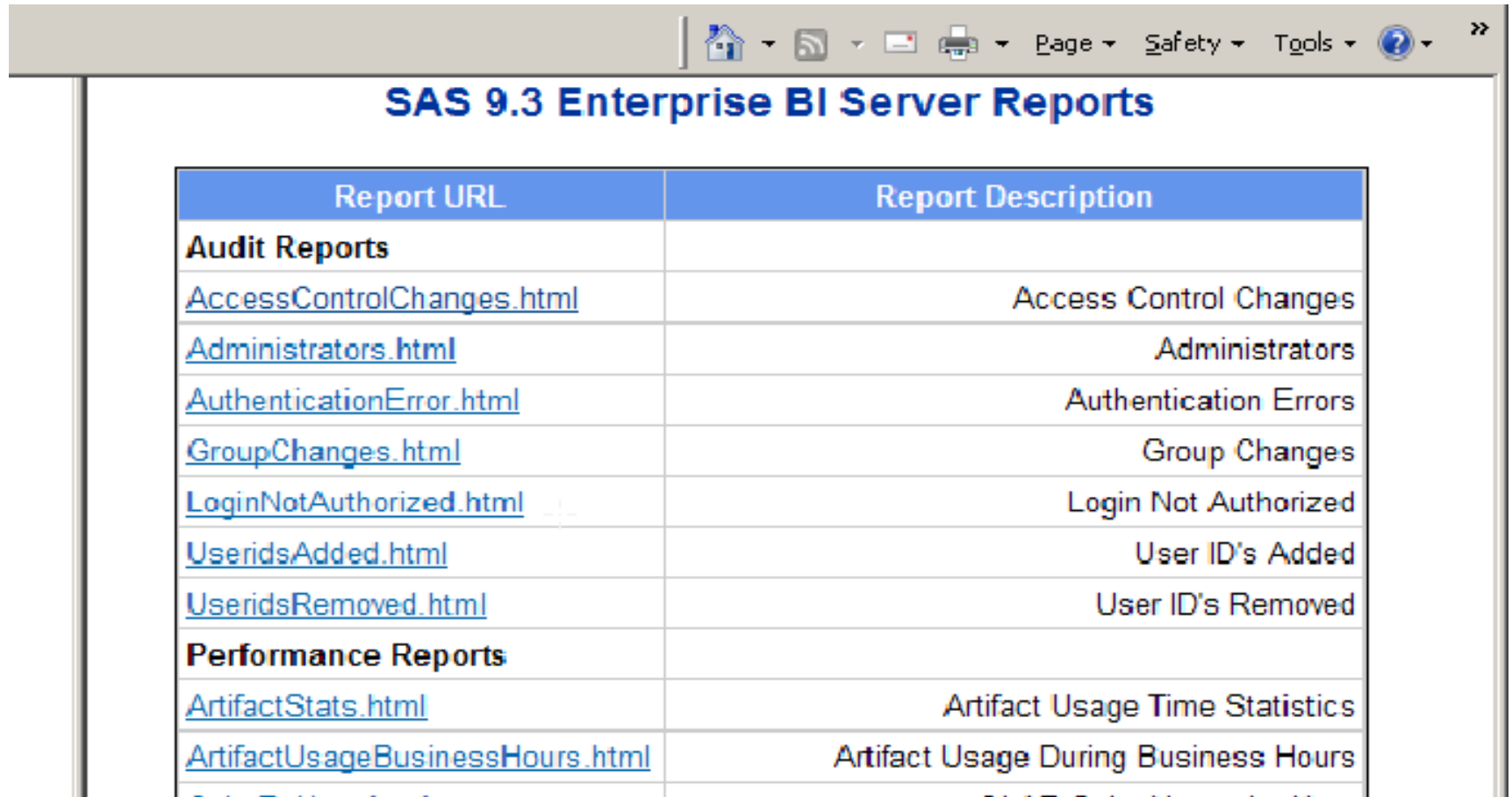
# Sample Reports

SAS 9.3 Enterprise BI Audit and Performance Measur...

## SAS 9.3 Enterprise BI Server and Web Tier Status Report: 04JUL2012:17:01

Monitoring	Server Name	Status	Port	Validated
Mid-Tier	<a href="#">SASAdmin</a>	Running	8080	04JUL2012:17:01:20.29
	<a href="#">SASBIDashboard</a>	Running	8080	04JUL2012:17:01:19.01
	<a href="#">SASBIDashboardEventGen</a>	Running	8080	04JUL2012:17:01:18.94
	<a href="#">SASContentServer</a>	Running	8080	04JUL2012:17:01:19.86
	<a href="#">SASPortal</a>	Running	8080	04JUL2012:17:01:19.34
	<a href="#">SASStoredProcess</a>	Running	8080	04JUL2012:17:01:19.91
	<a href="#">SASWebDoc</a>	Running	8080	04JUL2012:17:01:18.87
	<a href="#">SASWebReportStudio</a>	Running	8080	04JUL2012:17:01:19.70
Servers	<a href="#">Object Spawner - rdcesx02064</a>	Running	8581	04JUL2012:17:01:16.04
	PWS - Logical OLAP Server	Down	5452	04JUL2012:17:01:18.37
	<a href="#">SASApp - Connect Server</a>	Running	7551	04JUL2012:17:01:17.05
	<a href="#">SASApp - OLAP Server</a>	Running	5451	04JUL2012:17:01:16.19
	<a href="#">SASApp - Stored Process Server</a>	Running	8601	04JUL2012:17:01:16.25
	<a href="#">SASMeta - Metadata Server</a>	Running	8561	04JUL2012:17:01:15.96
	<a href="#">Share Server - rdcesx02064</a>	Running	8551	04JUL2012:17:01:17.13
	<a href="#">jepsds_evr</a>	Running	6100	04JUL2012:17:01:18.83
	<a href="#">jepsds_svr_sunburn</a>	Down	6100	04JUL2012:17:01:18.86
<a href="#">speedy2k3</a>	Running	5400	04JUL2012:17:01:17.55	

# Sample Reports

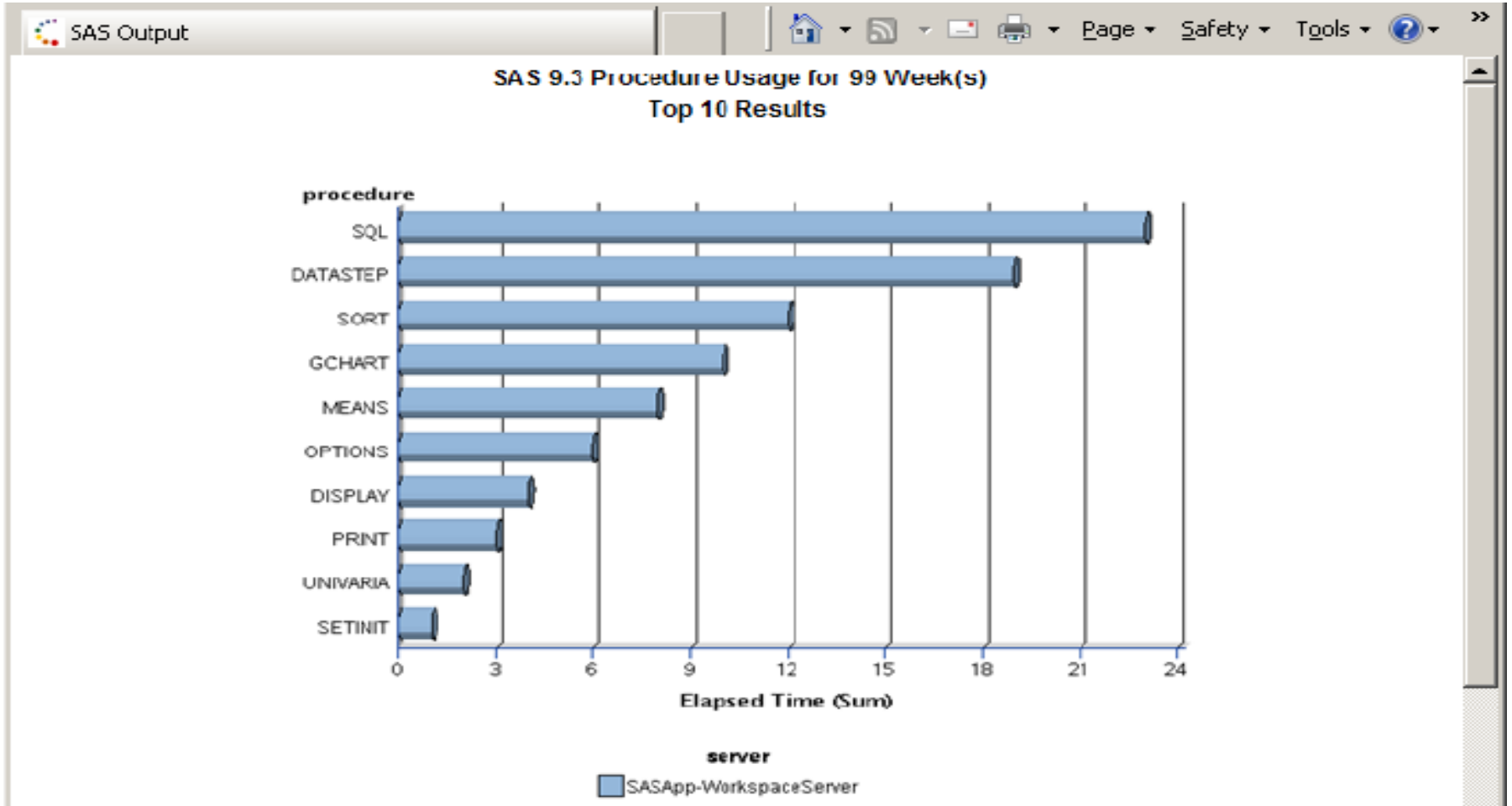


The image shows a screenshot of a web browser displaying the SAS 9.3 Enterprise BI Server Reports page. The browser's address bar and navigation icons are visible at the top. The page title is "SAS 9.3 Enterprise BI Server Reports". Below the title is a table with two columns: "Report URL" and "Report Description". The table is divided into two sections: "Audit Reports" and "Performance Reports".

Report URL	Report Description
<b>Audit Reports</b>	
<a href="#">AccessControlChanges.html</a>	Access Control Changes
<a href="#">Administrators.html</a>	Administrators
<a href="#">AuthenticationError.html</a>	Authentication Errors
<a href="#">GroupChanges.html</a>	Group Changes
<a href="#">LoginNotAuthorized.html</a>	Login Not Authorized
<a href="#">UseridsAdded.html</a>	User ID's Added
<a href="#">UseridsRemoved.html</a>	User ID's Removed
<b>Performance Reports</b>	
<a href="#">ArtifactStats.html</a>	Artifact Usage Time Statistics
<a href="#">ArtifactUsageBusinessHours.html</a>	Artifact Usage During Business Hours



# Sample Reports



# Sample Reports

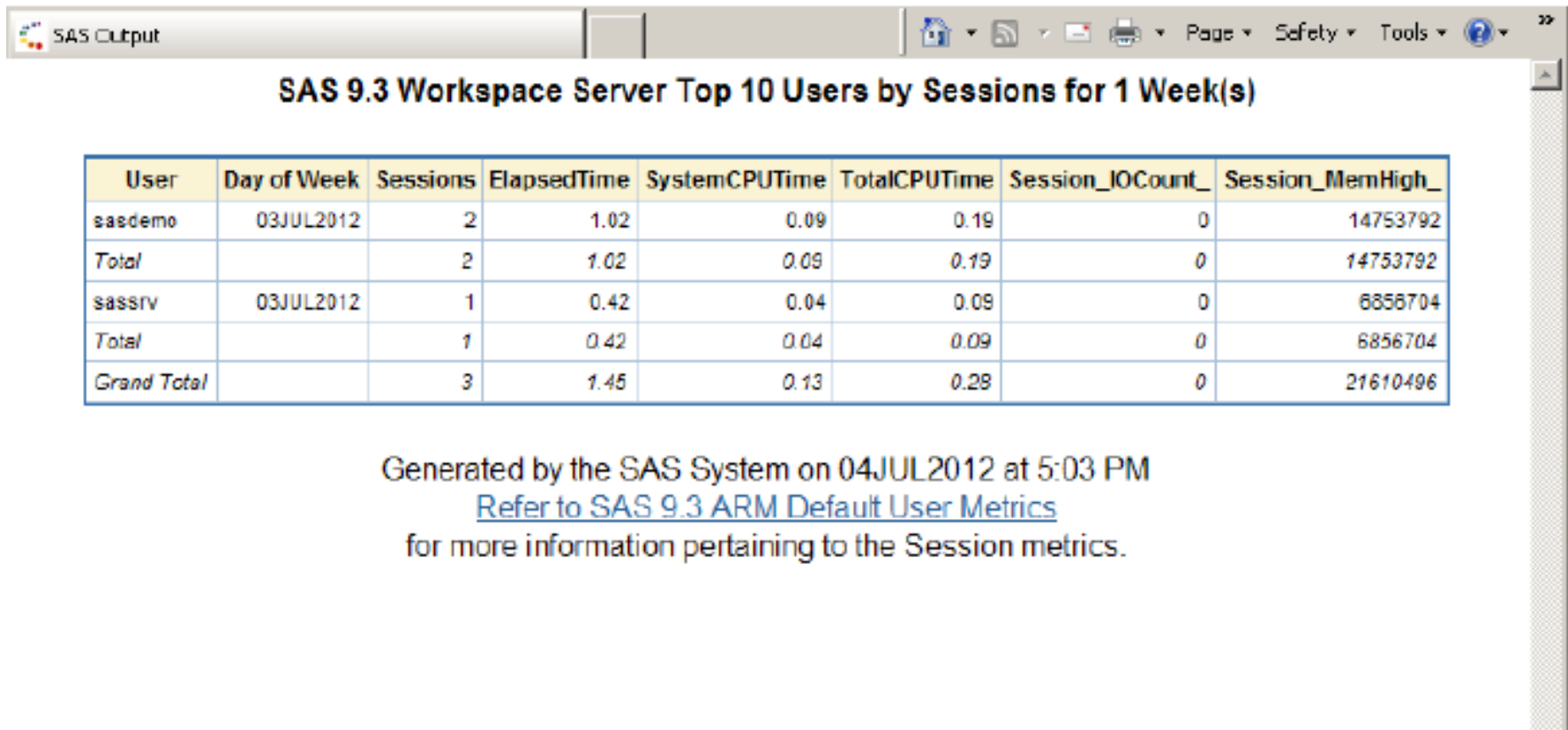
SAS Output

SAS 9.3 Workspace Server Top 10 Users by Memory for 1 Week(s)

User	Sessions	ElapsedTime	SystemCPUTime	TotalCPUTime	Session_IOCCount_	Session_MemHigh_
sasdemo	2	1.02	0.09	0.19	0	14753792
sassrv	1	0.42	0.04	0.09	0	6856704
<i>Grand Total</i>	3	1.45	0.13	0.28	0	21610496

Generated by the SAS System on 04JUL2012 at 5:03 PM  
[Refer to SAS 9.3 ARM Default User Metrics](#)  
for more information pertaining to the Session metrics.

# Sample Reports



SAS Output

SAS 9.3 Workspace Server Top 10 Users by Sessions for 1 Week(s)

User	Day of Week	Sessions	ElapsedTime	SystemCPUTime	TotalICPUTime	Session_IOCCount_	Session_MemHigh_
sasdemo	03JUL2012	2	1.02	0.09	0.19	0	14753792
Total		2	1.02	0.09	0.19	0	14753792
sassrv	03JUL2012	1	0.42	0.04	0.09	0	6856704
Total		1	0.42	0.04	0.09	0	6856704
Grand Total		3	1.45	0.13	0.28	0	21610496

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