Ask the Expert

Why Do I Need SAS® Enterprise Session Monitor and Ecosystem Diagnostics?

Steven Sober

Advisory Solutions Architect

Customer Technology Adoption

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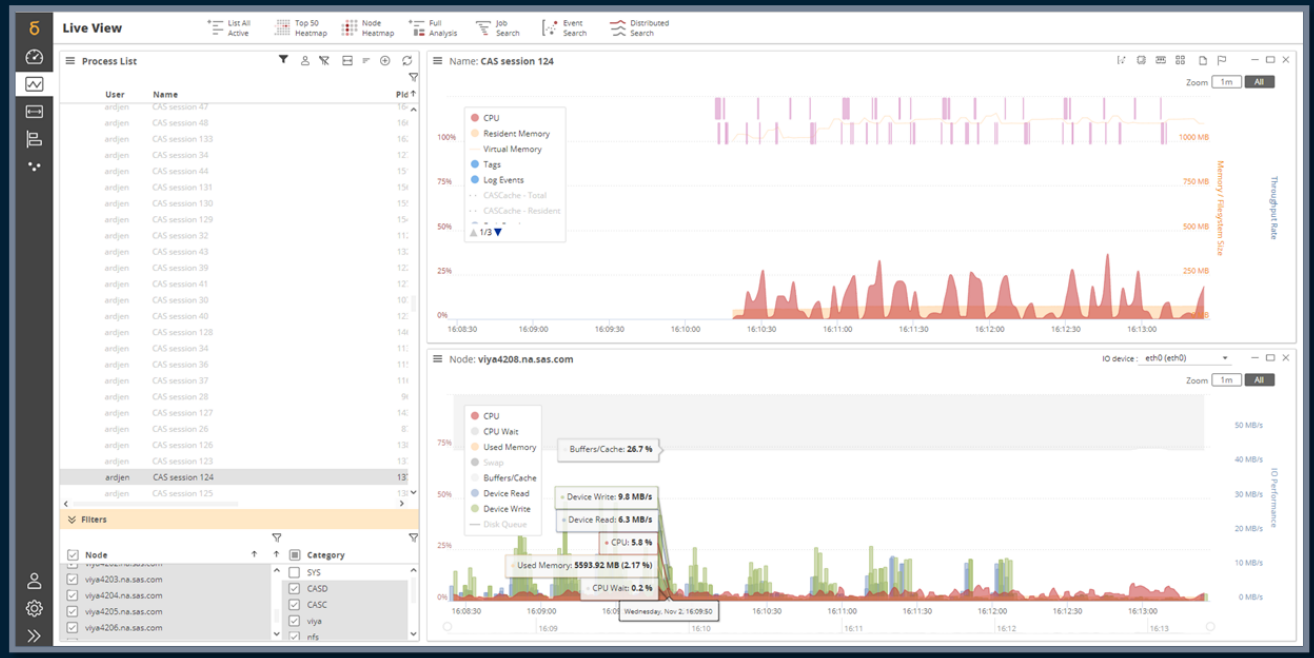
SAS Enterprise Session Monitor

Who is it for?

- Platforms:
  - SAS 9.x
  - Viya 3
  - SAS Viya 4
- Roles:
  - SAS Administrators
  - SAS Developers



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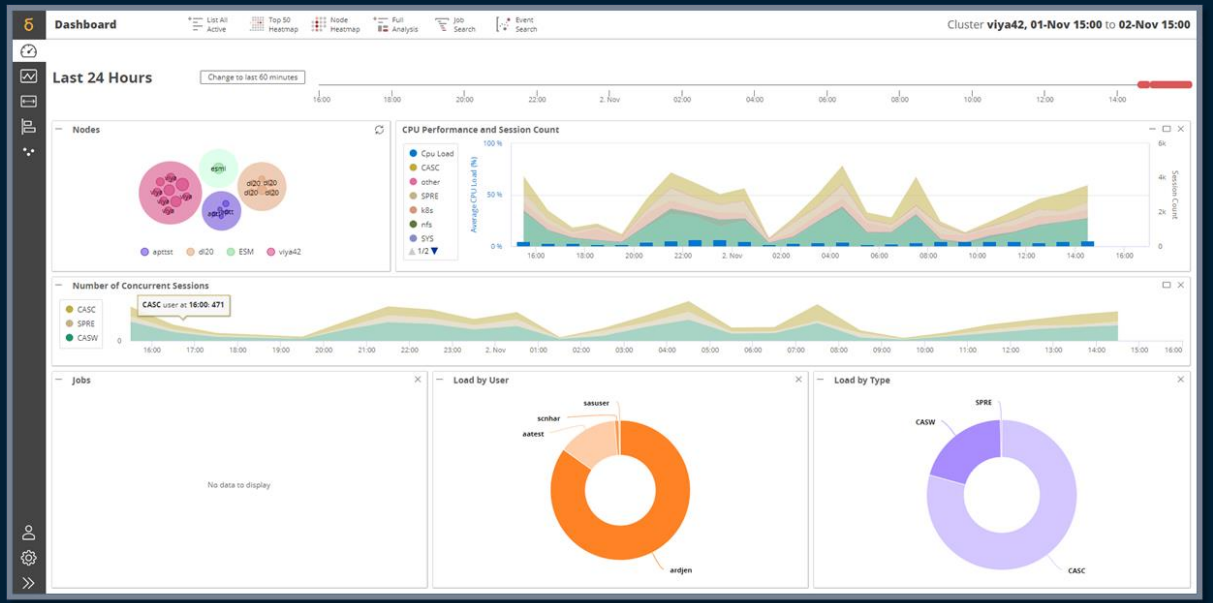
SAS Enterprise Session Monitor

What is it?

- An *Observability* tool for Analytic workloads
- Get a holistic view of analytics consumption across the enterprise
- Provides real-time workload identification
- Enables self-service root cause analysis and event investigation



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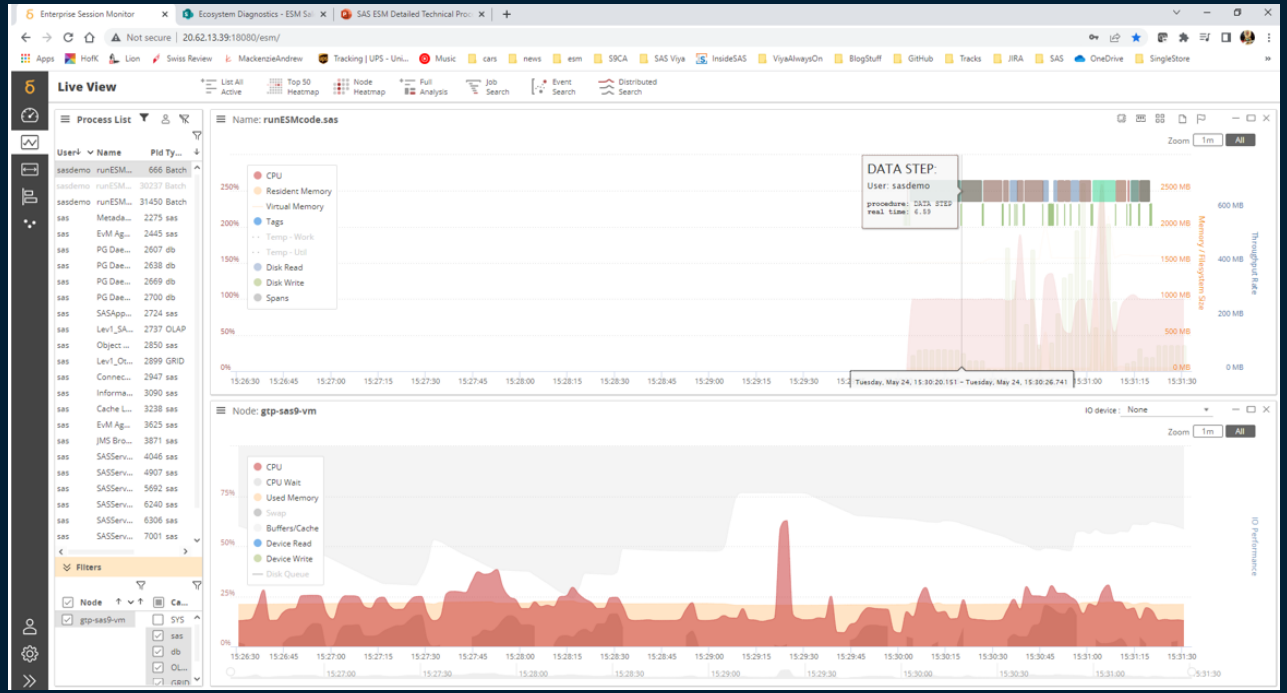
SAS Enterprise Session Monitor (ESM)

Monitor Interactive SAS Users and SAS Batch Jobs



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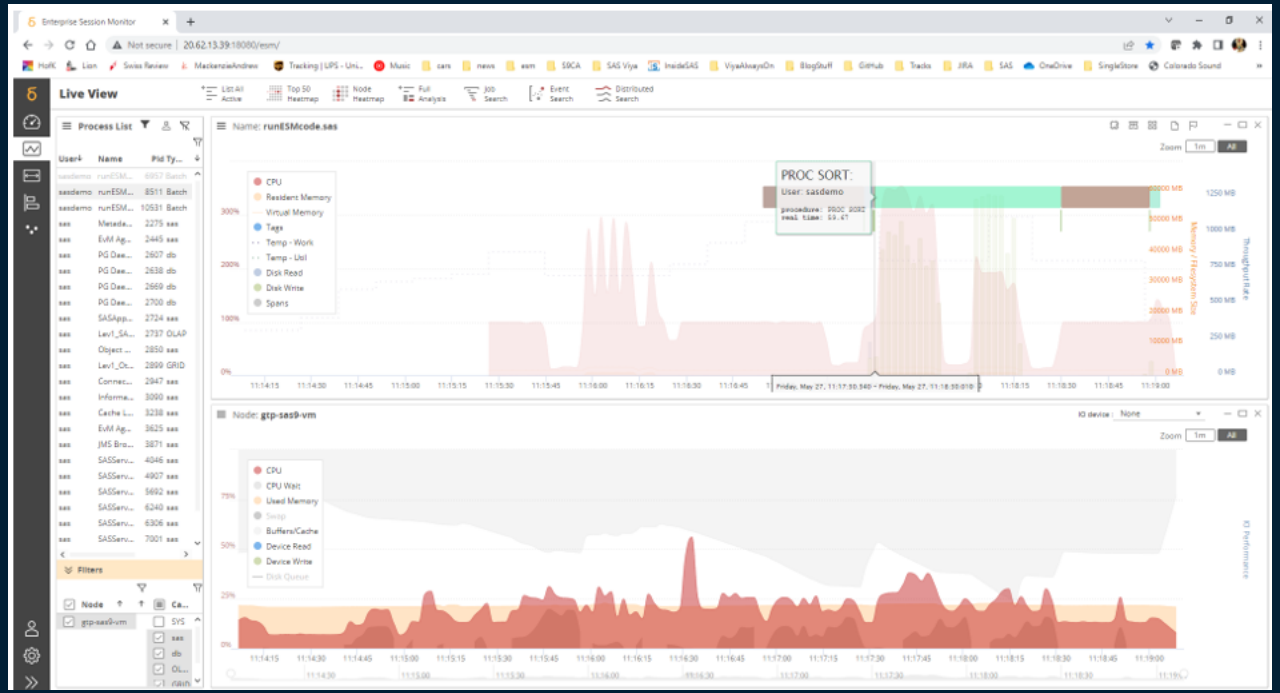

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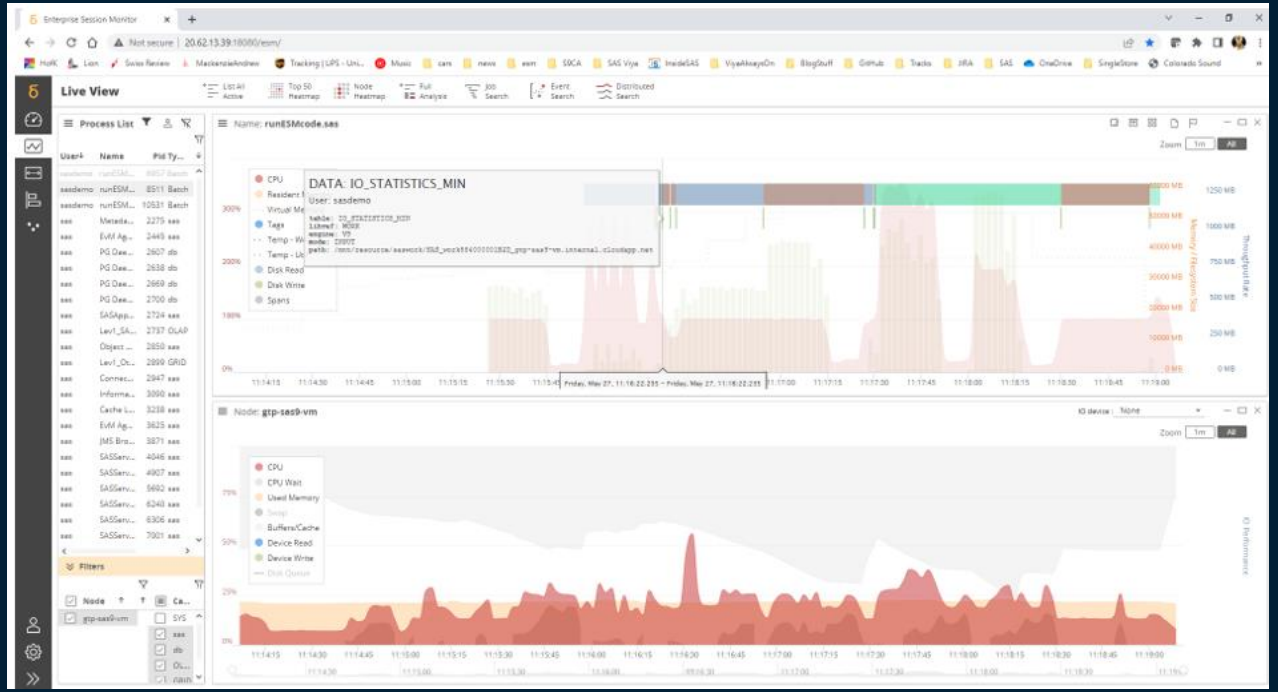

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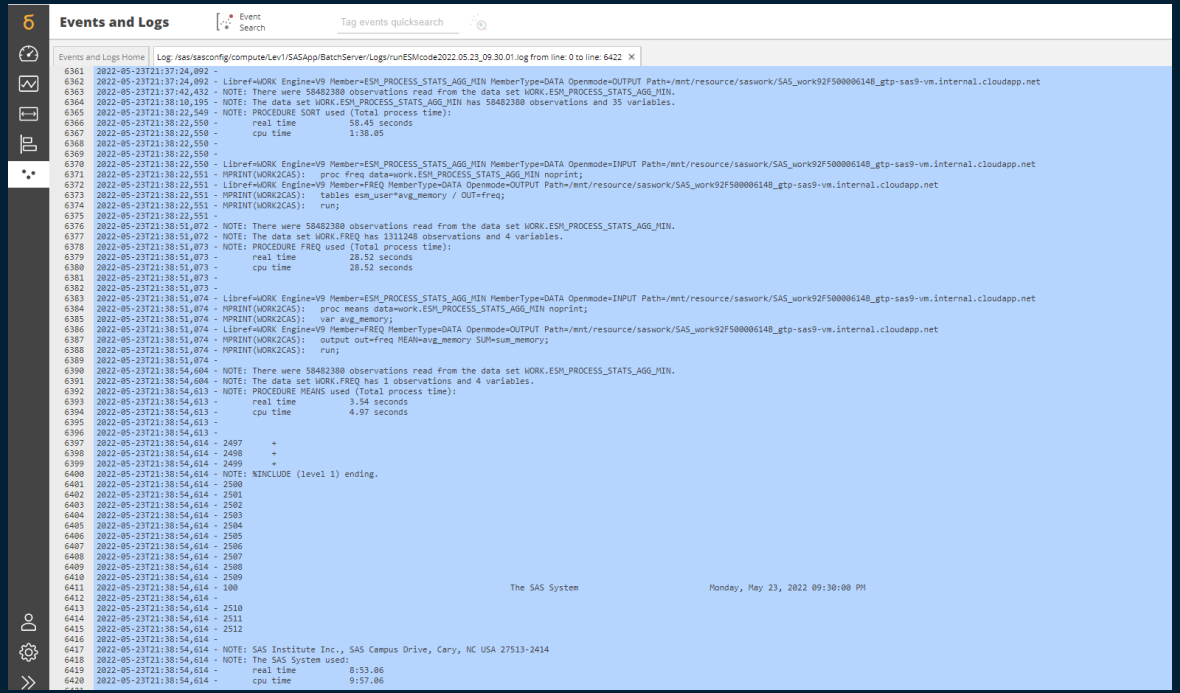

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SAS Enterprise Session Monitor as a Data Engine

Use Cases from other customers

- Zero Trust Architecture
- Chargeback
- Management reporting
- Modernization planning
- Software Development Lifecycle Management

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SAS Enterprise Session Monitor

Key Features

Real-time workload identification

Detect all SAS executions. Allow users and administrators to instantly see whether their jobs and interactive sessions are behaving as expected and if any action is required.

Self-service administration

Provides users with a secure and audited way to terminate sessions and view logs.

Top-down performance analysis

Narrow in on hot spots and drill through to individual jobs or users that may be causing undesired behavior.

Scheduled batch job flow analysis

Collect detailed performance data on all jobs, including return code, flow and queue information. Job and flow visualization features accelerate root-cause analysis to help prevent future exceptions.

Point-and-click chargeback

Present session performance data through a drag-and-drop interface that lets users generate cost allocation rules by classifying workload into different departments.

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SAS Enterprise Session Monitor
Install/Config

sas.com

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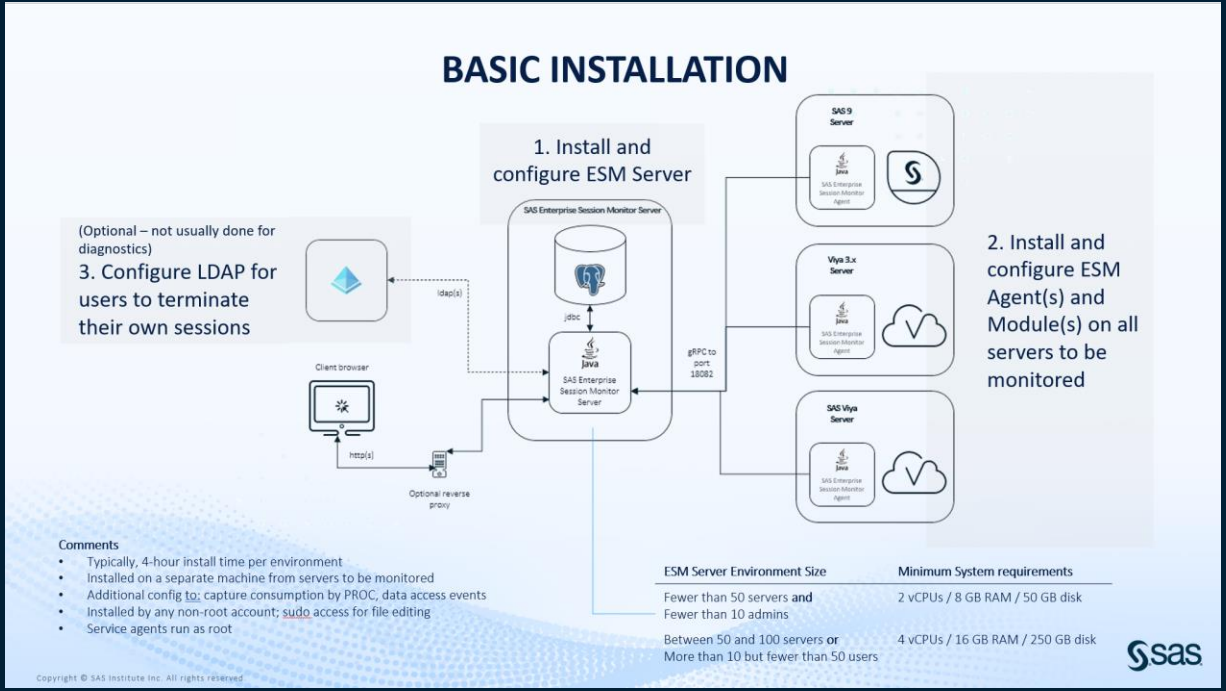
SAS Enterprise Session Monitor (ESM)

Installation



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SAS Enterprise Session Monitor (ESM)

FAQ

TYPICAL FAQS FROM CUSTOMERS

Will ESM slow down the environments it monitors?

From data collected of ESM monitoring itself:

- Basic config is 5%-10% of 1 core…
- Advanced config (PROC & data access tracking) up to 20% of 1 core
- Maps to the workload spikes/logging follows, averages are above
- Per server basis

Is ESM an enterprise-grade monitoring tool?

- 100s of customers installed, 10s of thousands of core monitored
- Largest customer is monitoring 1376 cores across numerous SAS, non-SAS, cloud & on-prem environments today

How is data sent to SAS for additional analysis?

- Secured SharePoint shared between SAS and customer
- Packaged utility to create summary tables shared on secured SharePoint
- By default, Host Name & User ID are obfuscated; others optional
- Customer retains key which can unmask data

How big is the data that is generated?

Customer example:
80GB uncompressed data collected

4 environments, ~150 cores

Combined 700-1600 concurrent sessions

60 days monitored

Data size driven by:

- Num. servers monitored
- Num. sessions per server
- Num. markers per day
- Durations of sessions
- Config (basic vs. advanced)

Data Collected	Data Retention (configurable)	
	Minute Aggregate	Hourly Aggregate
Server CPU, memory, IO	Stored for 60 days	Stored for one year
Session Statistics (peak, etc.)		
Path, Program Name, Host Name, User ID		
Errors		
Warnings, Procs	Stored for 60 days	
Data Access Events	Stored for 60 days	

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SAS Enterprise Session Monitor Maintenance Utility
Data Extraction Utility

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SAS Enterprise Session Monitor Maintenance Utility

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Credentials:

esm

BoemskaESM

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SAS Enterprise Session Monitor Maintenance Utility

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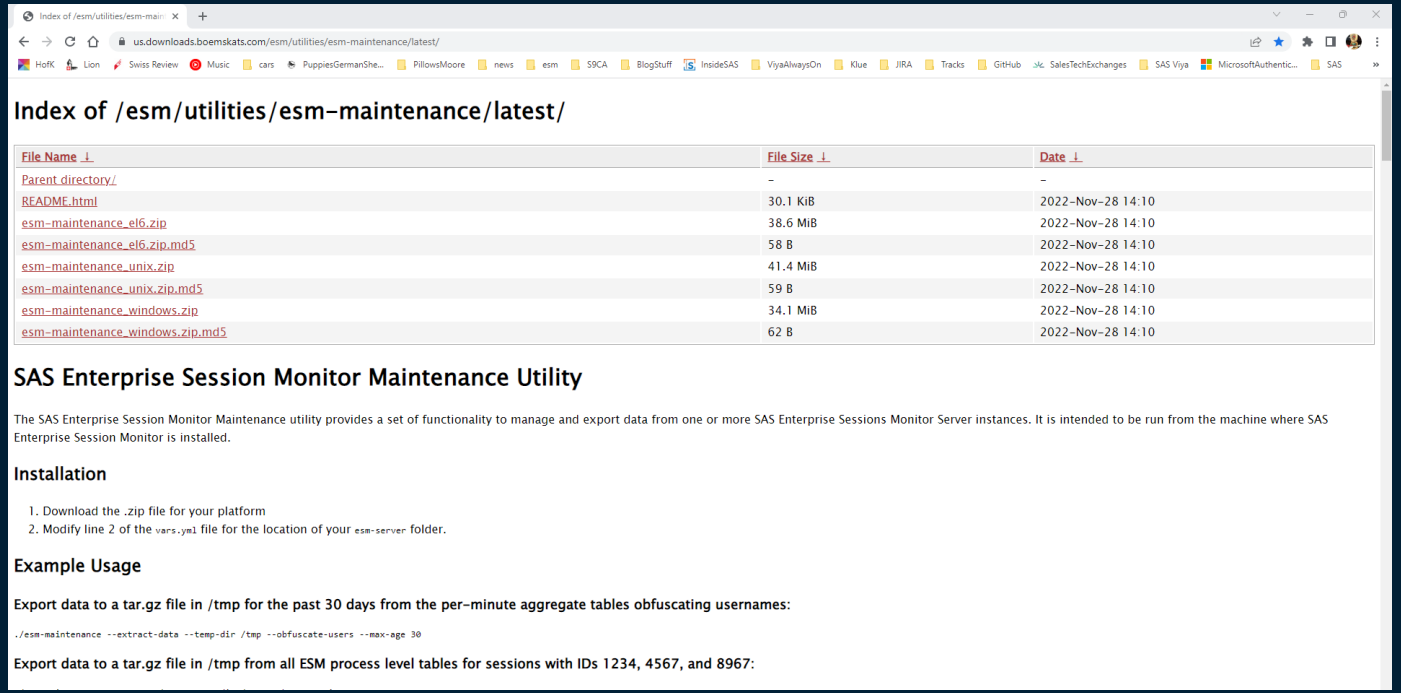
Copy zip file to the ESM Server Instance and unzip it



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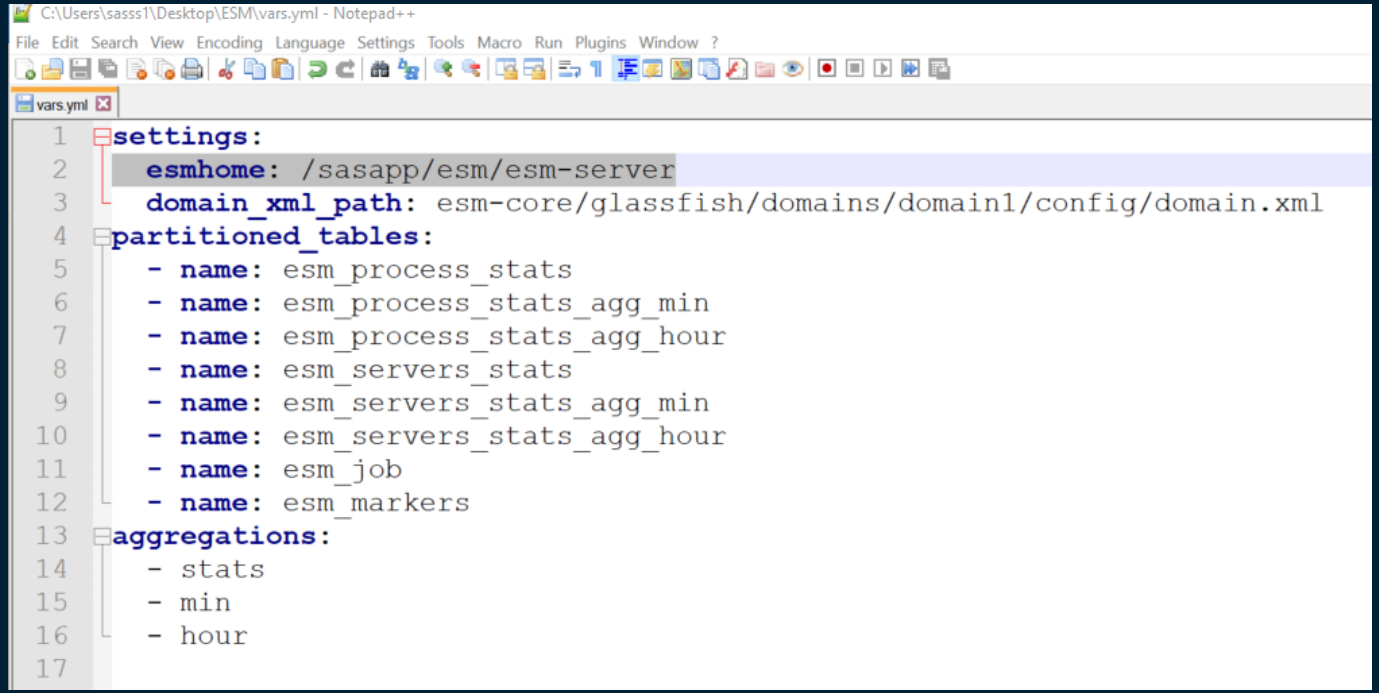
SAS Enterprise Session Monitor Maintenance Utility

Modify the file vars.yml which is delivered with the utility

Modify line 2 to your esm-server folder & ensure the esm server is running



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SAS Enterprise Session Monitor Maintenance Utility

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- Command
  - Set max age to 95 even if there is less than 95 days' worth of data.

./esm-maintenance --extract-data --compress-data --temp-dir /tmp --obfuscate-users --obfuscate-hosts --max-age 95

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SAS Enterprise Session Monitor Maintenance Utility

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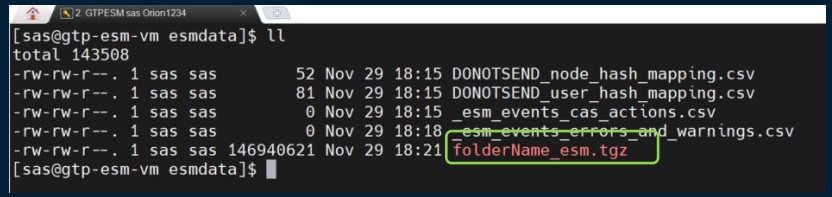
- SAS Enterprise Session Monitor Maintenance Utility creates a zip/tarball containing the ESM data the customer shares with SAS

Note: modify **folderName**_esm.tgz/zip to the actual folder name specified when you filled in the ServiceNow form.

Copy **the zip/tarball** file to SAS Secure SharePoint site folder

This screenshot is an example of the tarball that is copied to the SAS Secure SharePoint folder created using this ServiceNow form.



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Ecosystem Diagnostics - SAS Enterprise Session Monitor Reports

Requires SAS Viya 2021.2.5 or Higher

sas.com

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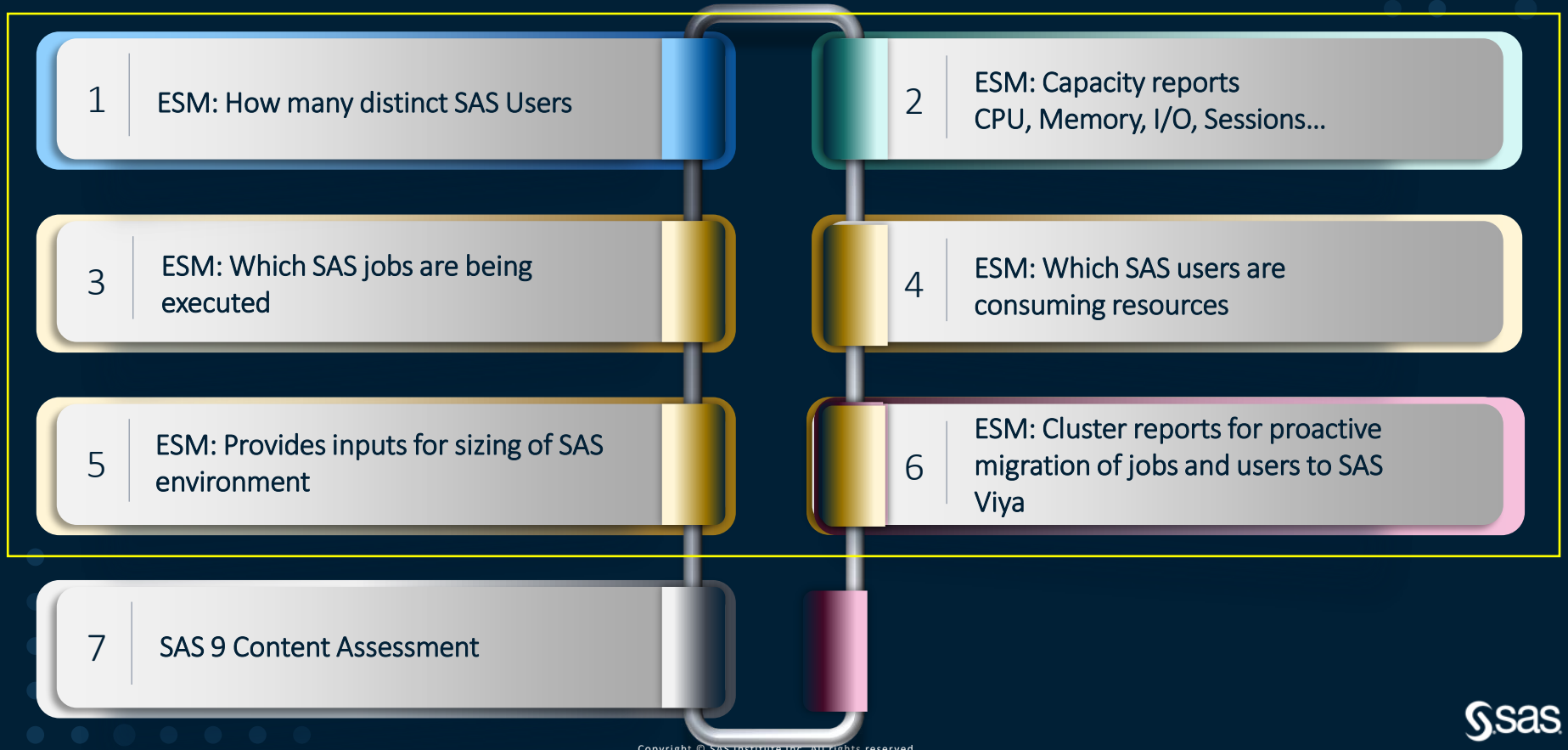
The Ecosystem Diagnostics helps organizations understand the impact of SAS on their environment



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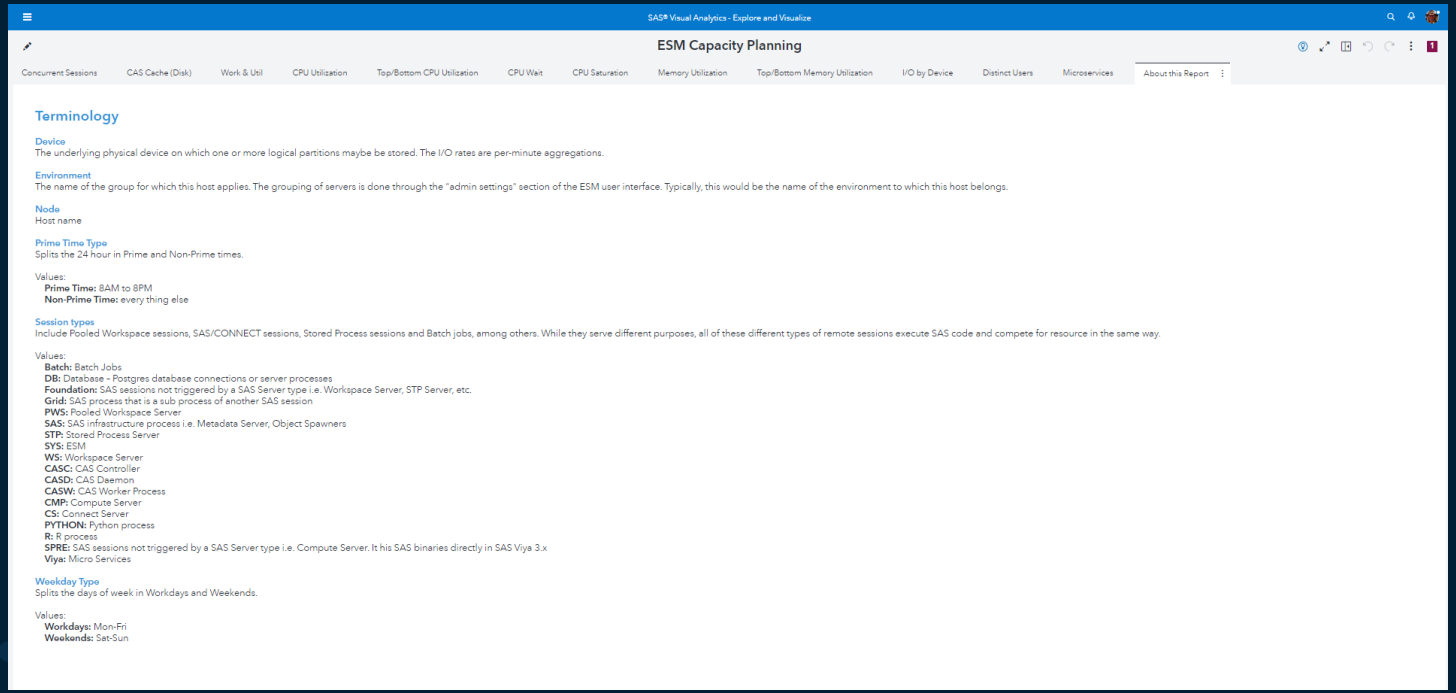
Ecosystem Diagnostics - SAS Enterprise Session Monitor

About this Report



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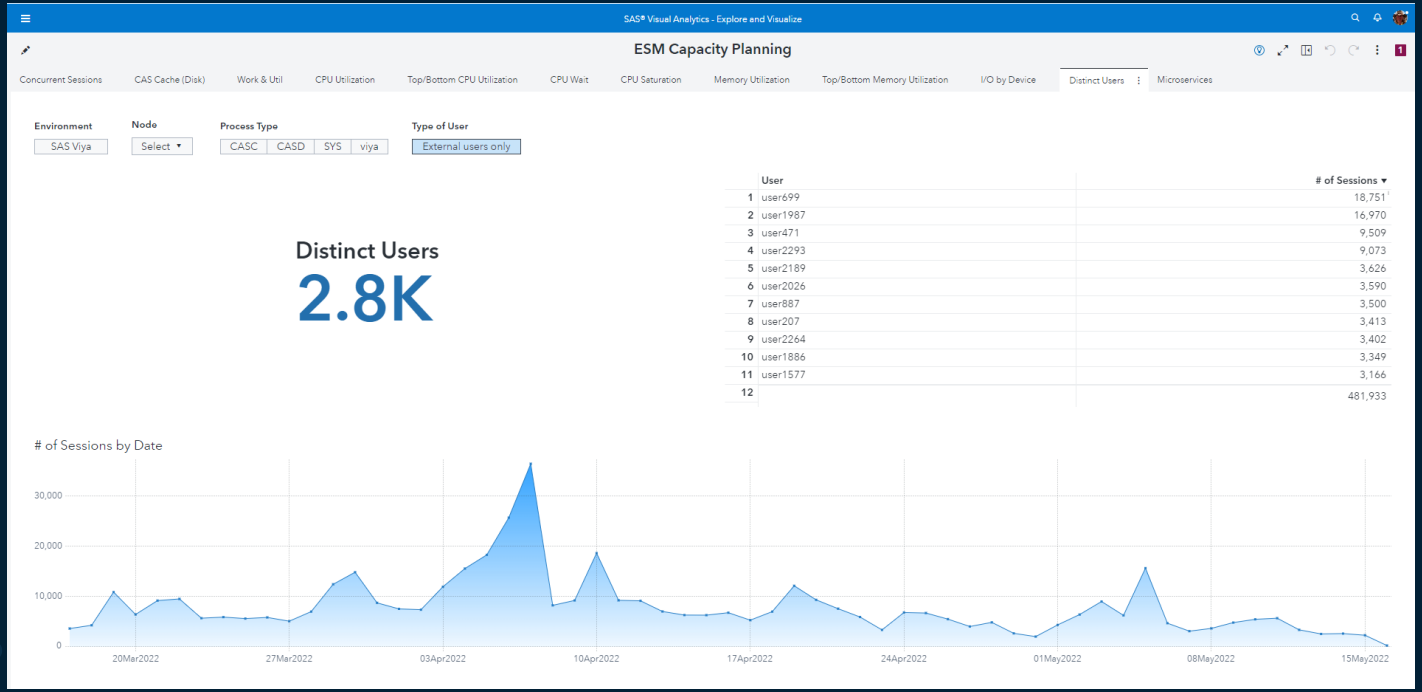
Ecosystem Diagnostics - SAS Enterprise Session Monitor

Distinct Users



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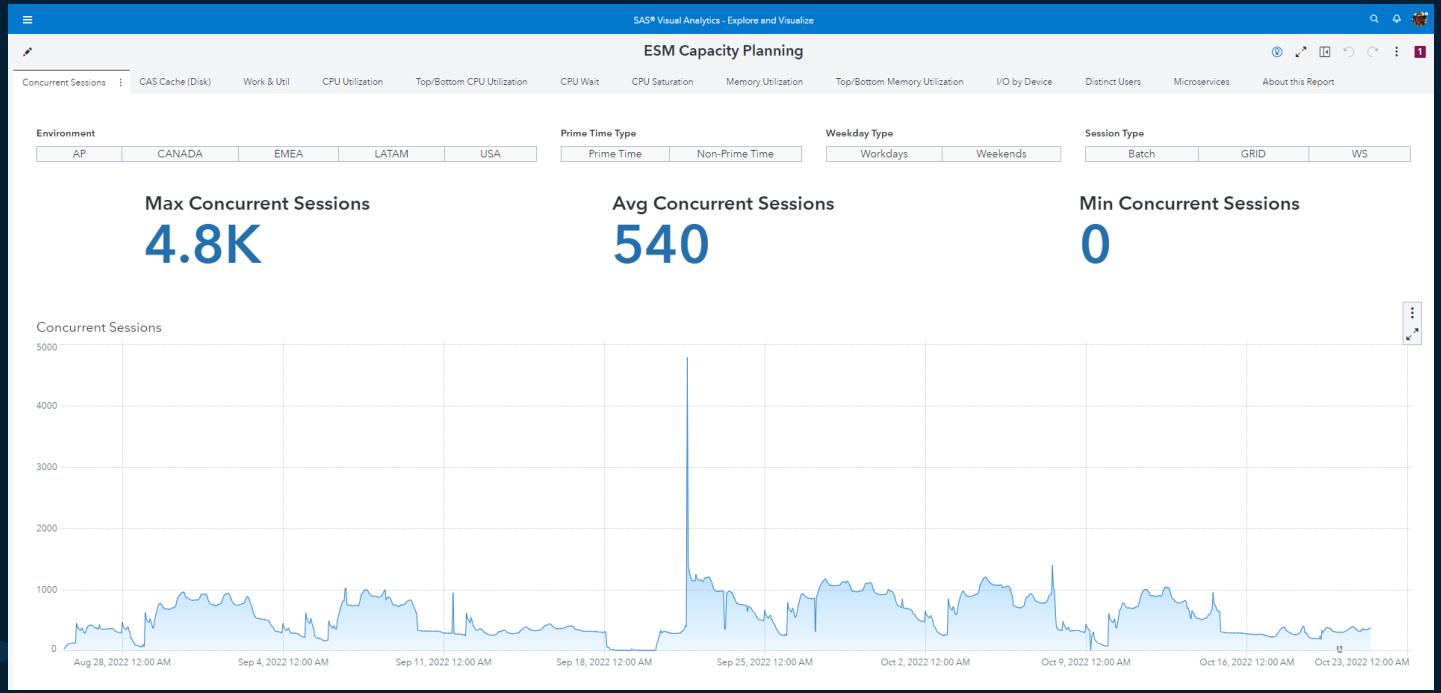
Ecosystem Diagnostics - SAS Enterprise Session Monitor

Concurrent Sessions



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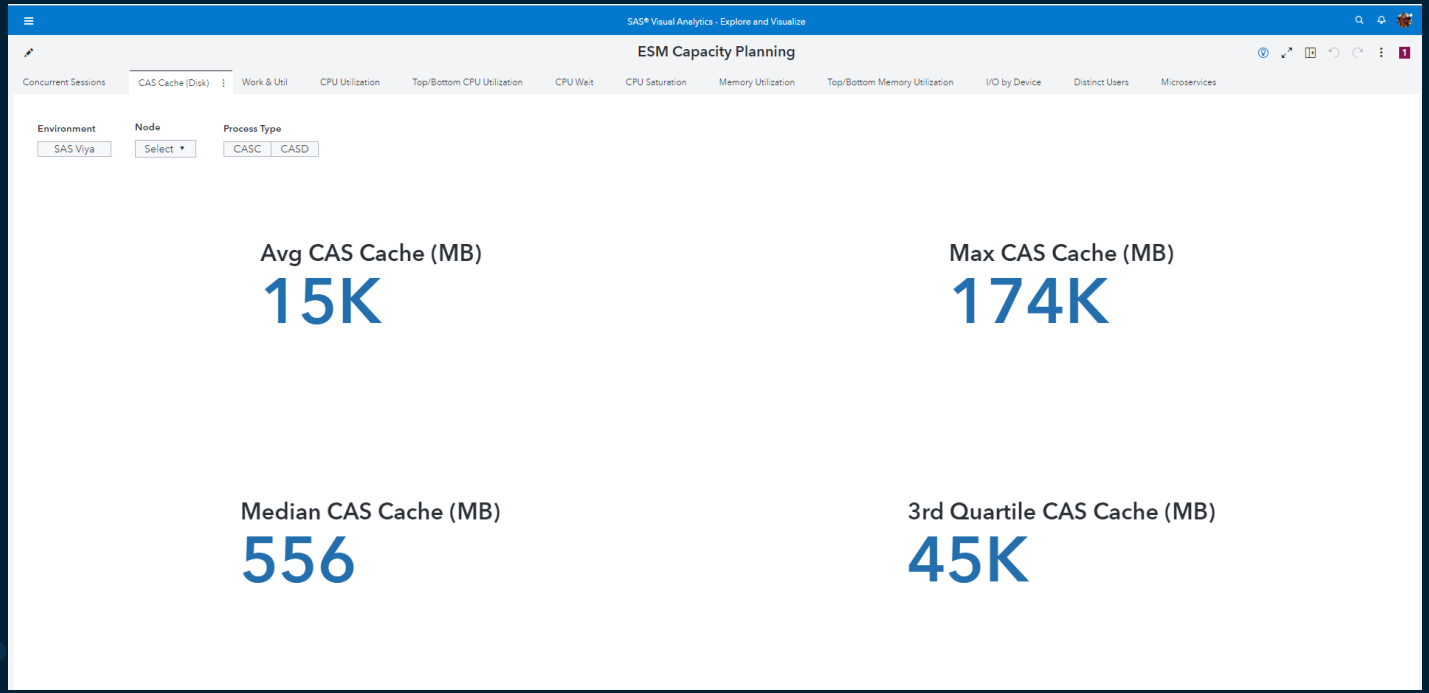
CAS Cache



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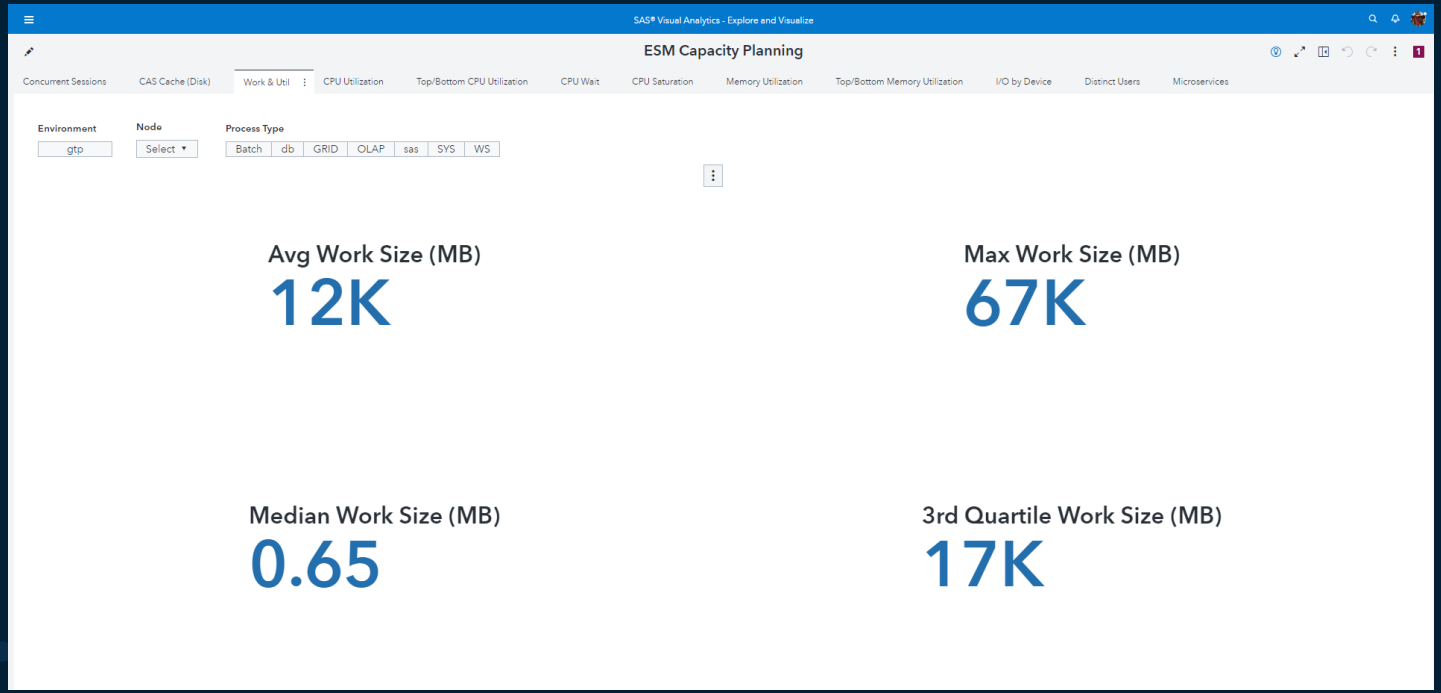
SAS WORK and SAS UTIL



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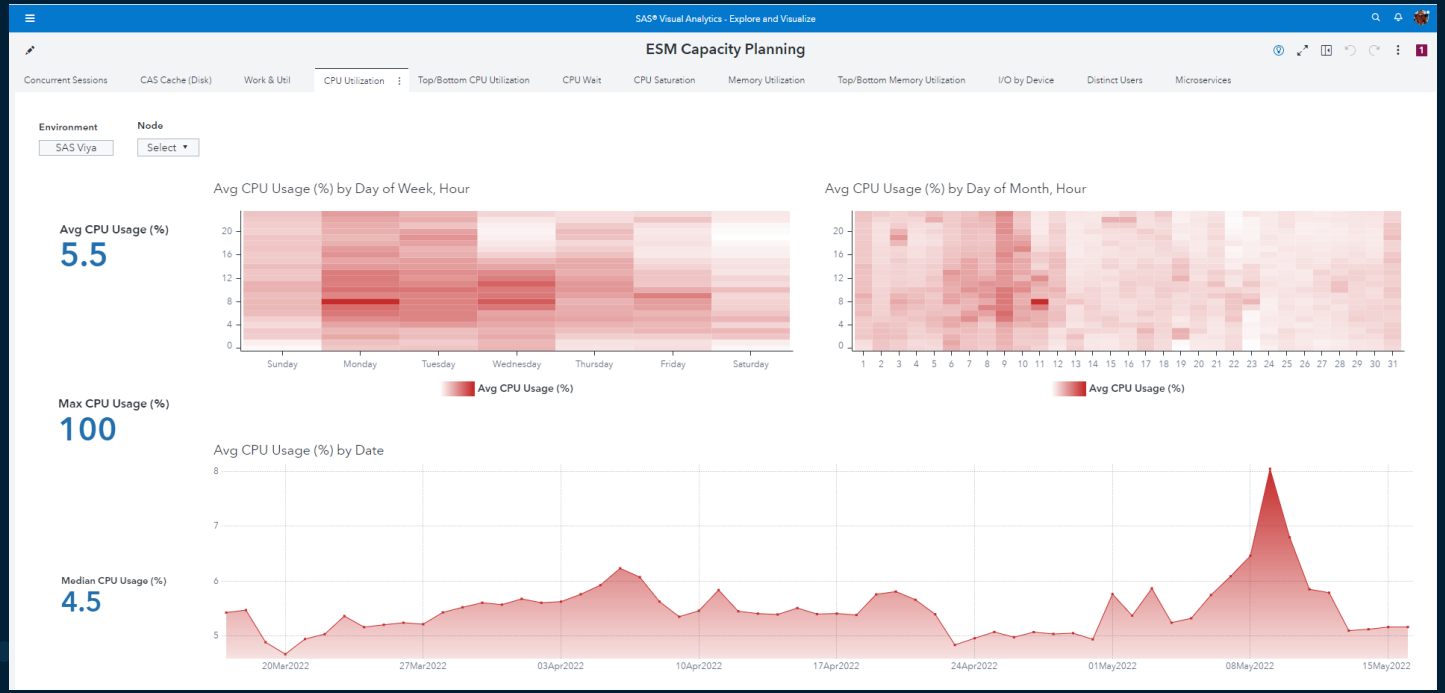
CPU Utilization



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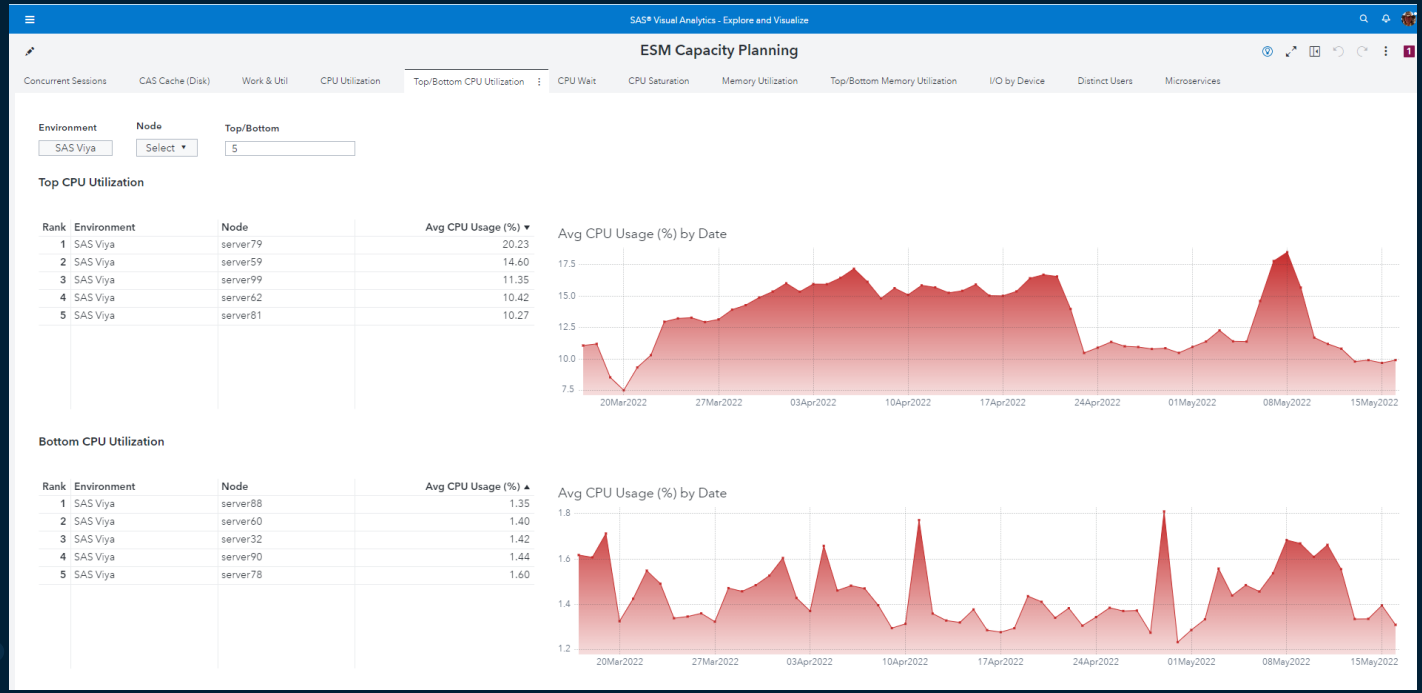
Top/Bottom CPU Utilization



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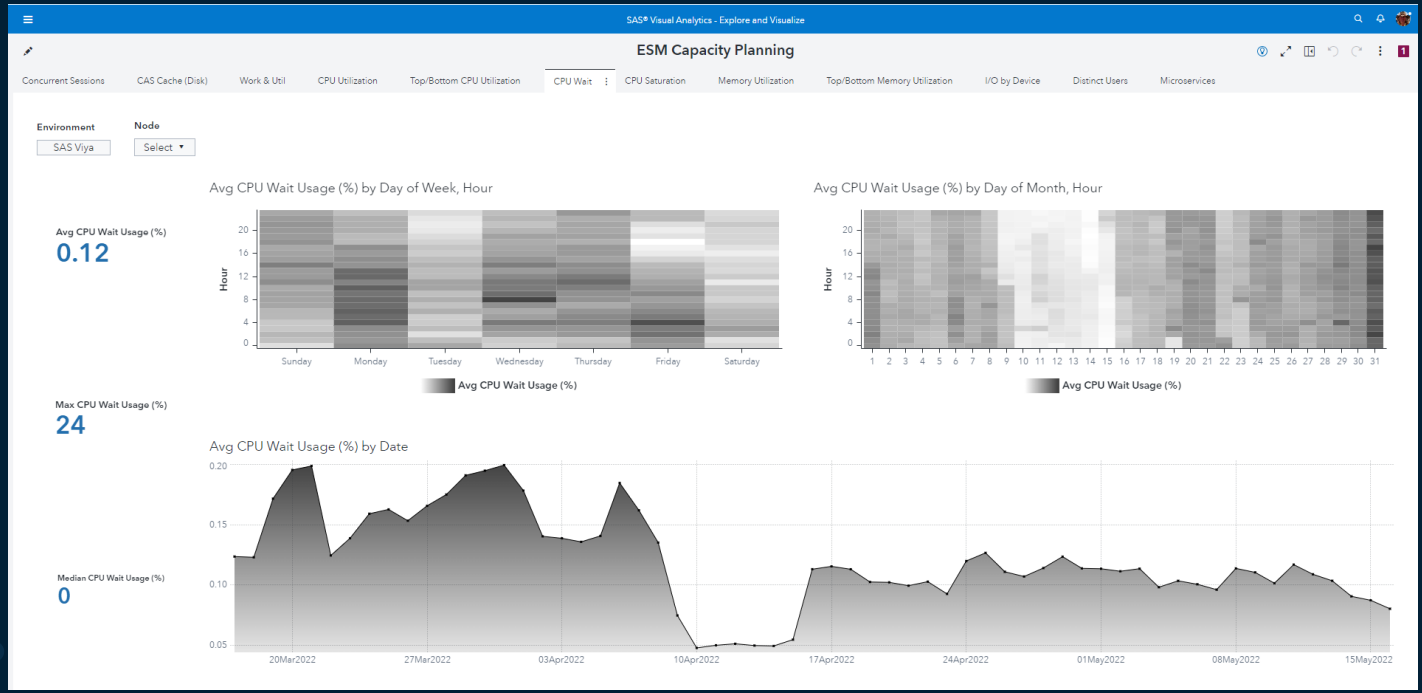
CPU Wait



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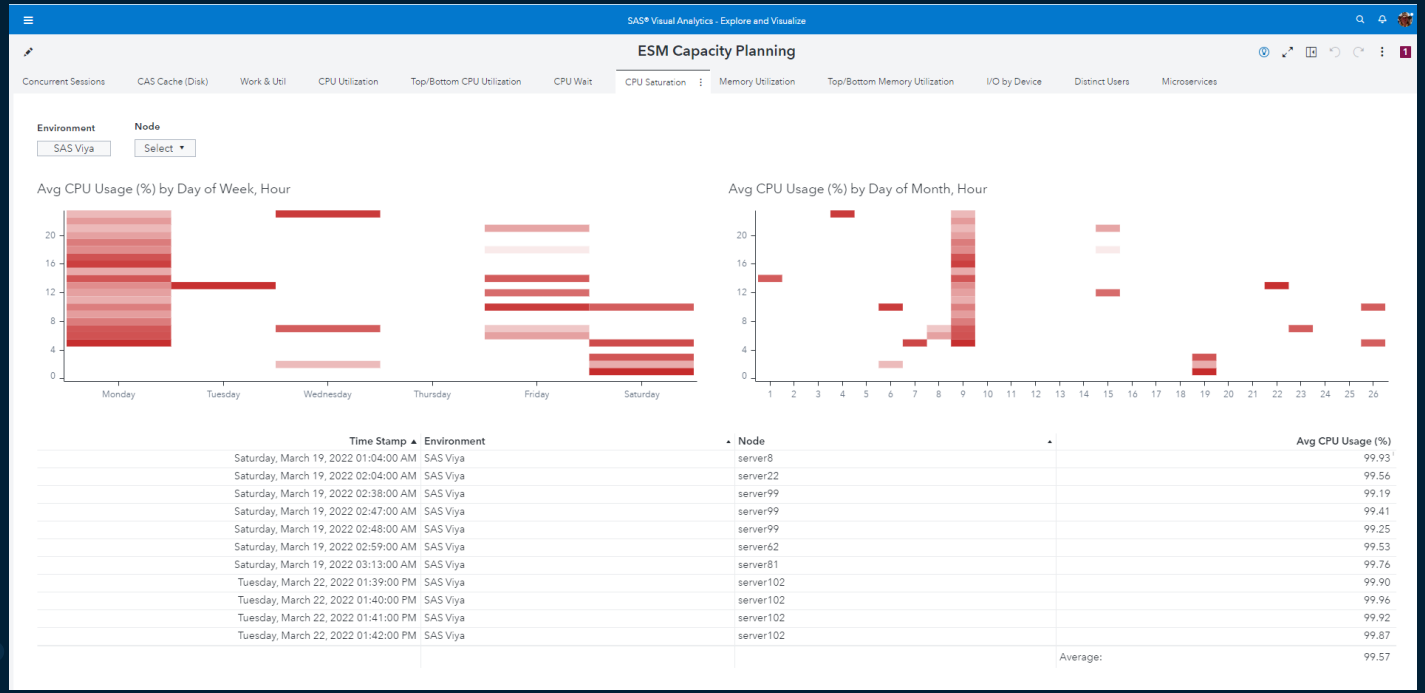
CPU Saturation



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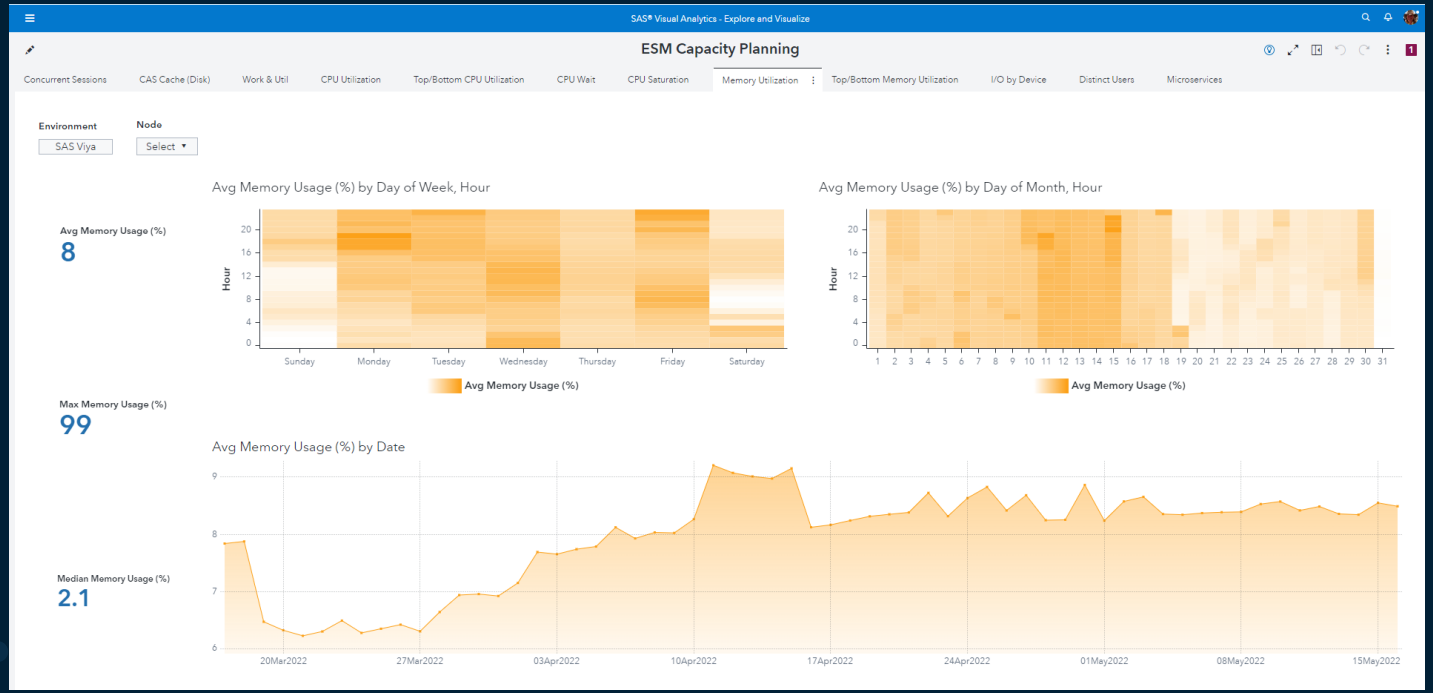
Memory Utilization



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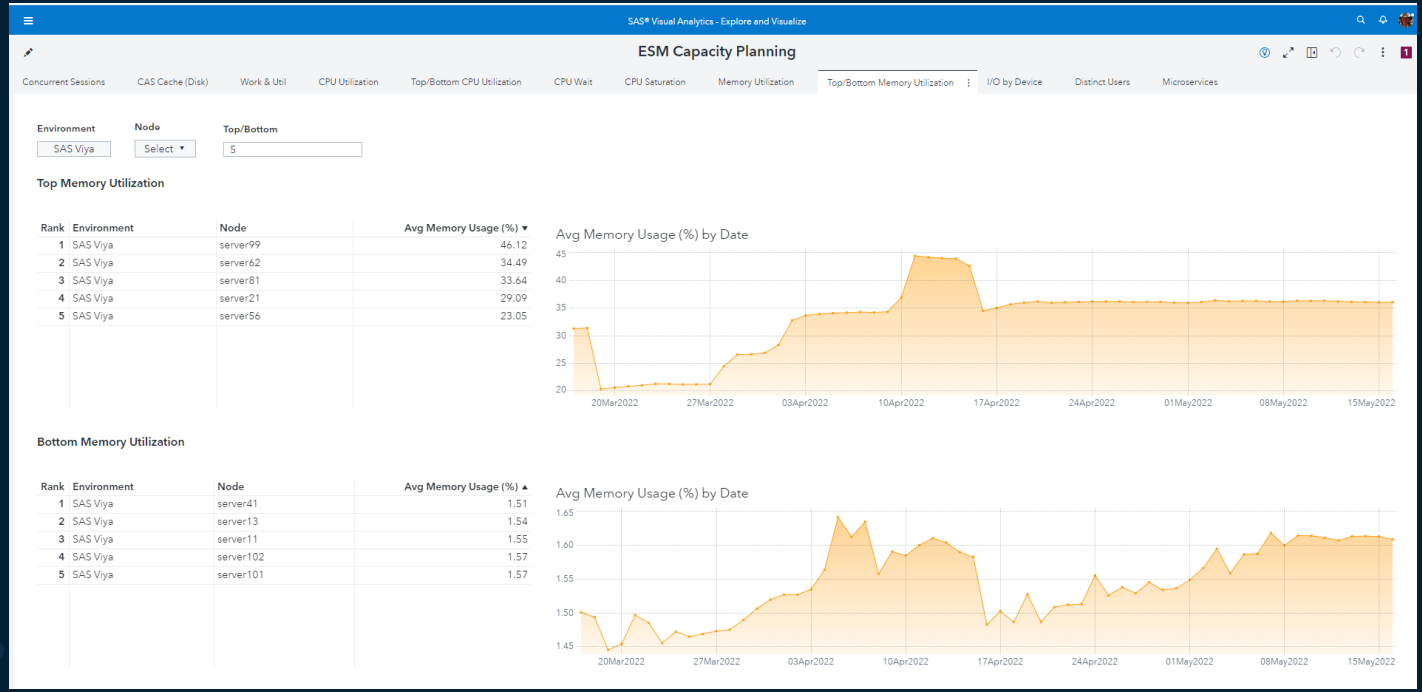
Ecosystem Diagnostics - SAS Enterprise Session Monitor

Top/Bottom Memory Utilization



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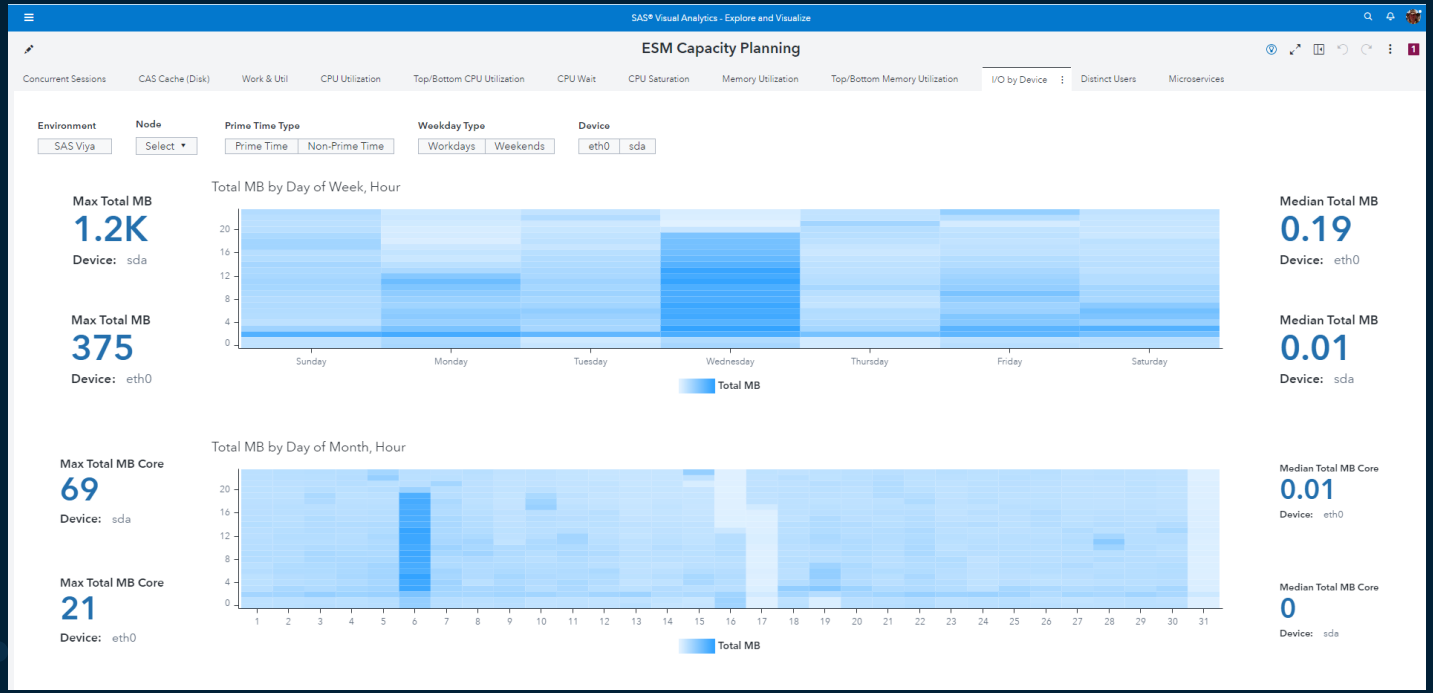
IO by Device



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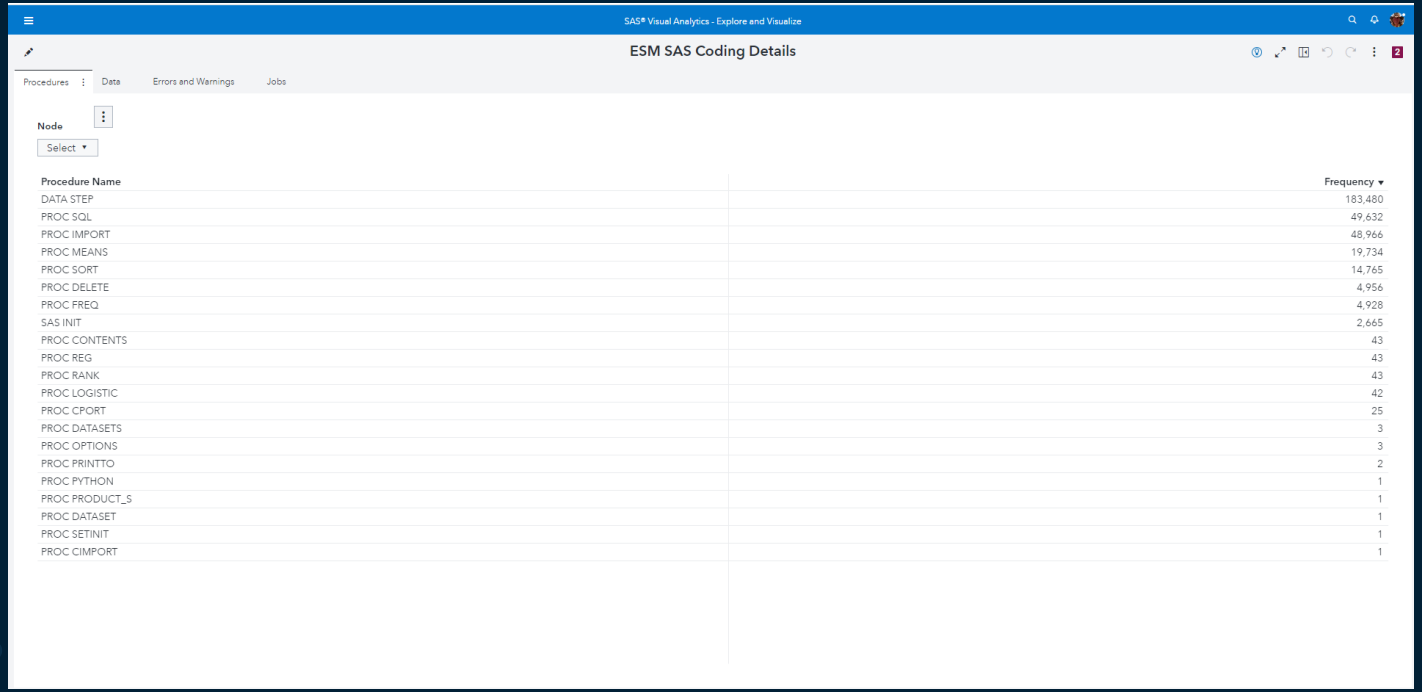
Ecosystem Diagnostics - SAS Enterprise Session Monitor

SAS Steps



Procedure Name	Frequency
DATA STEP	183,480
PROC SQL	49,632
PROC IMPORT	48,966
PROC MEANS	19,734
PROC SORT	14,765
PROC DELETE	4,956
PROC FREQ	4,928
SAS INIT	2,665
PROC CONTENTS	43
PROC REG	43
PROC RANK	43
PROC LOGISTIC	42
PROC CPORT	25
PROC DATASETS	3
PROC OPTIONS	3
PROC PRINTTO	2
PROC PYTHON	1
PROC PRODUCT_S	1
PROC DATASET	1
PROC SETINIT	1
PROC CIMPORT	1

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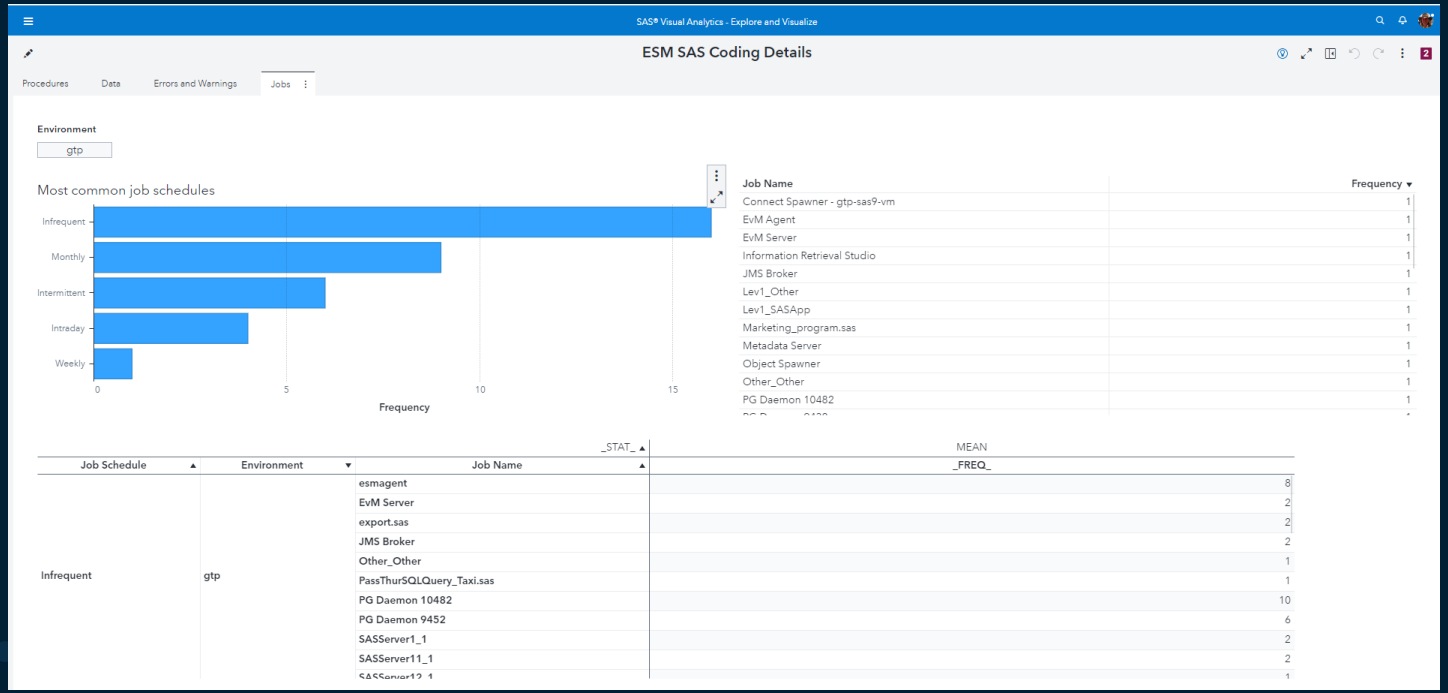
Jobs



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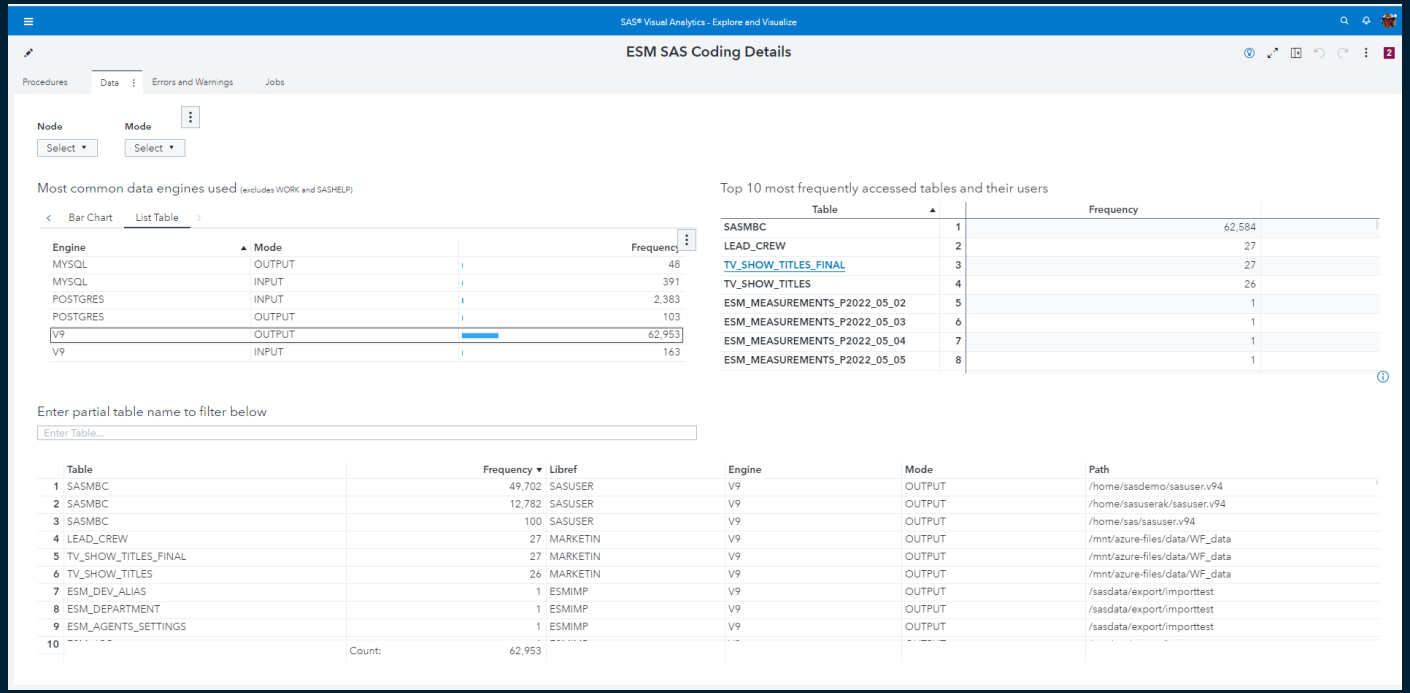
Tables Processed



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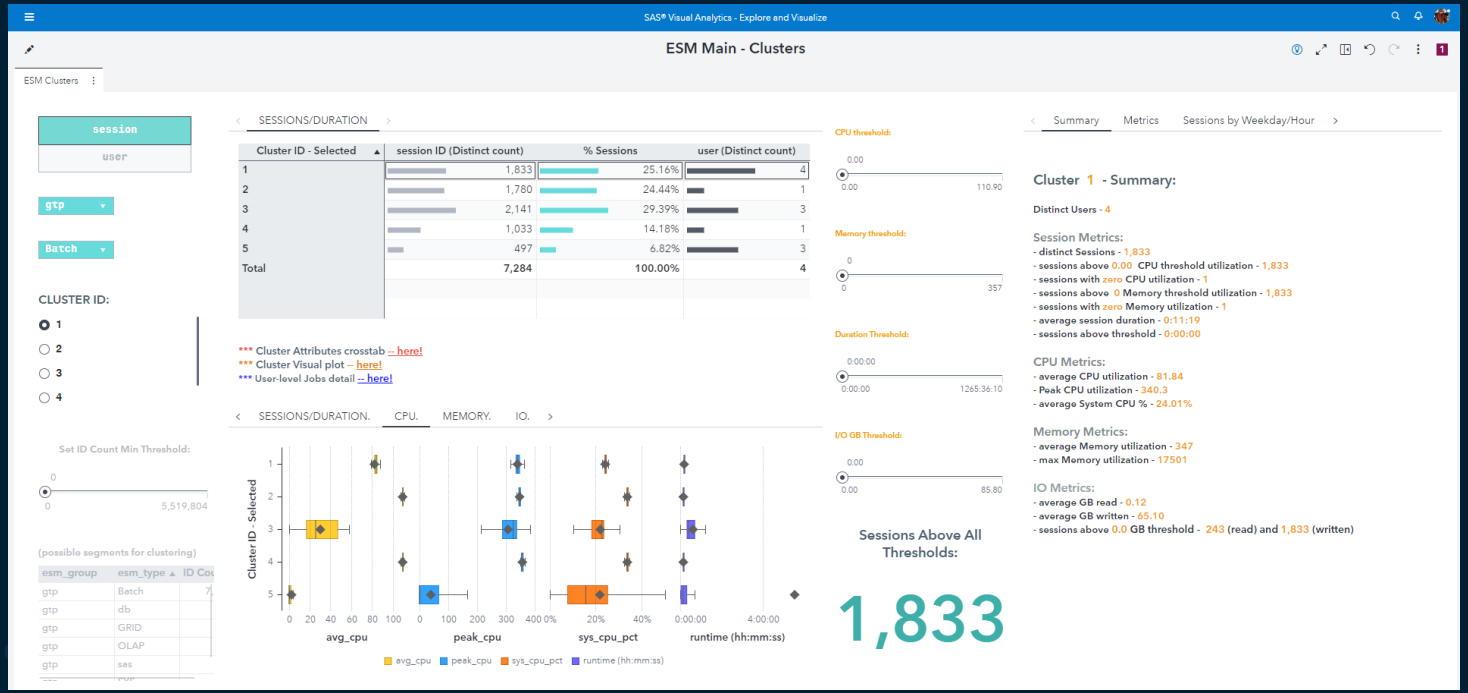
Ecosystem Diagnostics - SAS Enterprise Session Monitor

Session Level Cluster Analysis



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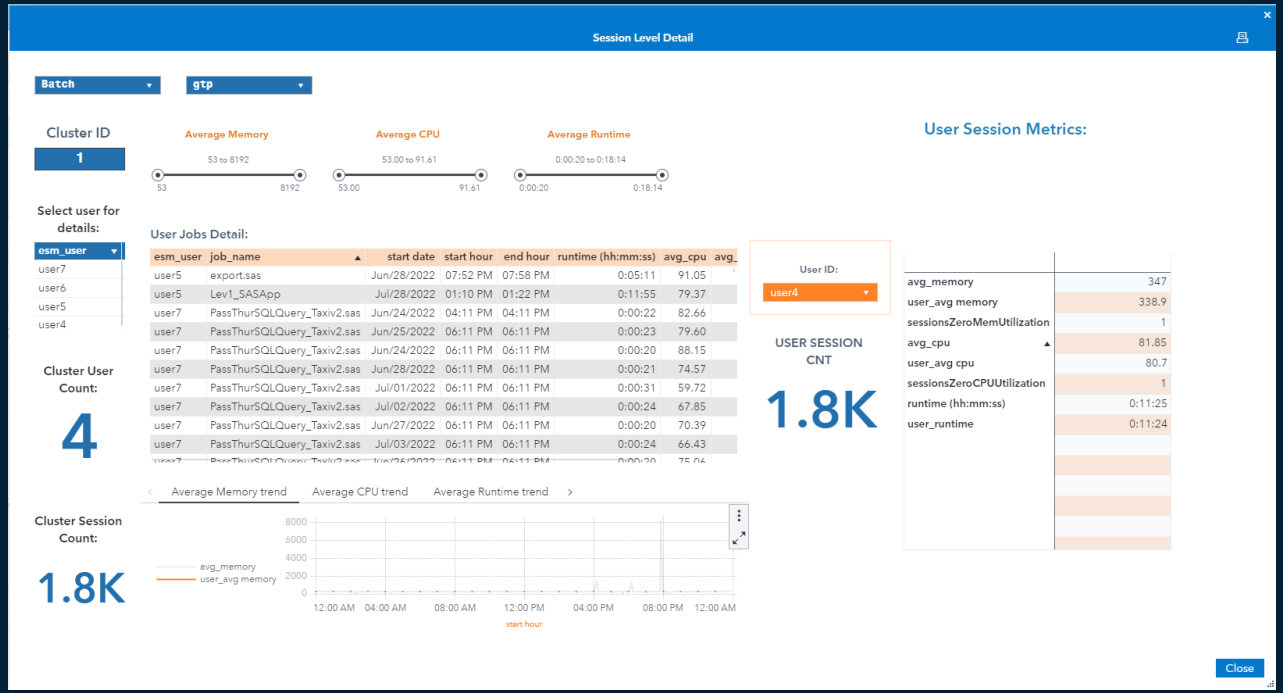

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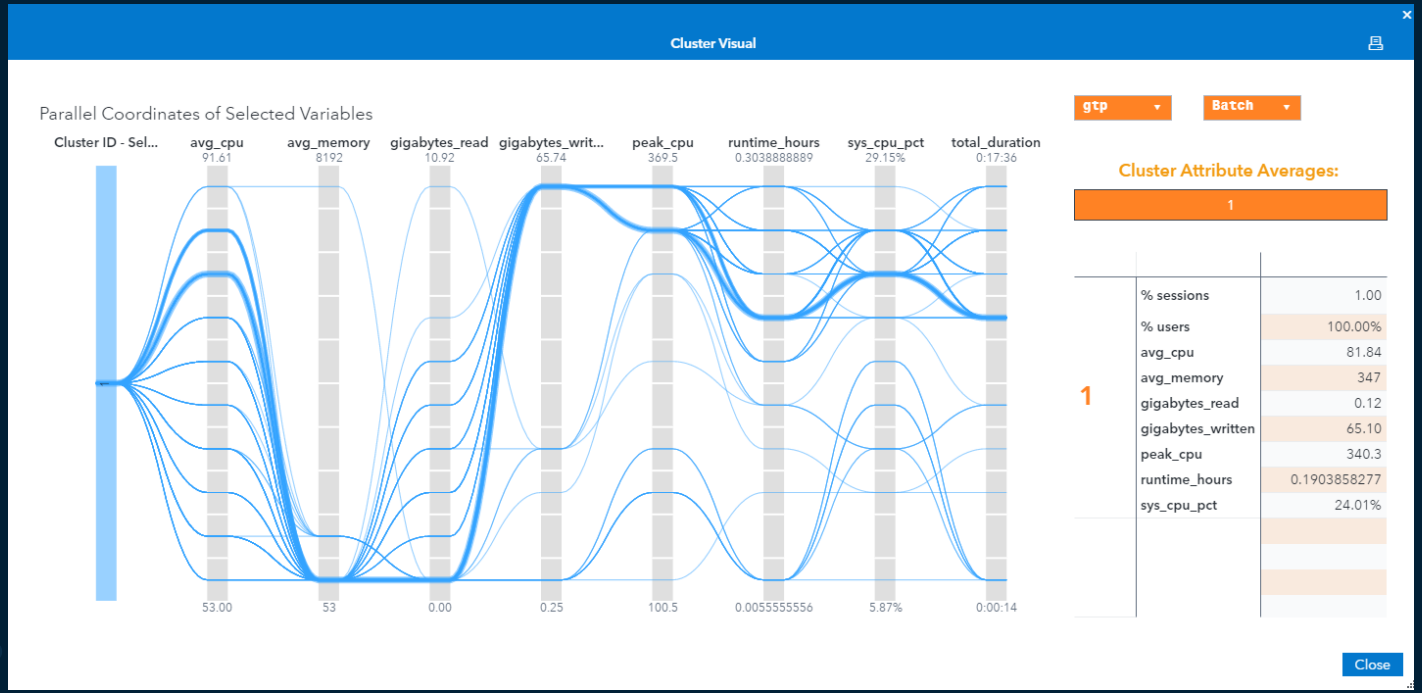

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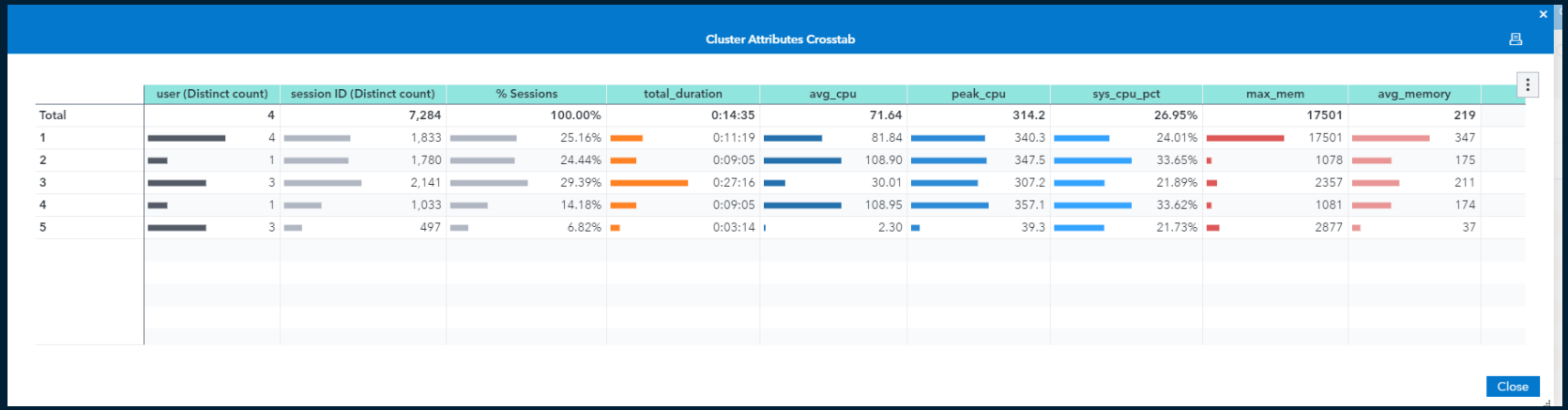

	user (Distinct count)	session ID (Distinct count)	% Sessions	total_duration	avg_cpu	peak_cpu	sys_cpu_pct	max_mem	avg_memory
Total	4	7,284	100.00%	0:14:35	71.64	314.2	26.95%	17501	219
1	4	1,833	25.16%	0:11:19	81.84	340.3	24.01%	17501	347
2	1	1,780	24.44%	0:09:05	108.90	347.5	33.65%	1078	175
3	3	2,141	29.39%	0:27:16	30.01	307.2	21.89%	2357	211
4	1	1,033	14.18%	0:09:05	108.95	357.1	33.62%	1081	174
5	3	497	6.82%	0:03:14	2.30	39.3	21.73%	2877	37

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Ecosystem Diagnostics - SAS Enterprise Session Monitor Reports

VA reports Require SAS Viya 2021.2.5 or Higher

- If you do not have a SAS Viya environment
  - SAS Secure SharePoint site to upload zip/tar file to
  - SAS Viya environment for SAS account team to review reports for read back to their customer

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SAS Enterprise Session Monitor

Next Steps

- If interested in learning more let us know in the survey or contact your SAS account team
- Check out the resource list
  - In the follow up email
  - Posted to the Ask the Expert board on SAS Communities

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SAS Enterprise Session Monitor (ESM)
Ecosystem Diagnostics
Q&A

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