

# Upgrading to the Latest Version of SAS® 9.4 M8

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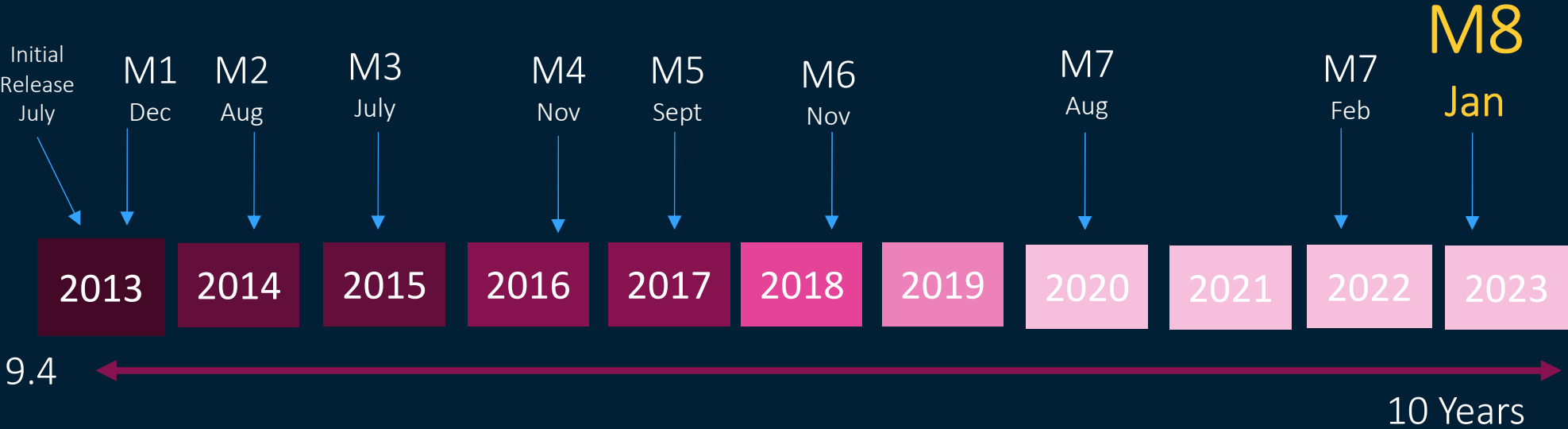


# Today's Agenda

1. What is new in SAS 9.4 M8?
2. Plan before you start your update
3. Q&A

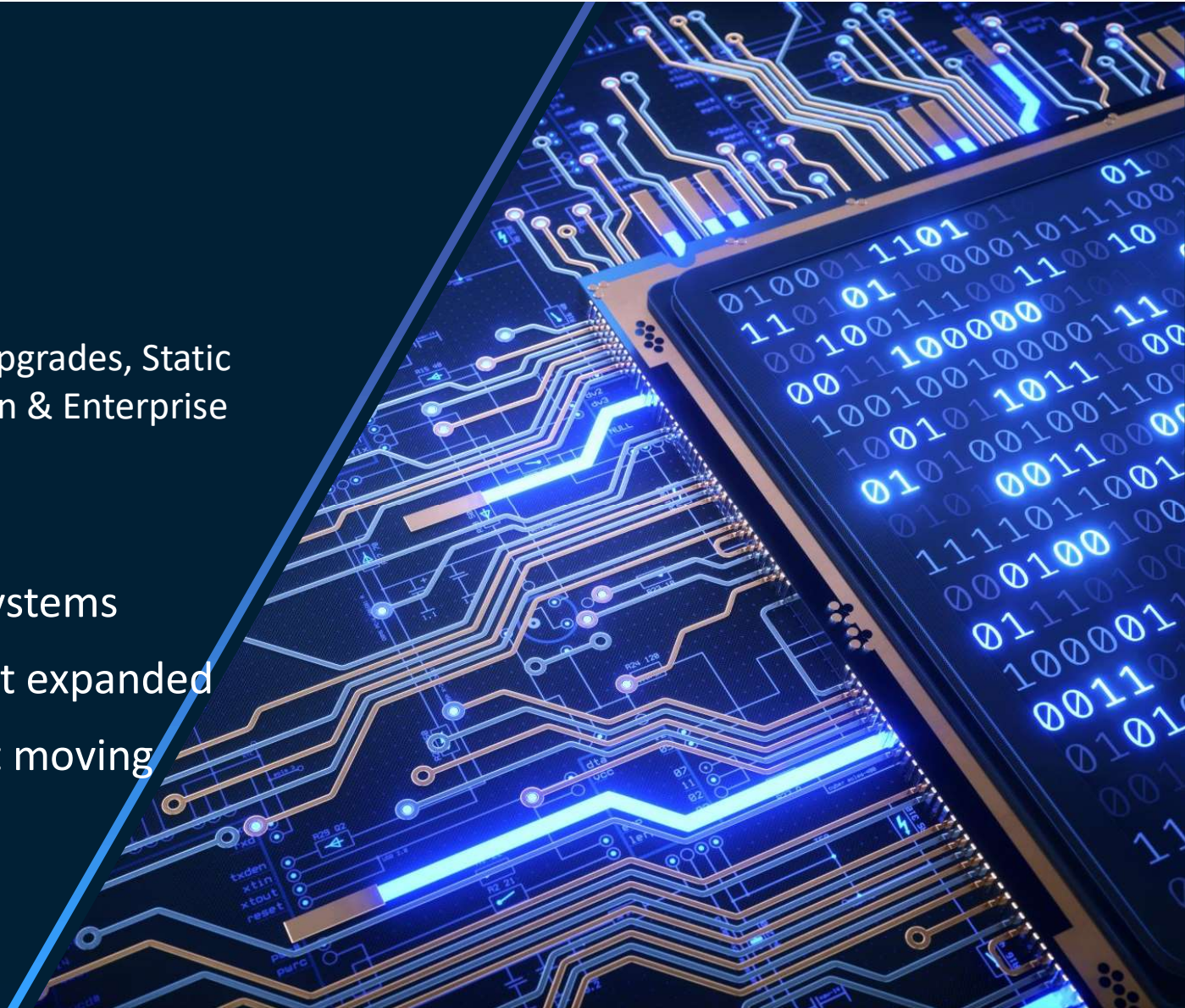


# 9.4 Release Timeline



# What is new in SAS 9.4 M8?

- Security Enhancements
  - Third Party Component Upgrades, Static and Dynamic Security Scan & Enterprise Security Integration
- Modernization
- Supported Operating Systems
- Retired SAS products list expanded
- Some SAS Solutions not moving
- Hot Fixes



# Security Enhancements: Third Party Changes and Upgrades

- Spring upgraded from version 3 to version 5
- Log4j Version 1 upgraded to Version 2
- CAS (Aprero Central Authentication Service) used by SAS Logon Manager upgraded from CAS 3.x to CAS 6.x
- Hundreds of third-party jars upgraded
- SAS will use the Operating System SSL libraries available in the customer's environment.
  - On z/OS, the IBM SSL libraries will be used.
  - The SAS Web Server and Postgres will continue to be compiled with OpenSSL
- OpenSSL 1.0.2 support upgraded to OpenSSL 3
- SAS added support for TLS 1.3

# Security Enhancements: Third Party Changes and Upgrades

- The use of Struts in SAS 9.4M8 is eliminated (except for a few Solutions)
- Enhancements to SAS Support for Microsoft Windows Defender Credential Guard and Constrained Delegation are delivered
- Support added for IBM z/OS Pervasive Encryption

# Security Enhancements: Enterprise Security Integration

- Windows Integrated Authentication
- IBM WebSeal
- Broadcom SiteMinder (used to be CA SiteMinder)
- Powerful Fallback Authentication
- FIPS
- SAML Authentication

# Security Enhancements: Static and Dynamic Security Scans

- BlackDuck scan for third party Java projects
- Checkmarx scan for all Java, Groovy and JSP source code
- Klocwork scan for all C source code
- OWASP ZAP scan for all SAS Web Applications and HTTP(S) endpoints



# Modernization

- SAS Private JRE is now based on Java 11 (MVS is Java 8)
- SAS Cache Locator is now based on OpenSource Geode instead of Gemfire
  - Geode version is at the most recent release stream
- SAS Web Application Server is now based on OpenSource Tomcat instead of VMware tcServer
  - Tomcat version is Tomcat 9 instead of Tomcat 8
- SAS Web Server is upgraded with OpenSSL 3 and FIPs support out-of-box
- SAS Messaging Engine is upgraded to use 5.17.x
- SAS Transaction Manager upgraded to Atomikos Extreme Transactions instead of OpenSource Atomikos (Transaction Essentials)
- SAS Content Server upgraded to use the newest version of JackRabbit
- SAS Middle Tier Platform (WIP) Services modernized to support the above changes

# SAS 9.4M8 Updated Operating Systems

## Linux

- Oracle 7.9 and 8.3
- Red Hat Enterprise Linux 7.9 and 8.4
- SUSE/SLES 12.5 and 15

## UNIX

- AIX 7.2
- Solaris 11.4 for x64/x86 and SPARC 64 bit

## Windows (32 bit (when available) and 64 bit)

- Windows Server 2012, 2012R2, 2016, 2019, 2022, Windows 10 and Windows 11 (SAS Note 69854)

## z/OS 31 bit and z/OS 64 bit for the Metadata Server

- z/OS 2.5

# SAS 9.4 M8 Deprecated Operating Systems

Support for the following operating system versions are dropped with SAS 9.4 M8

- Windows 7 and Windows Server 2008 and 2008R2
- Red Hat Enterprise Linux 6
- Solaris 10
- AIX 7.1 TL5
- HP UX Itanium
- SUSE 11

# SAS 9.4 M8 Products

For a complete list, go to

[SAS Help Center: What's New in SAS 9.4 Guide to Software Updates](#)

# SAS 9.4 M8 Deprecated Products

Support for the following products are dropped with SAS 9.4 M8

- SAS AppDev Studio
- SAS BI Portal
- SAS Information Delivery Portal - [SAS Help Center: Transitioning from a SAS Enterprise BI Server Deployment That Uses SAS Information Delivery Portal](#)
- SAS/ACCESS Interface to Oracle on the z/OS platform

For a complete list, go to

[SAS Help Center: What's New in SAS 9.4 Guide to Software Updates](#)

# SAS Solutions shipping with SAS 9.4 M8

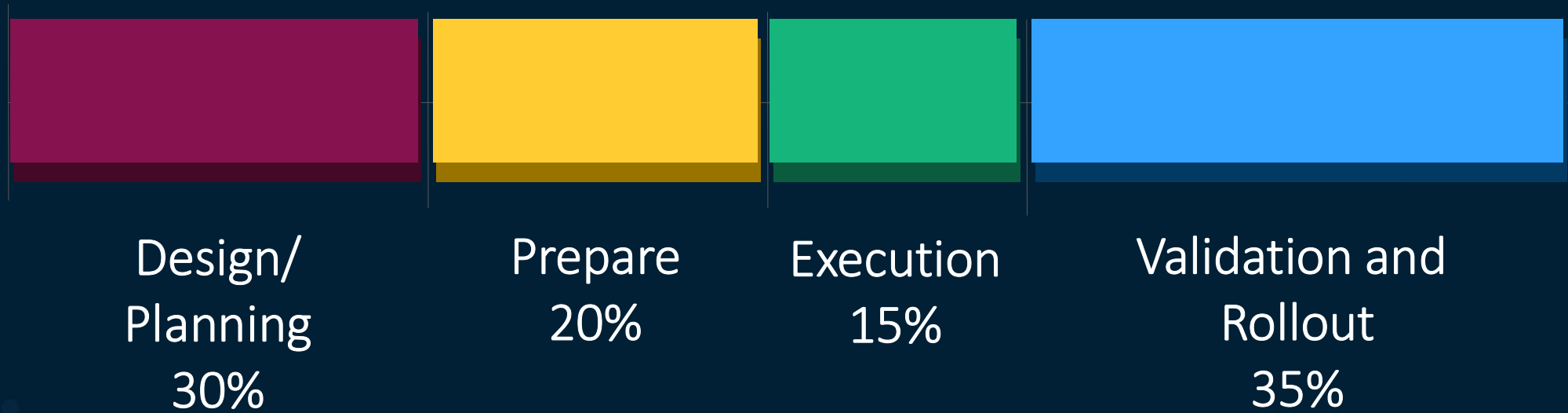
## Initially Available

- Risk and Quantitative Solutions (many are releasing)

## Shortly after Initial Release:

- Fraud and Security Solutions (Anti Money Laundering, Customer Due Diligence, Fraud Management, Currency Transaction Reporting)
- SAS Compliance Solutions
- Internet of Things
- Retail (many are releasing)
- Risk (SAS Asset and Liability Management)

# Upgrading is a Process



# SAS Migration Utility (SMU) vs. Upgrade In Place (UIP)

## Pros

### SAS Migration Utility

- SAS processing is not disrupted
- New installation of SAS is created
- Allows for hardware and operating system version upgrades

### Upgrade In Place

- No additional hardware cost
- Lower implementation cost
- Shorter time to complete upgrade
- Preserve customizations

## Cons

### SAS Migration Utility

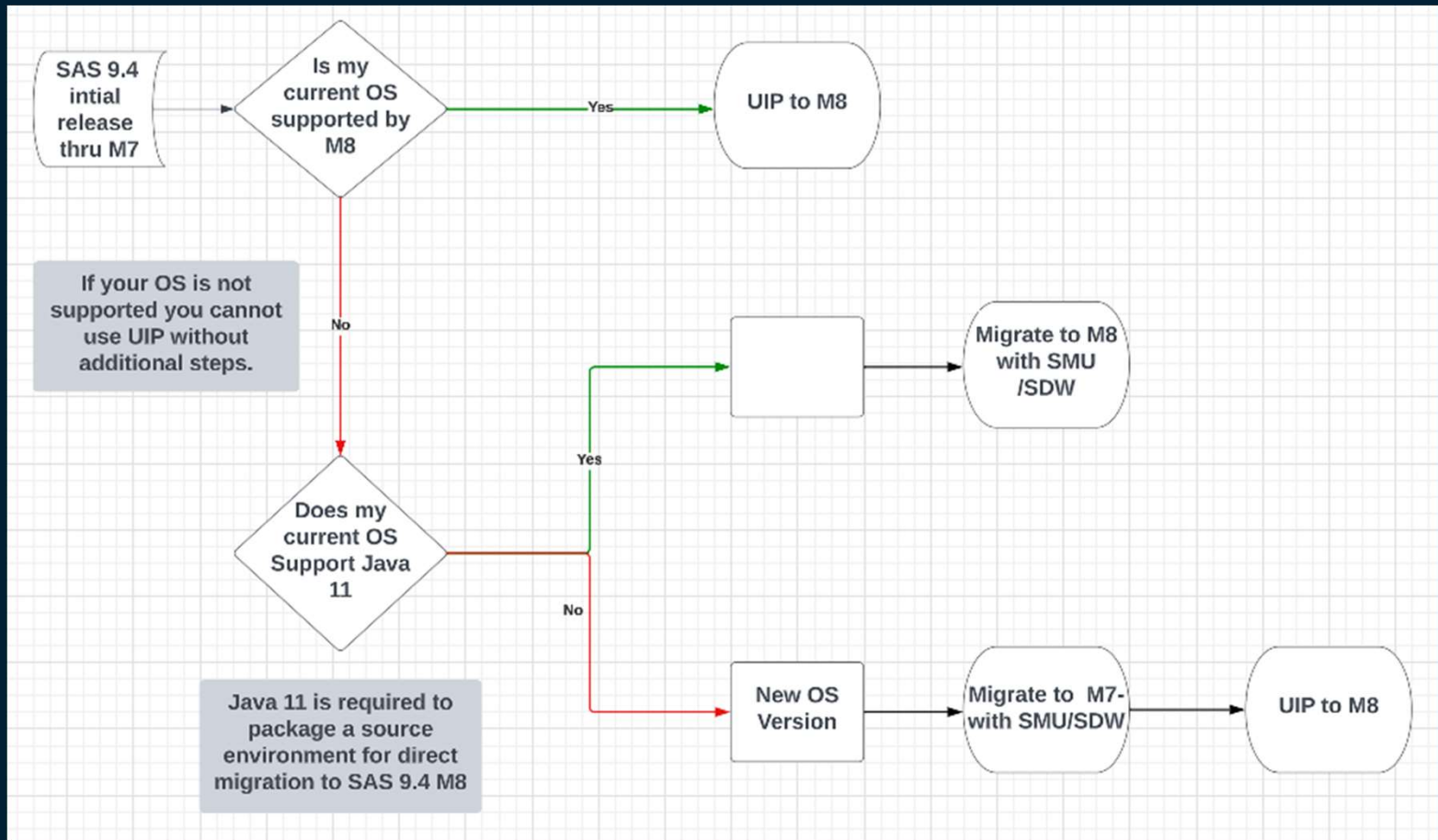
- Additional hardware costs
- Higher implementation cost
- Lengthier time to complete migration

### Upgrade In Place

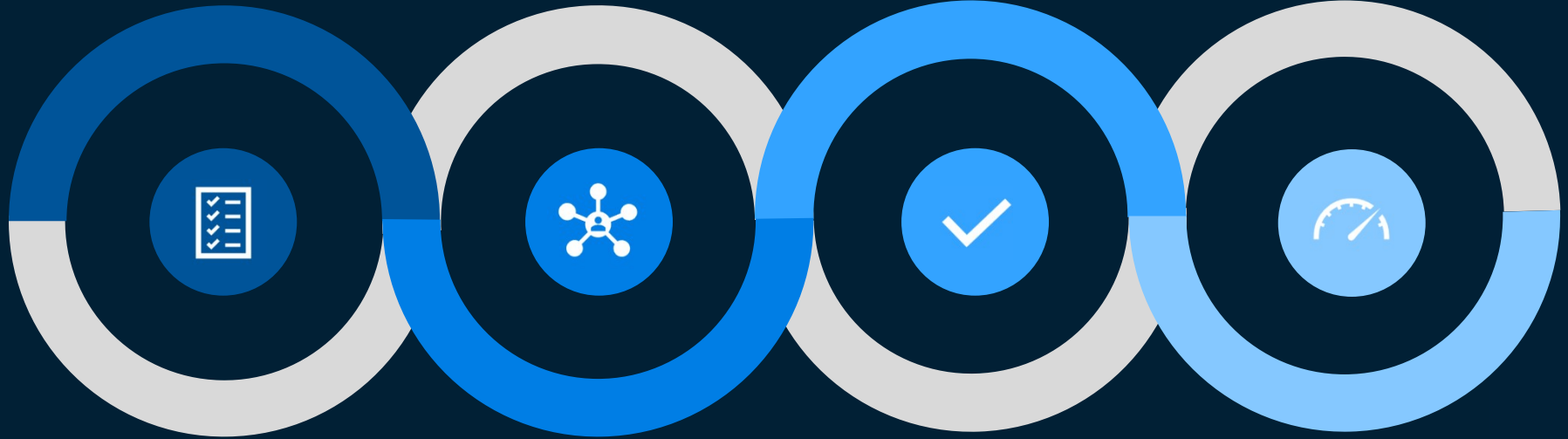
- SAS processing is disrupted until the upgrade is complete (or a backup restored)
- Not available if running on a deprecated operating system



# Upgrade Process Flow



The SAS<sup>®</sup> 9 Content Assessment helps organizations understand their SAS<sup>®</sup> 9 systems.



SAS 9 Inventory

SAS 9 Profile

SAS 9 Code Check

SAS 9 System Evaluation

# SAS® 9 Content Assessment Applications are available to customers from Downloads on [support.sas.com](https://support.sas.com)

- S
  - Sample Data for SAS/ETS Interface Engines
  - SAS/ACCESS to Google BigQuery Tools
  - SAS/ACCESS to R/3 Download
  - SAS/ACCESS to SAP ASE Tools
  - SAS/C Cross-Platform Software Updates for UNIX Platforms *Release 6.50.02 - MAR 1999*
  - SAS/C Cross-Platform Software Updates for Windows and UNIX Platforms *Release 6.50.05 - AUG 1999*
  - SAS/C Cross-Platform Software Updates for Windows and UNIX Platforms *Release 6.50.04 - MAR 1999*
  - SAS/GRAPH Control for ActiveX *Release 9.46 - NOV 2018*
  - SAS/GRAPH Control for ActiveX *Release 9.45 - SEP 2017*
  - SAS/GRAPH Control for ActiveX *Release 9.44 - NOV 2016*
  - SAS/GRAPH Control for ActiveX *Release 9.431 - MAR 2016*
  - SAS/GRAPH Control for ActiveX *Release 9.43 - JUL 2015*
  - SAS/GRAPH Control for ActiveX *Release 9.4 M2 - AUG 2014*
  - SAS/GRAPH Control for ActiveX *Release 9.4 M1 - DEC 2013*

- SAS/SECURE SSL Add-in *AUG 2005*
- SAS/SHARE Data Provider *Version 9.0 - OCT 2002*
- SAS/SHARE Data Provider *Release 3.1 - OCT 2001*
- SAS 8.2 Qualification Tools *Updated OCT 2003*
- **SAS 9 Content Assessment 1.3**
- SAS Administration CLI
- SAS AppDev Studio 2.0 and 3.0 Localized Server-side Data Sets (Spanish Only) *for SAS® 9.1 - Updated NOV 2006*
- SAS AppDev Studio Eclipse Plug-ins Update *Release 3.2.1 - NOV 2006*
- SAS AppDev Studio Eclipse Plug-ins Update *Release 3.2.2 - JUN 2007*
- SAS AppDev Studio Java Components 3.1.2 Update *for SAS® 9.1.2 - JUN 2004*
- SAS AppDev Studio Java Components 3.1.3 Update *for SAS® 9.1.3 - AUG 2004*

[Go to the SAS 9 Content Assessment download](#)



# Evaluates the current system to identify known issues

**SAS** System Evaluation

## System Evaluation Report

CTNSRVVM23

**Total Issues:**

# 5

**System Details:**

SAS Home: C:\Program Files\SASHome94	Number of Core(s): 1
SAS Config Directory: C:\SAS\MYAA\Lev4	Number of Logical Processor(s): 1
Files in SAS Config Directory: 176727	System Locale: en-us:English (United States)
Operating System: Microsoft Windows Server ...	Total System Memory: 32,768 MB
Version: 6.2.9200 N/A Build 9200	Available System Memory: 14,470 MB
CPU(s): 2 Processor(s) Installed.	

▼ Helpful Links

Please contact [SAS Technical Support](#) about any issues requiring further assistance.

See [Tuning the PostgreSQL Data Server](#) for information on tuning the SAS Web Infrastructure Platform Data Server.

### System Evaluation Summary

Task	Status	Code	Comments	Message
Processing status.xml	❌ Issues Found	SASCASE-STATUSXMLMULTIORDERS	There appears to be multiple orders in the status.xml file for the specified configuration directory.	Please contact SAS Technical Support to determine whether this is an actual issue.
Evaluating SAS web applications	✅ Success			
Archiving results directory	✅ Success			
Validating all SAS software orders	✅ Success			

# Know what products are installed



## Metadata

### Metadata Topology:

**rdcesx03470.race.sas.com (Compute, Metadata, Middle Tier - Primary on lax)**

- ✓ SASApp
- ✓ SASMeta - Logical Metadata Server
- ✓ Decision Manager Com Data Svr Cfg 3.3
- ✓ Web Infrastructure Platform Data Server 9.4
- ✓ Object Spawner - rdcesx03470
- ✓ Operating System Services - rdcesx02005
- ✓ SASApp - Logical SAS DATA Step Batch Server
- ✓ SASApp - Logical OLAP Server
- ✓ SASApp - Logical Pooled Workspace Server
- ✓ SASApp - Logical Stored Process Server
- ✓ SASApp - Logical Workspace Server
- ✓ Connect Spawner - rdcesx03470
- ✓ Management Console 9.4
- ✓ Visual Analytics Cfg Data 7.5
- ✓ BI Lineage Sched Svr 4.4
- ✓ Web Infra Platf Sched Svcs 9.4
- ✓ BI Report Services 4.4
- ✓ BI Dashboard Config Data 4.3
- ✓ EnvMgr Enablement Kit 2.4
- ✓ DP-WebServer rdcesx03470.race.sas.com
- ✓ DP-SAS Web Application Server rdcesx03470.race.sas.com
- ✓ Foundation Services 9.4
- ✓ Web Infrastructure Platform 9.4
- ✓ Flex Application Themes
- ✓ Visual Analytics Services 7.5
- ✓ Web Report Studio 4.4
- ✓ Visual Analytics Admin 7.5
- ✓ Information Delivery Portal 4.4
- ✓ BI Dashboard 4.4
- ✓ BI Portlets 4.4
- ✓ Decision Manager Common Mid 3.3
- ✓ SAS Studio Mid-Tier 3.8
- ✓ Web Infra Platf Ext BI Dash 4.3
- ✓ Business Rules Manager Web 3.3
- ✓ Model Manager Mid-Tier 14.3
- ✓ DP-SAS-Environment-Manager rdcesx03470.race.sas.com



# Have Questions or Need Assistance?

- Your SAS Account team is here to help.
- [SAS 9.4 Maintenance 8 is available](#)
- SAS 9.4 M8 Product Documentation
  - For a summary of highlights see the 9.4 M8 sections of the [SAS 9.4 Guide to Software Updates and Product Changes](#)
  - The [SAS Content Assessment System Evaluation Tool v2023.01](#)

The time is now!  
Move to SAS 9.4 M8



Questions?