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Creating a SAS® Technical Platform Standard for IFRS 17

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ABSTRACT

By 2022, IFRS 17 from the International Financial Reporting Standards Foundation has the potential to unsettle the entire insurance industry. It not only brings new regulatory requirements, but the technical capability to support this new regulation can potentially introduce new costs to insurance providers. As an insurance company, are you ready to support the technical requirements of an end-to-end IFRS 17 platform — including architecture, installation, verification, and validation? Does your current IT organization have the capacity to scale to support this new solution? How ready are you to support an IFRS 17 platform? Is your IT team prepared to implement and support a highly available IFRS 17 platform? If the answer is "NO," then this session is for you! This session touches on the following topics: architectural decisions, security, and best practices (such as why it's important to have a platform standard and how to leverage DevOps tools like Puppet). Also included in this session are specific tips and tricks for preparing your institution to use SAS® software to implement your IFRS 17 platform.

INTRODUCTION

The clock is ticking, as is the pressure on the insurance firms to adhere to the IFRS 17 standard issued by International Accounting Standards Board (IASB). It is very important to know the challenges and rewards that you will receive while deciding your SAS IFRS 17 infrastructure. **And when I say "challenges," it all** boils down to how you have conditioned your IT team to host the SAS IFRS 17 stack in your data center. The data center can be on-premise or on any cloud providers. Once you figure out the challenges, the results are rewarding. In order to comply with and meet the IASB deadlines, an **insurance company's** IT team needs to prepare with the requirements of SAS® Solution for IFRS 17 software and the emphasis must be given on the following factors:

- Base SAS®
- IFRS 17 Architecture
- IFRS 17 Installation
- Verification
- Validation

Let's deep dive in each of the above-mentioned in the sections below.

BASE SAS®

In very simple words SAS Solution for IFRS 17 is installed on top of Base SAS foundation software. In other words, BASE SAS provides the runtime compiler environment for SAS Solution for IFRS 17.

Having said that, I assume that you all are very versed with BASE SAS components. It is a very important factor for your SAS Solution for IFRS 17 installation to be successful. This also brings an important point about why you should have a very capable SAS admin. Not to mention your Base SAS installation should always be at the latest and greatest HOTFIXES and the security updates.

This paper is not about Base SAS. It is about SAS Solution for IFRS 17, so I will not spend much time on Base SAS. So, let's move ahead.

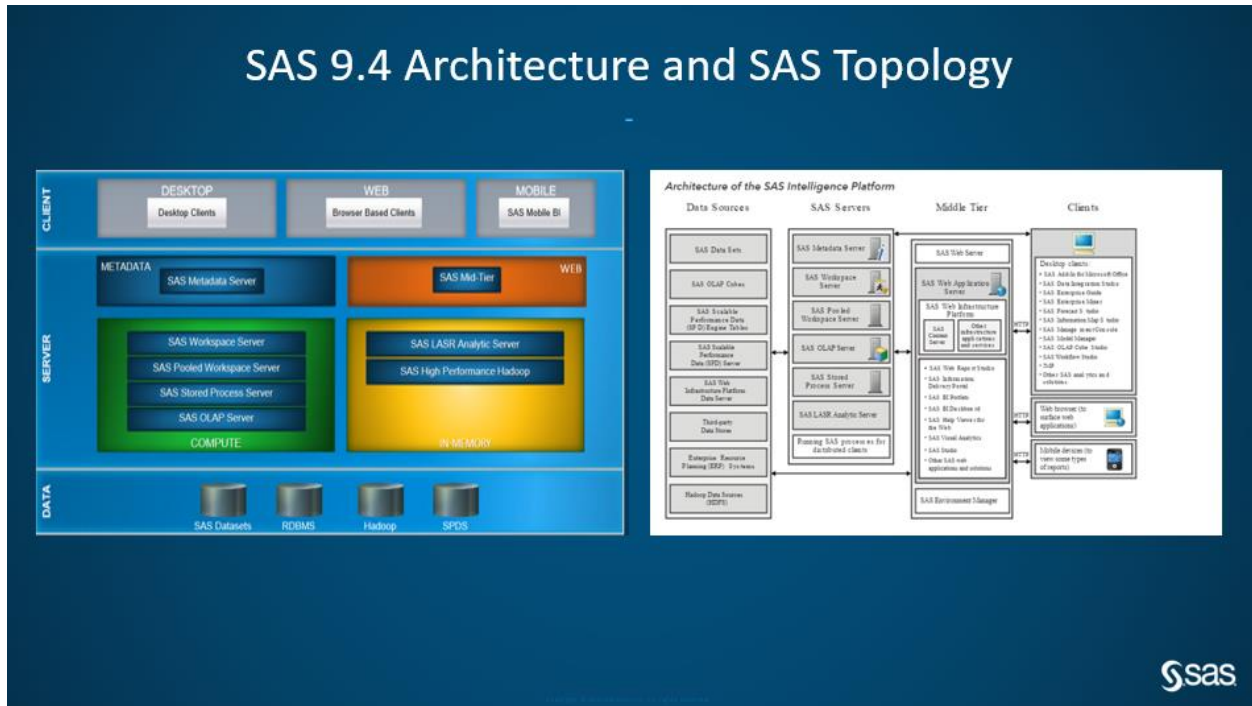


Figure 1: SAS 9.4 Architecture and SAS Topology

SAS SOLUTION FOR IFRS 17 ARCHITECTURE

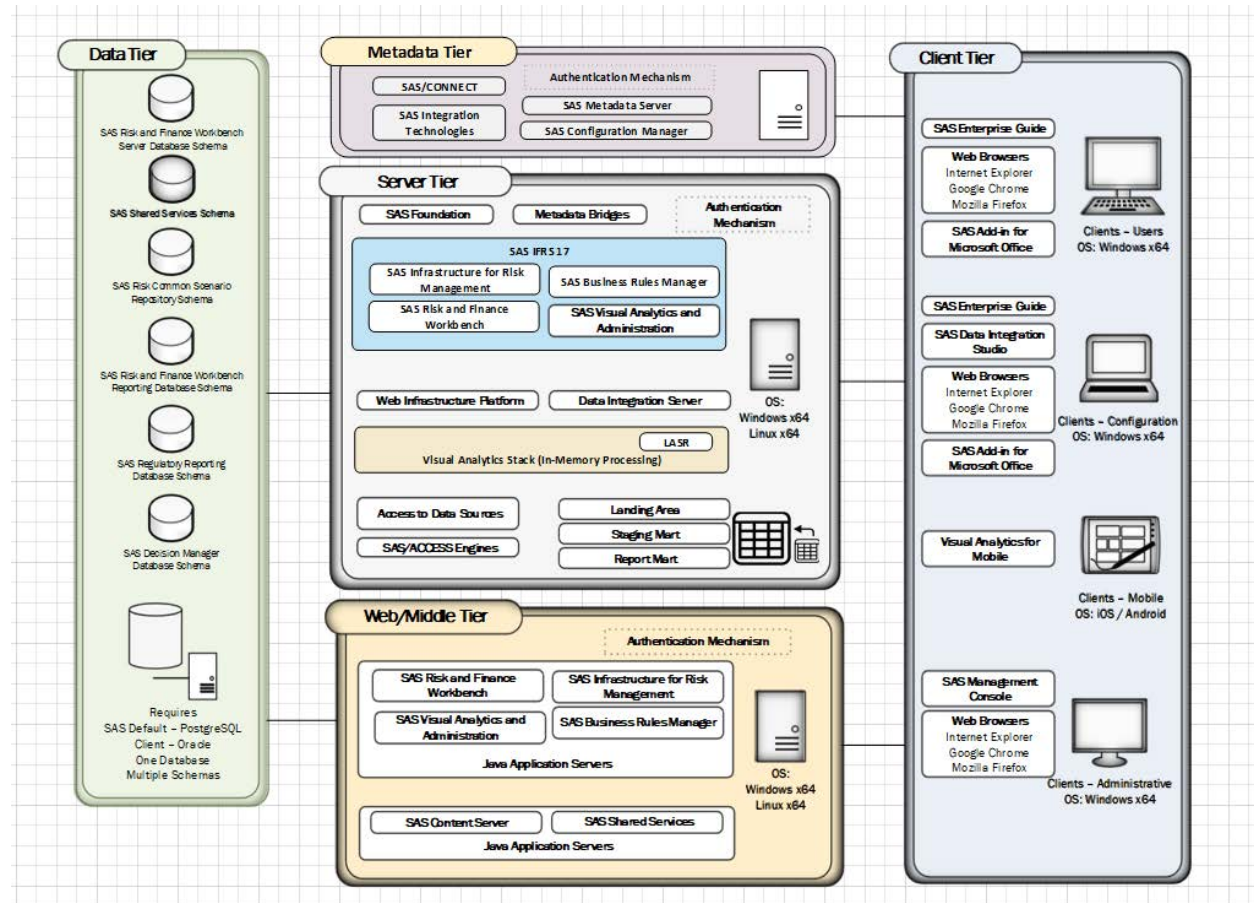


Figure 2: SAS Solution for IFRS 17 Architecture

BUILDING BLOCKS OF SAS SOLUTION FOR IFRS 17:

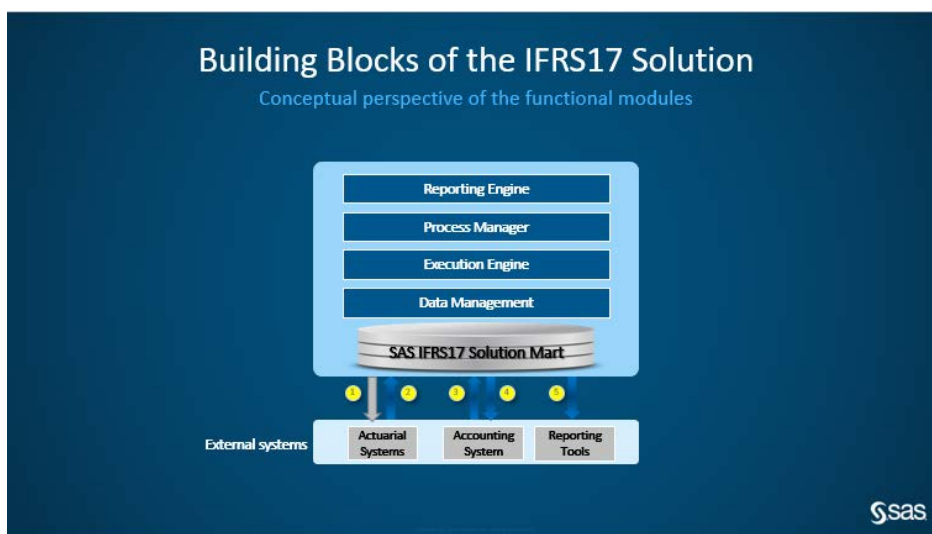
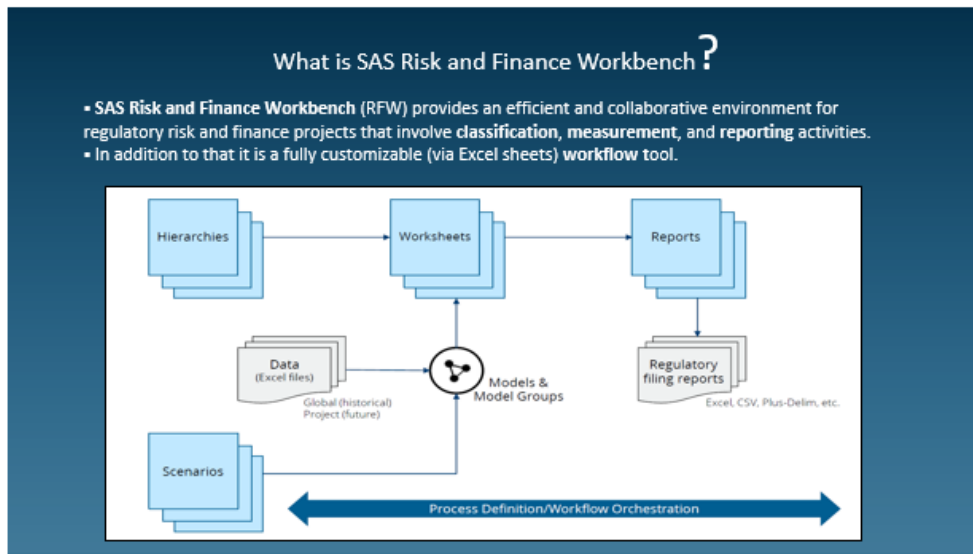


Figure 3: SAS Solution for IFRS 17 Building Blocks

1. SAS® Risk and Finance Workbench:



2. SAS® Infrastructure for Risk Management:

What is SAS Infrastructure for Risk Management?

- SAS Infrastructure for Risk Management (IRM) is a stand-alone platform
 - job execution engine with a web-based user interface.
 - calculations are performed using transparent job flows that facilitate auditing of risk practices.
- SAS IRM is a high-performance analytical platform aimed at
 - the visualization of complex calculation flows
 - the execution of complex analytics
- Key development objective of SAS IRM is usability
 - delivering to the end user an environment that is
 - easy to use (intuitive graphical user interface)
 - easy to adjust (calculation nodes, defined inputs and outputs, BPMN)
 - easy to understand / transparent / traceable / well documented (Doxygen)
 - performant (parallel processing, partitioning)
 - provides versioning
 - deliver to the developer an environment that is
 - easy to maintain
 - technologically advanced
 - powerful and performant
- SAS IRM is the backbone of the IFRS 17 solution

3. SAS® Visual Analytics:


Visual Analytics Reporting Engine

Reports to be generated

- **Financial reports** – detailed historical financial reports down to the UoM applied in calculations and postings; drill-down reports to the details of measures (movements) that impacted given item in SoA, with information on C/D
- **Data quality reports** – these may include the reports on: completeness of the data (delivery of all required data packages, all needed cross sections), accuracy of data (invalid values, confidence in data), appropriateness of data
- **Process quality reports** - reports on the advance of all the processes by entities (whether steps were finished in required time, which users are staying behind)
- **Internal reports** – controlling reports, management reports; may be added during implementation project, following requirements of customers

Reporting

- Drill-back to data sources
- Report in multiple formats (Excel, xbrl, xml, csv files)
- Possible integration with Regulator infra-structure – e-filing
- Database with Security, Audit-trail and versioning
- Alerts-driven review and approval process
- Collaboration and workflow definition



SAS SOLUTION FOR IFRS 17 | INSTALL:

USERS AND GROUPS

In order to successfully install SAS Solution for IFRS 17, the following users need to be onboarded on the underlying operating system

OS users	OS groups
sas	sas
sassrv	sas, sassrv
lasradm	sas, sassrv, lasradm
sasdemo	sassrv, sasusers,

FILE SYSTEM AND OWNERSHIP

Authentication : Host-based Authentication

File System	Ownership
SASHOME	sas: sas
CONFIG	sas: sas
Mart Directories	sassrv: sasusers
Risk Workgroup Directories	sassrv: sasusers
Federated Area	sassrv: sasusers

Authentication : Token-based Authentication

File System	Ownership
SASHOME	sas: sas
CONFIG	sassrv: sas
Mart Directories	sassrv: sas
Risk Workgroup Directories	sassrv: sas
Federated Area	sassrv: sas

FILE SYSTEM

Server Role	Description	File System
MetaData	SASHome	/data/SAS/SASHome/SASFoundation/9.4
MetaData	Config	/data/SAS/Dev/config
Compute	SASHome	/data/SAS/SASHome/SASFoundation/9.4
Compute	Config	/data/SAS/Dev/config
Midtier	SASHome	/data/SAS/SASHome/SASFoundation/9.4
Midtier	Config	/data/SAS/Dev/config
Compute	Content Package (ifrs17_vxx.20xx)	/data/SAS/Dev/config/Lev1/ifrs17_vxx.20xx
Compute	AppData	/data/SAS/Dev/config/Lev1/AppData
Compute	reportmart	/data/SAS/Dev/config/Lev1/AppData/SASIRM/ifrs17_reportmart
Compute	Slammart	/data/SAS/Dev/config/Lev1/AppData/SASIRM/ifrs17_slammart
Compute	SlamVamart	/data/SAS/Dev/config/Lev1/AppData/SASIRM/ifrs17_slamvamart
Compute	Staging_uae folder in SAS Infrastructure for Risk Management	/data/SAS/Dev/config/Lev1/ifrs17_vxx.20xx/irm/input/staging_uae

Midtier	Apache Webserver	/data/SAS/Dev/config/Lev1/Web/WebServer
Midtier	Tomcat Application Servers	/data/SAS/Dev/config/Lev1/Web/WebAppServer
All Tiers	Java	/data/SAS/SASHome/SASPrivateJavaRuntimeEnvironment/9.4/jre/bin/java

STORAGE

Mount Point Directory	Server	Server Role	Description	Physical Storage Type	Recommended RAID Level	File System Type	Usage Profile	Size (GB)	Backup
\\sas	Server1	IFRS17 Metadata Server	SAS Software Binary & configuration files	SAN	RAID 5	Mapped	Reads, Light I/O	50	N
\\config	Server1	IFRS17 Metadata Server	SAS Metadata Repository	SAN	RAID 5	Mapped	Reads, Light I/O	50	Y
\\sas	Server2	IFRS17 Compute Server	SAS Software Binary & configuration files	SAN	RAID 5	Mapped	Reads, Light I/O	50	N
\\config	Server2	IFRS17 Compute Server	SAS Compute Configuration	SAN	RAID 5	Mapped	Reads, Light I/O	90	Y
\\saswork	Server2	IFRS17 Compute Server	SAS temporary area for SAS Datasets	Direct Attached Dis	RAID 5	UFS	Heavy reading and writing, performance critical	50	N
\\sasdata	Server2	IFRS17 Compute Server	SAS permanent data set storage area	SAN	RAID 5 or 1	Mapped	Heavy reading and writing, performance critical	100	Y
\\sas	Server3	IFRS17 MIDTier Server	SAS Software Binary & configuration files	SAN	RAID 5	Mapped	Reads, Light I/O	50	N
\\config	Server3	IFRS17 MIDTier Server	SAS Midtier Configuration	SAN	RAID 5	Mapped	Reads, Light I/O	100	Y
\\sas	Server4	IFRS17 VAAR	SAS Software Binary & configuration files	SAN	RAID 5	Mapped	Reads, Light I/O	50	N
\\config	Server4	IFRS17 VAAR	SAS LASR Configuration	SAN	RAID 5	Mapped	Reads, Light I/O	50	Y
\\saswork	Server4	IFRS17 VAAR	SAS temporary area for SAS Datasets	Direct Attached Dis	RAID 5	UFS	Heavy reading and writing, performance critical	50	N
\\sasdata	Server4	IFRS17 VAAR	SAS permanent data set storage area	SAN	RAID 5 or 1	Mapped	Heavy reading and writing, performance critical	100	Y
\\sasdepot	SHARED	SAS Installation Depot	Installation Software to be mounted on several machines	NAS	N/A	Mapped	Read only once built	30	N
TOTAL (GB)								820	
TOTAL (GB)								820	

NEXT?

Follow the installation steps that ship with SAS Solution for IFRS 17. You should make sure that the entire installation process is error-free. If you encounter any errors, do not proceed further. Most of the common errors occur due to metadata and Unix file system permission issues.

JAVA HEAP

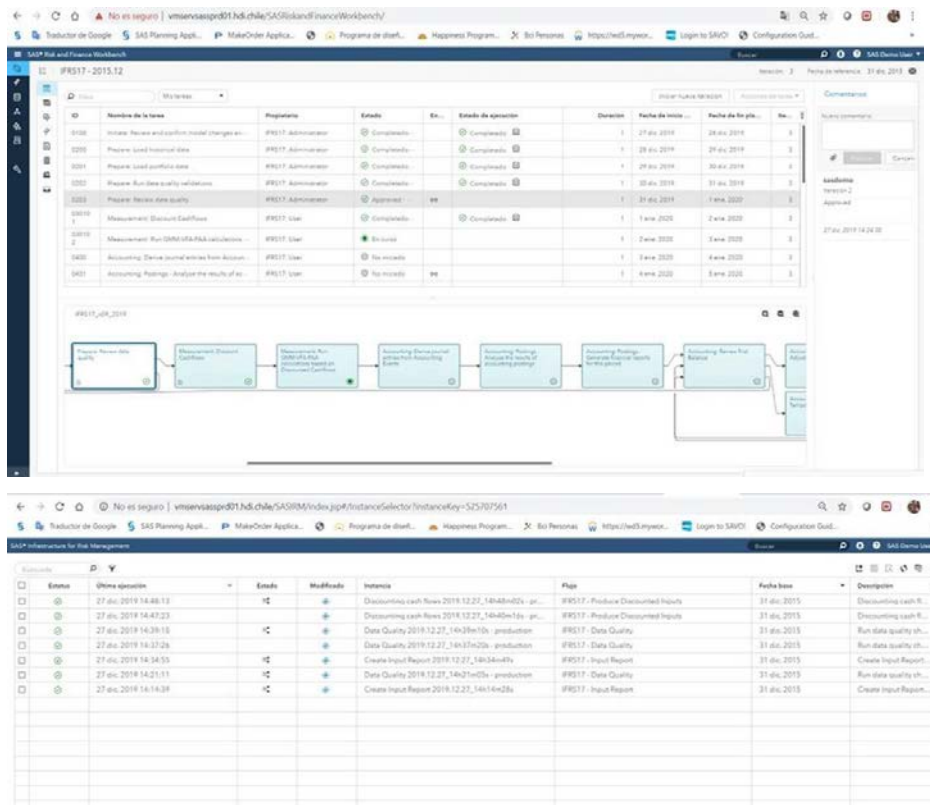
Configure 4GB Max and Min (XMS=XMS=4GB) Java heap for each Tomcat instance (Midtier).

VERIFICATION AND VALIDATION

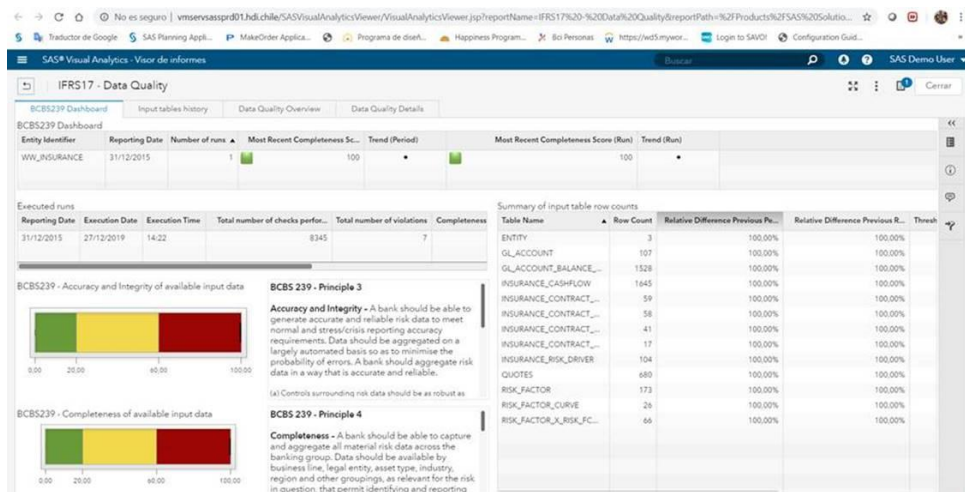
Follow the following steps:

1. Log in to the SAS Visual Analytics Admin Console : Stop the LASR Server.
2. STOP Mid Compute Meta Tier : Order is Important.
3. START Meta Compute Mid-Tier : Order is Important.
4. Log in to the SAS Visual Analytics Admin Console : Start the LASR Server.

- Log in to the SAS Risk and Finance Workbench Console : Select any one of the projects and run the end-to-end tasks.



- Log in to SAS Visual Analytics Console : Access the reports.



CONCLUSION

We have discussed the factors that play an important role in implementing SAS Solution for IFRS 17. These factors are the solution's architecture, building blocks, file system, permissions, storage, java heap, validation, and verification.

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