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:**

   - *What is SAS Risk and Finance Workbench?*
     - SAS Risk and Finance Workbench (RFW) provides an efficient and collaborative environment for regulatory risk and finance projects that involve classification, measurement, and reporting activities.
     - In addition to that it is a fully customizable (via Excel sheets) workflow tool.

2. **SAS® Infrastructure for Risk Management:**

   - *What is SAS Infrastructure for Risk Management?*
     - SAS Infrastructure for Risk Management (IRIM) 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.
     - IRIM is a high-performance analytical solution aimed at:
       - The visualization of complex calculation flows.
       - The execution of complex analytics.
     - Key development objective of SAS IRIM is *scalability*.
       - 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 design).
         - Powerful (parallel processing, partitioning).
         - Provides versioning.
       - Deliver to the *end user* an environment that is:
         - Easy to maintain.
         - Technologically advanced.
         - Powerful and performant.
     - SAS IRIM is the backbone of the IFRS 17 solution.
3. SAS® Visual Analytics:

**Reports to be generated**
- Decision support - detailed, historical, financial reports down to the line item level for control, variance analysis, performance analysis, and business planning.
- Data quality reports - may include the reports on completeness of data (delivery of all required data packages, all needed fields against data), accuracy of data (valid values, confidence in data), and appropriateness of data.
- Process status reports - report on the status of all the processes, by milestones (whether steps were finished in required time, which steps are shortening).
- Risk Workgroup reports - controlling reports, management reports, may be added during implementation project, following requirements of customers.

**Reporting**
- Drill-down to data sources
- Report in multiple formats (Excel, pdf, xml, csv files)
- Possible integration with SAP and other infrastructures - mailing
- Databases with metadata, audit trail and ownership
- Alerts-driven review and approval process
- Collaboration and workflow definition

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**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:

<table>
<thead>
<tr>
<th>OS users</th>
<th>OS groups</th>
</tr>
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<tbody>
<tr>
<td>sas</td>
<td>sas</td>
</tr>
<tr>
<td>sassrv</td>
<td>sas, sassrv</td>
</tr>
<tr>
<td>lasradm</td>
<td>sas, sassrv, lasradm</td>
</tr>
<tr>
<td>sasdemo</td>
<td>sassrv, sasusers,</td>
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**FILE SYSTEM AND OWNERSHIP**

**Authentication**: Host-based Authentication

<table>
<thead>
<tr>
<th>File System</th>
<th>Ownership</th>
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<tbody>
<tr>
<td>SASHOME</td>
<td>sas:sas</td>
</tr>
<tr>
<td>CONFIG</td>
<td>sas:sas</td>
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<tr>
<td>Mart Directories</td>
<td>sassrv:sasusers</td>
</tr>
<tr>
<td>Risk Workgroup Directories</td>
<td>sassrv:sasusers</td>
</tr>
<tr>
<td>Federated Area</td>
<td>sassrv:sasusers</td>
</tr>
</tbody>
</table>
**Authentication**: Token-based Authentication

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<tr>
<td>SASHOME</td>
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</table>

**FILE SYSTEM**

<table>
<thead>
<tr>
<th>Server Role</th>
<th>Description</th>
<th>File System</th>
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<tr>
<td>MetaData</td>
<td>SASHome</td>
<td>/data/SAS/SASHome/SASFoundation/9.4</td>
</tr>
<tr>
<td>MetaData</td>
<td>Config</td>
<td>/data/SAS/Dev/config</td>
</tr>
<tr>
<td>Compute</td>
<td>SASHome</td>
<td>/data/SAS/SASHome/SASFoundation/9.4</td>
</tr>
<tr>
<td>Compute</td>
<td>Config</td>
<td>/data/SAS/Dev/config</td>
</tr>
<tr>
<td>Midtier</td>
<td>SASHome</td>
<td>/data/SAS/SASHome/SASFoundation/9.4</td>
</tr>
<tr>
<td>Midtier</td>
<td>Config</td>
<td>/data/SAS/Dev/config</td>
</tr>
<tr>
<td>Compute</td>
<td>Content Package (ifrs17_vxx.20xx)</td>
<td>/data/SAS/Dev/config/Lev1/ifrs17_vxx.20xx</td>
</tr>
<tr>
<td>Compute</td>
<td>AppData</td>
<td>/data/SAS/Dev/config/Lev1/AppData</td>
</tr>
<tr>
<td>Compute</td>
<td>reportmart</td>
<td>/data/SAS/Dev/config/Lev1/AppData/SASIRM/ifrs17_reportmart</td>
</tr>
<tr>
<td>Compute</td>
<td>Slammart</td>
<td>/data/SAS/Dev/config/Lev1/AppData/SASIRM/ifrs17_slammart</td>
</tr>
<tr>
<td>Compute</td>
<td>SlamVamart</td>
<td>/data/SAS/Dev/config/Lev1/AppData/SASIRM/ifrs17_slamvamart</td>
</tr>
<tr>
<td>Compute</td>
<td>Staging_uoe folder in SAS Infrastructure for Risk Management</td>
<td>/data/SAS/Dev/config/Lev1/ifrs17_vxx.20xx/irm/input/staging_uoe</td>
</tr>
</tbody>
</table>
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.
5. Log in to the SAS Risk and Finance Workbench Console: Select any one of the projects and run the end-to-end tasks.


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.
REFERENCES

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  ▪ Zina Stewart

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