

SAS[®] Solution for Regulatory Capital: Release Notes

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About This Document

Version History

This document lists the incremental changes and enhancements for each release of SAS Solution for Regulatory Capital.

Table 1 Version History

Release Date	Version Number	Comments
23-Dec-2022	v12.2022	Support for SSA-CCR; Enhancements to CVA risk calculations, LE limit monitoring, and multi-obligor treatment. Also includes other fixes and enhancements.
09-Sep-2022	v08.2022	Support for credit risk capital charge calculation under CRR3, EBA CRM guidelines for IRBA approach, and output adjustments to the result data sets of the solution. Also includes other fixes and enhancements.
31-May-2022	v05.2022	Support for third-party calculations for CIU fund exposures and improvement in GCC module. Also includes other fixes and enhancements.
31-March-2022	v03.2022	Support for Leverage Ratio calculation, EBA COREP – LE, LR templates. Integration of Large Exposures calculation in Pillar 1 Calculations flow. Enhancements to the calculations flow visualization. Also includes other fixes and enhancements.
29-Oct-2021	v10.2021	Support for Attribution Analysis, GCC, LE Calculations, CIU MBA, Principal-only Guarantees. Also includes other fixes and enhancements.
09-July-2021	v07.2021	Dedicated workflow for EBA COREP reporting, CRR "Quick Fix", and corrections according to CRR Corrigendum. Also includes other fixes and enhancements.

Release Date	Version Number	Comments
30-April-2021	v04.2021	Enhancements to securitizations, Prudential Backstop calculations, and support for IRB Excess or Shortfall Calculation. Also includes other fixes and enhancements.
22-Jan-2021	v01.2021	Enhancements to Prudential Backstop calculations, CRM allocation for SA-CCR, and support for batch execution of cycles. Also includes other fixes and enhancements.
13-Nov-2020	v11.2020	Upgrade to SAS Risk Stratum and other enhancements and fixes.
14-Aug-2020	v08.2020	Support for the CRR quick fix and enhancements in CCR implementation. Also includes enhancements to CIU exposures and counter guarantees treatment.
29-Apr-2020	v04.2020	Introduction of a configuration set for CRR2 calculations. Support for new EBA COREP 2.9.1. SEC reports and other fixes and enhancements.
8-Jan-2020	v12.2019	Support for compliance with Basel IV credit risk. Also includes new features such as prudential backstop and what-if analysis.
27-Sep-2019	v09.2019	Support for permanent partial use. Support for equity investment in funds and intra-group transactions. Also includes enhancements for the revised securitization framework and other enhancements.
5-July-2019	v07.2019	Support for standardized approach to measure counterparty credit risk (SA-CCR). Also supports new management reports for SA-CCR in SAS Visual Analytics. Includes other fixes and enhancements.
29-May-2019	v05.2019	Enhancements for revised securitization framework. Also includes other fixes and enhancements.
15-Feb-2019	v02.2019	Support for revised securitization framework and support for management reporting using SAS Visual Analytics. Also includes other fixes and enhancements.
26-Sep-2018	v09.2018	Support for EBA COREP reporting. Also includes other fixes and enhancements.
13-Jun-2018	v06.2018	Enhancements for supporting Pillar 1 calculations for BCBS (Basel II / Basel III) regulations. Also includes other fixes and enhancements.
21-Mar-2018	v03.2018	Support for the EBA Taxonomy 2.7.0.1 and multiple portfolio versions. Also includes other fixes and enhancements.
10-Jan-2018	v01.2018	Support for the EBA taxonomy 2.7.0.0, and introduction of data partitioning in job flows. Also includes, bug fixes, and other performance enhancements.

Release Date	Version Number	Comments
04-Oct-2017	v10.2017	Enhancements, bug fixes, and fixes for reporting validation rules.
02-Aug-2017	v08.2017	Enhancements and bug fixes for reporting validation rules, and other enhancements.
21-Jun-2017	v06.2017	Enhancements and bug fixes for reporting validation rules, and other enhancements.
31-Mar-2017	v03.2017	First content release.

List of Abbreviations

Table 2 *List of Abbreviations*

Abbreviation	Expanded Form
BAD	Bank Accounts Derivatives
BCBS	Basel Committee on Banking Supervision
CA	Capital Adequacy
CCF	Credit Conversion Factor
CCR	Counterparty Credit Risk
CEM	Current Exposure Method
CIU	Collective Investment Undertaking
COREP	Common Reporting
CQS	Credit Quality Steps
CR	Credit Risk
CRD-IV	Capital Requirements Directive IV
CRE	Commercial Real Estate
CRM	Credit Risk Mitigant
CRR	Capital Requirements Regulation

Abbreviation	Expanded Form
CVA	Credit Valuation Adjustment
EAD	Exposure at Default
EBA	European Banking Authority
EEA	European Economic Area
EL	Expected Loss
EQU	Equity
ETL	Extract, Transform, and Load
GAAP	Generally Accepted Accounting Principles
GCC	Group of Connected Clients
IFRS	International Financial Reporting Standards
IRB	Internal-Rating Based
IRBA	Internal Rating Based Advanced
IRBF	Internal Rating Based Foundation
I/O	Input and Output
LE	Large Exposures
LGD	Loss Given Default
LTA	Look-through Approach
MBA	Mandate Based Approach
MCE	Minimum Coverage Requirement for Exposure
MLC	Minimum Loss Coverage
MtM	Market to Market
NPE	Non-performing Exposure
OS	Operating System
PD	Probability of Default

Abbreviation	Expanded Form
RRE	Residential Real Estate
RW	Risk Weight
RWA	Risk Weighted Asset
SA	Standardized Approach
SA-CCR	Standardized Approach for Counterparty Credit Risk
SEC	Securitization
SL	Specialized Lending
STD	Standardized
SME	Small and Medium-Sized Enterprise
XBRL	Extensible Business Reporting Language

Content Release v12.2022

What's New in the v12.2022 Content Release

Overview

SAS Solution for Regulatory Capital v12.2022 has the following new features, fixes, and enhancements:

- Simplified Standardized Approach for measuring Counterparty Credit Risk
- enhancements to CVA Risk capital charge calculations under CRR2
- enhancements to Large Exposures Limit Monitoring under CRR2
- risk weight treatment of multiple obligors to a single exposure
- documentation enhancements

Simplified Standardized Approach for Measuring Counterparty Credit Risk

SAS Solution for Regulatory Capital now supports EAD calculation for Counterparty Credit Risk exposures using the Simplified Standardized Approach as per **CRR Article 281**. For more information, see the chapter "Counterparty Credit Risk Capital Charge" in the *SAS Solution for Regulatory Capital - Reference Manual*.

Enhancements to CVA Risk Capital Charge Calculations under CRR2

- In SAS Solution for Regulatory Capital, CVA Risk capital calculation is now a separate module in All Pillar 1 calculations, and can be launched as a separate task in the Stratum Workflow.
- SAS Solution for Regulatory Capital now supports CVA Risk capital calculations for derivative exposures treated under the Counterparty Credit Risk - Original Exposure Method.
- SAS Solution for Regulatory Capital now supports the use of internal rating for counterparties with missing external rating to get the applicable weight to be used in CVA Risk capital calculations under the Standardized method.

For more information, see the chapter "Credit Valuation Adjustment Risk" in the *SAS Solution for Regulatory Capital - Reference Manual*.

Enhancements to Large Exposures Limit Monitoring under CRR2

Exposures that are fully and completely secured by a mortgage on immovable property and meeting conditions mentioned in **CRR Article 402 (1) and (2)** and treated under the IRB approach are now deducted from the exposures subject to large exposures limit monitoring in SAS Solution for Regulatory Capital. Also, the exposure value calculation for those treated under the STD approach is updated to use the LTV ratio mentioned in **CRR Article 402 (1) and (2)** instead of the LTV ratio mentioned in **CRR Article 125 (2)(d) and 126 (2)(d)**. For more information, see the chapter "Large Exposures" in the *SAS Solution for Regulatory Capital - Reference Manual*.

Risk Weight Treatment of Multiple Obligor to a Single Exposure

SAS Solution for Regulatory Capital now supports the selection of an obligor from multiple obligors associated with a single exposure. For more information, see the chapter "Multi-Obligor Treatment" in the *SAS Solution for Regulatory Capital - Reference Manual*.

Documentation Enhancements

The following documentation sections of *SAS Solution for Regulatory Capital: Reference Manual* has been enhanced with additional information:

- Credit Risk Capital Charge
- Large Exposures
- Credit Valuation Adjustment Risk

Other Fixes and Enhancements

For more information, see ["Details of Other Fixes and Enhancements in v12.2022" on page 11](#).

Data Model Changes

For more information, see ["Data Model Changes in v12.2022" on page 16](#).

Details of Other Fixes and Enhancements in v12.2022

Table 3 Details of Other Fixes and Enhancements in v12.2022

Category	Description	Affects Version
Credit Risk	<p>Exposure value calculation</p> <p>Currently, exposure value under the IRB approach is the accounting value measured without considering any credit risk adjustments, except for equity and other non-credit obligations. With this fix, under the IRB approach, the total credit risk adjustment amount is deducted from the secured part of the exposures fully secured by credit risk mitigant that is treated under the STD approach and eligible for risk substitution. This fix is only applicable for a single exposure, fully secured by a single CRM, and eligible for risk substitution effect. For more information, see the section "Exposure Value Subject to Risk Weight" under the chapter "Credit Risk Capital Charge" in the <i>SAS Solution for Regulatory Capital - Reference Manual</i>.</p>	All previous versions
Credit Risk	<p>IPS treatment for defaulted exposures</p> <p>Under CRR configuration, defaulted exposures to counterparties associated with Institutional Protection Scheme were not assigned a preferential RW of 0%. With this fix, an RW of 0% is applied to Institutions that are part of the Institutional Protection Scheme, even for the defaulted exposures (CRR Article 113(7)).</p>	v07.2021
Credit Risk	<p>CRM eligibility of guarantee</p> <p>In SAS Solution for Regulatory Capital, eligibility of guarantees was determined based on an exposure's APPROACH. For example, if an</p>	v08.2022

Category	Description	Affects Version
	<p>exposure's APPROACH was "STD" and ELIGIBLE_CRM_TYPE was "GUARANTEE_IRBF", then the guarantee was considered ineligible even though the CRM_APPROACH was "IRBF". With this fix, eligibility of guarantees is determined based on the CRM's APPROACH, that is, the protection provider's approach.</p>	
Credit Risk	<p>Issues in "IFRS9 Provisioning Impact on RWA" flow</p> <p>The SAS Solution for Regulatory Capital flow "IFRS9 Provisioning Impact on RWA" was not running successfully on SAS Risk and Finance Workbench and SAS Infrastructure for Risk Management because there were some traces of the securitization library, which no longer exists. This issue has been resolved by replacing securitization library with capital library.</p>	All previous versions
Credit Risk	<p>Issue with setting entity role in a Stratum cycle</p> <p>In SAS Risk Governance Framework, running RWA Calculation without selecting any job flow would reset the entity role to "none selected". This has been fixed.</p>	v08.2022
Credit Risk	<p>Attribution Analysis cycle and CDT failure</p> <p>In SAS Solution for Regulatory Capital, after Attribution Analysis (AA) cycles were deleted from SAS Risk Governance Framework UI, the reportmart table that stores the attribution analysis results was automatically getting converted from data set to views. This lead to the following errors:</p> <ul style="list-style-type: none"> ■ When a new attribution cycle is executed, it results in job runner failure. ■ When a new SAS Solution for Regulatory Capital package is installed, it results in CDT command failure. <p>This issue has now been fixed.</p>	v10.2021, v08.2022

Category	Description	Affects Version
Credit Risk	<p>Derivative exposures to retail counterparties</p> <p>Under CRR2 configuration, as per EBA Q&A 2014_704, derivative instruments meeting the criteria as mentioned in CRR Article 123 should be treated as Retail exposure. With this fix, for derivative instruments, RETAIL_TRT_FLG is set if it meets the product and granularity criteria as per CRR Article 123 and the corresponding Retail treatment is applied to the derivative instruments.</p>	v11.2020, v07.2021
Credit Risk	<p>Intra-group transactions</p> <p>SAS Solution for Regulatory Capital now supports preferential risk weight of 0% to intra-group transactions only if the intra-group counterparties are in the same member state as per CRR Article 113-6(d).</p>	
Credit Risk	<p>Third country equivalence treatment</p> <p>North Macedonia and Bosnia-Herzegovina have been added in the list of equivalent third countries in SAS Solution for Regulatory Capital as per Commission Implementing Decision (EU) 2021/1753.</p>	
Credit Risk	<p>Exposure under STD approach with guarantee under IRB approach</p> <p>SAS Solution for Regulatory Capital now introduces an option 'USE_STD_APRCH_RISK_SUBSTITUTION' that allows downgrading the approach of an Unfunded Credit Protection from IRBF/IRBA/IRB to STD if the exposure covered by the protection is treated under STD approach. For more information, see the section "Credit Risk Substitution Treatment >Treatment when Exposure's Approach is Different from CRM's Approach" under the chapter "Credit Risk Capital Charge" in the <i>SAS Solution for Regulatory Capital - Reference Manual</i>.</p>	

Category	Description	Affects Version
Credit Risk	<p>Original regulatory exposure class</p> <p>The column ORIG_REG_EXP_CLASS was not populated for exposures that do not migrate from one exposure class to another. With this fix, the column is now populated for all exposures to be consistent with the DPM definition of this concept in EBA Taxonomies for COREP reporting. Also, this column was incorrectly populated as 'RETAIL/CORPORATE' when the exposure secured by an immovable property risk-weighted under IRB approach attains past due status. With this fix, the value is set correctly to 'MORT_IMV_PROP' in this case.</p>	v04.2020, v08.2022
Credit Risk	<p>Cycle execution failure</p> <p>The "All Pillar I Calculations" instance was failing in the "Select Obligor-Multi-Obligor" sub-flow when the option RUN_IRBA_EBA_CRM_GL was set to YES. This has now been fixed.</p>	v08.2022
Credit Risk	<p>Currency code update</p> <p>Croatia joins Euro area on 1st January 2023. Hence, EUR is now mentioned as the country currency code for Croatia in the MUTUAL_RECOGNITION table in SAS Solution for Regulatory Capital.</p>	
Credit Risk	<p>Updates to data dictionary in reference manual</p> <p>A few columns that were deleted from the staging data model in previous releases of SAS Solution for Regulator Capital were still mentioned in the "Data Dictionary - Staging" chapter of the <i>SAS Solution for Regulatory Capital - Reference Manual</i>. This has been fixed.</p>	
Credit Risk	<p>CIU exposure under FBA</p> <p>The value of REG_EXP_CLASS for CIU exposures under FBA was incorrectly set to "CIU" when the RWA_APPROACH was IRB. With</p>	v08.2022

Category	Description	Affects Version
	this fix, the value is now set to "OTHER_NCO".	
Performance	Reportmart data sets In SAS Solution for Regulatory Capital, the deleted rows in Visual Analytics reportmart data sets were occupying space even though the rows were deleted. With this fix, the proc sql queries that reserve the space of deleted observations within the memory are replaced with the data steps so that the rows in Visual Analytics reportmart are deleted physically and do not occupy the disk space.	All previous versions
Performance	Flow performance In SAS Solution for Regulatory Capital, parallelization is introduced in the node "Calculate Risk Weight - STD - Benchmark RWA" for better performance, in terms of execution time.	v08.2022
Performance	Cycle execution time The "Capital Calculation" cycle task in SAS Risk Governance Framework was taking more than expected time for completion even after the execution of Capital Calculation flow triggered within the task in SAS Infrastructure for Risk Management. This was because the result tables were stored as ADOs sequentially in Stratum, after the completion of SAS Infrastructure for Risk Management flow. With this fix, the result tables are now stored in parallel in Stratum resulting in better performance.	v08.2022
Performance	Cycle execution time The SAS Risk Governance Framework cycle to run Regulatory Capital Calculations was taking more time than expected to complete although the Capital Calculations instance on SAS Infrastructure for Risk Management executes much earlier. With this fix, the "Load Data to LASR" flow within the other SAS Infrastructure for Risk Management	v08.2022

Category	Description	Affects Version
	instance of Job Runner is separated out from the other tasks performed within this instance. The data is now loaded to the LASR server in parallel instead of sequentially, which helps to improve the performance by reducing the cycle execution time.	
Backend	Duplicate cycle instances The concurrent execution of two or more cycles sometimes resulted in instances having duplicate names. To fix this, analysis run ID is now added to the instance name for Job runner and RCM calculations job flows. In addition, for calculation job flows, the job flow label is now restricted to fewer characters before other strings are appended to the name.	v01.2021

Data Model Changes in v12.2022

Data Model Changes

Table 4 Data Model Changes

Area	Table Name	Column Name	Nature of Change
Job_runner_parameters	BYN_CONFIG_LOAD_TO_LASR		Table added to contain the number of user-defined partitions that can be created for storing the data sets in reportmart and LASR Analytic Server.
Job_runner_parameters	BYN_CONFIG_LOAD_TO_LASR	MAX_RANK_NO	Column added to store the number of partitions that can be used simultaneously to store the result data sets to reportmart and LASR Analytic Server in parallel. Default value: 5.

Area	Table Name	Column Name	Nature of Change
Job_runner_parameters	BYN_CONFIG_STORE_ANALYSIS_DATA		Table added to contain the number of user-defined partitions that can be created for storing the data sets in reportmart and LASR Analytic Server.
Job_runner_parameters	BYN_CONFIG_STORE_ANALYSIS_DATA	MAX_RANK_NO	Column added to store the number of partitions that can be used simultaneously to store the result data sets to reportmart and LASR Analytic Server in parallel. Default value: 5.
Static	CCR_SUPERVISORY_PARAMETER		Table name renamed from SACCR_SUPERVISORY_PARAMETER.
Static	MUTUAL_RECOGNITION	REGULATORY_CM_LE_MLV_LTV_PCT	Column added to store the large exposure loan-to-value ratio for the commercial mortgage where the property value is measured by mortgage lending value as per CRR Article 402.
Static	MUTUAL_RECOGNITION	REGULATORY_CM_LE_MV_LTV_PCT	Column added to store the large exposure loan-to-value ratio for the commercial mortgage where the property value is measured by market value as per CRR Article 402.
Static	MUTUAL_RECOGNITION	REGULATORY_RM_LE_MLV_LTV_PCT	Column added to store the large exposure loan-to-value ratio for the residential mortgage where the property value is measured by mortgage lending value as per CRR Article 402.
Static	MUTUAL_RECOGNITION	REGULATORY_RM_LE_MV_LTV_PCT	Column added to store the large exposure loan-to-value ratio for the

Area	Table Name	Column Name	Nature of Change
			residential mortgage where the property value is measured by market value as per CRR Article 402.
System_configuration	RUN_CCR_SA		Table added Contains the settings related to Counterparty Credit Risk - Standardized Approach in the form of name-value pair.
System_configuration	RUN_CCR_SA	CONFIG_NAME	Contains the parameter name.
System_configuration	RUN_CCR_SA	CONFIG_VALUE	Contains parameter value.
System_configuration	RUN_CCR_SA	CONFIG_VALUE_DESC	Contains the description of the parameter value.
System_configuration	RUN_CCR_SSA		Table added Contains the settings related to Counterparty Credit Risk - Simplified Standardized Approach in the form of name-value pair.
System_configuration	RUN_CCR_SSA	CONFIG_NAME	Contains the parameter name.
System_configuration	RUN_CCR_SSA	CONFIG_VALUE	Contains parameter value.
System_configuration	RUN_CCR_SSA	CONFIG_VALUE_DESC	Contains the description of the parameter value.
Result table	CCR_CRM_ALLOCATION_DETAIL	EXT_MAP_RATING_CVA	Column added to fetch the rating used to derive CVA weight.
Result table	LR_EXPOSURE_DETAIL	EXP_SECURED_BY_REAL_FLG EXP_SECURED_BY_REAL_ESTATE_FLG	The flags EXP_SECURED_BY_REAL_FLG and EXP_SECURED_BY_REAL_ESTATE_FLG are created to support COREP Report C43.00

Area	Table Name	Column Name	Nature of Change
			column 020 and rows 0190/0200. They are now getting populated as intended. The value of the flag EXP_SECURED_BY_REAL_FLG is set to 1 when an exposure is secured by Residential real estate and the APPROACH is IRB. The value of the flag EXP_SECURED_BY_REAL_ESTATE_FLG is set to 1 when an exposure is secured by Commercial or Residential real estate and the APPROACH is IRB.

Changed Files for v12.2022

The following list of *.sas files have been added, updated, or deleted between version v08.2022 and v12.2022 (excluding DDL scripts, insert scripts, and documentation-related resources files):

Node Files

Files Added

- <FA_RRM>\irm\source\sas\nodes\analytics\rrm_delete_portfolio_data.sas
- <FA_RRM>\irm\source\sas\nodes\analytics\rrm_dp_fetch_portfolio.sas
- <FA_RRM>\irm\source\sas\nodes\analytics\rrm_sp_create_datastore_cfg.sas
- <FA_RRM>\irm\source\sas\nodes\analytics\rrm_sp_fetch_portfolio.sas
- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\rrm_ccr_calc_aggregate_addon.sas
- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\rrm_ccr_calc_fx_adj_notional.sas
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- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_ccr_calculate_eq_add_on.sas
- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_ccr_calculate_fx_add_on.sas
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- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_ccr_eq_comm_adj_notionl.sas
- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_ccr_separate_portfolio.sas
- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_cva_fetch_inputs.sas
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Content Release v08.2022

What's New in the v08.2022 Content Release

Overview

SAS Solution for Regulatory Capital v08.2022 has the following new features, fixes, and enhancements:

- credit risk capital charge under CRR3
- EBA CRM guidelines for IRB Advanced approach
- output adjustments
- OEM approach for measuring counterparty credit risk

- financial collaterals adjusted in LGD under IRBF approach

Credit Risk Capital Charge under CRR3

Calculation of credit risk capital charge under CRR3 has been enabled in SAS Solution for Regulatory Capital for exposures belonging to all asset classes treated under the Standardized Approach and Internal Rating Based Approach. For more information, see "Credit Risk Capital Charge - CRR3" chapter in the *SAS Solution for Regulatory Capital - Reference Manual*.

EBA CRM Guidelines for IRB Advanced Approach

SAS Solution for Regulatory Capital now supports the calculation as per EBA CRM Guidelines (EBA/GL/2020/05) that sets out the credit risk mitigation guidelines for institutions applying the IRB approach with their own estimates of LGDs (IRBA). The solution performs the allocation of Unfunded Credit Protections (UFCP) based on the alternative approaches mentioned in the guidelines. The solution calculates risk weight for the exposures and comparable direct exposure to the guarantors and performs the optimal CRM allocation for exposures benefiting from multiple forms of credit protection. The solution further calculates and applies the risk weight floor. For more information, see the "IRBA EBA CRM GL" section in the "Credit Risk Capital Charge" chapter in the *SAS Solution for Regulatory Capital - Reference Manual*.

Output Adjustments

SAS Solution for Regulatory Capital now enables users with appropriate roles and rights to perform adjustments to the results data of regulatory calculation. For more information, see the chapter "Output Overlay Adjustment" in the *SAS Solution for Regulatory Capital - Reference Manual*.

OEM Approach for Measuring Counterparty Credit Risk

SAS Solution for Regulatory Capital now supports Counterparty Credit Risk treatment based on Original Exposure Method (OEM) as per CRR Article 282. For more information, see the chapter "Counterparty Credit Risk Capital Charge" in the *SAS Solution for Regulatory Capital - Reference Manual*.

Financial Collaterals Adjusted in LGD under IRBF Approach

Under the IRBF approach, financial collaterals are adjusted in the LGD (CRR2 Article 228(2) and Basel framework CRE32.9), and the risk weight is computed using this adjusted LGD. The risk-weighted exposure amount is calculated using this risk weight and the original exposure value. For more information, see the section "Treatment of exposures secured by financial collaterals under IRBF approach" in the "Credit Risk Capital Charge" chapter in the *SAS Solution for Regulatory Capital - Reference Manual*.

Other Fixes and Enhancements

For more information, see ["Details of Other Fixes and Enhancements in v08.2022"](#) on page 27.

Data Model Changes

For more information, see [“Data Model Changes in v08.2022” on page 32.](#)

Details of Other Fixes and Enhancements in v08.2022

Table 5 Details of Other Fixes and Enhancements in v08.2022

Category	Description	Affects Version
Credit Risk - Basel 4	Exposure weighted average LGD Under the Basel 4 configuration, exposure weighted average LGD under the IRBF approach was being computed for corporate and retail exposures only. With this fix, the calculation has been extended to sovereign and bank exposure classes.	v04.2021 and later
Credit Risk - Basel 4	High risk preferential treatment Particular high risk treatment was applicable to a high risk exposures for BASEL 4 configuration. With this fix, high risk preferential risk weight is no longer applied to exposures under BASEL 4.	v05.2022
Credit Risk - Basel 4	Mutual recognition table The value of REGULATORY_RM_MLV_LTV_PCT is updated to 55 (from 75 and 70 for countries IRELAND and MALTA, respectively) in the MUTUAL_RECOGNITION table, under the BASEL 4 configuration.	v01.2021 and later
Credit Risk - Basel 4	Exposures identified as ADC Under Basel4 configuration, Land Acquisition, Development and Construction (ADC) exposures were getting risk-weighted incorrectly based on split-loan treatment and were getting assigned a risk-weight other than 100% or 150%. With this fix, ADC exposures are now getting	All previous versions

Category	Description	Affects Version
	risk-weighted correctly at either 100% or 150%.	
Credit Risk	<p>Infrastructure supporting factor</p> <p>The conditions to apply the infrastructure supporting factor to the RWA of exposures were captured through flags INFRA_PROJECT_FLG and INFRA_SF_CRITERIA_FLG in the staging.counterparty_mart. With this fix, these conditions are captured through the INFRA_SF_EXP_CRITERIA_FLG and INFRA_SF_CPTY_CRITERIA_FLG as some of the conditions are applicable at the exposure level and some are applicable at the counterparty level. In addition, the flexibility to override the conditions check and apply the infrastructure supporting factor directly is provided through INFRA_SF_OVERRIDE_FLG, if users have an external process in place that identifies the exposures that should receive infrastructure supporting factor regardless of the conditions mentioned in CRR Article 501a(1) and CRR Article 501a(2). For more details about the new flags, see the “Data Model Changes” on page 32 section.</p>	v03.2022 and later
Credit Risk	<p>Haircut for IRB collatorals</p> <p>Under CRR2 and Basel2-3 configurations, own estimates of haircut were not allowed for IRB collatorals under IRBF. With this fix, own estimates of haircut are allowed (in the column HAIRCUT_VALUE of rd_stage.issue_asset_mart data set) for IRB collatorals such as other physical collatorals and RRE/CRE under IRBF in the CRR2 and Basel 2–3 configuration.</p>	All previous versions
Credit Risk	<p>EL optimization</p> <p>In SAS Solution for Regulatory Capital, the EL optimization was carried out under both IRBA and</p>	v03.2022 and later

Category	Description	Affects Version
	IRBF approaches for all the defaulted guaranteed exposures. With this fix, EL optimization is carried out for defaulted guaranteed exposures under the IRBF approach or under the IRBA approach only if the computed risk weight of the defaulted guaranteed exposure is zero.	
Credit Risk	<p>LGD Floor computation</p> <p>LGD Floor computation for retail exposures secured by Residential or Commercial Immovable property but not benefitting from Central Government guarantees as per CRR Article 164(4) is implemented at the CRM counterparty country level. With this fix, an option "IP_LGD_WA_CALC_BASIS", is introduced to calculate the weighted average LGD for these exposures. When the option value is set to COUNTRY, the weighted average LGD is computed at each asset location country level and compared with the corresponding LGD floors. When the option is set to FLOOR_VALUE, the weighted average LGD is computed for the pool of exposures with the same LGD floor value and compared with respective LGD floors.</p>	All previous versions
Credit Risk	<p>RWA_PRE_SF for defaulted exposures</p> <p>RWA_PRE_SF and CAPITAL was incorrect for defaulted exposures secured by real estate under STD. For the defaulted exposures, RW and RWA columns are re-calculated in the post-processing based on the provisions and adjustment percent after CRM allocation. With this fix, RWA_PRE_SF and CAPITAL are also re-calculated based on the updated RW value.</p>	v05.2022
Credit Risk	<p>Exposures secured by FCP or UFCP</p> <p>A dedicated category field CRM_CATEGORY is added in the result data sets to identify exposures</p>	All previous versions

Category	Description	Affects Version
	secured by funded credit protection (FCP) or unfunded credit protection (UFCP).	
Credit Risk	CIU exposures under FBA For CIU exposures under FBA approach, APPROACH and APPROACH_CATEGORY values are now derived based on RWA_APPROACH.	All previous versions
CIU	Off-balance fund exposures Under the CRR2 configuration, for the off-balance sheet position of an IRB bank in the CIU fund exposures processed through LTA, the REG_EXP_CLASS was being set to CIU. With this fix, the REG_EXP_CLASS is set to OTHER_NCO for the off-balance sheet position of the bank in the CIU fund exposure.	v05.2022
CIU	Treatment of only off-balance sheet exposures Under CRR configuration sets, exposures with only off-balance sheet position of the bank in the fund were not supported under MBA. With this fix, these exposures are now supported by providing a dummy on-balance position for them. For more information, see "Data Entry Guidelines" in "Exposure to Equity Investment in Funds" section of the <i>SAS Solution for Regulatory Capital - Reference Manual</i> .	v03.2022 and later
CIU	EAD computation for fund exposures The exposure value of a CIU fund was computed using BANK_SHARE_HOLDING_PCT, FUND_SHARE_CAPITAL_AMT, and RETAINED_EARNINGS_AMT. With this fix, another way to compute exposure value using the VALUE_AMT column in the rd_stage.issue_instrument data set has been enabled. The details of the implementation are available in "Data Entry Guidelines" in "Exposure to	All previous versions

Category	Description	Affects Version
	Equity Investment in Funds" section of the <i>SAS Solution for Regulatory Capital - Reference Manual</i> .	
Large Exposures	<p>GCC parent information</p> <p>The LE module consumed GCC_ID and GCC_NAME information from the GCC module output, whereas it consumed the GCC parent information (GCC_PARENT_FLG) from the credit risk module stored in column COUNTERPARTY_GROUP_PARENT_FLG of staging.counterparty_mart. With this fix, GCC parent information is also consumed from the output of the GCC module.</p>	v03.2022 and later
Back-end	<p>Error in rendering COREP securitization reports</p> <p>In SAS Solution for Regulatory Capital, the ADO (Analysis Data Object) of CRM_ALLOCATION_DETAIL_SEC and CRM_ALLOCATION_DETAIL tables were pointing to the same partition table that caused error in rendering of COREP securitization reports. This was happening due to truncation of SCHEMA_NAME. With this fix, the SCHEMA_NAME is hardcoded for crm_allocation_detail_sec table and the COREP reports are now rendered correctly.</p>	v05.2022
Back-end	<p>Error in rendering jobflows</p> <p>In the workflow task that is used to perform the regulatory calculations, the job flow list was empty when the server locale was non-English. The code that populates the job flow list has now been updated and it now shows job flow for all locales.</p>	v10.2021 and later
Back-end	<p>Job flow execution failure</p> <p>While executing the on-demand analysis cycle, the execution failed for the Chinese locale (zh_CN). The issue is now fixed.</p>	v10.2021 and later

Category	Description	Affects Version
Back-end	Error while loading data to LASR Analytic Server The workflow task failed in cases when the underlying IRM instance ran for a longer duration. The LASR Analytic Server could not authenticate the user because of expired credentials. The issue is now fixed. The code fetches new credentials before loading data to LASR Analytic Server.	v10.2021 and later

Data Model Changes in v08.2022

Data Model Changes

Table 6 Data Model Changes in Staging Tables

Area	Table Name	Column Name	Nature of Change
Staging	TRADING_BK_TRANSACTION_NON_CR	GCC_PARENT_FLG	Column added to identify GCC parent for trading book transactions not subject to credit risk, which are used in Large Exposures identification process.
Staging	TRADING_BK_TRANSACTION_NON_CR	COUNTERPARTY_GROUP_PARENT_FLG	Column deleted.
Staging	COUNTERPARTY_MART	INFRA_PROJECT_FLG	Column deleted.
Staging	COUNTERPARTY_MART	INFRA_SF_CRITERIA_FLG	Column deleted.
Staging	COUNTERPARTY_MART	INFRA_SF_CPTY_CRITERIA_FLG	Column added to identify whether all the counterparty level criteria under CRR Article 501a(1(b,d,n)) are satisfied.

Area	Table Name	Column Name	Nature of Change
Staging	ISSUE_ACCOUNT	INFRA_SF_EXP_CRITERIA_FLG	Column added to identify whether all the exposure level criteria under CRR Article 501a(1(c, e-m, o)) are satisfied.
Staging	ISSUE_ACCOUNT	INFRA_SF_OVERRIDE_FLG	Column added to identify whether the user has an external process in place that identifies the exposures that should receive the infrastructure supporting factor regardless of the conditions mentioned in CRR Article 501a(1 and 2).
Staging	ISSUE_FACILITY	INFRA_SF_EXP_CRITERIA_FLG	Column added to identify whether all the exposure level criteria under CRR Article 501a(1(c, e-m, o)) are satisfied.
Staging	ISSUE_FACILITY	INFRA_SF_OVERRIDE_FLG	Column added to identify whether the user has an external process in place that identifies the exposures that should receive the infrastructure supporting factor regardless of the conditions mentioned in CRR Article 501a(1 and 2).
Staging	ISSUE_ASSET_MART	HAIRCUT_VALUE	Column added to capture the bank's own estimates of volatility adjustment.
Staging	ISSUE_FACILITY	FAC_AVAILABLE_CONSTRaining_AMT	Column added to specify the value reflecting any possible constraining of the availability of the facility. This field is used in CRR3 configuration only (CRR3 Article 166(8a)).
Staging	SECURITIZATION_POOL_MART	EXCESS_SPREAD_TYPE_CD	Column added to support EBA Taxonomy 3.2 C14 report. This column

Area	Table Name	Column Name	Nature of Change
			specifies the code for the type of excess spread.
Staging	SECURITIZATION_POOL_MART	AMORTIZATION_SYSTEM_CD	Column added to support EBA Taxonomy 3.2 C14 report. This column specifies the code for the type of amortization system.
Staging	SECURITIZATION_POOL_MART	SEC_COLLATERALIZATION_TYPE_CD	Column added to support EBA Taxonomy 3.2 C14 report. This column specifies the code for the Type of CPA collateralization.
Staging	SECURITIZATION_POOL_MART	OVERCOLLATERALIZATION_AMT	Column added to support EBA Taxonomy 3.2 C14 report. This column specifies the amount of the pool taken as buffer to help cover the first losses.
Staging	SECURITIZATION_POOL_MART	SYNTHETIC_EXCESS_SPREAD_AMT	Column added to support EBA Taxonomy 3.2 C14 report. This column specifies the amount that is contractually designated by the originator to absorb losses of the securitized exposures that might occur before the maturity date of the transaction.
Staging	FINANCIAL_REPORTING_DATA	OTHER_NCO_SOFT_ASSETS_AMT	Column added to support EBA Taxonomy 3.2 C01 report.
Staging	FINANCIAL_REPORTING_DATA	SA_OTHER_SOFT_ASSETS_AMT	Column added to support EBA Taxonomy 3.2 C01 report.
Staging	EXPOSURE_COUNTERPARTY_LINK		Table added to support Multiple Obligors link with exposure for the future release.
Staging	EXPOSURE_COUNTERPARTY_LINK	EXPOSURE_ID	Column added to link exposure with multiple

Area	Table Name	Column Name	Nature of Change
			obligors for the future release.
Staging	EXPOSURE_COUNTER PARTY_LINK	COUNTERPARTY_RK	Column added to link multiple obligors with exposure for the future release.
Staging	PD_INFO		Table added to support EBA CRM GL treatment (EBA/GL/2020/05) and store the modeled values of PD for different combinations of FCP (Funded Credit Protection) and UFCP (Unfunded Credit Protection).
Staging	PD_INFO	FCP_CNT	Column added to store the count of the funded credit protection in the PD model.
Staging	PD_INFO	UFCP_CNT	Column added to store the count of the Unfunded credit protection in the PD model.
Staging	PD_INFO	MODEL_ID	Column added to identify a model.
Staging	PD_INFO	PD_SEGMENT_ID	Column added to identify the portion of portfolio used to model PD.
Staging	PD_INFO	PD_PCT	Column added to store the modeled probability of default value in percentage.
Staging	PD_INFO	OVERRIDE_FLG	Column added to identify whether PD_PCT is overwritten.
Staging	LGD_INFO		Table added to support EBA CRM GL treatment (EBA/GL/2020/05) and store the modeled values of LGD for different combinations of FCP

Area	Table Name	Column Name	Nature of Change
			(Funded Credit Protection) and UFCP (Unfunded Credit Protection).
Staging	LGD_INFO	FCP_CNT	Column added to store the count of the funded credit protection in the LGD model.
Staging	LGD_INFO	UFCP_CNT	Column added to store the count of the Unfunded credit protection in the LGD model.
Staging	LGD_INFO	MODEL_ID	Column added to identify a model.
Staging	LGD_INFO	LGD_SEGMENT_ID	Column added to identify the portion of portfolio used to model LGD.
Staging	LGD_INFO	LGD_PCT	Column added to store the modeled loss given default value in percentage.
Staging	LGD_INFO	OVERRIDE_FLG	Column added to identify whether LGD_PCT is overwritten or not.
Staging	CRM_INSURANCE	PD_SEGMENT_ID	Column added to identify the portion of portfolio used to model PD.
Staging	CRM_INSURANCE	LGD_SEGMENT_ID	Column added to identify the portion of portfolio used to model LGD.
Staging	CRM_DERIVATIVE	PD_SEGMENT_ID	Column added to identify the portion of portfolio used to model PD.
Staging	CRM_DERIVATIVE	LGD_SEGMENT_ID	Column added to identify the portion of portfolio used to model LGD.
Staging	CRM_GUARANTEE	PD_SEGMENT_ID	Column added to identify the portion of portfolio used to model PD.

Area	Table Name	Column Name	Nature of Change
Staging	CRM_GUARANTEE	LGD_SEGMENT_ID	Column added to identify the portion of portfolio used to model LGD.
Staging	EXPOSURE_ACCOUNT	PD_SEGMENT_ID	Column added to identify the portion of portfolio used to model PD.
Staging	EXPOSURE_ACCOUNT	LGD_SEGMENT_ID	Column added to identify the portion of portfolio used to model LGD.
Staging	EXPOSURE_ACCOUNT	IRBA_CRM_TREATMENT	Column added to store the approach that is used for the allocation of unfunded credit protections under IRBA.
Staging	EXPOSURE_INSTRUMENT	PD_SEGMENT_ID	Column added to identify the portion of portfolio used to model PD.
Staging	EXPOSURE_INSTRUMENT	LGD_SEGMENT_ID	Column added to identify the portion of portfolio used to model LGD.
Staging	EXPOSURE_INSTRUMENT	IRBA_CRM_TREATMENT	Column added to store the approach that is used for the allocation of unfunded credit protections under IRBA.
Staging	EXPOSURE_FACILITY	PD_SEGMENT_ID	Column added to identify the portion of portfolio used to model PD.
Staging	EXPOSURE_FACILITY	LGD_SEGMENT_ID	Column added to identify the portion of portfolio used to model LGD.
Staging	EXPOSURE_FACILITY	IRBA_CRM_TREATMENT	Column added to store the approach that is used for the allocation of unfunded credit protections under IRBA.
Staging	EXPOSURE_RECEIVABLE	PD_SEGMENT_ID	Column added to identify the portion of portfolio used to model PD.

Area	Table Name	Column Name	Nature of Change
Staging	EXPOSURE_RECEIVABLE	LGD_SEGMENT_ID	Column added to identify the portion of portfolio used to model LGD.
Staging	EXPOSURE_RECEIVABLE	IRBA_CRM_TREATMENT	Column added to store the approach that is used for the allocation of unfunded credit protections under IRBA.

Table 7 Data Model Changes in Result Tables

Area	Table Name	Column Name	Nature of Change
Capital	CRM_ALLOCATION_DETAILS	CRM_CATEGORY	Column added to identify funded or unfunded credit protection.
Capital	CRM_ALLOCATION_DETAILS	CRM_CATEGORY	Column added to identify funded or unfunded credit protection.

New Tables in v08.2022

Table 8 PD_INFO

Column Name	Data Type	Column Label	Column Description
FCP_CNT	NUM	Number of FCP	Count of funded collaterals considered in the PD model.
MODEL_ID	CHARACTER(32)	Identifier for a model.	Identifier for a model.
PD_PCT	NUM	PD (%)	Modeled Probability of default (PD) value in percentage.
PD_SEGMENT_ID	CHARACTER(32)	PD Segment ID	Identifier for a portion of portfolio used to model PD.

Column Name	Data Type	Column Label	Column Description
UFCP_CNT	NUM	Number of UFCP	Count of unfunded collaterals considered in the PD model.
OVERRIDE_FLG	NUM	Override Flag	Flag to identify whether PD_PCT is overwritten.

Table 9 LGD_INFO

Column Name	Data Type	Column Label	Column Description
FCP_CNT	NUM	Count of Funded Credit Protection	Count of funded collaterals considered in the LGD model.
LGD_PCT	NUM	LGD (%)	Modeled Loss given default (LGD) value in percentage.
LGD_SEGMENT_ID	CHARACTER(32)	LGD Segment ID	Identifier for a portion of portfolio used to model LGD.
MODEL_ID	CHARACTER(32)	Model ID	Identifier for a model.
UFCP_CNT	NUM	Count of Unfunded Credit Protection	Count of unfunded collaterals considered in the LGD model.
OVERRIDE_FLG	NUM	Override Flag	Flag to identify whether LGD_PCT is overwritten.

Table 10 EXPOSURE_COUNTERPARTY_LINK

Column Name	Data Type	Column Label	Column Description
EXPOSURE_ID	CHARACTER(20)	Exposure ID	Unique identifier for an exposure, and refers to the 'INSTID' from various exposure staging tables, such as 'RRM_STG.EXPOSURE_ACCOUNT'.
COUNTERPARTY_RK	NUM	Counterparty Key	This field identifies the retained key (primary

Column Name	Data Type	Column Label	Column Description
			key) used to uniquely identify a counterparty.

Changed Files for v08.2022

The following list of *.sas files have been added, updated, or deleted between version v05.2022 and v08.2022 (excluding DDL scripts, insert scripts, and documentation-related resources files):

Node Files

Files Added

- <FA_RRM>\irm\source\sas\nodes\analytics\rrm_ooa_apply_adjustments.sas
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Files Updated

- <FA_RRM>\irm\source\sas\nodes\analytics\rrm_eba_create_eba_ds_config.sas

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Content Release v05.2022

What's New in the v05.2022 Content Release

Overview

SAS Solution for Regulatory Capital v05.2022 has the following new features, fixes, and enhancements:

- third-party calculations for CIU fund exposures
- improvement in groups of connected clients module
- integration of Group of Connected Clients information with credit risk calculation

Third-party Calculations for CIU Fund Exposures

SAS Solution for Regulatory Capital now supports third-party calculations for CIU fund exposures. Under CRR2 configuration, institutions that rely on third-party calculations need to multiply the risk-weighted exposure amount of a CIU's exposures resulting from those calculations by a factor of 1.2. However, where the institution has unrestricted access to the detailed calculations that are carried out by the third party, the factor of 1.2 does not apply. (CRR Article 132(4)(c)). For more information, see "Third-party Calculations under CRR2 Configuration" section in *SAS Solution for Regulatory Capital: Reference Manual*.

Improvement in Groups of Connected Clients Module

SAS Solution for Regulatory Capital now uses a new algorithm to identify groups of connected clients. The algorithm can identify all possible groups of connected clients as defined by the EBA/GL/2017/15 guidelines. The feature also allows performance setting. The problem of identification of groups of connected clients is divided into multiple sub-problems that can be processed in parallel. Users can configure the number of parallel SAS sessions that the hardware can spawn for this feature in the RRMCFG.BYN_CONFIGURATION_GCC data set. For more information, see "Groups with Control Relationship and Economic Dependency" section in *SAS Solution for Regulatory Capital: Reference Manual*.

Integration of Group of Connected Clients Information with Credit Risk Capital Calculation

SAS Solution for Regulatory Capital now uses the information of groups of connected clients to support the following areas of CRR regulations where the concept of connected clients is used.

- classification of exposures subject to credit risk in retail exposure class (CRR Articles 123(c) and 147(5)(a)(ii))
- SME supporting factor (CRR Article 501(2)(c))
- firm-size adjustment for SME under IRB approach (CRR Article 153(4))

For more information, see the following sections under “Credit Risk Capital Charge” in *SAS Solution for Regulatory Capital: Reference Manual*.

- SME Supporting Factor
- Retail Granularity Check
- Firm-Size Adjustments

Other Fixes and Enhancements

For more information, see [“Details of Other Fixes and Enhancements in v05.2022” on page 55](#).

Data Model Changes

For more information, see [“Data Model Changes in v05.2022” on page 61](#).

Details of Other Fixes and Enhancements in v05.2022

Table 11 *Details of Other Fixes and Enhancements in v05.2022*

Category	Description	Affects Version
Credit Risk	Exposures with CRMs For some of the exposures secured by CRMs, CRM related columns were populated for the unsecured exposure leg. With this fix, the unsecured exposure does not carry any CRM attribute.	v01.2021 and later
Credit Risk	Exposures secured by immovable properties In SAS Solution for Regulatory Capital, for exposures secured by immovable properties under STD approach, the fully but not completely secured part of the exposure is rejected when its RW is higher than the counterparty's RW. With this fix,	v04.2021 and later

Category	Description	Affects Version
	based on EBA Q&A 2014_936, the fully but not completely secured part of the exposure is now assigned an RW as the minimum of 100% and counterparty's RW.	
Credit Risk	<p>Capping of RW of equity exposures under PD/LGD approach</p> <p>For equity exposures under PD/LGD approach, if the sum of the expected loss amount multiplied by 12.5 and the risk-weighted exposure amount exceeds the exposure value multiplied by 12.5, then the RW of the exposure was updated to 1250%. With this fix, if this threshold is exceeded, then the RW is updated in such a way that the above condition is satisfied. The original risk weight is stored as ORIG_RW_EQ_PD_LGD in an interim table _REGCALC.ALL_EXPOSURES_IRB_0 for debugging purposes.</p>	v03.2022
Credit Risk	<p>Identification of sovereign exposures</p> <p>A new column EXP_TREATED_AS_SOVEREIGN_FLG has been introduced in CR and LR output tables to identify exposures to Regional governments, local authorities, PSE, MDB, and International organization, which are treated as sovereigns.</p>	v10.2021 and later
Large Exposures	<p>Identification of exposures</p> <p>A new column, LE_NAME, has been added in the following data sets to identify a counterparty or group toward which an institution has largest exposures.</p> <ul style="list-style-type: none"> ■ LE_REP.TOP_TEN_LE_INST ■ LE_REP.TOP_TEN_LE_SBE ■ LE_REP.CONCENTRATION_RISK_EXPOSURES 	v03.2022

Category	Description	Affects Version
	In addition, steps to identify the top 10 large exposures to the institution, top 10 large exposures to shadow banking entities, and exposures of value greater than or equal to EUR 300 million but less than 10% of the institution's Tier 1 Capital, have been added in the solution documentation..	
Large Exposures	Identification of exposures A new column, LE_NAME, has been added in the LE_REP.TOP_TWENTY_LE_IR B data set to identify a counterparty or group toward which an institution has largest exposures. The steps to identify top 20 large exposures have been added in the solution documentation.	v03.2022
Large Exposures	LE Limits Exemptions In SAS Solution for Regulatory Capital, all General Government exposures with 20% risk weight were exempted from application of limits to large exposures. This fix now correctly identifies and exempts only regional and local government exposures that are assigned 20% risk weight as defined under CRR Article 400 (2) (b).	v03.2022
Large Exposures	Duplicate entries in LE sub-flow Duplicate records of indirect exposures were created in the LE module due to incorrect join condition when the counterparty was part of two GCCs. This has been fixed.	v10.2021 and later
Back-end	Issue in retail granularity check The attribute STD_PRODUCT_CLASS was getting updated for CRM counterparties that do not fulfill the retail granularity criteria, in	v04.2021 and later

Category	Description	Affects Version
	<p>the result table EAD.ALL_CRMS_2 of the node 'Update STD Exposures Post Retail Granularity'. With this fix, STD_PRODUCT_CLASS is not updated since it is not a counterparty attribute.</p>	
Back-end	<p>Table issues in RWA Calculations node</p> <p>The Securitization Capital Calculations subflow in the RWA Calculations flow contained SEC.CAPITAL_DETAIL_SEC, SEC.CAPITAL_DETAIL_SEC_T RANSACTION, and SEC.CRM_ALLOCATION_DETA IL_SEC data sets that were deleted. These data sets were not deleted from the script file rrm_add_inputs_outputs.sas, which makes inputs and outputs visible in the IRM flow. Hence, users were not able to download or view the Data Object Table successfully. With this fix, these data sets are removed from the script rrm_add_inputs_outputs.sas and hence are not visible in the IRM flow.</p>	v03.2022
Back-end	<p>Performance improvement</p> <p>A join in the SME capital deduction module led to duplication of data. This inflated the size of interim data set and thereby increased the execution time. The join has now been corrected.</p>	v04.2020
CIU	<p>Treatment of CIU fund's derivative and their underlyings</p> <p>For CIU fund exposures, under MBA, fund's derivative exposures and underlyings of the fund's derivative exposures were not included in RWA calculations of the fund. With this fix, both fund's derivative exposures and underlyings of</p>	v10.2021 and later

Category	Description	Affects Version
	the fund's derivative exposures are included in the RWA calculations of the fund.	
CIU	<p>Treatment of equity underlyings of the CIU fund under MBA approach</p> <p>Equity exposures as either underlying of the fund or as underlying of the fund's derivative exposures were treated using STD approach only. With this fix, equity exposures are now treated using STD approach or IRB_SIMPLE_RW approach based on the value of RWA_APPROACH in RRM_STG.ENTITY table.</p>	v10.2021 and later
CIU	<p>Treatment of defaulted exposures as underlyings of CIU fund under MBA</p> <p>Non-performing positions of a CIU fund were not recognized and treated under MBA. With this fix, non-performing positions of a CIU fund are now identified in the data set RRM_STG.FUND_MANDATE by setting IN_DEFAULT_FLG to 1. A maximum RW of 150% is assigned to the non-performing positions of a CIU fund under Mandate-based approach.</p>	v03.2022
CIU	<p>Treatment of covered bonds and other assets as underlyings of CIU fund under MBA</p> <p>The underlying positions of a CIU fund in the form of covered bonds or other assets were not recognized and treated as underlyings of CIU funds under MBA. With this fix, fund underlyings as covered bonds are identified in the data set RRM_STG.FUND_MANDATE by setting the column PRODUCT_CLASS to "COVERED_BOND" and other</p>	v03.2022

Category	Description	Affects Version
	<p>assets are identified in the data set</p> <p>RRM_STG.FUND_MANDATE by setting the column PRODUCT_CLASS to "OTHER_ASSETS". The various types of other assets are identified by setting PRODUCT_SUBCLASS to "CASH", "GOLD", "CASH_COLLECT", or "OTHER". Under the Mandate-based approach, risk weight to covered bonds and other assets is assigned as per CRR Article 129(4) and CRR Article 134 respectively.</p>	
CIU	<p>Treatment of underlyings of CIU fund's derivative transactions subject to credit risk</p> <p>The RWA was not calculated for the derivative underlyings of a CIU fund under LTA. With this fix, the RWA is computed for the underlyings of a derivative transaction and the exposures are now part of the final result data set</p> <p>RRM_CIU.CIU_LTA_FUND_UNDERLYING.</p>	v07.2021 and later
CIU	<p>CIU fund exposures and their underlyings</p> <p>Under CRR configuration, the underlyings of CIU fund exposures under LTA were available in the result data set CAPITAL.CRM_ALLOCATION_DETAIL and the CIU funds were not included. With this fix, CIU fund exposures are now available in the result data set CAPITAL.CRM_ALLOCATION_DETAIL with the aggregated RWA. The underlyings are removed from this data set and are now available in</p> <p>RM_CIU.CIU_LTA_FUND_UNDERLYING.</p>	v07.2021 and later

Category	Description	Affects Version
GCC	Improvement in identification of Group of Connected Clients Earlier, the solution could not detect the groups of connected clients that were formed through contagion from economic groups. The logic has now been corrected and such groups of connected clients are also identified by the solution.	v10.2021 and later

Data Model Changes in v05.2022

Data Model Changes

Table 12 Data Model Changes in Staging Tables

Area	Table Name	Column Name	Nature of Change
Staging	FUND_MANDATE	IN_DEFAULT_FLG	Column added to identify whether the underlying of a fund is in default.
Staging	COUNTERPARTY_MAR T	CTRL_GROUP_PAREN T_FLG	Column added to identify whether the counterparty is the parent of the control group.
Staging	COUNTERPARTY_MAR T	GCC_PARENT_FLG	Column added to identify whether the counterparty is the parent of the group of connected clients .
System configuration	BYN_CONFIGURATION _GCC		Table added to configure the number of partitions for identifying GCC.
System configuration	BYN_CONFIGURATION _GCC	ENTITY_NM	Column added to store the entity name for which the number of partitions are specified.
System configuration	BYN_CONFIGURATION _GCC	MAX_RANK_NO	Column added to store the number of partitions

Area	Table Name	Column Name	Nature of Change
			for the entity given in ENTITY_NM column.
Staging	FUND_INFORMATION	THIRD_PARTY_CALC_FLG	Column deleted.
Staging	FUND_INFORMATION	DETAILED_CALC_ACCESS_FLG	Column deleted.
Staging	EXPOSURE_INSTRUMENT	DETAILED_CALC_ACCESS_FLG	Column added to identify whether the institution has unrestricted access to the detailed calculations that are carried out by the third-party.
Staging	EXPOSURE_INSTRUMENT	CIU_APPROACH	Column added to store the approach used by the third-party to compute risk weight for the fund exposure.
Staging	FUND_MANDATE	PRODUCT_CLASS	Column added to identify the regulatory classification of the product at a granular level.
Staging	FUND_MANDATE	PRODUCT_SUBCLASS	Column added to identify the regulatory sub-classification of the product at a granular level.
Staging	FUND_MANDATE	STD_PRODUCT_CLASSES	Column deleted
Staging	FUND_MANDATE	FUND_ISSUE_KEY	Column renamed from ISSUE_KEY
Staging	FUND_MANDATE	EXP_VALUE	Column added to store the pre-calculated exposure value for the derivative positions of the fund.

Table 13 Data Model Changes in Static Tables

Area	Table Name	Column Name	Nature of Change
Static	REGULATORY_PARAMETER	THIRD_PARTY_CALC_MULTIPLIER	Parameter renamed from LTA_THIRD_PARTY_CALC_MULTIPLIER.

Table 14 Data Model Changes in Analytic Tables

Area	Table Name	Column Name	Nature of Change
Analytics	REGULATORY_SETTINGS	IDENTIFY_GCC	Column added to identify groups of connected clients as described in EBA/GL/2017/15. Valid values: YES, NO. The default value is set to YES for CRR2 and NO for Basel 2-3 and Basel 4.

Table 15 Data Model Changes in Result Tables

Area	Table Name	Column Name	Nature of Change
Capital	CRM_ALLOCATION_DETAIL	FUND_ID	The column has been deleted as LTA fund underlyings are no longer reported in CRM_ALLOCATION_DETAIL.
Capital	CRM_ALLOCATION_DETAIL	EXP_TREATED_AS_SOVEREIGN_FLG	The column has been added to indicate that the RW treatment applied to the exposure is that of the central government. When the exposure is treated as sovereign the value is set to 1.
Capital	CRM_ALLOCATION_DETAIL	CPTY_GROUP_ID	Column added. Counterparty Group ID is populated based on GCC_ID, if the counterparty is part of a GCC. If the counterparty is not part of a GCC, CPTY_GROUP_ID is the same as COUNTERPARTY_RK.

Area	Table Name	Column Name	Nature of Change
Capital	CRM_ALLOCATION_DE TAIL	THIRD_PARTY_CALC_F LG	This column has been added. It indicates whether the bank relies on third-party calculations for the risk weights of the fund exposures as it does not have adequate data or information to perform the calculation.
Capital	CRM_ALLOCATION_DE TAIL	DETAILED_CALC_ACC ESS_FLG	This column has been added. It indicates whether the institution has unrestricted access to the detailed calculations carried out by the third-party.
RRM_LR	LR_EXPOSURE_DETAI L	EXP_TREATED_AS_SO VEREIGN_FLG	The column has been added to indicate that the RW treatment applied to the exposure is that of the central government. When the exposure is treated as sovereign the value is set to 1.

New Tables in v05.2022

Table 16 BYN_CONFIGURATION_GCC

Column Name	Data Type	Column Label	Column Description
ENTITY_NM	CHARACTER (32)	Reporting Entity	This column stores the code for business unit. Examples of values for ENTITY_NM column include BHC (Bank Holding Company), RLU (Retail Lending unit), CLU (Corporate Lending Unit), and GLU (Government Lending Unit). The values of this column are mapped to the values of ENTITY_ID column of RRM_STG.ENTITY data set. In addition to these values, a special value - _ALL_ - is reserved, which serves as a default business unit. This reserved value is considered when data for a business unit is not available. If the

Column Name	Data Type	Column Label	Column Description
			number of entities is large, you can use <code>_ALL_</code> to represent data for all business units.
MAX_RANK_NO	NUM	Number of partitions	The value specifies the number of partitions that should be formed. Post-processing occurs on this value to determine whether the input is large enough to form the required partitions. If this value is greater than the number of rows in the table, the number of partitions is reset to the number of rows of the table under consideration.

Changed Files for v05.2022

The following list of *.sas files have been added, updated, or deleted between version v03.2022 and v05.2022 (excluding DDL scripts, insert scripts, and documentation-related resources files):

Node Files

Files Added

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Files Updated

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Content Release v03.2022

What's New in the v03.2022 Content Release

Overview

SAS Solution for Regulatory Capital v03.2022 has the following new features, fixes, and enhancements:

- Leverage Ratio calculation
- Support for EBA COREP - Leverage Ratio (LR) Templates
- Support for EBA COREP - Large Exposures (LE) Templates
- Integration of Large Exposures Calculation in Pillar 1 Calculations flow
- Treatment of defaulted exposures
- Support for Inferred Rating (CRR Article 139)
- CIU: Treatment of off-balance sheet fund exposures
- Enhancements to the calculations flow visualization
- Documentation enhancements

Leverage Ratio Calculation

SAS Solution for Regulatory Capital now supports the calculation of Leverage Ratio (CRR Article 429). The solution calculates the leverage ratio exposure value for different asset classes, excludes certain exposures from total exposure value calculation, calculates Leverage Ratio and adjusted

Leverage Ratio, and prepares the result tables in a new SAS Infrastructure for Risk Management flow "Process Leverage Ratio". For more information, see "Leverage Ratio Framework" section in *SAS Solution for Regulatory Capital: Reference Manual*.

Support for EBA COREP - Leverage Ratio (LR) Templates

SAS Solution for Regulatory Capital now supports these COREP LR reports: C40, C43, C44, C47.

The following output tables are created, which can be used for populating the COREP LR reports:

- LR_EXPOSURE_DETAIL
- LR_CALCULATION

For more information about the output tables, see "Result Tables" under "Leverage Ratio Framework" in *SAS Solution for Regulatory Capital: Reference Manual*.

Support for EBA COREP - Large Exposures (LE) Templates

SAS Solution for Regulatory Capital now supports these COREP LE reports: C26, C27, C28, C29.

The following output tables are created, which can be used for populating the COREP LE reports:

- LE_REPORTING_DETAIL
- LE_LIMITS_PARAMETERS
- LARGE_EXPOSURES
- TOP_TEN_LE_INST
- TOP_TEN_LE_SBE
- CONCENTRATION_RISK_EXPOSURES
- TOP_TWENTY_LE_IRB

For more information about the output tables, see "Output Data Sets" under "Large Exposures" in *SAS Solution for Regulatory Capital: Reference Manual*.

Integration of Large Exposures Calculation in Pillar 1 Calculations Flow

Large Exposures calculation was introduced as a separate flow in the previous release of SAS Solution for Regulatory Capital. With this release, Large Exposures calculation is now part of Pillar 1 Calculations flow. For more information, see "All Pillar 1 Calculations Flow" under "About SAS Solution for Regulatory Capital Job Flows" in *SAS Solution for Regulatory Capital: Reference Manual*.

Treatment of Defaulted Exposures

Treatment of cross-guaranteed defaulted exposures

In SAS Solution for Regulatory Capital, due to missing EL value, the unfunded credit protection was not allocated to the defaulted exposures when the APPROACH of the CRM was STD and the APPROACH of the defaulted exposure was IRB. With this fix, the EL value is set correctly, such that the unfunded credit protection is allocated to the defaulted exposures.

Treatment of defaulted guaranteed exposures

In SAS Solution for Regulatory Capital, in case of defaulted exposures covered with unfunded credit protection, the RWA amount of the secured part of the exposure was incorrectly calculated by multiplying the exposure amount that is covered with unfunded credit protection with the risk weight of the exposure. With this fix, the RWA amount of the secured part of the exposure is calculated by multiplying the exposure amount that is covered with unfunded credit protection with the risk weight of the protection provider.

Treatment of defaulted mortgage exposure under STD approach

In SAS Solution for Regulatory Capital, the calculation of risk weight for defaulted mortgage exposures does not consider the correct provision amount. This leads to incorrect assignment of risk weight to the FCS and FS part of the mortgage exposures with sufficient credit risk adjustments. With this fix, for the defaulted mortgage exposures, the FCS part is risk-weighted as per CRR Article 127(2), and the FS part and the remaining exposure are risk weighted as per CRR Article 127(1).

Support for Inferred Rating (CRR Article 139)

SAS Solution for Regulatory Capital now considers counterparty rating for unrated exposure to Institutions and Corporate under the Standardized Approach (CRR Article 139(2)). For more information, see "Issuer and issue credit assessment" under "Use of ECAI Credit Assessments for the Determination of Risk Weights" in *SAS Solution for Regulatory Capital: Reference Manual*.

CIU: Treatment of Off-balance Sheet Fund Exposures

SAS Solution for Regulatory Capital now supports the risk-weight treatment of off-balance sheet items with the potential to be converted into exposures in the form of units or shares in a CIU (CRR Article 132(c)-1). For more information, see "Treatment of Off-balance Sheet Exposures to CIUs" under "Exposure to Equity Investment in Funds" in *SAS Solution for Regulatory Capital: Reference Manual*.

Enhancements to the Calculations Flow Visualization

Sub-flow for LE Limits monitoring

A dedicated sub-flow for Large Exposures Limits monitoring has been created with LE Limits calculation and LE Limits threshold checks as part of the sub-flow.

Node for LE scope definition function

The LE definition scoping as per CRR Article 392 is now done in a single node `rrm_le_scope.sas`.

Documentation Enhancements

The following documentation sections of *SAS Solution for Regulatory Capital: Reference Manual* have been enhanced with additional information:

- Risk Weight Determination for STD Approach
- Risk Weight Determination for IRB Approach
- Exposure to Equity Investment in Funds

Other Fixes and Enhancements

For more information, see [“Details of Other Fixes and Enhancements in v03.2022”](#) on page 71.

Data Model Changes

For more information, see [“Data Model Changes in v03.2022”](#) on page 74.

Details of Other Fixes and Enhancements in v03.2022

Table 17 Details of Other Fixes and Enhancements in v03.2022

Category	Description	Affects Version
Group of Connected Clients	<p>Option SOV_CARVE_OUT_OPTION renamed and moved</p> <p>The option SOV_CARVE_OUT_OPTION was erroneously inserted into the REGULATORY_OPTION table. As it is a bank-specific option, it should be present in the REGULATORY_SETTINGS table. This is fixed. Also, the name of the option has changed to GCC_SOV_CARVE_OUT_APP ROACH to make it self-explanatory.</p>	All previous versions
Large Exposures	<p>Preparing data for LE reporting corrected</p> <p>COREP guidelines (Annexure 9) for LE reporting on a consolidated basis require that all large exposures (identified in accordance with CRR Article 392) be reported in LE1, LE2, and LE3 report templates. To report all large exposures in these templates, the details of such GCCs or counterparties must be available in the LE_REPORTING_DETAIL table. In the current implementation,</p>	v10.2021

Category	Description	Affects Version
	<p>while reporting on a consolidated basis, only the details of top ten large exposures to Institutions and Shadow banking entities, exposures above EUR 300 million but less than 10% of Tier 1 capital, and the top 20 largest exposures were available in LE_REPORTING_DETAIL. With this fix, all large exposures without any exception are available in LE_REPORTING_DETAIL.</p>	
Large Exposures	<p>Handling of Exemptions under 400 1 (c)(d)</p> <p>Currently, for the cases falling under exemption category 400 1 (c)(d), allocation and final exposure amount is not getting calculated correctly. If the guarantor is not a large exposure (not subject to LE reporting), exemption of exposure to the obligor takes precedence over CRM allocation, that is, guaranteed exposure to the obligor is exempted and there is no substitution effect for that exposure. As such, indirect exposure to the guarantor is not created in this case. On the other hand, if the guarantor is a large exposure (subject to LE reporting), guaranteed exposure is substituted first and the exposure against the guarantor is exempted. In this case, exemption is reflected against the Guarantor and not the Obligor.</p>	v10.2021
Performance	<p>Performance improvement in optimal CRM allocation</p> <p>The process "Optimal CRM Allocation for Multiple linked Exposures and CRM" was taking a long time to execute, which impacted the overall performance. Now, the unwanted data sets of the WORK library that are created in the do loop in the "optimal_crm_allocation.sas"</p>	v12.2019 and later

Category	Description	Affects Version
	and "allocate_crm_optimal.sas" macros are deleted at the end of each iteration. This results in significant improvement in the execution time.	
Credit Risk	Eligibility of defaulted unfunded credit protection In SAS Solution for Regulatory Capital, the unfunded credit protections were considered eligible under all approaches even if the protection provider was defaulted. With this fix, if the protection provider is defaulted, then the unfunded credit protection is reported as ineligible under all approaches.	v04.2021 and later
Credit Risk	RW treatment of defaulted guaranteed exposures under STD approach In SAS Solution for Regulatory Capital, under STD approach, the secured part of the defaulted exposures was assigned the risk weight of the exposure when the exposure was secured by unfunded credit protection. With this fix, the risk weight of the secured part is calculated by considering the characteristics of the credit risk protection provider.	v10.2021
Credit Risk	Institution Protection Scheme treatment applied to counterparties to collaterals under STD approach In SAS Solution for Regulatory Capital, a preferential risk-weight treatment is applied to the exposures to counterparties under Institution Protection Scheme. With this fix, a preferential risk-weight treatment is also applied to the collaterals to counterparties under the Institution Protection Scheme.	v04.2020 and later
Credit Risk	Data entry for dummy underlyings	v10.2021

Category	Description	Affects Version
	Under CRR configuration, the data entry for dummy underlyings under the MBA approach was populated in rd_stage.exposure_* and rd_stage.issue_* data sets. With this fix, data entry for dummy underlyings can be directly populated in the rd_stage.fund_mandate data set.	
Credit Risk	CIU Exposures under MBA Approach Under CRR configuration for the CIU fund exposures under MBA approach, dummy underlyings were required to be populated in rd_stage.exposure_* and rd_stage.issue_* data sets with the information available in the fund mandate. With this fix, the information of asset items in which the fund invests can directly be populated in the rd_stage.fund_mandate data set and dummy exposures are not needed in rd_stage.exposure_* and rd_stage.issue_* data sets.	v10.2021

Data Model Changes in v03.2022

Data Model Changes

Table 18 Data Model Changes in Staging Tables

Area	Table Name	Column Name	Nature of Change
Staging	ENTITY	LE_LIMITS_NON_INST_AMT LE_LIMITS_INST_AMT LE_LIMITS_INST_PCT	These columns have been removed. They were used in old LE framework, which is replaced by a new LE framework. For the new LE framework, these columns are available

Area	Table Name	Column Name	Nature of Change
			in LE_REGULATORY_PARAMETERS table.
Staging	ENTITY	INSTITUTION_TYPE	Column added to capture the type of the reporting institution.
Staging	ENTITY	PUBLIC_DEVELOPMENT_UNIT_FLG	Column added to capture whether the reporting institution has a public development unit whose purpose is to promote the public policy objectives of the central government, regional government, or local authority in a Member State.
Staging	ENTITY	CENTRAL_GOV_GUARANTEE_PDU_FLG	Column added to capture whether the public development unit of the reporting institution is guaranteed by the central government.
Staging	ENTITY	REGIONAL_GOV_GUARANTEE_PDU_FLG	Column added to capture whether the public development unit of the reporting institution is guaranteed by the regional government.
Staging	ENTITY	LOCAL_AUTH_GUARANTEE_PDU_FLG	Column added to capture whether the public development unit of the reporting institution is guaranteed by the local authority.
Staging	ENTITY	CLEARING_MEMBER_FLAG	Column added to capture whether the institution is a clearing member of a QCCP.
Staging	ENTITY	CENTRAL_BANK_RK	Column added to capture the Counterparty RK of the central bank for the reporting institution.

Area	Table Name	Column Name	Nature of Change
Staging	ENTITY	COMPANY_STRUCTURE_TYPE	Column added to capture the ownership structure of the reporting institution.
Staging	ENTITY	PROTECTED_VIABILITY_FLG	Column added to capture whether the credit institution viability is protected by the Member State's central government, regional government, or local authority.
Staging	ENTITY	OF_FUNDING_PROM_DIRECT_GUA_FLG	Column added to capture whether 90% of the credit institution fund requirements is directly guaranteed by the Member State's central government, regional government, or local authority.
Staging	ENTITY	OF_FUNDING_PROM_INDIRECT_GUA_FLG	Column added to capture whether 90% of the credit institution fund requirements is indirectly guaranteed by the Member State's central government, regional government, or local authority.
Staging	EXPOSURE_ACCOUNT	PUBLIC_SECTOR_INVESTMENT_FLG	Column added to capture loans, which are targeted toward investment programs carried out by central, regional, local authorities of the Member state, which are used for public welfare projects.
Staging	EXPOSURE_ACCOUNT EXPOSURE_DERIVATIVE EXPOSURE_INSTRUMENT EXPOSURE_FACILITY	LR_EXCLUSION_REASON_CD	Column added to capture exclusion code used to identify exposures, which are excluded from Leverage Ratio calculation in accordance with CRR Article 429a.

Area	Table Name	Column Name	Nature of Change
	EXPOSURE_RECEIVABLE		
Staging	EXPOSURE_FACILITY EXPOSURE_RECEIVABLE EXPOSURE_ACCOUNT	PASS_THROUGH_FLG	Column added to capture pass-through loans where the reporting institution acts as an intermediary credit institution and receives loans from a promotional bank and extends them onward to the final clients.
Staging	EXPOSURE_FACILITY EXPOSURE_RECEIVABLE	PUBLIC_SECTOR_INVEST_FLG	Column added to capture loans, which are targeted toward investment programs carried out by central, regional, or local authorities of the member state, which are used for public welfare projects.
Staging	ISSUE_ACCOUNT ISSUE_FACILITY ISSUE_INSTRUMENT ISSUE_RECEIVABLE EXPOSURE_DERIVATIVE	GROSS_CARRYING_AMT	Column added to capture the accounting balance sheet value without netting and CRM effects.
Staging	ISSUE_ACCOUNT ISSUE_FACILITY ISSUE_INSTRUMENT ISSUE_RECEIVABLE EXPOSURE_DERIVATIVE	CARRYING_AMT	Column added to capture the accounting balance sheet value.
Staging	COUNTERPARTY_MART_ASSOC	CONTROLLING_INTEREST_FLG	This column has been removed. It is no longer required as with the implementation of GCC module, the column COUNTERPARTY_ASSOC_TYPE in the table MAP_CPTY_ASSOC_TYPE now identifies the control relationship.

Area	Table Name	Column Name	Nature of Change
Staging	EXPOSURE_INSTRUMENT	FUND_COMMITMENT_AMT	Column added to capture the committed amount by the bank for the off-balance sheet position of the fund.
Staging	FUND_MANDATE	ISSUE_KEY	This column has been added. It is the unique identifier for a fund exposure, and refers to the ISSUE_KEY from exposure staging table, rrm_stg.issue_instrument .
Staging	FUND_MANDATE	COUNTERPARTY_CLASS	This column has been added. It represents the regulatory classification of the counterparty.
Staging	FUND_MANDATE	COUNTERPARTY_SUBCLASS	This column has been added. It represents the regulatory sub-classification of the counterparty.
Staging	FUND_MANDATE	RATING	This column has been added. It is the rating of the asset defined in mandate.
Staging	FUND_MANDATE	RATING_AGENCY	This column has been added. It is the rating agency that assigned the rating.
Staging	FUND_MANDATE	COUNTRY	This column has been added. It is the classification of type of country from asset defined in mandate.
Staging	FUND_MANDATE	CURRENCY	This column has been added. It is the currency of the asset defined in mandate.
Staging	FUND_MANDATE	STD_PRODUCT_CLASSES	This column has been added. It is the regulatory classification of the

Area	Table Name	Column Name	Nature of Change
			product at a granular level.

Table 19 Data Model Changes in Mapping Tables

Area	Table Name	Column Name	Nature of change
Mapping	MAP_LR_EXP_EXCLUSION_TYPE	LR_EXCLUSION_REASON_CD LR_EXCLUSION_REASON_TYPE LR_EXCLUSION_REASON_DESC	Table added to support the list of exclusion types required for Leverage Ratio calculation.

Table 20 Data Model Changes in Result Tables

Area	Table Name	Column Name	Nature of change
LE	LE_LIMITS_PARAMETERS	LE_LIMITS_MAX_INST_PCT	This column has been added. For an institution, the LE Limit percentage is the absolute limit expressed as the percentage of Tier 1 capital, that is, 25% or a value calculated as the percentage of TIER1_CAPITAL_AMT, if 25% of Tier 1 Capital amount is less than or equal to 150 million. This column is required for the COREP LE reporting template C 26 column 030.
LE_REP	LE_REPORTING_DETAIL	CRM_COUNTERPARTY_CLASS	This column is moved from the EXPOSURE_DETAIL_CR table to the LE_REPORTING_DETAIL table so that it can be consumed by EBA for reporting purposes.
LE_REP	LE_REPORTING_DETAIL	DEDUCTION_AMT	This column is moved from the EQUITY_EXP_Deducted_From_Capital table to the LE_REPORTING_DETAIL table so that it can be consumed by EBA for reporting purposes.

Area	Table Name	Column Name	Nature of change
LE_REP	LE_REPORTING_DETAIL	REGULATORY_PRODUCT_CD	This column is moved from the CRM_ALLOCATION_DETAIL table to the LE_REPORTING_DETAIL table so that it can be consumed by EBA for reporting purposes.
LE_REP	LE_REPORTING_DETAIL	SEC_DEDUCTION_AMT	This column is moved from CRM_ALLOCATION_DETAIL_SEC table to LE_REPORTING_DETAIL table so that it can be consumed by EBA for reporting purposes.
LE_REP	LE_REPORTING_DETAIL	TOTAL_DED_AMT	This column is the sum of TIER1_DEDUCTION_AMT and SEC_DEDUCTION_AMT. This column is introduced in the LE_REPORTING_DETAIL table so that it can be consumed by EBA for reporting purposes.
LE_REP	LE_REPORTING_DETAIL	VALUE_ADJ_AMT	This column is the sum of SPECIFIC_PROVISION and ADDNL_VAL_ADJ_AMT. This column is introduced in the LE_REPORTING_DETAIL table so that it can be consumed by EBA for reporting purposes.
LE_REP	LE_REPORTING_DETAIL	FINANCIAL_ENTITY_TYPE_CD	This column with missing values is introduced in the LE_REPORTING_DETAIL table so that it can be consumed by EBA for reporting purposes.
LE_REP	LE_REPORTING_DETAIL	LE_ID	This column is moved to LE_REPORTING_DETAIL so that it can be consumed by EBA for reporting purposes.
LE_REP	LE_REPORTING_DETAIL	CONCENTRATION_LEVEL_TYPE	This column is moved to LE_REPORTING_DETAIL so that it can be consumed by EBA for reporting purposes.

Area	Table Name	Column Name	Nature of change
LE_REP	LE_REPORTING_DE TAIL	UNDERLYING_AM T	This column has been removed. The institution must assess whether the underlying exposures constitute an additional exposure (CRR article 390(7)).
LE_SCOPE	NON_LARGE_EXPO SURES		This table has been removed. It unnecessarily increased the data footprint. If a GCC or a counterparty is not available in the LARGE_EXPOSURES table, it is understood that the GCC or the counterparty is not a large exposure.
LE_REP	TOP_TWENTY_LE		This table has been renamed. For institutions following the IRB approach, details of the 20 largest exposures on a consolidated basis are reported in the TOP_TWENTY_LE data set, which is used in LE COREP reporting. In order to provide more clarity to the data set name, it is now renamed to TOP_TWENTY_LE_IRB.
RRM_LR	LR_EXPOSURE_DE TAIL		This table has been added. It contains key information about exposures that are part of the Leverage ratio calculation.

New Tables in v03.2022

Table 21 LR_EXPOSURE_DETAIL

Column Name	Data Type	Column Label	Column Description
EXP_ID	CHARACTER(32)	Exposure ID	Retained key to uniquely identify an exposure.
CRM_ID	CHARACTER(32)	CRM ID	Unique identifier for a credit risk mitigant, and refers to the INSTID from various credit

Column Name	Data Type	Column Label	Column Description
			risk mitigant staging tables, such as RRM_STG.CRM_ACCOUNT.
NETTING_SET_RK	NUM(8)	Netting Set Key	Reference key associating the netting set. The novation position associated with the exposure is fetched through this key.
APPROACH	CHARACTER(16)	Approach	This value identifies the regulatory approach for running credit risk pillar I calculations. Possible values include STD for the standardized approach, IRBF for foundation internal ratings-based approach, IRBA for advanced internal ratings-based approach, LTA for look-through approach for CIU exposures, FBA for fall-back approach for CIU exposures, IRB_SLOTTING for supervisory slotting criteria approach, IRB_SIMPLE_RW for simple risk weight approach for equity exposures, IRB_PD_LGD for PD/LGD approach for equity exposures, and IRB_FIXED_RW for non-deducted holdings that receive fixed risk weight.
APPROACH_CATEGORY	CHARACTER(3)	Approach Category (STD or IRB)	This value specifies the category of regulatory approach for running credit risk pillar I calculations. Possible values are STD and IRB.
APPROACH_USAGE	CHARACTER(20)	Approach Usage	This value determines the level of prior permission of competent authorities or institutions using IRB approach that they might apply the Standardized Approach to one or more exposure classes either temporarily or permanently based on CRR Article 150(1). Possible values include PPU for applying the approach permanently, and TPU for applying the approach temporarily.
MAIN_CATEGORY	CHARACTER(32)	Main Category	This column specifies the asset category for exposure. Possible values are LOAN_ADVANCES, DERIVATIVE, DEBT_SECURITY, EQUITY, CASH, INVESTMENT_FUND_UNITS, REMAINING_ASSETS, FIXED_ASSETS, SECURITIZATION, LOAN_COMMITMENT, FINANCIAL_GUARANTEES, SFT, or OTHER_COMMITMENT.
LR_EXP_VALUE	NUM(8)	Leverage Ratio	The institution's exposure measure as defined in CRR Article 429(4). It is used for Leverage ratio (LR) calculation.

Column Name	Data Type	Column Label	Column Description
		Exposure Value	
LR_EXP_EXCLUSION_TYPE	CHARACTER(36)	LR Exposure Exclusion Type	This value identifies the LR exposure exclusion reason type. Possible values are ASSETS_PSI, AUT Ancillary Services CSD, CENTRAL_BANK, COMMON_EQUITY_TIER1, DESIG Ancillary Services CSD, EXPORT_CRDITS, FIDUCIARY_ASSETS, HIGHER_LEVEL_CLIENT, INTRAGROUP, IPS, PROMO_LOANS_CTR_REG_LOCAL_GOV, , PROMO_LOANS_CTR_REG_LOCAL_GOV_PUB, PROMO_LOANS_INTER_CREDIT_INST, PROMO_LOANS_INTER_CREDIT_INST_PUB, PROMO_LOANS_PDI, PSE_EXP, QCCP, SEC_EXP_SIGN_RISK_TRANS, TIER1, TRIPARTY_AGENTS, or VM_RECEIVABLE_ASSET.
LR_ADD_ON	NUM(8)	LR Add On	This column stores the Add-on for counterparty credit risk calculated, in accordance with CRR Article 429e.
EXP_VALUE	NUM(8)	Exposure Value	This value specifies the market value of the derivative transaction. It excludes the application of CCF for undrawn exposure amount.
OFF_BALANCE_SHEET_FLG	NUM(8)	Off Balance Sheet Flg	This flag indicates whether the position is an off-balance sheet item or not. The value 1 denotes an off-balance sheet item.
CCF_LR	NUM(8)	Credit Conversion Factor LR	Regulatory CCF value used for leverage ration calculations.
LR_RC	NUM(8)	LR Replacement Cost	This column indicates the loss that can occur if a counterparty defaults, considering that the closeout and replacement of transactions occur immediately. The replacement cost (RC) per netting set is calculated in accordance with CRR Article 275 for the SA-CCR.

Column Name	Data Type	Column Label	Column Description
LR_PFE	NUM(8)	LR Potential Future Exposure	This column indicates a potential conservative increase in exposure over a one-year time horizon from the present date. PFE is calculated as per CRR Article 278 considering the derogation regarding contracts with clients where those contracts are cleared by a QCCP of 429c(5).
LR_NICA	NUM(8)	LR Net Independent Collateral Amount	The total amount of net independent collateral at netting set level computed in accordance with CRR Article 276 but also considering that, for the purpose of LR calculation, institutions shall not include collateral received in the calculation of NICA, except in the case of derivative contracts with clients where those contracts are cleared by a QCCP.
LR_VM	NUM(8)	LR Variation Margin	The total amount of Leverage ratio variation margin received and posted in cash for offsetting against the replacement cost portion of the derivatives exposure in accordance with CRR Article 429c(3).
EAD	NUM(8)	Exposure at Default	Exposures considering the application of CCF for undrawn amounts for both on-balance and off-balance items.
EAD_PORTION	NUM(8)	Effective Exposure at Default Amount	Portion of the exposure value (after applying CCF and specific credit risk adjustment) that is allocated to each CRM type or to the unsecured part of the exposure.
RW_EFF	NUM(8)	Risk Weight Effective	Final risk weight assigned for each EAD portion.
RWA	NUM(8)	Risk Weighted Asset (RWA)	Final risk-weighted asset assigned to an EAD portion.
REGULATORY_CO UNTERPARTY_TYP E_CD	CHARACTER(3)	Regulatory Counterparty Type Code	Specifies the regulatory classification of the counterparty, at a granular level (counterparty class and subclass). You can enter a code such as 010 to denote central governments, or PSE to denote a private sector entity. The regulatory counterparty type code is mapped to the rd_map.map_counterparty_class data set.

Column Name	Data Type	Column Label	Column Description
COUNTERPARTY_ID	CHARACTER(32)	Counterparty Id	Specifies the business key for the counterparty. Must be populated.
COUNTERPARTY_CLASS	CHARACTER(32)	Counterparty Class	This value specifies the counterparty class that is mapped to REGULATORY_COUNTERPARTY_TYPE values in staging tables.
COUNTERPARTY_SUBCLASS	CHARACTER(32)	Counterparty Subclass	This value specifies the counterparty subclass that is mapped to the REGULATORY_COUNTERPARTY_TYPE values in staging tables.
FINREP_CPTY_SECTOR	CHARACTER(32)	FINREP Counterparty Sector	The FINREP sector of the counterparty mapped as per (MAP_FINREP_SECTOR). According to FINREP Annex V, following are the counterparty sectors - General governments, Central banks, Credit institutions, Investment firms, other financial corporations, non-financial corporations, households.
PRODUCT_TYPE	CHARACTER(32)	Product Type	This value specifies the product type. Possible values are FACILITY, GUARANTEE , OPTIONS, and so on.
PRODUCT_SUBTYPE	CHARACTER(32)	Product Subtype	This value specifies the product subtype.
CCP_TYPE	CHARACTER(5)	Central Clearing Counterparty Type	This field is created during enrichment to identify Central Counterparty Type. Possible values are 'QCCP', 'NQCCP' and missing.
CRM_MAIN_CATEGORY	CHARACTER(32)	CRM Main Category	This column specifies the asset category for CRM. Possible values are CASH, EQUITY, LOAN_ADVANCES, DERIVATIVE, DEBT_SECURITY, REAL_ESTATE, SFT, and FINANCIAL_GUARANTEES.
REG_EXP_CLASS	CHARACTER(32)	Regulatory Exposure Class	This value specifies the regulatory asset class to which an exposure belongs. Possible values include RETAIL, CORPORATES, EQUITY, CENT_GOV_BANKS, and so on.
REG_EXP_SUBCLASS	CHARACTER(32)	Regulatory Exposure Subclass	This value specifies the regulatory asset subclass to which an exposure belongs. Possible values are QRRE, SL, RETAIL_MORT_IMV_PROP, OTHER_THAN_SL, OTHER_RETAIL under

Column Name	Data Type	Column Label	Column Description
			IRB approach, and RRE and CRE under STD approach.
SPECIFIC_PROVISION	NUM(8)	Exposure-Specific Provisions	This value indicates the amount of the specific provisions at exposure level.
NOTIONAL_AMT	NUM(8)	Notional Amount	This column stores the notional amount for the underlying derivative transaction.
PASS_THROUGH_FLAG	NUM(8)	Pass Through Flag	This column identifies pass-through loans where the reporting institution acts as an intermediary credit institution and receives loans from a promotional bank and extends them onward to the final clients.
PUBLIC_SECTOR_INVEST_FLG	NUM(8)	Public Sector Investment Flag	This column identifies loans, which are targeted toward investment programs carried out by central, regional, local authorities of the Member state, which are used for public welfare projects.
PROMOTIONAL_LOAN_FLG	NUM(8)	Promotional Loan Flag	This flag indicates whether the nature of exposure is a Promotional Loan.
GROSS_CARRYING_AMT	NUM(8)	Gross Carrying Amount	This is the accounting balance sheet value without netting and CRM effects. It is used to populate column 0020 of the Corep report C 40.00.
CARRYING_AMT	NUM(8)	Carrying Amount	This is the accounting balance sheet value. It is used to populate column 0010 of the Corep report C 40.00.
IMP_FCS_FLG	NUM(3)	Immovable Property Fully Completely Secured Flag	This flag indicates whether the exposure is fully and completely secured by real estate CRM instrument.
EXPORT_CREDIT_INSURANCE_SCHEME_FLG	NUM(8)	Export Credit Insurance Scheme Flag	This column indicates that the guarantees and insurances are issued by Export Credit Agency as CRM.
IRB_PRODUCT_CLASS	CHARACTER(32)	IRB Product Class	This value specifies the product class in the internal ratings-based approach. Possible values include EQUITY, MORTGAGE, REVOLVING, and so on.

Column Name	Data Type	Column Label	Column Description
STD_PRODUCT_CLASS	CHARACTER(32)	STD Product Class	This value specifies the product class in the standardized approach. Possible values include EQUITY, MORTGAGE, REVOLVING, and so on.
PRUDENTIAL_PORTFOLIO	CHARACTER(32)	Prudential Portfolio	This value indicates whether an exposure is a trading book exposure or a banking book exposure. Valid values: "TRADING_BOOK", "BANKING_BOOK".
TRADE_FIN_FLG	NUM(8)	Trade Finance Flag	This flag indicates whether an exposure is a trade finance exposure or not. The value 1 denotes trade finance exposure.
CRM_TYPE	CHARACTER(32)	CRM Type	This value specifies the name of a type of credit risk mitigant. Examples of types of credit risk mitigants include financial collateral, physical collateral, receivables and guarantees. For example, use values like FINANCIAL_COLLATERAL, PHYSICAL_COLLATERAL, GUARANTEE, and so on.
CRM_SUBTYPE	CHARACTER(32)	CRM Subtype	This value specifies the credit risk mitigant (CRM) subtype that is mapped as per rd_map.map_crm_type. For each type of credit risk mitigant there are one or more subtypes. For example, GOLD or CASH is a subtype of a financial collateral CRM type.
COUNTERPARTY_INTERNAL_ORG_FLAG	NUM(8)	Counterparty Internal Org Flg	This flag indicates whether a counterparty is represented by an internal organization. The flag value of 1 indicates counterparty is represented by at least one internal organization.
BUSINESS_UNIT	CHARACTER(40)	Business Unit	An identifier of the business unit such as BU1 for business unit 1.
IN_DEFAULT_FLG	NUM(8)	In Default Flag	Under STD approach, the exposure is considered in default if number of days past due is greater than prescribed threshold. The bank can also decide to consider an exposure in default even if the threshold is not crossed.
ELIGIBLE_CRM_TYPE	CHARACTER(32)	Eligible CRM Type	This value specifies a type that categorizes the eligibility of a particular credit risk mitigant for a particular regulatory set. This

Column Name	Data Type	Column Label	Column Description
			is mapped as per rd_map.map_eligible_crm_type.
SACCR_ALPHA	NUM(8)	SACCR-Alpha	SACCR_ALPHA is used as a multiplier in the computation of EAD.
MARGIN_AGREEMENT_RK	NUM(8)	Margin Agreement Reference Key	This column specifies reference key associated with the margin agreement present in rrm_stg.margin_agreement table. The margin agreement associated with this netting set is retrieved through this key.
COUNTERPARTY_NAME	CHARACTER(150)	Counterparty Name	The name of the counterparty. This value is optional.
CCR_NICA	NUM(8)	SACCR Net Independent Collateral Amount	The total amount of net independent collateral at netting set level computed in accordance with CRR Article 276.
SA_CCR_VM	NUM(8)	SACCR Variation Margin	The total amount of variation margin received and posted for offsetting against the replacement cost portion of the derivatives exposure in accordance with CRR Article 429c(3).
PFE_M1_AMT	NUM(8)	PFE Amount with Multiplier at 1	This column stores the total amount of Potential future exposure as per Article 278 CRR assuming a multiplier of 1.
TRADE_EXP_FLG	NUM(8)	Trade Exposure Flag	This flag indicates whether the exposure is a trade exposure or not. The value 1 denotes, if the exposure is trade exposure.
CRM_EFFECT	CHARACTER(16)	CRM Effect	This column identifies the method used for application of CRM to exposures subject to STD approach. Valid values: FCSM (Simple method), FCCM (Comprehensive method).
CCR_APPROACH	CHARACTER(32)	CCR Approach	EAD for derivative transactions are calculated as per the CCR_APPROACH. Possible values are SA_CCR and CEM_OEM.
CRM_APPROACH	CHARACTER(16)	CRM Approach	This data fields indicates the approach, such as Standardized and IRB used for derivatives, guarantees and insurance used as CRM.

Column Name	Data Type	Column Label	Column Description
CRM_COUNTERPARTY_CLASS	CHARACTER(32)	CRM Counterparty Class	Counterparty class assigned to the counterparty of the CRM instrument. Possible values are RETAIL, CORPORATE, INSTITUTION, BANK and so on.
CRM_COUNTERPARTY_SUBCLASS	CHARACTER(32)	CRM Counterparty Subclass	This value specifies the counterparty subclass assigned to the counterparty of the CRM instrument.
CRM_REG_EXP_CLASS	CHARACTER(32)	Regulatory Exposure Class for CRM	This value specifies the regulatory exposure class for the CRM taking the substitution effect. Possible values include RETAIL, CORPORATES, EQUITY, CEN_GOV_BNK, and so on.
CRM_REG_EXP_SUBCLASS	CHARACTER(32)	Regulatory Exposure Subclass for CRM	This value specifies the regulatory asset subclass for the CRM. Possible values are OTHER_THAN_SL and OTHER_RETAIL under IRB approach.
CRM_RISK_SUBSTITUTION_EFF_FLG	NUM(8)	Credit Protection Eligible For Substitution Effect Flag	This flag specifies whether the CRM utilizes the substitution effect.

Table 22 MAP_LR_EXP_EXCLUSION_TYPE

Column Name	Type	Not Null	Label	Description
LR_EXCLUSION_REASON_CD	CHARACTER(16)	N	LR Exclusion Reason Code	This value specifies a code that represents the LR exclusion reason type.
LR_EXCLUSION_REASON_TYPE	CHARACTER(36)	N	LR Exclusion Reason Type	This value identifies the LR exclusion reason type. Possible values are ASSETS_PSI, AUT Ancillary Services_CSD, CENTRAL_BANK, COMMON_EQUITY_TIER1, DESIG Ancillary Services_CSD, EXPORT_CRDITS, FIDUCIARY_ASSET

Column Name	Type	Not Null	Label	Description
				S, HIGHER_LEVEL_C LIENT, INTRAGROUP, IPS, PROMO_LOANS_C TR_REG_LOCAL_G OV, PROMO_LOANS_C TR_REG_LOCAL_G OV_PUB, PROMO_LOANS_IN TER_CREDIT_INST, PROMO_LOANS_IN TER_CREDIT_INST _PUB, PROMO_LOANS_P DI, PSE_EXP, QCCP, SEC_EXP_SIGN_RI SK_TRANS, TIER1, TRIPARTY_AGENT S, and VM_RECEIVABLE_ ASSET.
LR_EXCLUSION_ REASON_DESC	CHARACTER(500)	N	LR Exclusion Reason Description	This value describes the details of the LR exclusion reason type.

Changed Files for v03.2022

The following list of *.sas files have been added, updated, or deleted between version v07.2021 and v10.2021 (excluding DDL scripts, insert scripts, and documentation-related resources files):

Node Files

Files Added

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Content Release v10.2021

What's New in the v10.2021 Content Release

Overview

SAS Solution for Regulatory Capital v10.2021 has the following new features, fixes, and enhancements:

- Attribution Analysis
- Identification of Groups of Connected Clients
- Large Exposures calculation
- Principal-only Guarantee treatment
- MBA treatment for CIU funds under CRR2 configuration

- Update to base date for sample data
- RW treatment for banks with STD approach under Basel4 configuration
- Documentation enhancements

Attribution Analysis

The attribution analysis feature enables you to gain insight into the changes in credit risk metrics due to the attribution factors. The attribution analysis makes incremental changes to the analysis performed in the previous period and records the values of user-specified output variables with each change. SAS Solution for Regulatory Capital runs the attribution analysis for credit risk portfolio through a dedicated SAS Risk Stratum workflow template. This feature also enables you to visualize the change through a waterfall chart. For more information, see [Attribution Analysis](#) in *SAS Solution for Regulatory Capital: User's Guide*.

Identification of Groups of Connected Clients

SAS Solution for Regulatory Capital now supports the identification of Group of Connected Clients as per the guidelines provided in CRR Article 4(1)(39) and EBA report EBA/GL/2017/15 in a new SAS Infrastructure for Risk Management flow "Group of Connected Clients". The solution identifies the type of relationship — control or economic dependency — and builds groups based on these relationships depending on the newly added [input fields on page 108](#) in the COUNTERPARTY_MART and COUNTERPARTY_MART_ASSOC. Also, it considers the relationship between control groups and economic groups, as well as the contagion effect on economic dependency and creates the final GCC output tables. For more information, see "Group of Connected Clients" in *SAS Solution for Regulatory Capital: Reference Manual*.

Large Exposures Calculation

SAS Solution for Regulatory Capital identifies large exposures, defines the scope, monitors the limits to large exposures, and prepares data for large exposures reporting in the "Large Exposures Calculations" flow. The solution also monitors the limits to large exposures in the trading book and calculates the additional own funds (capital charge) required for excess due to trading book exposures over the regulatory limits. A new table [TRADING_BK_TRANSACTION_NON_CR on page 108](#) has been introduced to store trading book transactions not subject to credit risk. For more information, see "Large Exposures" in *SAS Solution for Regulatory Capital: Reference Manual*.

Principal-only Guarantee Treatment

SAS Solution for Regulatory Capital now supports the calculation of RWA for exposures secured by principal-only guarantee. The flag [PRINCIPAL_ONLY_PROTECTION_FLG on page 108](#) is used to identify the principal-only guarantee. A guarantee issued against an exposure, such that the protection amount of the guarantee covers only the principal amount of the exposure, and not the interest or other amounts, is identified as principal-only guarantee. For more information, see "Principal-only Guarantee" in *SAS Solution for Regulatory Capital: Reference Manual*.

MBA Treatment for CIU Funds under CRR2 Configuration

Institutions that do not have sufficient information about the individual underlying exposures of CIU funds and that satisfy the criteria to apply the Mandate-based Approach (MBA), calculate the RWA of those exposures in accordance with the limits set in the CIU's mandate and relevant law. The RWA of the fund is calculated as the sum of the RWA of the asset items in which the fund is allowed to invest, multiplied by the maximum leverage allowed under the mandate. The RW of the fund is calculated by dividing RWA amount by the bank's exposure in the fund. For more information, see "Exposure to Equity Investment in Funds" in *SAS Solution for Regulatory Capital: Reference Manual*.

Update to Base Date for Sample Data

Base date in OOTB sample data is modified from 31MAR2019 to 30JUN2022. Hence, the folder name 03312019 is now changed to 06302022 under <FA_RRM>/landing_area.

RW Treatment for Banks with STD Approach under Basel4 Configuration

Under SCRA, exposures to banks without an external credit rating receive a risk weight of 30% when the bank fulfills the requirements for Grade A classification, its CET1 ratio meets or exceeds 14%, and its Tier1 leverage ratio meets or exceeds 5% (Basel framework CRE20.21 footnote 15 (forthcoming)). For more information, see "Standardized credit risk assessment approach" in *SAS Solution for Regulatory Capital: Reference Manual*.

Documentation Enhancements

The following documentation sections of *SAS Solution for Regulatory Capital: Reference Manual* has been supplemented with additional information:

- Risk Weight Determination for STD Approach
- Risk Weight Determination for IRB Approach
- Credit Risk Mitigation Techniques

Other Fixes and Enhancements

For more information, see ["Details of Other Fixes and Enhancements in v10.2021"](#) on page 105.

Data Model Changes

For more information, see ["Data Model Changes in v10.2021"](#) on page 108.

Details of Other Fixes and Enhancements in v10.2021

Table 23 Details of Other Fixes and Enhancements in v10.2021

Category	Description	Affects Version
Securitization	<p>Securitization exposure value for the subpool</p> <p>If the underlying exposure in a securitization pool was secured by financial collateral, the amount of collateral was deducted from the exposure value of the subpool. With this fix, the original exposure value is considered as exposure value of the subpool, and any collateral not subject to substitution effect is ignored.</p>	v02.2019 and later
Credit Risk	<p>Missing annual sales value affecting firm size adjustments</p> <p>When annual sales or total assets is missing for any counterparty within a counterparty group, size still takes the aggregated value and firm size adjustment is applied to the exposures within the group. With this fix, when annual sales or total assets is missing for any counterparty within the counterparty group, the firm-size adjustment is not applied to the exposures in the counterparty group.</p>	All previous versions
Credit Risk	<p>Retail Granularity Exception for Exposures with linked facilities</p> <p>In SAS Solution for Regulatory Capital, if the exposure fails retail granularity check, the product or exposure class of the linked facility is not updated along with the exposure, leading to different RWA for exposures and their linked facility. With this</p>	v04.2021 and later

Category	Description	Affects Version
	fix, if the exposure fails retail granularity check, the exposure and its linked facility receives equal risk weight treatment.	
Credit Risk	<p>Benchmark RWA for mortgage exposures under Split Loan Approach</p> <p>Under the Benchmark RWA flow, the real estate collateral was not being considered for assigning the fully and completely secured (FCS) and fully secured (FS) part for the exposures secured by those real estate collaterals; even though the collateral was available and eligible. This has been fixed and the benchmark columns for these exposures are aggregated in the capital.capital_detail_irb data set.</p>	All previous versions
Credit Risk	<p>Exposure Value for CIU Funds</p> <p>Under CRR configuration, MTM_INSTRUMENT was used for EAD valuation of CIU fund exposures. With this fix, MTM_INVESTMENT_FUND is now used for EAD valuation of CIU fund exposures. In this pricing method, fund share capital amount is multiplied with the bank share holding percentage to compute the exposure at default for the CIU fund exposure.</p>	All previous versions
CCR	<p>RC, PFE, and Add-On components updated when margined EAD is greater than unmargined EAD</p> <p>In SAS Solution for Regulatory Capital, only unmargined EAD was reported in the output tables for the cases where margined EAD was greater than unmargined EAD. Unmargined RC, PFE, and other Add-on components (AGGREGATE_ADD_ON, IR_ADD_ON, FX_ADD_ON,</p>	v04.2021 and later

Category	Description	Affects Version
	CR_ADD_ON, EQ_ADD_ON, COMM_ADD_ON and PFE_MULTIPLIER) were not reported in the CCR result tables. This has been fixed (Basel Framework CRE52.2(CRR ARTICLE 274(3))).	
Back-end	SAS Risk Stratum workflows When ENTITY_ROLE_CD was set to BOTH in the rrm_bsdt.entity data set, the stratum workflows failed for any entity role value selected in the user interface. This has been fixed.	v11.2020 and later
Back-end	RWA_APPROACH parameter at entity level RWA_APPROACH was placed in config.regulatory_settings table that applied to all entities. This parameter is used to decide the APPROACH and APPROACH_CATEGORY for the equity exposures subject to 250% RW. With this fix, RWA_APPROACH is moved to the entity table (rrm_bsdt.entity) and can be specified at the individual entity level.	All previous versions
Back-end	Replacing Arithmetic operators with sum function The arithmetic operators + and – were used in SAS code, which lead to unexpected results or sometimes code failure when there were missing values. These operators have been replaced with sum functions, which can handle the missing values.	All previous versions
Back-end	Support to base date with timestamp In SAS Infrastructure for Risk Management, input data sets can be versioned by date (8-character string – mmddyyyy) or by date and time (14-character	All previous versions

Category	Description	Affects Version
	string – mmddyyyyhhmmss). When triggered from Stratum, the workflows were failing when they were run with the timestamp base date folder. With this fix, workflows run successfully with both the formats of base date. Note that this fix is not yet supported for IFRS9 Provisioning Impact on RWA job flow when it is run through On-demand Regulatory Calculations workflow.	

Data Model Changes in v10.2021

Data Model Changes

Table 24 Data Model Changes

Area	Table Name	Column Name	Nature of Change
Staging	COUNTERPARTY_MAR T	COMMON_EQUITY_TIE R1_RATIO_PCT	Column added to capture CET1 ratio, which is checked against a threshold to apply preferential risk weight treatment for unrated exposures to banks under SCRA approach in Basel4 config.
	COUNTERPARTY_MAR T	LEVERAGE_RATIO_PC T	Column added to capture leverage ratio, which is checked against a threshold to apply preferential risk weight treatment for unrated exposures to banks under SCRA approach in Basel4 config.
	COUNTERPARTY_MAR T	CTRL_GROUP_ID	Column added to capture Control Group ID, which is used in the new

Area	Table Name	Column Name	Nature of Change
			feature for GCC processing.
	COUNTERPARTY_MART	CTRL_GROUP_NAME	Column added to capture Control Group Name, which is used in the new feature for GCC processing.
	COUNTERPARTY_MART	GCC_ID	Column added to capture the name of Group of Connected Clients, which is used in the new feature for GCC processing.
	COUNTERPARTY_MART	GCC_NAME	Column added to capture the ID of Group of Connected Clients, which is used in the new feature for GCC processing.
	COUNTERPARTY_MART	ASSOCIATION_QUOTA_PCT	Column added to capture quota of each counterparty in a civil law association.
	COUNTERPARTY_MART	COMMON_AGENT_RK	Column added to identify common agent within a group of connected clients.
	COUNTERPARTY_MART	GSII_CPTY_FLG	Column added. Indicates that the counterparty is a Global Systemically Important Institution (GSII).
	COUNTERPARTY_MART	SHADOW_BANK_ENTITY_FLG	Column added. Indicates that the counterparty is a Shadow Bank Entity.
	COUNTERPARTY_MART_ASSOC	COUNTERPARTY_ID	Column added. Specifies the business key for the counterparty.
	COUNTERPARTY_MART_ASSOC	EXCLUDE_FROM_GROUP_FLG	Column added. Indicates the inexistence of control in spite of the ownership relationship and for override of existing

Area	Table Name	Column Name	Nature of Change
			economic relationship in spite of economic dependencies.
	COUNTERPARTY_MAR T_ASSOC	SOV_CARVE_OUT_FLG	Column added. For entities, which are under partial carve out approach, this column is used to Identify whether they should be carved out ("1" if yes).
	COUNTERPARTY_MAR T_ASSOC	ECONOMIC_DEPENDE NCY_TYPE	Column added. Identifies the type of economic relationship, which is used in the new feature for GCC processing.
	COUNTERPARTY_MAR T_ASSOC	PARTICIPATION_HOLDI NG_PCT	Column added. Percentage of holding in the entity under ownership relationship.
	COUNTERPARTY_MAR T_ASSOC	VOTING_AGREEMENT_ DT	Column added. Date on which the voting agreement was signed (there might be several).
	ENTITY	RWA_APPROACH	Column added to apply RWA_APPROACH at the individual entity level.
	ENTITY	TIER1_CAPITAL_AMT	Column added to store Tier 1 Capital Amount at the individual entity level.
	ENTITY	GSII_FLG	Column added to specify whether the reporting entity is a Global Systemically Important Institution (G-SII).
	TRADING_BK_TRANSA CTION_NON_CR		Table added to store the trading book transactions that are not subject to credit risk. This table is consumed as is in the Large Exposures process.
Mapping	MAP_CRM_TYPE	PRINCIPAL_ONLY_PRO TECTION_FLG	Column added to support RWA calculation for

Area	Table Name	Column Name	Nature of Change
			exposures secured by principal-only guarantee. This flag indicates whether the credit risk mitigant covers only the principal amount of the exposure.
	MAP_CPTY_ASSOC_TY PE	COUNTERPARTY_ASS OC_TYPE_CD	Column added. Indicates the type of association between the two counterparties, which is used in the new feature for GCC processing.
	MAP_CPTY_ASSOC_TY PE	DESCRIPTION	Column added. Provides description of the counterparty association type.
Static	REGULATORY_PARAM ETER	SOV_CARVE_OUT_OP TION	Column added to identify the carve out approach to be applied for entities for which the controlling entity is a government institution.
	LE_REGULATORY_PAR AMETER		Table added to store the list of regulatory parameter names and associated values used in the Large Exposures calculations.
Capital	CCR_HEDGING_SET_T RANSACTION_LINK		Table added. This table links an Exposure ID to its corresponding Hedging set id.

Changed Files for v10.2021

The following list of *.sas files have been added, updated, or deleted between version v07.2021 and v10.2021 (excluding ddl scripts, insert scripts, documentation-related resources files):

Node Files

Files Added

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Content Release v07.2021

What's New in the v07.2021 Content Release

Overview

SAS Solution for Regulatory Capital v07.2021 has the following new features, fixes, and enhancements:

- Support for EU Capital Markets Recovery Package
- CRR2 Corrigendum
- CRR2 default configuration set for EU
- Support for EBA COREP-CCR Templates
- LTA approach for CIU funds under CRR2 configuration
- COREP Reports on SAS Risk Stratum

Support for EU Capital Markets Recovery Package

The Capital Markets Recovery Package (EU2 2021/558) - the “CRR Quick Fix” brings important changes in the area of the prudential treatment of securitization exposures.

Eligibility of Unfunded Credit Protection

For the securitization positions, the eligibility check for unfunded credit protection is now performed only for corporate credit protection providers as per the revised CRR Article 249(3). For more information, see “Recognition of Credit Risk Mitigation for Securitization Positions” in *SAS Solution for Regulatory Capital: Reference Manual*.

Differentiated Capital Treatment to STS On-balance Sheet Synthetic Securitization Exposures

As per revised CRR Article 270, the differentiated capital treatment is now also applied to senior positions in STS on-balance sheet synthetic securitization transaction. For more information, see “Differentiated Capital Treatment” in *SAS Solution for Regulatory Capital: Reference Manual*.

Look-through Treatment of Non-performing Exposures (NPE) Securitizations

SAS Solution for Regulatory Capital now supports the look-through treatment of senior positions in qualifying traditional non-performing exposures (NPE) securitizations as per CRR Article 269a (6). For senior positions in all other NPE securitization transactions, the look-through treatment is applied as per Basel Framework CRE40.50 and CRR Article 267. For more information, see “Look-Through Approach in Treatment for Securitization” in *SAS Solution for Regulatory Capital: Reference Manual*.

Calculation of Non-refundable Purchase Price Discount Amount (NRPPD) for Qualifying Traditional Non-performing Exposures (NPE) Securitizations

SAS Solution for Regulatory Capital now supports the calculation of non-refundable purchase price discount amount adjusted downward to consider the realized losses. For more information, see “Calculation of Non-refundable Purchase Price Discount Amount” in *SAS Solution for Regulatory Capital: Reference Manual*.

CRR2 Corrigendum

A corrigendum to Regulation (EU) 2019/876 ("CRR2") was issued by the European Parliament and the Council of the EU on 25th February 2021. SAS Solution for Regulatory Capital implements the following corrections from that Corrigendum:

Revised Definition of E* in CRR Article 501 for the SME Supporting Factor

The total amount owed by the SME or by the group of connected clients of the SME to the institution, its subsidiaries, its parent undertakings, and to other subsidiaries of those parent undertakings includes the exposures in default but excludes claims or contingent claims secured on residential property collateral. With this enhancement, under CRR configuration, if the total amount owed to the institution is zero, then the total amount owed is assigned as the amount of claims or contingent claims against the SME or the group of connected clients of the SME that are secured by residential property collateral - as per revised CRR Article 501. For more information, see “SME Supporting Factor” in *SAS Solution for Regulatory Capital: Reference Manual*.

Introduction of 10 Days Floor in Supervisory Duration Formula of SA-CCR (CRR Article 279b-1)

The formula for calculating supervisory duration has been changed and a floor of 10 business days has been added in accordance with Corrigendum to Regulation (EU) 2019/876 on page 70, new

Article 279b, paragraph 1, point (a). For more information, see “Retrieve the Supervisory Parameters - Supervisory Factor and Correlation” *SAS Solution for Regulatory Capital: Reference Manual*.

CRR2 Default Configuration Set for EU

The legislative amendments to the EU’s Capital Requirements Regulation, widely referred to as “CRR2” that were published in the [Official Journal of the European Union](#) is applicable directly across the EU from June 28, 2021. This release renames the existing regulatory configuration set CRD5 to CRR2. The solution workflow template “EU - Regulatory Capital Calculations” now runs with CRR2 configuration set for RWA computation. For more information, see [SAS Solution for Regulatory Capital: User’s Guide](#).

Support for EBA COREP -CCR Templates

SAS Solution for Regulatory Capital now supports these COREP 3.0 reports: C 34.02, C 34.03, C 34.06, C 34.07, C 34.08, C 34.09, C 34.10. The following output tables are created and can be used for populating the COREP reports.

- CAPITAL.CCR_NETTING_SET
- CAPITAL.CCR_DERIVATIVE_TRANSACTION
- CAPITAL.CCR_HEDGING_SET
- CAPITAL.CCR_NETTING_SET_CRM_ALLOC

For more information about the output tables, see “Output Data Sets” under “About SAS Solution for Regulatory Capital Job Flows” in *SAS Solution for Regulatory Capital: Reference Manual*.

LTA Approach for CIU Funds under CRR2 Configuration

Institutions that have sufficient information about the underlyings of CIU funds must look-through those underlying exposures to calculate the risk-weighted exposure amount of the CIU. The institutions must risk weight all underlying exposures of the CIU as if they were directly held by those institutions. For more information, see “Exposure to Equity Investment in Funds” in *SAS Solution for Regulatory Capital: Reference Manual*.

COREP Reports on SAS Risk Stratum

For customers who use SAS Solution for Regulatory Capital on SAS Risk Stratum to run calculations, and SAS Regulatory Content for EBA Taxonomies to generate COREP reports, a workflow has been added to support the entire run from SAS Risk Governance Framework. The creation of filing packages and the generation of XBRL reports is still performed in SAS Risk and Finance Workbench while the process is now orchestrated in SAS Risk Governance Framework. For more information about the workflow, see “COREP Reports – EBA Workflow” in [SAS Solution for Regulatory Capital: User’s Guide](#).

Other Fixes and Enhancements

For more information, see “Details of Other Fixes and Enhancements in v07.2021” on page 122.

Data Model Changes

For more information, see [“Data Model Changes in v07.2021”](#) on page 125.

Details of Other Fixes and Enhancements in v07.2021

Table 25 *Details of Other Fixes and Enhancements in v07.2021*

Category	Description	Affects Version
Counterparty Credit Risk	<p>EAD treatment for Sold Options with premium received upfront</p> <p>As per CRR Article 274(5), for Sold Options where the premium has been received upfront, EAD is equal to 0. These are applicable for isolated sold options and exclusive netting sets that comprise of only sold options qualifying the criteria mentioned in CRR Article 274(5). As part of this treatment a new column PREMIUM_RECEIVED_UPFRONT_FLG is added in the data model changes section. For more information, see “Standardized Approach for Counterparty Credit Risk” in <i>SAS Solution for Regulatory Capital: Reference Manual</i>.</p>	All previous versions
Credit Risk	<p>SME SF and Infra SF application</p> <p>When an exposure qualifies for both SME and Infrastructure capital deduction treatment, both these factors were getting applied. With this fix, if an exposure is eligible for both SME SF and Infra SF, the most beneficial of the two, that is, the Infra SF is applied to the RWA.</p>	v04.2021
Credit Risk	<p>Exposures secured by immovable property</p>	All previous versions

Category	Description	Affects Version
	For the exposures that are completely secured by immovable property, the exposure is split into three parts - secured by FCS part, secured by FS part, and the remaining part of the exposure. Earlier, all the records were present in the result tables even when the parts had zero EAD_PORTION. With this fix, such records are removed from the result tables and provisions are allocated to the other parts as appropriate.	
Credit Risk	New dimension for COREP Reporting A column CRM_EFFECT has been added to identify the method used for application of financial collateral to exposures subject to STD approach.	Not applicable
Prudential Backstop	Exposure value in Prudential Backstop calculations The exposure value that was used for calculations of insufficient loss coverage amount for the non-performing exposures was the exposure value after the application of CCF. As per CRR Article 47a (2), the exposure value must not include the effect of CCF. This has now been fixed.	v12.2019 and later
CCR	MTM values can be positive or negative regardless of whether its bought or sold The column VALUE_AMT in EXPOSURE_DERIVATIVE would accept only positive values and the positive or negative sign was assigned based on POSITION_TYPE_CD being LONG or SHORT. With this fix, VALUE_AMT takes both positive and negative values as input regardless of POSITION_TYPE_CD being LONG or SHORT.	All previous versions

Category	Description	Affects Version
Back end	<p>Performance improvement in optimal CRM allocation</p> <p>The execution time of IRM instance had increased due to the optimal CRM allocation that was added for SA-CCR module, allocation of LGD-adjusted CRMs for LGD flooring under Basel 4 configuration, and allocation of LGD-adjusted CRMs for Prudential Backstop calculation in v01.2021 content release. Then, the allocation for each group of exposure-CRM pairs that are inter-connected was performed sequentially.</p> <p>Now, the corresponding portfolio is partitioned and the allocation is performed in parallel for multiple groups. The number of partitions can be configured in the data set <code>rrm_scfg.byn_configuration_optimizatn_gen</code>. For more information, see the documentation for the individual topic.</p>	v01.2021 and later
Back end	<p>Prudential Backstop calculations</p> <p>The system configuration input data set <code>rrm_scfg.crm_allocation_options</code> was missing from the "Backstop - Process Demand Calculations" node. As a result, the IRM instance was failing due to an unresolved macro variable <code>mitigant_allocation_method</code>. With this fix, <code>rrm_scfg.crm_allocation_options</code> is introduced as an input in the "Backstop - Process Demand Calculations" node.</p>	v04.2021
Back end	<p>Exposure value under IRB approach</p> <p>For the equity and other NCO exposures under IRB approaches, total credit risk adjustment was deducted from the exposure value subject to</p>	All previous versions

Category	Description	Affects Version
	RW. With this fix, now only the specific provision amount is deducted (CRR Article 167 and 168).	
Documentation	New section on Institutions treatment Documentation and flowchart for treatment of Exposures to Institutions under CRR regulation has been updated. For more information, see <i>SAS Solution for Regulatory Capital: Reference Manual</i> .	All previous versions
Documentation	New section on exposure value A new section "Process Exposure Value" has been added to the documentation. The section provides details about the drivers involved in the calculation of exposure value subject to RW under different approaches. For more information, see <i>SAS Solution for Regulatory Capital: Reference Manual</i> .	All previous versions

Data Model Changes in v07.2021

Data Model Changes in Staging Tables

Table 26 Data Model Changes in Staging Tables

Area	Table Name	Column Name	Nature of Change
Staging	EXPOSURE_DERIVATIVE	FAIR_VALUE_AMT	Column Added Column added to store fair value information, which is to be made available in C34.09, COREP report.

Area	Table Name	Column Name	Nature of Change
	SECURITIZATION_POOL_MART	ON_BALANCE_SYNTH_STG_FLG	Column Added Column added to identify the on-balance synthetic STS securitization transactions.
	SECURITIZATION_POOL_MART	NRPPD_AMT_AT_ORIGINATION	Column Added Column added to calculate the adjusted non-refundable purchase price discount amount for NPE securitization transaction.
	SECURITIZATION_POOL_MART	POOL_FACE_VALUE_IN CEP_AMT renamed to POOL_VALUE_AMT_AT_ORIGINATION	Column Renamed Renamed column to reflect its correct definition.
	SECURITIZATION_POOL_MART	POOL_FACE_VALUE_AMT renamed to POOL_CURRENT_VALUE_AMT	Column Renamed Renamed column to reflect its correct definition.
	SECURITIZATION_POOL_MART	SEC_POOL_REALIZED_LOSS_AMT	Column Added Column added to calculate the adjusted non-refundable purchase price discount amount for NPE securitization transaction.
	EXPOSURE_ACCOUNT, EXPOSURE_RECEIVABLE, EXPOSURE_INSTRUMENT, EXPOSURE_FACILITY	OUTSTANDING_AMT_AT_TRANSFER	Column Added Column added to calculate the adjusted non-refundable purchase price discount amount for NPE securitization transaction.
	EXPOSURE_ACCOUNT, EXPOSURE_RECEIVABLE, EXPOSURE_INSTRUMENT, EXPOSURE_FACILITY	REALIZED_LOSS_AMT	Column Added Column added to store realized loss amount for an exposure. It is also used in the calculation of "adjusted NRPPD amount for NPE securitization transaction" if an exposure is an

Area	Table Name	Column Name	Nature of Change
			underlying of a securitization program.
	EXPOSURE_DERIVATIVE	PREMIUM_RECEIVED_UPFRONT_FLG	Column Added Column added to support the treatment of EAD for Sold Options Netting Sets as per CRR Article 274(5).
	ENTITY	OPTALLOC_SUB_PARTITION_EXP_CRM_CNT	Column Added Column added to support performance improvement for generic optimizer by processing multiple isolated groups of exposure-CRM pairs together. It mimics the column CRM_ALLOC_NETWORK_SIZE for generic optimizer.
System configuration	BYN_CONFIGURATION_OPTIMIZATION_GEN	ENTITY_NM, NUMBER_OF_PARTITIONS	Table Added Table added to support partitioning for generic optimizer. The number of partitions to be formed can be configured in this data set.

Data Model Changes in Result Tables

Table 27 Data Model Changes in Result Tables

Area	Table Name	Column Name	Nature of Change
Capital	CCR_DERIVATIVE_TRANSACTION	CREDIT_PROTECTION_TYPE	Column Added It is set to BOUGHT for derivative transactions with a LONG position and SOLD for derivative transactions with a SHORT position.
	CCR_NETTING_SET_CRM_ALLOC	COLLTRL_RECEIVED_POSTED	Column Added

Area	Table Name	Column Name	Nature of Change
			This column distinguishes a collateral as either RECEIVED or POSTED.
	CCR_EXP_DETAIL		Table Renamed The output table CCR_EXP_DETAIL is renamed to CCR_CRM_ALLOCATION_DETAIL as it contains both secured and unsecured rows.
	CCR_EXP_DETAIL_INTRA_GRP		Table Renamed The output table CCR_EXP_DETAIL_INTRA_GRP is renamed to CCR_CRM_ALLOC_DETAIL_INTRA_GRP as it contains both secured and unsecured rows.
	CRM_ALLOCATION_DETAIL, CCR_CRM_ALLOCATION_DETAIL	CIU_APPROACH	Column Added The column identifies the approach of the CIU fund.
	CRM_ALLOCATION_DETAIL, CCR_CRM_ALLOCATION_DETAIL	FUND_ID	Column Added The column identifies the CIU fund to which the underlying exposures belong.
	CRM_ALLOCATION_DETAIL	CIU_LOOK_THROUGH_FLG	Column Deleted
	CCR_DERIVATIVE_TRANSACTION	FAIR_VALUE	Column Added This column is the fair value amount, which will be used to populate in C34.09, COREP report.
	CCR_NETTING_SET	REG_EXP_SUBCLASS	Column Added The column is used to populate C 34.07, COREP report. Regulatory Config: CRR2.
	CRM_ALLOCATION_DETAIL	TOTAL_EXP_AMT_OWED	Column Added

Area	Table Name	Column Name	Nature of Change
			This column stores the total amount of exposure owed to the counterparty or group of connected counterparties. It is used for the application of the SME supporting factor. Regulatory Config: CRR2.
	CCR_NETTING_SET, CCR_HEDGING_SET, CCR_DERIVATIVE_TRANSACTION, CCR_CRM_ALLOCATION_DETAIL, CCR_CRM_ALLOC_DETAIL_INTRA_GRP, CCR_DETAIL	MARKET_VALUE	Column Added This value specifies the market value of the derivative transaction.
	CCR_NETTING_SET_CRM_ALLOC	SEGREGATED_ACCOUNT_FLG	Column Added This column is the classification field for segregated and unsegregated collateral and will be used to populate in C34.08, COREP report.
	CRM_ALLOCATION_DETAIL_SEC, CAPITAL_DETAIL_SECTION_TRANSACTION	NRPPD_AMT	Column Added The column stores the value of non-refundable purchase price discount amount that is adjusted downward to consider the realized losses.
	CCR_HEDGING_SET, CCR_DERIVATIVE_TRANSACTION, CCR_CRM_ALLOCATION_DETAIL, CCR_CRM_ALLOC_DETAIL_INTRA_GRP, CCR_DETAIL	RISK_CATEGORY	Renamed Values in the column The values INTEREST_RATE & FOREIGN_EXCHANGE are renamed to "IR" and "FX" respectively for the column RISK_CATEGORY.
	CCR_HEDGING_SET	RISK_SUBCATEGORY	Column Added This value specifies the RISK_SUBCATEGORY of the hedging set.

Area	Table Name	Column Name	Nature of Change
	CRM_ALLOCATION_DETAIL, CCR_CRM_ALLOCATION_DETAIL, CCR_NETTING_SET	CRM_EFFECT	Column Added Column added to identify the method used for application of CRM to exposures subject to STD approach.

New System Configuration Tables in v07.2021

Table 28 BYN_CONFIGURATION_OPTIMIZATN_GEN

Column Name	Data Type	Not Null	Column Label	Column Description
ENTITY_NM	CHARACTER(32)	N	Reporting Entity	This column stores the code for business unit. Examples of values for ENTITY_NM column include BHC (Bank Holding Company), RLU (Retail Lending unit), CLU (Corporate Lending Unit), and GLU (Government Lending Unit). The values of this column are mapped to the values of ENTITY_ID column of ENTITY data set. Apart from these values, a special value - _ALL_ - has been reserved, which serves as default business unit. This reserved value is considered when data for certain business unit is not available. If the number of entities is large, you can use _ALL_ to represent data for all business units.
NUMBER_OF_PARTITION	CHARACTER(5)	N	Number of partitions	The value specifies the number of partitions that are to be formed. Post processing occurs on this value to determine whether the input is large enough to form the stated partitions. If this value is greater than the number of rows in the table, the number of partitions is set to the number of rows of the table under consideration. Valid values: any positive integer value, AUTO, and MAX. When the value is set to AUTO, the number of available cores is computed and 80% of that value is taken as the number of partitions. When the value is set to

Column Name	Data Type	Not Null	Column Label	Column Description
				MAX, the number of partitions is set to the number of available cores.

Changed Files for v07.2021

The following list of *.sas files have been added, updated or deleted between version v04.2021 and v07.2021 (excluding ddl scripts, insert scripts, documentation-related resources files):

Node Files

Files Added

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Content Release v04.2021

What's New in the v04.2021 Content Release

Overview

SAS Solution for Regulatory Capital v04.2021 has the following new features, fixes, and enhancements:

- IRB Excess or Shortfall calculation
- enhancements to securitization treatment
- enhancements to Prudential Backstop Calculations
- support to EBA Taxonomy 3.0

IRB Excess or Shortfall Calculation

SAS Solution for Regulatory Capital now supports the IRB excess or shortfall calculation as per the Basel Framework CAP30.13 and CRR Article 159. The IRB excess or shortfall amount is calculated as the difference of total eligible provisions and expected loss amount. For more information, see “IRB Excess or Shortfall of CRA” under “Credit Risk Capital Charge” in *SAS Solution for Regulatory Capital: Reference Manual*.

Enhancements to Securitization Treatment

Treatment of Non-performing Exposures (NPE) Securitizations

SAS Solution for Regulatory Capital now supports the treatment of non-performing exposures (NPE) securitizations. This includes implementation of the risk weight treatment and maximum capital treatment for NPE securitization exposures as per Basel Framework CRE 45 and CRR Article 269a. Currently, the look-through treatment for NPE securitization exposures is supported as per Basel Framework CRE40.50 and CRR Article 267. For more information, see “Capital Treatment of Securitizations of Non-performing Exposures” under “Treatment for Securitization” in *SAS Solution for Regulatory Capital: Reference Manual*.

Significant Risk Transfer

The significant risk transfer types 'A', 'B', 'D', and 'N', when not provided as an input, are now derived in the solution (CRR Article 244 and 245). For more information, see “Recognition of Significant Credit Risk Transfer” under “Treatment for Securitization” in *SAS Solution for Regulatory Capital: Reference Manual*.

Update to Maximum Capital Requirement Treatment

The current formula for computation of Maximum Capital requirement for the securitization position includes EL amount, even for the case when the securitization pool consists of only STD exposures. With this fix, the formula for computation of maximum capital is updated to include EL amount only when the securitization pool consists of only IRB exposures as per Basel framework CRE40.53 (CRR Article 268(1)). For more information, see “Maximum Capital Requirement” under “Treatment for Securitization” in *SAS Solution for Regulatory Capital: Reference Manual*.

Enhancements to Prudential Backstop Calculations

Prioritized (BY_RANK) Allocation Support

SAS Solution for Regulatory Capital now supports Prudential Backstop calculations under the prioritized (BY_RANK) allocation. The method to allocate CRMs is based on the value of the parameter MITIGANTS_ALLOCATION_METHOD. For more information, see “CRM Allocation” under “Prudential Backstop” in *SAS Solution for Regulatory Capital: Reference Manual*.

Contribution of NPE to IRB Shortfall

The EL amount was re-calculated within the Prudential Backstop subflow and was used to calculate IRB_SHORTFALL_AMT. Now with this fix, the EL amount and the IRB Shortfall amount that are already computed outside of the Prudential Backstop subflow are used to calculate the contribution of the non-performing exposure, IRB_SHORTFALL_AMT, to the aggregated IRB Shortfall (CRR Article 47C paragraph 1(b)(iv)). For the scenario of non-performing exposure under STD approach that is secured by collateral IRB guarantee (risk substitution), IRB_SHORTFALL_AMT is currently not calculated.

Exposures Secured by Immovable Property

For the exposures secured by immovable property under STD approach, both the parts of the exposure that is fully and completely secured as well as that is fully but not completely secured were considered for applying the coverage factor specified in CRR Article 47c (3). With this fix, only that part of the exposure that is fully and completely secured is considered as part of the exposure secured by immovable property. The part of the exposure that is fully but not completely secured receives the same coverage factor as an unsecured exposure would (CRR Article 47c (2)).

Calculation of Total Provisions

While calculating the insufficient coverage for non-performing exposures, TOTAL_PROV_ADJUST_UNCAP was being calculated incorrectly. First, the individual provisions were populated incorrectly in the secured rows and TOTAL_PROV_ADJUST_UNCAP was calculated using the mean of those rows. Second, it did not consider that IRB_SHORTFALL_AMT could be present for the parts of the exposure that are secured by a guarantee. With this fix, TOTAL_PROV_ADJUST_UNCAP is now correctly calculated.

Vintage Period for Forborne Exposures

The column FBE_V_TIME_INTERVAL was calculated as the number of years following an exposure's classification as non-performing until the forbearance status is granted. With the fix, now FBE_V_TIME_INTERVAL is calculated as a vintage period for forbearance exposure. A new column FBE_POINT_INTERVAL has now been introduced, which indicates the years following an exposure's classification as non-performing until the forbearance status is granted.

Support to EBA Taxonomy 3.0

SAS Solution for Regulatory Capital v04.2021 has modified output tables for feeding new and modified templates in EBA Taxonomy 3.0. The new supported templates are:

- **NPE Loss Coverage reports:** The solution now supports inputs to the new COREP reports C 35.01, C 35.02, C 35.03.
- **IRB reports:** The solution now supports inputs to the new COREP reports C 08.03, C 08.06, C 08.07.

Other Fixes and Enhancements

For more information, see [“Details of Other Fixes and Enhancements in v04.2021” on page 138](#).

Data Model Changes

For more information, see [“Data Model Changes in v04.2021” on page 145](#).

Details of Other Fixes and Enhancements in v04.2021

Table 29 Details of Other Fixes and Enhancements in v04.2021

Category	Description	Affects Version
Credit Risk	<p>Treatment of exposures in foreign currency with an unrated bank</p> <p>In CRD4 and CRD5 configurations, for an exposure in a foreign currency, the RW was correctly derived only when both domestic and foreign currency ratings of the bank were not available. If the domestic currency rating was available and foreign currency rating was not available, the RW was incorrectly derived. With this fix, even when the domestic currency rating is available, the RW of an exposure in a foreign currency is derived from the foreign currency rating of the central government, if the foreign</p>	All previous versions

Category	Description	Affects Version
	<p>currency rating of the bank is not available, according to CRR Art.121-1.</p> <p>Similarly, in Basel4 configuration, for an exposure in a foreign currency, SCRA grade was used to derive its RW only when both domestic and foreign currency ratings of the bank were not available. If the domestic currency rating was available and foreign currency rating was not available, the RW was incorrectly derived. With this fix, even when the domestic currency rating is available, the RW of an exposure in a foreign currency is derived using SCRA grade of the bank, if the foreign currency rating of the bank is not available. (Basel framework CRE20.21 (forthcoming)). For more details, refer to section Standardized credit risk assessment approach (SCRA) under Exposures to banks in Credit Risk Capital Charge - Basel IV.</p>	
Credit Risk	<p>Renaming of column ADDNL_VALUE_ADJUSTMENTS to TOTAL_ADDNL_VALUE_ADJUST_AMT</p> <p>Column ADDNL_VALUE_ADJUSTMENT S represents the sum of the additional value adjustment amount (ADDNL_VAL_ADJ_AMT) and own funds deduct amount (OWN_FUNDS_DED_AMT). The similarity between the column names ADDNL_VALUE_ADJUSTMENT S and ADDNL_VAL_ADJ_AMT created ambiguity about the column values. With this fix, the column ADDNL_VALUE_ADJUSTMENT S has been renamed to TOTAL_ADDNL_VALUE_ADJUS</p>	v08.2020 and later

Category	Description	Affects Version
	T_AMT to represent the column value clearly.	
Credit Risk	<p>Regulatory exposure subclass for CRD4 and CRD5 configuration</p> <p>For CRD4 and CRD5 configuration, the regulatory exposure subclass was missing for corporate exposures other than specialized lending and other retail exposures. With this fix, corporate exposures other than specialized lending and other retail exposures are assigned an OTHER_THAN_SL or OTHER_RETAIL regulatory exposure subclass, respectively. CRM_REG_EXP_SUBCLASS is also now assigned for the CRMs subject to substitution effect.</p>	All previous versions
Credit Risk	<p>Missing RW for defaulted exposures with high provisions</p> <p>In the treatment of defaulted exposures under Standardized approach, ADJUSTMENT_PCT is the ratio of sum of specific credit risk adjustments and the applicable amount of insufficient coverage for non-performing exposures to the unsecured part of the exposure, and directly drives the assigned risk weight value. In rrm_update_rw_defaulted_std.sas macro file, the upper bound for the ADJUSTMENT_PCT was defined as 1000. This resulted in missing risk weights in the result table for defaulted exposures with high provision. To fix this issue, the upper bound for the ADJUSTMENT_PCT is updated to 999 in rrm_update_rw_defaulted_std.sas file.</p>	v02.2019 and later
Credit Risk	<p>Defaulted exposures: round-off limit for ADJUSTMENT_PCT</p>	v12.2019 and later

Category	Description	Affects Version
	<p>In the treatment of defaulted exposures under the Standardized approach, ADJUSTMENT_PCT is the ratio of sum of specific credit risk adjustments and the applicable amount of insufficient coverage for non-performing exposures to the unsecured part of the exposure, and it directly drives the assigned risk weight value. The rounding of that parameter was hardcoded. A new parameter CALCULATION_OPTION.ADJUSTMENT_PCT_ROUND OFF is introduced to let you choose the rounding threshold. It is by default set to 0.0001.</p>	
Credit Risk	<p>Defaulted exposures with missing PD</p> <p>If the PD_PCT input value is missing for a defaulted exposure under the IRB approach, the approach was not downgraded and the RW was calculated under IRB approach only. With this fix, an option DOWNGRADE_INDEFAULT_MISSING_PD has been added in rrm_scfg.calculation_options data set to determine whether to downgrade the approach for such defaulted exposures. For more information, see the section “Update in risk measurement approach based on the availability of risk components” in the <i>SAS Solution for Regulatory Capital: Reference Manual</i>.</p>	v09.2019 and later
Credit Risk	<p>CRD4 - Risk weight of non-performing exposures</p> <p>Non-performing exposures in default under the standardized approach were not getting correct risk weight as only specific provision was considered in the calculations of adjustments to exposure value ratio for assigning risk weight</p>	All previous versions

Category	Description	Affects Version
	<p>bucket to these exposures. With this fix, the applicable amount of insufficient loss coverage for non-performing exposures is also considered in the calculation and correct risk weight is assigned accordingly (CRR Article 127).</p>	
Counterparty Credit Risk	<p>QCCP or NQCCP counterparties</p> <p>The flag QCCP_EXPOSURE_FLG was used to identify exposures to a QCCP counterparty and to prevent override of the preferential treatment. With this fix, QCCP_EXPOSURE_FLG has been renamed to QCCP_PREF_RW_FLG and is made available in the interim data set. A new column CCP_TYPE with values QCCP or NQCCP is used to identify exposures to a QCCP or NQCCP counterparty.</p>	v08.2020 and later
Counterparty Credit Risk	<p>Margined and unmarginined transactions</p> <p>The margined and unmarginined transactions were identified by using the column MARGIN_AGREEMENT_TYPE in the data set MARGIN_AGREEMENT of the staging library. With this fix, the column MARGIN_AGREEMENT_TYPE is now deleted and a new column MARGIN_AGREEMENT_FLG is derived in the solution to identify whether a transaction is margined. If there is a margin agreement corresponding to a netting set, the transactions in that netting set are identified as margined, and the value of the flag MARGIN_AGREEMENT_FLG is set to 1.</p>	v07.2019 and later

Category	Description	Affects Version
Counterparty Credit Risk	<p>Identify single name derivatives</p> <p>The Single-name Credit default swaps and Index Credit default swaps could not be differentiated. To fix this, a new PRODUCT_SUBTYPE, INDEX_CREDIT_DEF_SWAPS has been introduced in the mapping table MAP_PRODUCT_INFO.</p> <p>In addition, the following values of the PRODUCT_SUBTYPE column have been renamed.</p> <ul style="list-style-type: none"> ■ CREDIT_DEFAULT_SWAPS is renamed to CREDIT_DEF_SWAPS ■ OPTIONS is renamed to CREDIT_OPTIONS ■ OTHER is renamed to OTHER_CREDIT_DERIVATIVES 	v07.2019 and later
Counterparty Credit Risk	<p>Main category for SFTs</p> <p>A new value SFT is introduced in the MAIN_CATEGORY column of the map_product_info table to capture securities financing transactions.</p>	All previous versions
Counterparty Credit Risk	<p>Support for basis transactions</p> <p>SAS Solution for Regulatory Capital supports the treatment of basis transactions (Basel Framework CRE52.73)(CRR2 Article 277 paragraph 2(b)). All the basis transactions within a netting set (with both the legs denominated in the same currency, that belong to the same asset class, and reference the same pair of risk factors) form a single hedging set. The supervisory factor for such basis hedging sets is also updated.</p>	All previous versions
Securitization	<p>Identification of ON_BALANCE and ARBITRAGE synthetic securitization</p>	All previous versions

Category	Description	Affects Version
	<p>Synthetic securitization transactions were mapped to the securitization structure subtype, OTHER. With this fix, the synthetic securitization transactions are now mapped to the securitization structure subtype ON_BALANCE or ARBITRAGE . A flag ON_BALANCE_SYNTH_STS_F LG is derived to identify the on-balance sheet synthetic STS securitization.</p>	
Back-end	<p>Moving from Public LASR to Private LASR library</p> <p>SAS Solution for Regulatory Capital now uses a restricted LASR library instead of the general-purpose public LASR library. As a result, the usage and visibility is now restricted to the solution user base. For UIP scenarios, the deployment of SAS Solution for Regulatory Capital v04.2021 automatically moves the tables from the public LASR library to the private LASR library.</p>	All previous versions
Back-end	<p>SAS Risk Stratum cycle run failed due to data export failure</p> <p>If the portfolio size is more than 1 million exposures, then SAS Risk Stratum cycle would fail due to failure to export data into excel. This issue has been fixed by updating the Datastore_config.sas file.</p>	v11.2020 and later
Back-end	<p>Upgrading SAS Solution for Regulatory Capital on SAS Risk Stratum v03.2021</p> <p>The script (upgrade_solutions.sas) to upgrade to SAS Risk Stratum v03.2021 would fail for versions of SAS Solution for Regulatory Capital prior to v04.2021. To upgrade the solution successfully, copy irm_setup.sas</p>	v11.2020 and later

Category	Description	Affects Version
	file from the SAS Risk Stratum core federated area (/irm/source/sas/ucmacros) to SAS Solution for Regulatory Capital federated area (/irm/source/sas/ucmacros) before executing upgrade_solutions.sas file.	
Back-end	Role getting reset during flow run Running the RWA Calculation flow without selecting the job flow would reset the role to "none selected". This issue has been fixed by updating cyclesubscreen.xml.	v01.2021
Back-end	Performance fix in optimal CRM allocation The optimal CRM allocation was added for SA-CCR module, allocation of LGD-adjusted CRMs for LGD flooring under Basel 4 configuration and allocation of LGD-adjusted CRMs for Prudential Backstop calculation in v01.2021 content release. For IRB portfolio, the IRM instance either stalled or the execution time increased manifold due to increased portfolio size. This performance issue has now been fixed.	v01.2021

Data Model Changes in v04.2021

Data Model Changes in Staging Tables

Table 30 Data Model Changes in Staging Tables

Area	Table Name	Column Name	Nature of Change
Staging	EXPOSURE_DERIVATIVE	MARKET_TYPE	Column Added This column indicates the type of market in which the derivative is traded. Enter

Area	Table Name	Column Name	Nature of Change
			OTC if the derivative is traded over-the-counter and enter EXCHANGE_TRADED, if the derivative is traded through an exchange. This column has been added to support EBA Taxonomy 3.0 reporting requirement.
Staging	MARGIN_AGREEMENT	MARGIN_AGREEMENT_TYPE	Column Deleted The identification of a netting set as margined or unmargined is now done programmatically.
Staging	EXPOSURE_DERIVATIVE	SINGLE_NAME_TRANSACTION_FLG	Column Added This column indicates whether the CREDIT DERIVATIVE or the EQUITY transaction is single-name or multi-name. Possible values are 1 for single-name and 0 for multi-name. This column has been added to support EBA Taxonomy 3.0 reporting requirement.
Staging	EXPOSURE_DERIVATIVE	BASIS_RISK_TRANSACTION_FLG	Column Added Column added to support the treatment of basis transactions
Staging	SECURITIZATION_POOL_MART	WA_MATURITY_MONTHS	Column Deleted
Staging	SECURITIZATION_POOL_MART	WA_MATURITY_YEAR_NO	Column Added This column indicates weighted average maturity of the underlying assets in years.
Staging	SECURITIZATION_POOL_MART	PERFORMING_STATUS	Column Added This column stores the performing status for a securitization transaction. It has been added to support treatment of non-performing exposures (NPE) securitizations.

Area	Table Name	Column Name	Nature of Change
Staging	SECURITIZATION_POOL_MART	QUALIFYING_TRANSACTION_ADDITIONAL_NPE_FLG	Column Added This column identifies whether a securitization transaction is qualifying traditional NPE securitization transaction. It has been added to support treatment of non-performing exposures (NPE) securitizations.
Staging	SECURITIZATION_POOL_MART	NON_REFUNDABLE_PURCHASE_PRICE_DISC_AMT	Column Added This column represents the non-refundable purchase price discount amount for a traditional non-performing securitization transaction. It has been added to support treatment of non-performing exposures (NPE) securitizations.
Staging	RISK_DRIVER_ASSOC		Table Added This table stores the association between risk drivers for derivative transactions. This data set is used to form hedging set for basis transactions.

Data Model Changes in Mapping Tables

Table 31 Data Model Changes in Mapping Tables

Area	Table Name	Column Name	Nature of Change
Mapping	MAP_SEC_STRUCTURE_TYPE		New securitization structure subtypes "ON_BALANCE" and "ARBITRAGE" are added for SYNTHETIC securitization.
Mapping	MAP_PRODUCT_INFO		New MAIN_CATEGORY "SFT" is added to identify the SFT transactions.
Mapping	MAP_PRODUCT_INFO		PRODUCT_TYPE "TOTAL_REPO" and "TOTAL_REVERSE_REPO"

Area	Table Name	Column Name	Nature of Change
			are renamed to “REPO” and “REVERSE_REPO”.
Mapping	MAP_PRODUCT_INFO		PRODUCT_SUBTYPE “CREDIT_DEFAULT_SWAPS” is renamed to “CREDIT_DEF_SWAPS” to differentiate between single name and index credit default swaps.
Mapping	MAP_PRODUCT_INFO		New PRODUCT_SUBTYPE “INDEX_CREDIT_DEF_SWAPS” is introduced to differentiate between single name and index credit default swaps.
Mapping	MAP_PRODUCT_INFO		PRODUCT_SUBTYPE “OPTIONS” is renamed to “CREDIT_OPTIONS” and “OTHER” is renamed to “OTHER_CREDIT_DERIVATIVES” for PRODUCT_TYPE “CR_DERIV”.

Data Model Changes in Result Tables

Table 32 Data Model Changes in Result Tables

Library	Table Name	Column Name	Nature of Change
MLC	NPE_LOSS_COVERAGE	SEC_UNSEC_FLG	Column Deleted
MLC	NPE_LOSS_COVERAGE	SECURED_FLG	Column Added This column identifies the secured leg. The new SECURED_FLG replaces SEC_UNSEC_FLG.
MLC	NPE_LOSS_COVERAGE	SUBJECT_TO_47C_6_FLG	Column Added The flag value 1 indicates that a coverage factor is applied to forbore exposures for an additional period of one year from the date on which forbearance

Library	Table Name	Column Name	Nature of Change
			measure is granted (CRR Article 47C(6)).
MLC	NPE_LOSS_COVERAGE	FBE_POINT_INTE RVAL	Column Added This column indicates the number of years following the exposures' classification as non-performing until the forbearance measure is granted.
CAPITAL	CRM_ALLOCATION_DE TAIL	LR_EXP_VALUE	Column Added This column indicates the institution's exposure measure as defined in CRR Article 429(4). It is used for Leverage ratio (LR) calculation. This column is required for EBA reporting and has the same value as the column EAD_NET_PROV_PRE_C CF_PRE_CRM.
CAPITAL	CRM_ALLOCATION_DE TAIL	CCP_TYPE	Column Added This column identifies the central counterparty type. This column has been added to support EBA Taxonomy 3.0 reporting requirement.
CAPITAL	CRM_ALLOCATION_DE TAIL	QCCP_EXPOSUR E_FLG	Column Deleted
CAPITAL	CRM_ALLOCATION_DE TAIL	ADDNL_VALUE_A DJUSTMENTS	Column Renamed ADDNL_VALUE_ADJUSTMENTS is renamed to TOTAL_ADDNL_VALUE_A DJUST_AMT
CAPITAL	CRM_ALLOCATION_DE TAIL	PRODUCT_CD	Column Added This value is a bank's own classification of the instrument's product code.
CAPITAL	CRM_ALLOCATION_DE TAIL	SUBPRODUCT_C D	Column Added Sub Product type code for the exposure. SUBPRODUCT_CD along

Library	Table Name	Column Name	Nature of Change
			with PRODUCT_CD is mapped to different instrument types.
CAPITAL	CRM_ALLOCATION_DE TAIL	CRM_TYPE_CD	Column Added The code for the credit risk mitigant type.
CAPITAL	CRM_ALLOCATION_DE TAIL	CRM_SUBTYPE_CD	Column Added The code to indicate the subtype for a type of credit risk mitigant.
CAPITAL	CRM_ALLOCATION_DE TAIL	REGULATORY_P RODUCT_CD	Column Added The code for the regulatory classification of the product at a granular level. For example, the code 522 denotes cash.
CAPITAL	CRM_ALLOCATION_DE TAIL	REGULATORY_C OUNTERPARTY_ TYPE_CD	Column Added Specifies the regulatory classification of the counterparty, at a granular level (counterparty class and subclass).
CAPITAL	CRM_ALLOCATION_DE TAIL	PD_PCT	Column Added User defined probability of default value of the counterparty in percentages.
CAPITAL	CRM_ALLOCATION_DE TAIL	LGD_PCT	Column Added User supplied Loss given default assigned for each exposure.
CAPITAL	CRM_ALLOCATION_DE TAIL	LGD_CRM_ADJU STED_FLG	Column Added This flag indicates if the LGD parameter already considers the effect of CRM instruments.
CAPITAL	CRM_ALLOCATION_DE TAIL CCR_EXP_DETAIL	CRM_REG_EXP_ SUBCLASS	Column Added The regulatory exposure subclass for the CRM with substitution effect.

Library	Table Name	Column Name	Nature of Change
CAPITAL	CRM_ALLOCATION_DE TAIL	INFRA_CAP_DED UCTN_TRT_FLG	Column Added
	CAPITAL_DETAIL_STD		This column indicates that the Infrastructure capital deduction treatment is applied.
	CAPITAL_DETAIL_IRB		
CAPITAL	CRM_ALLOCATION_DE TAIL	RWA_INFRA_SF_ ADJUSTMENT_A MT	Column Added
	CAPITAL_DETAIL_STD		This column stores the amount of RWA adjusted due to the application of the Infrastructure supporting factor.
	CAPITAL_DETAIL_IRB		
CAPITAL	CRM_ALLOCATION_DE TAIL	RWA_SME_SF_A DJUSTMENT_AM T	Column Added
	CAPITAL_DETAIL_STD		This column stores the amount of RWA adjusted due to the application of the SME supporting factor.
	CAPITAL_DETAIL_IRB		
	CCR_EXP_DETAIL		
CAPITAL	CRM_ALLOCATION_DE TAIL	RWA_PRE_SF	Column Added
	CRM_ALLOCATION_DE TAIL_SEC		Risk weighted asset amount before considering the application of the supporting factors.
	CAPITAL_DETAIL_STD		
	CAPITAL_DETAIL_IRB		
	CCR_EXP_DETAIL		
CAPITAL	CRM_ALLOCATION_DE TAIL	RWA_PRE_SME	Column Deleted
	CRM_ALLOCATION_DE TAIL_SEC		A single column RWA_PRE_SF is used to identify RWA before the supporting factor is applied in case of both SME and INFRA capital treatment.
	CAPITAL_DETAIL_STD		
	CAPITAL_DETAIL_IRB		
	CCR_EXP_DETAIL		
CAPITAL	CRM_ALLOCATION_DE TAIL	RWA_PRE_INFR A	Column Deleted
	CAPITAL_DETAIL_STD		A single column RWA_PRE_SF is used to identify RWA before the supporting factor is applied in case of both SME and INFRA capital treatment.
	CAPITAL_DETAIL_IRB		
CAPITAL	CAPITAL_DETAIL_IRB	SME_CAP_DEDU CTION_TRT_FLG	Column Added
	CAPITAL_DETAIL_STD		The flag indicates the application of the SME

Library	Table Name	Column Name	Nature of Change
	CCR_EXP_DETAIL		capital deduction treatment to the unsecured row.
CAPITAL	CCR_EXP_DETAIL	CRM_SME_CAP_DEDUCTION_TRANSACTION_FLG	Column Added The flag indicates the application of the SME capital deduction treatment to the secured row.
CAPITAL	CAPITAL_DETAIL_SEC_TRANSACTION	WA_MATURITY_YEAR_NO	Column Added This is done to comply with COREP report C 14.00. The weighted average maturity is now expected in years.
CAPITAL	CAPITAL_DETAIL_SEC_TRANSACTION	WA_MATURITY_MONTHS	Column Deleted The weighted average maturity is now expected in years.
CAPITAL	CAPITAL_DETAIL_SEC_TRANSACTION CRM_ALLOCATION_DETAIL_SEC	PERFORMING_STATUS	Column Added The column indicates the performing status of a securitization transaction.
CAPITAL	CAPITAL_DETAIL_SEC_TRANSACTION CRM_ALLOCATION_DETAIL_SEC	QUALIFYING_TRANSACTION_ADDITIONAL_NONPERFORMING_FLG	Column Added The flag indicates a qualifying traditional non performing securitization transaction.
CAPITAL	CAPITAL_DETAIL_SEC_TRANSACTION CRM_ALLOCATION_DETAIL_SEC	NON_REFUNDABLE_PURCHASE_PRICE_DISCOUNT_AMT	Column Added The column indicates the non-refundable purchase price discount amount.
CAPITAL	CAPITAL_DETAIL_SEC_TRANSACTION CRM_ALLOCATION_DETAIL_SEC	ON_BALANCE_SHEET_SYNTHETIC_TRANSACTION_FLG	Column Added The flag indicates on balance sheet synthetic STS securitization transaction.
CAPITAL	CAPITAL_DETAIL_SEC_TRANSACTION	SIGNIFICANT_RISK_TRANSFER_TYPE_CD	Column Added The column represents the significant risk transfer type code.

New Staging Tables in v04.2021

Table 33 *RISK_DRIVER_ASSOC*

Column Name	Data Type	Not Null	Column Label	Column Description
RISK_DRIVER_1	CHARACTER(32)	Y	Risk Driver 1	The first risk driver of the pair between which there is an association. If a single representative risk driver is provided as an input, it must be specified in this column.
RISK_DRIVER_2	CHARACTER(32)	N	Risk Driver 2	The second risk driver of the pair between which there is an association. If a single representative risk driver is provided as an input, this column remains blank.
POSITIVE_CORRELATION_FLG	NUM	N	Positive Correlation Flag	Flag indicating that the risk drivers are positively correlated. If the risk drivers that are provided in the columns RISK_DRIVER_1 and RISK_DRIVER_2 are positively correlated, set the value of this column to 1. This column is used for CRR2. To form basis hedging sets in CRR2, the risk drivers must be positively correlated (CRR2 Article 277 paragraph 2).
RISK_DRIVER_SIMILARITY_FLG	NUM	N	Risk Driver Similarity Flag	Flag indicating that the risk drivers are same. If the risk drivers that are provided in the columns RISK_DRIVER_1 and RISK_DRIVER_2 represent the same risk driver such as LIBOR_3M and 3M_LIBOR, set the value of this column to 1. If the source system has multiple values for the same risk driver, the risk drivers can be indicated as similar through this flag.

Changed Files for v04.2021

The following list of *.sas files have been added, updated or deleted between version v01.2021+HF and v04.2021 (excluding ddl scripts, insert scripts, documentation-related resources files):

Node Files

Files changed for v01.2021 hot fix

- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_reg_alloc_lgd_adjusted_crm.sas
- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_reg_calc_lgd_floor_irba.sas
- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_saccr_alloc_crm_optimal_rc.sas

Files Added

- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_cap_calc_total_cra_amt.sas
- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_cap_irb_excess_shrtfall_calc.sas
- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_cap_npe_irb_shortfall_calc.sas
- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_mlc_insuff_coverage_calc_std.sas
- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_mlc_post_process_by_rank.sas
- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_rev_sec_apply_srt_trt.sas
- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_rwa_ccr_create_report_input.sas
- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_rwa_combine_result_tables.sas

Files Deleted

- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_mlc_combine_deductions.sas
- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_mlc_insuffi_coverage_calc.sas

Files Updated

- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_alloc_final_processing.sas
- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_alloc_opt_post_process.sas
- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_apply_infra_support_factor.sas
- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_apply_sme_support_factor.sas
- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_br_create_dummy_dataset.sas
- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_br_rwa_create_capital_detail.sas
- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_calc_collateralized_lgd.sas
- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_ccr_enrich_exp_derivatives.sas

- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_ccr_process_defaulted_ccr.sas
- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_ciu_rwa_calculations.sas
- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_ciu_wgt_avg_rw_calc.sas
- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_combine_calc_params_for_rpt.sas
- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_ead_check_sec_approach.sas
- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_ead_create_all_crms.sas
- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_ead_create_irb_exposures.sas
- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_ead_create_std_exposures.sas
- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_ead_process_defaulted.sas
- <FA_RRM>\irm\source\sas\nodes\credit_risk_capital_calculation\irm_ead_retail_granu_sme_std_upd.sas
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- <FA_RRM>\irm\source\sas\nodes\enrichment\irm_de_process_underlying_exp.sas
- <FA_RRM>\irm\source\sas\nodes\enrichment\irm_rd_create_inst_out_var.sas

ucmacros

Files changed for v01.2021 hot fix

- <FA_RRM>\irm\source\sas\ucmacros\irm_allocate_crm_optimally.sas
- <FA_RRM>\irm\source\sas\ucmacros\irm_identify_grps_for_optimizatn.sas

Files Added

- <FA_RRM>\irm\source\sas\ucmacros\irm_mlc_insuff_coverage_calc.sas

Files Deleted

None

Files Updated

- <FA_RRM>\irm\source\sas\ucmacros\check_component.sas
- <FA_RRM>\irm\source\sas\ucmacros\d00_pm_counterparty.sas
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- <FA_RRM>\irm\source\sas\ucmacros\irm_update_rw_defaulted_std.sas
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Content Release v01.2021

What's New in the v01.2021 Content Release

Overview

SAS Solution for Regulatory Capital v01.2021 has the following new features, fixes, and enhancements:

- optimal CRM allocation for SA-CCR
- LGD floor computation for Basel 4 configuration
- allocation of funded collaterals under the IRBA approach for CRD4 and CRD5 configuration
- main exposure category
- enhancements to Prudential Backstop calculations
- sample file for batch execution of cycles

Optimal CRM Allocation for SA-CCR

A CRM allocation mechanism has been added in the SA-CCR module. This mechanism optimally allocates the CRM in order to reduce the total RWA of the counterparty credit risk portfolio that is treated under SA-CCR. The resultant allocation is then used for computing EAD as per SA-CCR. For more information, see the subsection "CRM Allocation - Optimal method" under the "Counterparty Credit Risk Capital Charge" chapter in *SAS Solution for Regulatory Capital: Reference Manual*.

LGD Floor Computation for Basel 4 Configuration

For Basel 4 configuration under the IRBA approach, funded collaterals were assumed to be adjusted in the exposure's LGD estimates and hence were not allocated to the respective exposures. These funded collaterals are now allocated optimally to derive the secured and unsecured parts of the exposure. These are then used in deriving the LGD floor of the exposure (The Basel Framework CRE32.16, CRE32.17 and CRE32.58 [forthcoming]). The input LGD value for the exposure is then floored with this computed LGD floor value and the risk weight is computed accordingly. The allocated collateral value before applying haircuts, allocated collateral value after applying haircuts, and computed LGD floor value are reported in the CRM_USED_AMT, CRM_USED_AMT_EFF, and LGD_FLOOR_PCT columns respectively in the result data set capital.crm_allocation_detail.

Allocation of Funded Collaterals under the IRBA Approach for CRD4 and CRD5 Configuration

Under the IRBA approach, funded collaterals were assumed to be adjusted in exposure's LGD estimates and hence were not allocated to the respective exposures. Under CRD4 and CRD5 configuration sets, these funded collaterals are now allocated optimally to derive the amounts of the exposures secured by the funded collaterals. The effects of any haircuts, maturity or currency mismatches or CCFs of exposures are not considered while deriving these values; they are reported at market values. The allocated collateral value is reported in the CRM_USED_AMT_EFF column of the result data set capital.crm_allocation_detail.

Main Exposure Category

A new column MAIN_CATEGORY has been added to the data set map_product_info to identify the asset category based on the nature of the business of the exposures. Based on this column, MAIN_CATEGORY and CRM_MAIN_CATEGORY columns have been added to the results data sets. For more information, see [“Data Model Changes in v01.2021” on page 167](#).

Enhancements to Prudential Backstop Calculations

- Exposure categories eligible for Prudential Backstop calculations

The prudential backstop calculation was performed for all the nonperforming exposures regardless of their asset category. However, the backstop calculation is applicable only for the nonperforming exposures that belong to the asset categories mentioned in CRR Article 47a(1). With this enhancement, the nonperforming exposures that belong only to the asset categories DEBT_SECURITY, LOAN, LOAN_COMMITMENT, FINANCIAL_GUARANTEES, and OTHER_COMMITMENT are considered in the backstop calculation.

- Usage of funded collaterals for Prudential Backstop Calculations

Minimum loss coverage amount was incorrectly calculated as the funded collaterals were not considered in the calculation. With this enhancement, all types of collaterals that include funded, unfunded, and other funded are considered in the minimum loss coverage amount calculation.

- Restructured exposures with increase in the exposure amount

The amount of insufficient coverage was calculated for the nonperforming restructured exposures with increase in exposure amount, without considering the restructure date. As per CRR 2 Article 469a, for restructured exposures, the restructure date is considered as the origination date and it must be later than the regulation date. With this enhancement, the amount of insufficient coverage is calculated for the nonperforming exposures that are restructured after the regulation date with increase in exposure amount.

- Incorrect EL of exposures secured by funded collaterals

EL was incorrectly computed in the Prudential Backstop subflow for exposures that were secured by funded collaterals. This has now been fixed.

Sample File for Batch Execution of Cycles

You can now create cycles and execute tasks in a batch by using the out-of-the-box template provided with SAS Solution for Regulatory Capital. For more information, see [SAS Solution for Regulatory Capital: User's Guide](#).

Other Fixes and Enhancements

For more information, see “[Details of Other Fixes and Enhancements in v01.2021](#)” on page 160.

Data Model Changes

For more information, see “[Data Model Changes in v01.2021](#)” on page 167.

Details of Other Fixes and Enhancements in v01.2021

Table 34 Details of Other Fixes and Enhancements in v01.2021

Category	Description	Affects Version
Securitization	Hierarchy of Approaches Where SEC-IRBA could not be used, institutions could use SEC-SA as per Article 254(1(b)). This fix introduces the option SEC_APPLY_SEC_ERBA_RATED_POSN to provide derogation from Article 254(1(b)). Now the institutions can apply SEC_ERBA instead of SEC-SA to all their rated securitization positions as per Article 254(3).	All previous versions
Securitization	Simplified method for calculating LGD Exposure Weighted Average LGD is calculated as per BCBS CRE44.21(CRR Article 259(5)). With this fix, if the share of the largest underlying exposure is not more than 3%, exposure weighted average LGD is assigned 50% using a simplified	v09.2019 and later

Category	Description	Affects Version
	approach as per BCBS CRE44.22 (CRR Article 259(6)).	
Securitization	Look-through Approach: Credit risk adjustments of underlyings The credit risk adjustments of underlying exposures were populated multiple times in the input data set capital.sec_underlying_detail and hence were aggregated multiple times during the computation of risk weight cap under the look-through approach. With this fix, they are populated and aggregated only once resulting into correct RWA under the look-through approach.	v08.2020 and later
Securitization	Maximum risk weight of senior position Exposure weighted average risk weight is used as maximum risk weight for senior securitization positions under the look-through approach as per CRR Article 267. With this fix K_IRB*1250 is used as maximum risk weight instead of exposure weighted average risk weight under SEC- IRBA approach.	v12.2019 and later
Securitization	Securitization exposures that result from credit derivative The exposure value for the counterparty credit risk of a securitization position that results from a credit derivative instrument is currently calculated using valuation under the securitization framework. As these exposures are credit derivatives, the exposure value needs to be calculated using the counterparty credit risk framework. With this fix, the exposure value of the securitization exposures that result from credit derivative instrument is calculated using	v12.2019 and later

Category	Description	Affects Version
	the Current Exposure Method (CEM) under the CCR framework.	
CCR	Repo transactions The repo transactions or SFTs were incorrectly reported in credit risk output result tables — <code>crm_allocation_detail</code> and <code>capital_detail_std(_irb)</code> . With this fix, they are now reported in the counterparty credit risk output result tables — <code>ccr_exp_detail</code> and <code>ccr_detail</code> .	All previous versions
CCR	Provisions for derivative transactions The provisions to CCR portfolio were not considered. With this fix, provisions are processed appropriately and consumed in further calculations.	All previous versions
CCR	LGD of netted rows of derivative transactions LGD of netted rows of the derivative transactions was the LGD of one of the underlying exposures. With this fix, LGD of netted rows is calculated as weighted average of the LGD of underlying exposures with weights as notional amounts. This is calculated for all the netting sets with the IRB approach.	All previous versions
Credit Risk	Brexit impact Post-Brexit, United Kingdom (UK) is no longer a part of EEA countries. With this fix, UK is marked as a non-EEA member and is not treated as an equivalent third country.	All previous versions
Credit Risk	Exposures secured by immovable property The exposures that are secured by immovable property are split into three parts, and for each secured part <code>EXP_ID</code> is	v08.2020 and later

Category	Description	Affects Version
	<p>concatenated with the CRM_ID that is already suffixed with _FCS or _FS. This concatenated ID is stored in EXP_ID column. However, for better traceability of EXP_ID and CRM_ID before concatenation, two new columns ORIG_EXP_INSTID and ORIG_CRM_INSTID are introduced that retain the original exposure and CRM IDs. These columns are populated in the results data set CRM_ALLOCATION_DETTAIL. In addition, the column ORIG_EXP_INSTID is populated in CAPITAL_DETAIL_STD result data set too.</p>	
Credit Risk	<p>Treating Serbia and South Korea as equivalent third country</p> <p>Serbia and South Korea were not an equivalent third country earlier. With this fix, Serbia and South Korea are treated as an equivalent third country as per latest amended version of 2014/908/EU (https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02014D0908-20200107#M4-1).</p>	All previous versions
Credit Risk	<p>Regulatory LGD of IRB collaterals under IRBF</p> <p>Seniority check for assigning LGD to IRB collaterals was based on seniority of CRM. With this fix, regulatory LGD of the IRB collaterals is now based on seniority of exposure.</p>	v05.2019 and later
Credit Risk	<p>CRM_USED_AMT_EFF and CRM_USED_AMT_EFF_PRE_CCF</p> <p>CRM_USED_AMT_EFF was changed to store the CRM value before applying CCF. This change has now been reverted. Now CRM_USED_AMT_EFF_PRE_CCF</p>	v08.2020 and later

Category	Description	Affects Version
	CF stores the CRM value allocated before applying the CCF and CRM_USED_AMT_EFF stores CRM value after applying the CCF.	
Credit Risk	<p>CRR - Preferential risk weight - equivalent countries</p> <p>Preferential risk weight for central government and central banks of equivalent countries in their domestic currency under Article 114(7) CRR and for exposures to institutions from equivalent countries denominated in their domestic currency under Article 119(2) CRR were incorrectly set to some random values. With this fix, these preferential risk weights are set flatly to 0% and 20% respectively.</p>	v09.2019 and later
Credit Risk	<p>Mapping of non-retail products to a retail counterparty</p> <p>There was no provision to map any non-retail products to a Retail counterparty under CRD4, CRD5, and BASEL2-3 configurations. With this fix, such exposures can now be mapped in the solution and are treated as unrated corporate exposures. To implement this, a new product class 'NON_RETAIL' is introduced. For these exposures, RETAIL_TRT_FLG is set to 0. Under D424, these exposures are mapped and treated as OTHER_RETAIL.</p>	v11.2020 and later
Credit Risk	<p>Retail Granularity Check</p> <p>In the retail granularity check, for calculating the total exposure amount owed to the institution, only those exposures that had RETAIL_TRT_FLG equal to 1 were getting included. With this fix, all the exposures that have counterparty class as</p>	v11.2020 and later

Category	Description	Affects Version
	RETAIL are included in the calculation.	
Credit Risk - Basel 4	<p>Usage of own estimates of EAD</p> <p>Under the IRBA approach, the own estimates of EAD were allowed for all exposures. With this fix, under the IRBA approach, the own estimates of EAD are allowed only for undrawn revolving commitments that are not subject to a CCF of 100% under a standardized approach (The Basel Framework CRE32.36 and CRE32.63 (forthcoming)).</p>	v12.2019 and later
Back-end	<p>Calculation of haircuts and risk weights for fund exposures</p> <p>Weighted average haircuts and risk weights for fund exposures under LTA approach were not getting calculated under some circumstances due to unsorted FUND_IDs while creating summary statistics. This issue has been resolved by sorting the CIU exposures by FUND_ID before calculating the summary statistics.</p>	v12.2019 and later
Back-end	<p>Enablement of IFRS9 Provisioning Impact on RWA</p> <p>The IFRS9 Provisioning Impact on RWA analysis run that can be executed through the On Demand - Regulatory Capital Calculations workflow template was failing because its parameters were not getting resolved. The failure has been fixed and post-install instructions have been added in SAS Solution for Regulatory Capital: Installation Guide, which describes the required parameters and the files in which they must be provided.</p>	v11.2020

Category	Description	Affects Version
Back-end	<p>Removal of unused columns from output tables</p> <p>With this fix, the unused columns have been removed from the following output tables.</p> <ul style="list-style-type: none"> ■ CAPITAL_DETAIL REGULATORY_PRODUCT_CD, REGULATORY_CPTY_TYPE_CD and CRM_USED_AMT_EFF_PRE_CCF ■ CRM_ALLOCATION_DETAIL BANKRUPTCY_REMOTE_FLG, EEA_MEMBER_FLG, BY_RANK, CORE_MARKET_PARTICIPANT_FLG, COVERED_VALUE_AMT, ELIGIBLE_REPO_CARVE_OUT_FLG, EXPOSURE_RANK, EXT_RATING_CRM_ADJUSTED_FLG, HIGH_RISK_CATEGORY_FLG, IRB_DEFAULT_SCALING_FACTOR, HAIRCUT_HOLDING_DAYS, HAIRCUT_SCALE, RECEIVABLE_EXPOSURE_FLG, ADD_ON , COUNTERPARTYID , CRM_REG_COUNTERPARTY_TYPE_CD, CRM_REG_EXP_CLASS_DESC, CRM_REG_PRODUCT_CD, CRM_REPORTING_CURRENCY_CD, CRM_RW_EXP , EXT_MAP_RATING_D_ST, EXT_MAP_RATING_F_ST , IRB_ALTER_TREAT_ELIGIBLE_TYPE_CD, MKT_RISK_CHG_AMT , OFF_BALANCE_SHEET_TYPE_CD, PE_APPROACH , REGULATORY_COUNTERPARTY_TYPE_CD, SECURITIZATION_EXPOSURE_FLG , SETT_RISK_CHG_AMT , 	v11.2020

Category	Description	Affects Version
	SHORTPOSITION, STD_RW_BUCKET_COUNT ERPARTY_D_ST, STD_RW_BUCKET_COUNT ERPARTY_F_ST , EL , PD_PCT, and CCF_PCT	
Back-end	<p>BY_RANK run with no CRM data resulting in no records in results tables</p> <p>The major result tables were not getting populated when the CRM data was missing and the CRM Allocation method was BY_RANK. This fix enables a successful benchmark run for a portfolio that has no CRM data, and the results are populated in the respective output tables.</p>	v04.2020 and later
VA report	<p>VA reports</p> <p>The global filters for Securitization and BASEL 4 tabs under the credit risk monitoring report were not working. With this fix, the global filters are now working and the report values are getting filtered for the respective tabs.</p>	All previous versions

Data Model Changes in v01.2021

Table 35 Data Model Changes in v01.2021

Area	Table Name	Column Name	Nature of Change
Securitization	EXPOSURE_DERIVATIVE	ATTACHMENT_POINT	Column Deleted
Securitization	EXPOSURE_DERIVATIVE	DETACHMENT_POINT	Column Deleted
Securitization	EXPOSURE_SECURITIZATION	RISK_CATEGORY_CD	Column Added
Securitization	EXPOSURE_SECURITIZATION	REFERENCE_CPTY_RK	Column Added
Securitization	ISSUE_SECURITIZATION	EFFECTIVE_FROM_DATE	Column Added

Area	Table Name	Column Name	Nature of Change
Securitization	ISSUE_SECURITIZATION	EFFECTIVE_TILL_DATE	Column Added
Securitization	ISSUE_SECURITIZATION	ILLIQUID_TRADE_FLG	Column Added
Credit Risk	MAP_PRODUCT_INFO	MAIN_CATEGORY	Column Added

Content Release v11.2020

What's New in the v11.2020 Content Release

Overview

SAS Solution for Regulatory Capital v11.2020 has the following enhancements:

Upgrade to SAS Risk Stratum

SAS Solution for Regulatory Capital v11.2020 is the first release of the solution on SAS Risk Stratum. SAS Risk Stratum is an integrated risk management platform, on which multiple SAS risk solutions can run in a single integrated environment. SAS Solution for Regulatory Capital on SAS Risk Stratum has the following new features

- user interface
- workflow
- embedded reports and documentation
- creation of what-if scenario analyses

For more information, see *SAS Solution for Regulatory Capital: User's Guide*.

Refinement to the Retail Exposures Treatment

The product criterion for the Retail exposures treatment has been reinforced in this release. Exposures are treated as regulatory Retail exposures not only if their counterparty is mapped to 'RETAIL', but also if their mapped product belongs to a predefined list of recognized Retail products.

This enhancement does not affect existing mappings and provides you the opportunity to refine the logic leading to the regulatory treatment.

For more information, see section "Retail Exposures" under "Credit Risk Capital Charge" in the *SAS Solution for Regulatory Capital: Reference Manual*.

Propagation of Newly Added Field to the Result Tables

You can now add a new field in the solution data mart (staging area) and propagate it downstream to the results tables without any code change or customization.

For more information, see section “Adding New Column in Staging Tables” under “Customization Guidelines” in the *SAS Solution for Regulatory Capital: Reference Manual*.

Change to the Federated Area Folder Structure

As part of the upgrade to SAS Risk Stratum, the folder structure of the IRM Federated Area has changed. There are now additional root folders: /irm and /rgf. The /rgf folder is specifically dedicated to the new artifacts that belong to SAS Risk Stratum whereas the artifacts of earlier releases are contained in the /irm folder.

Other Fixes and Enhancements

For more information, see [“Details of Other Fixes and Enhancements in v11.2020”](#) on page 169.

Data Model Changes

For more information, see [“Data Model Changes in v11.2020”](#) on page 173.

Details of Other Fixes and Enhancements in v11.2020

Table 36 *Details of Other Fixes and Enhancements in v11.2020*

Category	Description	Affects Version
Credit Risk	<p>EAD assignment for facility exposures</p> <p>When the user-supplied EAD_AMT was not populated for the facility exposures and was computed in the solution, the exposures were assigned EAD as 0 when the column OFF_BALANCE_SHEET_TYPE_CD present in the EXPOSURE_FACILITY table was not populated. With this fix, an integrity constraint, NOT NULL, is added in the column OFF_BALANCE_SHEET_TYPE_CD to avoid leaving that field empty.</p>	All previous versions
Credit Risk	<p>Defaulted IRB exposures covered by SA CRMs</p> <p>For a defaulted IRBA exposure that is secured by CRMs eligible for substitution effect and with</p>	v12.2019

Category	Description	Affects Version
	the SA approach, the RWA was calculated for the secured part of the exposure by using the IRBA approach. This calculation was incorrect as the secured part had used the SA approach. With this fix, the RWA is calculated for the covered part of the defaulted exposure on the basis of the CRM_APPROACH column. In this case, the approach of the exposure is not considered for the RWA calculation.	
Credit Risk	Own estimates of EAD Own estimates of EAD were used in both IRBA and IRBF approaches. With this fix, own estimates are allowed only under IRBA approach.	All previous versions
Credit Risk	FINREP counterparty sector To derive the FINREP counterparty sector (categorization of counterparties), a mapping table rd_map.map_finrep_sector is introduced that maps each counterparty to its FINREP as per FINREP Annex V. With this fix, column FINREP_CPTY_SECTOR is made available in the solution result tables. This column is specific to CRD4 and CRD5 configurations. Under BASEL2-3 and BASEL4 configuration, this column is not populated. For more information, see Table 39 on page 175 .	-
Credit Risk	CRD4/5 - Loan against pension or salary MONTHLY_INCOME_AMT and TOTAL_PAYMENT_AMT were compared without being converted into the same currency. With this fix, MONTHLY_INCOME_AMT is assumed to be in SOURCE_INCOME_CURRENCY of counterparty_mart table and	v04.2020

Category	Description	Affects Version
	<p>MONTHLY_PAYMENT_AMT is assumed to be in the CURRENCY of exposure_account table. Both of them are converted to the REPORTING_CURRENCY_CD of the entity. In addition, TOTAL_PAYMENT_AMT is calculated by aggregating MONTHLY_PAYMENT_AMT and then compared with MONTHLY_INCOME_AMT as per CRR2 Article 123(c).</p>	
Credit Risk - Basel 4	<p>Output floor with CCR portfolio</p> <p>The RWA under standardized approach was computed for CCR portfolio following IRB approach in the Benchmark RWA subflow but the output floor computation did not include CCR portfolio. The output floor computation now also considers the CCR portfolio in aggregation.</p>	v12.2019
Credit Risk - Basel 4	<p>Basel 4 output floor</p> <p>The RWA output floor was computed but the floored RWA was not derived. The floored RWA is now derived and is equal to the pre-floor RWA or the RWA output floor, whichever is higher.</p>	v12.2019
Credit Risk - Basel 4	<p>Calculation of CRM value of mortgages under Split Loan Approach of Basel 4</p> <p>For the exposures to real estate under split loan approach in Basel 4, any senior external lien present was not deducted from 55% of the CRM value as per D424 paragraph 65 and 71. Hence, a large part of the exposure was incorrectly covered by the CRM. With this fix, the senior lien amount is deducted from the 55% of the CRM value and then compared to the exposure value before the CRM is split into FCS and FS part.</p>	v04.2020

Category	Description	Affects Version
Credit Risk - Basel 4	<p>IRB Approach - Covered bonds</p> <p>Covered Bonds were incorrectly recognized for IRB approach in Basel 4 (Basel Framework) through an existing target value for IRB_PRODUCT_CLASS in the map_product_class sample data. With this fix, the incorrect mapping table target value of the BASEL4 configuration set has been removed from the sample data. The covered bonds are no longer in the scope of the Basel4 IRB treatments.</p>	v12.2019
Back End	<p>Dedicated regulatory parameter table for CCR exposures</p> <p>Counterparty Credit Risk (CCR) parameters have been grouped together in a single CCR_REGULATORY_PARAMETER static table. SACCR_parameter table is now removed and its contents are moved to the CCR_REGULATORY_PARAMETER table.</p>	All previous versions
Back End	<p>Dedicated regulatory parameter table for securitization exposures</p> <p>A new table SEC_REGULATORY_PARAMETER is added in the static library. This table contains the regulatory parameters that are used in the securitization framework, and that were earlier stored in the REGULATORY_PARAMETER table. For more information, see Table 38 on page 174.</p>	All previous versions
Back End	<p>Occasional instance failure when CRM_ALLOCATION_METHOD = BY_RANK</p> <p>Pillar I calculations instance creation with BY_RANK CRM allocation method occasionally failed at the securitization nodes</p>	v08.2020

Category	Description	Affects Version
	<p>due to unresolved macro variable - IN_REGULATORY_ASSET_SCL ASS_DS. With this fix, the input parameter is specified and the macro variable is resolved correctly resulting into successful execution of the instance.</p>	
Credit Risk	<p>Use of total assets as an indicator of firm size</p> <p>The total assets of the counterparty group were used as an indicator of the firm size if the option IRB_USE_TASSETS_AS_FIRM_SIZE in the regulatory_option table was set to "YES". The behavior of this option has been changed. The solution now considers total annual sales of the counterparty group as default meaningful indicator of the firm size. The total assets of the counterparty group are used as the firm size when the value of the parameter IRB_USE_TASSETS_AS_FIRM_SIZE is set to "YES" and the total annual sales are missing. For more information, see section "Firm-Size Adjustments" under Credit Risk Capital Charge" in the <i>SAS Solution for Regulatory Capital: Reference Manual</i>.</p>	v04.2020

Data Model Changes in v11.2020

Table 37 Data Model Changes in v11.2020

Area	Table Name	Column Name	Nature of Change
STATIC	B4_REGULATORY_ASSET_CLASS	REG_EXP_CLASS_DESC	Column length changed
STATIC	B4_REGULATORY_ASSET_SUBCLASS	REG_EXP_CLASS_DESC	Column length changed

Area	Table Name	Column Name	Nature of Change
STATIC	REGULATORY_ASSET_CLASS	REG_EXP_CLASS_DESC	Column length changed
STATIC	REGULATORY_ASSET_SUBCLASS	REG_EXP_CLASS_DESC	Column length changed
STATIC	SACCR_PARAMETER		Table removed and its contents moved to the CCR_REGULATORY_PARAMETER table.
STATIC	SEC_REGULATORY_PARAMETER		New table added. All security related parameters are removed from REGULATORY_PARAMETER and are added in this new table.
STAGING	EXPOSURE_FACILITY	OFF_BALANCE_SHEET_TYPE_CD	Not null
STAGING	COUNTERPARTY_MART	SECTOR	Column deleted
MAPPING	MAP_FINREP_SECTOR		New table added
MAPPING	MAP_STD_RW_BUCKETS_RETAIL		Table deleted
MAPPING	MAP_PRODUCT_CLASS	IRB_PRODUCT_CLASS	BASEL4 configuration set: COVERED_BOND target value removed

New Static Table SEC_REGULATORY_PARAMETER in v11.2020

Table 38 SEC_REGULATORY_PARAMETER

Column Name	Type	Not Null	Label	Description
CONFIG_NAME	CHAR(32)	N	Regulatory Parameter Name	This column contains the parameter name.
CONFIG_VALUE	NUM	N	Parameter Value	This column contains the parameter value.
CONFIG_VALUE_DESC	CHAR(256)	N	Regulatory Parameter Description	This column contains a description of the parameter and the regulatory reference to those parameters.

New Mapping Table MAP_FINREP_SECTOR in v11.2020

Table 39 MAP_FINREP_SECTOR

Column Name	Type	Not Null	Label	Description
REGLTRY_COUNTERPARTY_TYPE_CD	CHARACTER(3)	N	Regulatory Counterparty Type Code	This value specifies a code that represents the finrep sector of the counterparty.
FINREP_CPTY_SECTOR	CHARACTER(32)	N	FINREP Counterparty Sector	This value identifies the FINREP sector of the counterparty. This column can be used for COREP reporting templates. Possible values are GEN_GOV, CEN_BANKS, CREDIT_INST, INVEST_FIRM, FIN_CORP_NON_CREDIT_INST, NON_FIN_CORP, HOUSEHOLDS.
DESCRIPTION	CHARACTER(256)	N	Description	This column provides a description of the FINREP counterparty sector, such as - General governments, Central banks, Credit institutions, Investment firms, other financial corporations, non-financial corporations, households.

Content Release v08.2020

What's New in the v08.2020 Content Release

Overview

SAS Regulatory Risk Management 6.1 Content Release v08.2020 has the following enhancements:

- CRR quick fix

- enhancements in CCR implementation
- enhancements to the CIU exposures treatment
- counter-guarantee treatment
- revision to exposure values and provisions
- other fixes and enhancements
- data model changes

CRR Quick Fix

The regulation (EU) 2020/873 amends the regulation (EU) 575/2013 (CRR) and (EU) 2019/876 (CRR 2) regarding certain adjustments in response to the COVID-19 pandemic (CRR quick fix). SAS Regulatory Risk Management supports the following adjustments of the CRR quick fix:

Advanced application of selected CRR2 measures

- exposures against the transfer of pension or salary under the standardized approach (see section “Exposures Against Transfer of Pension or Salary (specific to CRD4)” under “Credit Risk Capital Charge”)
- revised SME Supporting factor (see section “Application of SME Supporting Factor for RWA Adjustment” under “Credit Risk Capital Charge”)
- infrastructure lending supporting factor (see section “Infrastructure Lending Supporting Factor” under “Credit Risk Capital Charge”)

Impact on NPE treatment

Non-performing loans that are guaranteed by an ECA receive preferential treatment for provisioning requirements under **CRR Article 47c**. In revised **CRR Article 47c(4)**, the derogation from **CRR Article 47c(3)** extends this preferential treatment to exposures that are guaranteed or counter-guaranteed by the public sector and attracting a 0% risk weight. For more information, see section “CRM Allocation” under “Prudential Backstop” in the *SAS Regulatory Risk Management 6.1 Content Release: Reference Manual*.

Preferential treatment of government debt

New **Article 500a CRR**. The exposures to central governments and central banks of EEA member states, denominated and funded in the domestic currency of another member state get preferential treatment of RW= 0% until 31DEC2022. For more information, see section “Exposures to Sovereign or Central Government” under “Credit Risk Capital Charge” in the *SAS Regulatory Risk Management 6.1 Content Release: Reference Manual*.

Public guarantees schemes that are issued by EBA

EBA has identified a list of public guarantee schemes to monitor the implementation of COVID-19 policies as well as the application of existing policies under these exceptional circumstances. In SAS Regulatory Risk Management these guarantees are identified and used for reporting purposes. For more information, see section “Public Guarantee Schemes in response to COVID-19 pandemic” under “Credit Risk Capital Charge” in the *SAS Regulatory Risk Management 6.1 Content Release: Reference Manual*.

Enhancements in CCR Implementation

SAS Regulatory Risk Management supports the following enhancements in CCR implementation:

- Enhancements to CCR implementation

- Determination of CCR Approach - a new option, CCR_APPROACH, is added in the config.regulatory_settings data set to determine the counterparty credit risk approach. For EAD calculations for CCR portfolio, the value of this option is SA_CCR for SA-CCR Approach and CEM_OEM for CEM/OEM Approach.
- Supervisory delta adjustment - supervisory delta is calculated for options trades with PRODUCT_TYPE as OPTIONS as per the formula mentioned in **BCBS279 paragraph 159(CRR2 Article 279a) (EBA-RTS-2019-02 (Section 2 Article4))**.
- Risk Category identification under SA-CCR - multiple risk drivers can now be provided as input in the rrm_stg.derivative_x_risk_driver data. These risk drivers are mapped to the corresponding regulatory risk categories through rd_map.map_ccr_risk_category. When the information of a risk category is sourced from an external system, it can be directly used without providing any information about the risk driver.
- SA-CCR implementation as per CRR2

For more information about these features, see “Standardized Approach for Counterparty Credit Risk” under “Counterparty Credit Risk Capital Charge” in the *SAS Regulatory Risk Management 6.1 Content Release: Reference Manual*.

Enhancements to the CIU Exposures Treatment

- Hierarchy of the approaches is implemented (**Basel framework CRE60.1, CRR2 Article 132a(1) (2)**). This is not applicable to CRD4 configuration (**CRR Article 132**).
- The fallback approach (FBA) is implemented under CRD-V (**CRR2 Article 132(2)**).
- Risk weight for CIUs calculated in accordance with the Look-through approach (LTA) is capped at the risk weight applicable under the fallback approach (1250%) (**CRR2 Article 132(6)**).

For more information about these features, see “Exposure to Equity Investment in Funds” under “Credit Risk Capital Charge” in the *SAS Regulatory Risk Management 6.1 Content Release: Reference Manual*.

Counter-guarantee Treatment

Counter-guarantee issued by sovereign is considered eligible for risk mitigation purpose and replaces the original guarantee (**Basel framework CRE22.76 and CRR Article 214(2)(a-d)**). For more information, see “Credit Risk Mitigation Techniques > Substitution Approach > Counter Guarantees” under “Credit Risk Capital Charge” in the *SAS Regulatory Risk Management 6.1 Content Release: Reference Manual*.

Revision to exposure values and provisions

Exposure values that are provided as input to the solution are corrected to follow accounting standards in case of partial write-off amounts and purchased exposures. Accordingly, a new provision type DISCOUNT_PURCHASE is introduced. New metrics related to provisions and exposures are introduced as follows:

- TOTAL_ADJUSTMENT_AMT stores the sum of the value adjustments and provisions (uncapped).
- EXP_ADJUSTMENT_AMT stores the value adjustments and provisions deducted from the original exposure capped at the exposure value.
- EAD_NET_PROV_PRE_CCF_PRE_CRM stores the exposure value net of the value adjustments and provisions.

- Under CRD4 and CRD5 configurations, the column ADDNL_VALUE_ADJUSTMENTS stores the sum of the additional value adjustments and own funds deductions.

For more information, see section “Calculate Total Credit Risk Adjustment Amount” under “Credit Risk Capital Charge” in the *SAS Regulatory Risk Management 6.1 Content Release: Reference Manual*.

Other Fixes and Enhancements

For more information, see [“Details of Other Fixes and Enhancements in v08.2020”](#) on page 178.

Data Model Changes

For more information, see [Details of Data Model Changes in v08.2020](#) on page 192.

Details of Other Fixes and Enhancements in v08.2020

Table 40 Details of Other Fixes and Enhancements in v08.2020

Category	Description	Affects Version
Securitization	Solvency treatment for securitization A new column SOLVENCY_TREATMENT_CD has been added in the securitization_pool_mart table to capture the solvency treatment implemented to the securitization transaction by the originator institution. This information is further used to populate EBA COREP reports. For more information, see “Data Dictionary - Staging” section in the <i>SAS Regulatory Risk Management 6.1 Content Release: Reference Manual</i> .	v04.2020
Securitization	Effective number of exposures The column EFF_NUMBER_OF_EXPOSURES, pre-calculated or not, has been rounded to the next integer when used in the calculations.	v04.2020

Category	Description	Affects Version
Securitization	<p>Revised securitization framework - Look through approach</p> <p>Risk weight calculation of senior securitization position under the look-through approach was using EL_EFF, which is now corrected to use EL_AMT (CRR article 267(3)).</p>	v12.2019
Securitization	<p>Exposure value of the securitization exposures risk weighted at 1250% (CRR Article 248-1(d))</p> <p>In case of multiple securitization positions of an originator institution having 1250% risk weight, the total credit risk adjustment amount on underlying exposures was getting deducted from the exposure value of each of these securitization positions. With this fix, when multiple securitization positions have 1250% risk weight, the total credit risk adjustment amount is subtracted from the exposure value of the most junior securitization position, and then the remaining amount, if any, is subtracted from the exposure value of the second most junior securitization position.</p>	v12.2019
Credit Risk	<p>Risk weight assigned to exposures secured by immovable property</p> <p>In CRD4 and CRD5 configurations and under the Split Loan approach of the Basel4 configuration, an exposure secured by an immovable property is split into three parts—the fully and completely secured part (FCS), the fully but not completely secured part (FS), and the unsecured part. The RW_EXP for each part of the exposure in the output data set capital.CRM_ALLOCATION_DE</p>	All previous versions

Category	Description	Affects Version
	<p>TAIL was assigned the risk weight of the counterparty instead of the final risk weight (RW_EFF) of that part of the exposure. With this fix, the RW_EXP for each part of the exposure is now the corresponding final risk weight.</p>	
Credit Risk	<p>Exposure value net of provisions for STD and IRB (equity) exposures</p> <p>A new column, EAD_NET_PROV_PRE_CCF_PRE_CRM, has been added in the output table CRM_ALLOCATION_DETAIL to calculate the exposure value net for provisions before applying CRM and CCF. This column is further used for EBA reporting.</p>	v04.2020
Credit Risk	<p>Guarantee or insurance by ECA</p> <p>The exposures that are guaranteed or insured by an export credit agency are identified by the EXPORT_CREDIT_AGENCY_FLG flag in rrm_stg.counterparty_mart data set. For these exposures, value of the flag is set to 1. With this fix, based on EXPORT_CREDIT_AGENCY_FLG, a flag EXPORT_CREDIT_INS_SCHEME_FLG is derived and output to crm_allocation_detail table. The column is further used for reporting purposes.</p>	All previous versions
Credit Risk	<p>Revision to the calculation of CRM_VALUE of mortgages under STD</p> <p>The value of the immovable property was calculated as the minimum of the values of the columns CRM_PHYSICAL.PROTECTION_VALUE_AMT, ISSUE_ASSET_MART.MORTG</p>	v04.2020

Category	Description	Affects Version
	<p>AGE_LENDING_VALUE_AMT, and ISSUE_ASSET_MART.VALUE_AMT. For BASEL 4 configuration, the value of the column ISSUE_ASSET_MART.VALUE_AMT_AT_ORIGINATION was also used in the minimum function. With this fix, a new option, USE_MORTGAGE_LENDING_VALUE, has been introduced in the REGULATORY_OPTION static table. A new flag, MLV_PROPERTY_VALTN_FLG, is derived and is set to 1 when the option USE_MORTGAGE_LENDING_VALUE is set to yes and the mortgage lending value is present in the ISSUE_ASSET_MART table. Otherwise, the flag is set to 0. When the flag value is 0, the ISSUE_ASSET_MART.MORTGAGE_LENDING_VALUE_AMT column is excluded from the CRM calculation. Also, the column PROTECTION_VALUE_AMT is not used in calculations anymore.</p>	
Credit Risk	<p>Specific Provision</p> <p>When the provision type was not specified in the rd_map.Map_provision_type table, the provision amount was added to SPECIFIC_PROVISION. With this fix, SPECIFIC_PROVISION contains the provision amount only when the provision type is specified as SPECIFIC_PROVISION.</p>	v12.2019
Credit Risk	<p>Defaulted exposures</p> <p>Under IRB(F) approach PD_EFF and LGD_EFF were not getting populated for defaulted exposures. With this fix, PD_EFF and LGD_EFF are getting assigned for defaulted</p>	v04.2020

Category	Description	Affects Version
	exposures. This enables the correct reporting of defaulted exposures.	
Credit Risk	<p>Introduction of REG_EXP_SUBCLASS</p> <p>Under CRD4 and CRD5 configurations, the new column REG_EXP_SUBCLASS stores values RRE and CRE for Residential Real Estate and Commercial Real Estate respectively for the exposures that are secured by immovable property under the standardized approach. For the IRB approach, the column has values SL for Specialized Lending exposures under Corporate exposure class, and RETAIL_MORT_IMV_PROP and QRRE for Secured by IP and Qualifying Revolving exposures respectively under Retail exposure class.</p>	All previous versions
Credit Risk	<p>Third country equivalence preferential treatment</p> <p>The preferential risk weight was not assigned to exposures to central government and to central bank of the equivalent third countries that are funded and denominated in domestic currencies (CRR Article 114(7)). Also, the exposures to institutions from equivalent third countries, which are funded and denominated in the domestic currency and have residual maturity less than three months, did not get preferential treatment (CRR Article 119(2)). Now with this fix, both these treatments are implemented.</p>	v12.2019
Credit Risk	<p>Effective CRM value</p> <p>The column CRM_USED_AMT_EFF was assigned the effective CRM value after applying CCF for off-balance sheet exposures even under CRD4 configuration. This</p>	All previous versions

Category	Description	Affects Version
	<p>was incorrect as the CCF is applied after the allocation and hence must not be considered while calculating the column CRM_USE_AMT_EFF. With this fix, under the CRD4 configuration, the column CRM_USED_AMT_EFF is calculated without considering the effect of CCF.</p>	
Credit Risk	<p>Nullification of exposure attributes</p> <p>In the result output tables, the numeric attributes of the exposure are set to zero in the secured rows to avoid double-counting when exposure attributes are aggregated for reporting purpose.</p>	All previous versions
Credit Risk	<p>Metrics of the Exposure secured by Mortgages</p> <p>In CRD4, the exposure that is secured by a mortgage on immovable property is split into three parts—the part of the exposure that is fully and completely secured by the mortgage, the part of the exposure that is fully but not completely secured by the mortgage, and the unsecured exposure. Earlier the first two parts were identified by concatenating the CRM_IDs with suffixes _FCS and _FS. Now, these splits are assigned unique EXP_IDs after RWA computation by concatenating the EXP_ID with the CRM_IDs created with the suffixes _FCS and _FS. In addition, for secured rows, the CRM_ID is set to missing. As a result, the three parts are reported as separate exposures in the crm_allocation_detail data set. The exposure attributes—EXP_VALUE, EAD, EAD_ADJ, and EAD_NET_PROV_PRE_CCF_PRE_CRM—are updated for each split accordingly. In Basel 4, this</p>	All previous versions

Category	Description	Affects Version
	treatment is applicable to exposures that are secured by residential or commercial real estate under the Split Loan approach.	
Credit Risk	<p>SME Supporting Factor</p> <p>The SME supporting factor was applied to the secured part of the defaulted exposure when the defaulted exposure was secured by a guarantee that was eligible for the SME supporting factor treatment. This was inconsistent with CRR Article 501(2) (a). With this fix, the SME supporting factor treatment is applied only to non-defaulted exposures from eligible asset classes.</p>	v04.2020
Credit Risk	<p>SME Supporting Factor</p> <p>The SME SF treatment was applied to exposures even when the value of the column AGGREGATED_ANNUAL_SALES was missing. Considering missing AGGREGATED_ANNUAL_SALES as a valid value in the counterparty level eligibility criterion was incorrect. With this fix, counterparty groups with missing AGGREGATED_ANNUAL_SALES are no longer eligible for SME SF treatment.</p>	All previous versions
Credit Risk	<p>SME Supporting Factor</p> <p>For CRD5 configuration, the criteria of the total amount owed to institutions not exceeding EURO 2.5M is checked to apply the SME supervisory factor. With this fix, SME exposures to retail, corporate, or those secured by mortgages on immovable property with annual turnover less than or equal to EUR 50M are eligible for SME deduction treatment as per CRR2 Article 501(2). For these SME exposures, the</p>	All previous versions

Category	Description	Affects Version
	SME_CAP_DEDUCTION_TRT_FLG is set to 1 and the SME supervisory factor is calculated as per CRR2 Article 501(1) .	
Credit Risk	SME Supporting Factor Counterparties that do not have associated exposure or CRM are filtered out in the enrichment process leading to the incorrect calculation of the total turnover amount at the counterparty group. With this fix, all the counterparties that belong to a counterparty group are considered in the total turnover calculation, where at least one of the counterparty within the group has an associated exposure or CRM, and at least one of them is a candidate for SME SF indicated by value 1 in SME_SUPPORTING_FACTOR_FLG column.	v04.2020
Credit Risk	SME Supporting Factor The annual turnover for a counterparty group was calculated on the partitioned counterparty data, which resulted in an incorrect calculation of total turnover amount as some of the counterparties that belong to the same counterparty group might become part of a different partition. This further resulted in an incorrect application of the SME deduction factor. With this fix, the annual turnover for a counterparty group is calculated before partitioning.	v04.2020
Credit Risk	SME Supporting Factor Under CRD5 configuration, when the exposure is secured by a residential mortgage with a CRM value equal to or greater than that of the exposure, E*, the total amount owed to an institution by an SME, becomes zero. This results in a missing value for the SME factor,	All previous versions

Category	Description	Affects Version
	SME_SF_VALUE_CRRII, and hence, the RWA. With this fix, if E*, that is, the _GROUP_TOTAL, is zero or missing, then a value of 0.7619 is assigned to SME_SF_VALUE_CRRII as the SME supervisory factor, and that is then used to compute the RWA.	
Credit Risk	<p>SME Supporting factor under risk substitution</p> <p>As per EBA Q&A 2013_565, application of SME SF is based on the characteristics of the counterparty of the exposure. Earlier when the counterparty of the exposure did not qualify but the counterparty of the CRM satisfied all the criterion, under credit risk substitution, SME SF was applied to the secured part. With this fix, a new option APPLY_SME_SF_UNDER_SUBSTITUTION is added in the data set config.regulatory_settings. When the value of the option is set to YES, the SME supporting factor is applied to the secured part in the above scenario; otherwise, the treatment is not applied to the secured part under credit risk substitution. When the value of the option is set to NO, the SME supporting factor is applied to both secured and unsecured rows whenever the counterparty of exposure meets the eligibility criteria for SME capital deduction treatment.</p>	All previous versions
Credit Risk	<p>Prudential Backstop - Forborne Exposures</p> <p>Non-performing forborne exposures received incorrect treatment regarding the coverage factor for different time periods since the exposure was first classified as non-performing and when it received the forbearance measure. This was inconsistent with CRR Article 47c(6). With this fix, the</p>	v12.2019

Category	Description	Affects Version
	condition to check these exposures between one year and two years and between two years and six years has been fixed.	
Credit Risk	Asset Value Correlation Multiplier (AVCM) AVC Multiplier was applied to all counterparties including non-financial sector corporate entities. With this fix, AVC Multiplier is now applicable only to large financial sector entities and to unregulated financial sector entities.	v04.2020
Credit Risk	CIUs With this fix, the parameters LTA_EXP_REPORTING_APPR OACH and FBA_EXP_REPORTING_APPR OACH that were used to set APPROACH_CATEGORY have been removed. The RWA_APPROACH parameter is now used to set APPROACH_CATEGORY.	All previous versions
Credit Risk	CIUs - Look Through With this fix, the CIU exposures are treated as per the look-through approach only if they satisfy the required criteria. The required criteria include information about the underlying exposures and qualitative criteria (Basel framework CRE60.2) CRR2 Article 132(3) . For more information, see “Hierarchy of Approaches” section under “Exposure to Equity Investment in Funds” in the <i>SAS Regulatory Risk Management 6.1 Content Release: Reference Manual</i> . A flag CIU_LOOK_THROUGH_FLG has been added in rrm_stg.fund_information data set to indicate that the exposure satisfies the required qualitative	All previous versions

Category	Description	Affects Version
	criteria for the look-through approach.	
Credit Risk	<p>CIUs- Third-party calculations for risk weight of the underlyings</p> <p>With this fix, when the bank relies on third-party calculations for the underlying risk weights of the exposures of the fund, the applicable risk weight is multiplied by 1.2. A flag THIRD_PARTY_CALC_FLG has been added in rrm_stg.fund_information data set to identify these CIU exposures (Basel framework CRE60.19(3), CRR Article 132(5) and CRR2 Article 132(4) (c)). For more information, see “Third-party calculations for risk weights of the underlyings” section in “Exposure to Equity Investment in Funds”. For CRD5 configuration, if the bank has unrestricted access to detailed calculations carried out by the third party, the multiplier is no longer applicable. A flag DETAILED_CALC_ACCESS_FLG has been added in the rrm_stg.fund_information data set to identify these CIU exposures.</p>	All previous versions
Credit Risk	<p>Maturity mismatch for Repo-style transactions</p> <p>Repo-style transactions are not evaluated for maturity mismatch. With this fix, an option MAT_MISMATCH_CHK_REPO has been introduced in regulatory_settings data set to apply the maturity mismatch.</p>	All previous versions
Credit Risk	<p>Prudential Backstop - Exposures secured by ECA</p> <p>Exposures guaranteed or insured by ECA were identified by STD_PRODUCT_SUBCLASS/IRB_PRODUCT_SUBCLASS =</p>	All previous versions

Category	Description	Affects Version
	EXP_CREDIT_INS. This identification is corrected and is now based on the protection provider's EXPORT_CREDIT_AGENCY_F LG in the COUNTERPARTY_MART table.	
Credit Risk	<p>CRM eligibility for high risk exposures</p> <p>For high-risk exposures, the HIGH_RISK_CRM_INELIG_TREAT parameter in config.regulatory_settings is used to check for eligible CRMs. With this fix, the HIGH_RISK_CRM_INELIG_TREAT parameter in config.regulatory_settings has only two values: YES, all CRMs made ineligible; NO, all CRMs made eligible except mortgages (EBA Q &A 2019_4765).</p>	All previous versions
Credit Risk - Basel4	<p>Output floor calculation</p> <p>RW_EFF in capital_detail_ds of the benchmark flow output was incorrectly calculated by aggregating RWA of the crm_allocation_detail data set at the exposure level. This resulted into incorrect RWA in the benchmark capital_detail_ds table. With this fix, RW_EFF is now calculated by aggregating RWA_PRE_SME instead of RWA.</p>	All previous versions
Credit Risk - Basel 4	<p>Exposures secured by financial collaterals under the IRBF approach under Basel 4</p> <p>The LGD_EFF amount was missing for these exposures resulting into incorrect risk weight calculation. This has been fixed.</p>	v12.2019
CCR	<p>Trade exposures cleared through QCCPs</p> <p>Preferential risk weight was assigned to these exposures only under CRD4 and CRD5</p>	All previous versions

Category	Description	Affects Version
	configuration. With this fix, the preferential treatment is extended to both Basel configurations (Basel2-3 and Basel 4).	
CCR	Trade exposures cleared through QCCP Trade exposures cleared through a clearing member of a QCCP are now identified using a flag QCCP_EXPOSURE_FLG for reporting purposes.	All previous versions
CCR	Trade exposures cleared through QCCP The preferential risk weight assigned to the trade exposures cleared through QCCP was not preserved under the STD approach. With this fix, the preferential risk weight assigned to these exposures is preserved and is prevented from being overwritten under the STD approach.	All previous versions
CCR	Counterparty risk weight In CCR portfolio, counterparty risk weight was not assigned in the risk weight method for high-risk exposures. Hence, it was not getting applied to the exposures. With this fix, the counterparty credit risk weight is assigned and is used for all exposures in the CCR portfolio.	All previous versions
CCR	Identification of derivatives The derivatives were identified by STD_PRODUCT_CLASS or IRB_PRODUCT_CLASS = DERIVATIVE. This prevented the simultaneous assignment of these exposures to other product class values such as specialized lending. To fix this, *_PRODUCT_CLASS is no longer used to identify the derivatives. A flag DERIVATIVE_FLG has been created in the CCR output table	All previous versions

Category	Description	Affects Version
	to identify the derivative exposures. For more information, see "Data Dictionary - Analytics" section in the <i>SAS Regulatory Risk Management 6.1 Content Release: Reference Manual</i> .	
CCR	SME SF treatment SME supervisory factor treatment was not applied to the CCR portfolio. With this fix, the eligibility check for SME SF treatment considers the whole portfolio that includes Counterparty Credit Risk portfolio and not only Credit risk portfolio. If the counterparty to the exposure under CCR portfolio is eligible, the SME supervisory factor is applied to risk-weighted asset (RWA) amount of the corresponding CCR exposures.	v09.2018
CCR	Benchmark portfolio The benchmark results under the standardized approach were not computed for CCR portfolio. This has been fixed.	v02.2019
CCR	Default treatment of derivatives Default treatment was not applied to the defaulted derivative exposures under CCR portfolio. With this fix, the default treatment is now applied to the CCR portfolio and the defaulted exposures receive 100% or 150% risk weight.	v09.2018
CCR	Retail granularity check Retail granularity check was not performed on CCR portfolio. With this fix, the retail granularity check is performed on the CCR portfolio and if the threshold is breached, the counterparty class or subclass of the exposures is updated. The risk weight based on the updated counterparty	v09.2018

Category	Description	Affects Version
	class or subclass is then applied to the CCR exposures.	
CCR	Eligibility Checks for Guarantees Guarantees were not checked for eligibility in CCR sub-flow. These checks are re-introduced now. In addition, the eligibility checks on CRMs that are specific to SA-CCR approach are now performed only when CCR_APPROACH = SA_CCR.	v09.2019
Documentation	CCR Approach under different configurations The procedure for selection of CCR Approach for EAD calculation of CCR portfolio has been introduced. It also mentions the CCR approach supported by the various configurations.	All previous versions
Enrichment	New columns added to mapping table The Rd_map.Map_ead_insttype data set contained only INSTTYPE of an exposure. With this fix, the data set is renamed to rd_map.map_product_info and it contains additional product information of PRODUCT_TYPE and PRODUCT_SUBTYPE. The product type and subtype store exposure details at granular level.	All previous versions

Data Model Changes for Staging Tables in v08.2020

Table 41 Data Model Changes for Staging Tables in v08.2020

Table Name	Column Name	Nature of Change
SECURITIZATION_POOL_MART	SOLVENCY_TREATMENT_CD	Column Added

Table Name	Column Name	Nature of Change
		Code to identify the solvency treatment applied to the securitization transaction. This column is populated by the originator institutions. Valid values: BANKING_BOOK, TRADING_BOOK, NOT_SUBJECT_TO_OF_REQ, PARTIALLY_IN_BANKING_TRADING. For more details, refer to the instructions document of COREP report (Annex 2 (Solvency)).
ISSUE_RECEIVABLES	PURCHASED_FLG, PURCHASE_PRICE_AMT	Column Deleted Superseded by the new provision type for identifying NPE purchase price discount.
ISSUE_INSTRUMENT	PURCHASED_FLG, PURCHASE_PRICE_AMT	Column Deleted Superseded by the new provision type for identifying NPE purchase price discount.
ISSUE_FACILITY	PURCHASED_FLG, PURCHASE_PRICE_AMT	Column Deleted Superseded by the new provision type for identifying NPE purchase price discount.
ISSUE_ACCOUNT	PURCHASED_FLG, PURCHASE_PRICE_AMT	Column Deleted Superseded by the new provision type for identifying NPE purchase price discount.
FUND_INFORMATION	CIU_LOOK_THROUGH_FLG	Column Added This flag indicates whether the exposure satisfies the qualitative criteria required to apply the look-through approach to the exposure. Enter 1 if the exposure satisfies the required qualitative criteria.
FUND_INFORMATION	THIRD_PARTY_CALC_FLG	Column Added This flag indicates whether the bank relies on third-party calculations for the underlying risk weights of the exposures of the fund when it does not have adequate data or information, or when it performs the calculation itself. Enter 1 if the risk weights are provided by the third party.

Table Name	Column Name	Nature of Change
FUND_INFORMATION	DETAILED_CALC_ACCESS_FLG	<p>Column Added</p> <p>This flag indicates whether the institution has unrestricted access to the detailed calculations carried out by the third-party CRR2 Article 132(4)(c). Enter 1 if the institution has access to detailed calculation. This flag is used in CRD5 configuration only.</p>
DERIVATIVE_X_RISK_DRIVER		<p>Table Added</p> <p>Links exposures with one or more risk drivers. It also stores the position type in the risk driver.</p>
DERIVATIVE_X_RISK_DRIVER	EXPOSURE_ID	<p>Column Added</p> <p>Unique identifier for an exposure. It refers to the INSTID from exposure staging tables, such as rrm_stg.exposure_derivative.</p>
DERIVATIVE_X_RISK_DRIVER	RISK_DRIVER	<p>Column Added</p> <p>This column contains the value of risk drivers of a trade. It is used to derive the single or multiple risk categories that a trade belongs to. Map each trade to a risk driver from the rd_map.map_ccr_risk_category data set to derive the risk categories.</p>
DERIVATIVE_X_RISK_DRIVER	POSITION_TYPE_CD	<p>Column Added</p> <p>This column stores the position type in the risk driver. Possible values are LONG and SHORT. The value of LONG indicates that the market value of the transaction is directly proportional to the value of the risk driver—that is, the market value of the transaction increases when the value of the risk driver increases. The value of SHORT indicates that the market value of the transaction is inversely proportional to the value of the risk driver—that is, the market value of the transaction decreases when the value of the risk driver increases.</p>
CRM_GUARANTEE	COUNTER_GUARANTEE_ID	<p>Column Added</p> <p>The INSTID for the counter guarantee. This column is used to identify the</p>

Table Name	Column Name	Nature of Change
		counter guarantee associated with the guarantee.
COUNTERPARTY_MART	EXPORT_CREDIT_AGENCY_FLG	Column Added This flag indicates whether the counterparty is an Official Export Credit Agency. Set the value to 1 if the counterparty is an Official Export Credit Agency. This flag is used to further determine that the exposure is guaranteed or insured by an Official Export Credit Agency (CRR Article 47c-4).

Data Model Changes for Mapping Tables in v08.2020

Table 42 Data Model Changes for Mapping Tables in v08.2020

Table Name	Column Name	Nature of Change
MAP_PRODUCT_INFO		Table renamed from MAP_EAD_INSTTYPE
MAP_PRODUCT_INFO	PRODUCT_TYPE	Column Added This value specifies the product type. Possible values are FACILITY, GUARANTEE , OPTIONS, and so on.
MAP_PRODUCT_INFO	PRODUCT_SUBTYPE	Column Added This value specifies the product subtype.
MAP_PRODUCT_CLASS	STD_PRODUCT_CLASS	Revised mapping - EXPORT_CREDIT_INSURANCE superseded. Replaced by EXPORT_CREDIT_AGENCY_FLG in counterparty_mart.
MAP_PRODUCT_CLASS	STD_/ IRB_PRODUCT_CLASS	DERIVATIVE is no longer a possible target value. The DERIVATIVE_FLG is assigned automatically based on the

Table Name	Column Name	Nature of Change
		presence of derivatives in EXP_DERIVATIVE table.
MAP_CCR_RISK_CATEGORY	RISK_CATEGORY_CD	Column Deleted RISK_CATEGORY_CD is now stored in map_ccr_preset_risk_category whereas map_ccr_risk_category is used to store RISK_DRIVER.
MAP_CCR_RISK_CATEGORY	RISK_DRIVER	Column Added This value identifies the risk driver of a derivative trade. For example, the value IMPLIED_VOLATILITY_IR is used to denote implied volatility for a derivative whose underlying is sensitive to interest rate volatility.
MAP_CCR_RISK_CATEGORY	DESCRIPTION	Column Added This column provides a description of the risk driver.
MAP_CCR_PRESET_RISK_CATEGORY		Table renamed from MAP_CCR_RISK_CATEGORY
MAP_CCR_APPROACH		Table Deleted CCR_APPROACH in MAP_CCR_APPROACH could be set differently for different risk category. Now CCR_APPROACH is stored as a parameter in rd_conf.regulatory_settings.

Data Model Changes for Static Tables in v08.2020

Table 43 Data Model Changes for Static Tables in v08.2020

Table Name	Column Name	Nature of Change
REGULATORY_ASSET_SUBCLASS		Table Added Creates the rules to classify the subclass of the exposures for the STD and IRB approaches using a combination of classification variables and their values. It follows

Table Name	Column Name	Nature of Change
		the decision tree on how to assign the original exposure subclass according to the CRR.
REGULATORY_ASSET_SUBCLASS	AND_OR	Column Added This value provides a concatenation operator (such as AND, OR) that concatenates the conditions for the classification.
REGULATORY_ASSET_SUBCLASS	APPROACH	Column Added This value identifies the regulatory approach for running credit risk analyses. Use STD for the standard approach, IRB for the internal ratings-based approach.
REGULATORY_ASSET_SUBCLASS	OPERATOR	Column Added This value specifies Operator (such as equal to, not equal, in, not in).
REGULATORY_ASSET_SUBCLASS	REG_EXP_CLASS	Column Added This value classifies the regulatory exposures subclass code. Possible values are QRRE, SL, RRE, CRE, and so on.
REGULATORY_ASSET_SUBCLASS	REG_EXP_CLASS_DESC	Column Added This value provides a description of the regulatory exposure subclass.
REGULATORY_ASSET_SUBCLASS	SEQUENCE	Column Added This value specifies hierarchy to be used while assigning the regulatory exposure subclass.
REGULATORY_ASSET_SUBCLASS	VAR_DESC	Column Added This value provides a description of the classification variable.
REGULATORY_ASSET_SUBCLASS	VAR_NM	Column Added This value specifies a classification variable. Column values can be CRM_TYPE, CRM_SUBTYPE, and so on.
REGULATORY_ASSET_SUBCLASS	VAR_VALUE	Column Added

Table Name	Column Name	Nature of Change
		This column provides the value of the classification variable.

Content Release v04.2020

What's New in the v04.2020 Content Release

Overview

SAS Regulatory Risk Management 6.1 Content Release v04.2020 has the following enhancements:

- support for new securitization reports in COREP 2.9.1.1 taxonomy
- new configuration set added for running CRR2 calculations
- CRD 4 – Enhancements to CRM allocation treatment
- consistency in mortgage treatment across BASEL4 and CRD4 configuration
- other fixes and enhancements
- data model changes

Support for New Securitization Reports in COREP 2.9.1.1 Taxonomy

This release enables users to generate securitization reports as per EBA taxonomy 2.9.1.1. Under the revised securitization framework, the output result tables have been enhanced to capture the interim calculation details for populating COREP reports. For more information, see “Treatment for Securitization” in the *SAS Regulatory Risk Management 6.1 Content Release: Reference Manual*.

New Configuration Set Added for Running CRR2 Calculations

This release supports Capital Requirements Directive V (CRD-V) capital calculations for credit risk, according to regulation (EU) 2019/876.

Here are the features that are supported:

- treatment of retail loans against transfer of pension or salary as per **CRR Article 123**.
- SME capital deduction treatment as per **CRR Article 501**.
- infrastructure capital deduction treatment as per **CRR Article 501a**.

For more information about these features, see “Credit Risk Capital Charge – CRD V” in the *SAS Regulatory Risk Management 6.1 Content Release: Reference Manual*.

CRD IV – Enhancements to CRM Allocation Treatment

CRM allocation optimization that is used to allocate CRMs in order to achieve minimum RWA has been enhanced to consider the capital deduction factor prescribed in **CRR Article 501 (1)** for exposures to SME. In addition, a separate optimization algorithm is introduced to determine the eligibility of a counterparty for SME capital deduction treatment. For more information, see “Special Treatments” under “Credit Risk Capital Charge” in the *SAS Regulatory Risk Management 6.1 Content Release: Reference Manual*.

Consistency in Mortgage Treatment across BASEL4 and CRD4 Configuration

The loan-splitting approach for mortgages in BASEL4 is now consistent with CRD IV. Now, in BASEL IV, the collateral is split in two parts — fully and completely secured (FCS) and fully but not fully and completely secured (FS). This modification enables you to compare the results across all configurations that run the loan-splitting approach to mortgages treatment. For more information, see “Real Estate Exposures” under “Credit Risk Capital Charge - Basel IV” in the *SAS Regulatory Risk Management 6.1 Content Release: Reference Manual*.

Other Fixes and Enhancements

For more information, see “[Details of Other Fixes and Enhancements in v04.2020](#)”.

Data Model Changes

For more information, see “[Details of Data Model Changes in v04.2020](#)”.

Details of Other Fixes and Enhancements in v04.2020

Table 44 *Details of Other Fixes and Enhancements in v04.2020*

Category	Description	Affects Version
Credit Risk	Lease Residuals Exposures Lease residuals exposures were assigned an incorrect risk weight of 1250% as they were allocated to the RW bucket of sundry items. With this fix, a new RW bucket has been defined for other assets to categorize these	All previous versions

Category	Description	Affects Version
	exposures and assign them a risk weight of 100%.	
Credit Risk	<p>Updates to IRB Components Check</p> <p>When calculating regulatory capital, the IRB exposures with fixed risk weight treatment (such as exposures to other assets, equity exposures subject to simple risk weight approach, equity exposures subject to 250% RW, and specialized lending exposures subject to slotting approach) were being checked for the risk components — PD and LGD — to decide whether the approach needs to be downgraded to a less sophisticated approach. To fix this issue, the IRB components check is now skipped for these exposures.</p>	All previous versions
Credit Risk	<p>Exclusion of EL Calculation for Fixed Risk Weight Exposures</p> <p>EL was computed from PD and LGD values under IRB approach even for exposures that are eligible for fixed risk weights. With this fix, EL is assigned as per exposure type and is not computed from PD and LGD values for exposures that have fixed risk weight assignments. For such exposures, PD_EFF, LGD_EFF, and EL_EFF are not populated in results data sets. Also, other assets (including cash, gold, and lease residual) are assigned an EL of 0%.</p>	All previous versions
Credit Risk	<p>Haircut Calculation of Non-senior Unrated Debt Securities</p> <p>Haircut based on issuer or counterparty rating was implemented only for unrated senior debt securities issued by institutions. With this fix, issuer or counterparty rating is also considered for haircut calculation</p>	All previous versions

Category	Description	Affects Version
	of non-senior unrated debt securities issued by institutions and other unrated debt securities issued by counterparties other than institutions.	
Credit Risk	<p>Benchmark RWA : Whole Portfolio Run</p> <p>The Benchmark RWA subflow was executed on only IRB portfolio along with STD exposures that have shared CRMs with IRB exposures. With this fix, the entire portfolio, including all STD exposures, can now be passed through 'Benchmark RWA' subflow to compute RWA. A regulatory option 'BENCHMARK_USE_WHOLE_PORTFOLIO' is introduced in the data set CONFIG.regulatory_settings for this purpose. Users can set the value of this option to 'YES' to pass the whole portfolio through the benchmark flow. The default value of BENCHMARK_USE_WHOLE_PORTFOLIO is set to 'NO'.</p>	v02.2019 and later
Credit Risk	<p>Benchmark RWA : User-supplied Measures</p> <p>In the Benchmark RWA subflow, when the user-supplied (IRB) EAD amount (EAD_AMT) is populated, it was used as is even though the approach was changed to STD. With this fix, first, the approach of the exposures is changed to STD, and then the EAD amount is calculated for those exposures as per the STD approach.</p>	v02.2019 and later
Credit Risk	<p>SME SF - RRE Collaterals Optimal Allocation</p> <p>CRMs that are adjusted in LGD are now considered in the computation that is performed to identify eligible counterparty groups for SME capital deduction</p>	All previous versions

Category	Description	Affects Version
	<p>treatment. Moreover, a separate optimization algorithm is introduced to allocate the residential property collaterals such that maximum number of groups of connected clients satisfy the threshold criterion given in CRR Article 501 (2)(c).</p>	
Credit Risk	<p>UFCPs Part of CRM Allocation When Adjusted LGD Is Same As Unadjusted LGD</p> <p>If the effect of an unfunded credit protection to an exposure is considered in its own estimates of LGD under the IRBA, and if the adjusted LGD is not different from the unadjusted LGD, such CRMs were not considered in the optimal CRM allocation process. Because of this, if the protection provider was eligible for an SME capital deduction treatment, this benefit was not exploited. This has now been fixed. Now if a protection-providing counterparty qualifies for SME capital deduction treatment and if that counterparty provides an unfunded protection to an exposure, it is included in the optimal CRM allocation process in the above case too. The counterparty gets the benefit in RWA reduction of that exposure. In such cases, for the secured part of the exposure, the column CRM_SME_CAP_DEDUCTION_TRT_FLG is set to 1.</p>	All previous versions
Credit Risk	<p>Use of SME Capital Deduction Factor in Optimal CRM Allocation</p> <p>CRM allocation optimization that allocates CRMs to achieve minimum RWA has been enhanced to consider the capital deduction factor prescribed in CRR Article 501 (1).</p>	All previous versions

Category	Description	Affects Version
Credit Risk	<p>Benchmark RWA: EAD Calculation of Facility Exposure</p> <p>There was inconsistency in the treatment in the benchmark EAD calculation of facility exposures that have user-defined EAD but get a 0 or missing EAD value after recalibration according to the standardized approach. With this fix, such exposures are excluded consistently from the calculation. The EAD value in RRM_B_E.all_exposures_std_0 data set is updated with EAD value from the diagnostic data set RRM_B_E.exposures_with_zero_ead_fac_1.</p>	v12.2019
Credit Risk	<p>Benchmark RWA: Availability of STD Attributes</p> <p>Under the Basel4 configuration, all the exposures under IRB approaches must be treated as STD to compute the benchmark RWA. While executing IRB portfolio through the benchmark subflow, some of the key attributes that are required for risk-weight calculations under the STD approach were missing. This fix keeps such STD attributes as part of the IRB portfolio, so that the benchmark RWA is correctly calculated under the STD approach.</p>	v12.2019
Credit Risk	<p>APPROACH_USAGE for PPU Cases of CRM Substitution</p> <p>Earlier the APPROACH_USAGE column in the crm_allocation_detail data set stored the value of exposures only for both secured and unsecured parts. APPROACH_USAGE of secured part in cases of credit risk substitution is an important aspect for PPU treatment. With this fix, the APPROACH_USAGE column stores the value of the</p>	v12.2019

Category	Description	Affects Version
	exposure for the unsecured part and that of the CRM for the secured part.	
Credit Risk	LGD_EFF Population With CRM Under IRBF Approach Under IRBF, for the secured row, the LGD_EFF was not being populated. As a result of the missing value of LGD_EFF, EL_EFF was not being computed either. With this fix, the LGD_EFF for the secured row is populated with the LGD of the CRM; and the EL_EFF is computed too.	v12.2019
Credit Risk	Non-deducted Equity Holdings The equity holdings that are exempted from deduction from Common Equity Tier 1 items are prescribed a fixed risk weight under both STD and IRB approach. With this fix, all such exposures are assigned fixed risk weight under either of the approaches. For reporting purpose, a new parameter RWA_APPROACH has been added in the config.regulatory_settings data set. This parameter enables users to set the APPROACH for these exposures and report them accordingly.	All previous versions
Credit Risk	Funded Collaterals Under IRBA Under IRBA, for exposures secured by funded collaterals, the effect of collateral is modeled in the own estimate of LGD of the exposure itself. Earlier, SAS Regulatory Risk Management was treating them similar to how they were treated under IRBF. This has now been fixed. Now all such collaterals are reported in the data set reg_calc.lgd_adjusted_crm_irb and are no longer part of the allocation process. These	All previous versions

Category	Description	Affects Version
	<p>collaterals are later added to the results table</p> <p>capital.crm_allocation_details after the CRM allocation. Also, the options</p> <p>USE_OVER_COLAT_LEVELS_IRBA and</p> <p>USE_MIN_COLAT_LEVELS_IRBA from the</p> <p>config.regulatory_settings have been removed because under IRBA, the collateralization check does not apply at all, and under IRBF it is mandatory.</p>	
Credit Risk	<p>Prudential Backstop: IRB Shortfall Calculation</p> <p>Earlier, IRB shortfall was calculated as the difference of provisions and expected loss in absolute value. Also, IRB shortfall was calculated at an aggregate level for IRB exposures separately for defaulted and non-defaulted portfolio, and the shortfall was not covered within the portfolio. With this fix, the difference of provisions and expected loss is computed without considering the absolute value. The positive value reflects the excess provision amount, and the negative value reflects the shortfall amount. Also, the excess of provision is used to cover any IRB shortfall that might exist in the entire portfolio.</p>	v12.2019
Credit Risk	<p>Corporate SME Adjustment Threshold Check at Counterparty Group Level</p> <p>Earlier, SAS Regulatory Risk Management summed the annual sales and total assets of individual counterparties to compute the annual sales and total assets at the counterparty group level. This total might not be the same as consolidated annual sales and consolidated total assets at the counterparty group level. Hence, two columns</p>	All previous versions

Category	Description	Affects Version
	<p>have been introduced to calculate the consolidated numbers at the counterparty group level: 1) CONSOLIDATED_ASSETS and 2) CONSOLIDATED_ANNUAL_SALES in the counterparty_mart data set. These values, if present, are used in the following computations; if these values are not present, the earlier aggregation logic is performed:</p> <ul style="list-style-type: none"> ■ To decide whether a counterparty is an SME to apply the firm size adjustment to the RW of the corporates under IRB approach ■ To decide whether a counterparty is eligible to get the capital deduction treatment as per CRR Article 501. ■ To decide whether a corporate counterparty is a large counterparty that is not eligible to apply IRBA approach under Basel 4 standards. 	
Credit Risk	<p>CRD4: Unregulated Financial Entity</p> <p>Under the CRD4 configuration, only the entities with COUNTERPARTY_TYPE value as UNREG_FIN_ENTITY were treated as an unregulated financial entity. With this fix, if the entities that do not have COUNTERPARTY_TYPE value as REG_FIN_ENTITY and none of its subsidiaries have COUNTERPARTY_TYPE value as REG_FIN_ENTITY, they are treated as unregulated financial entities.</p>	All previous versions
Credit Risk	<p>Benchmark RWA: BY_RANK Run</p> <p>The Benchmark RWA subflow with crm_allocation_option set to "BY_RANK" would result into an</p>	All previous versions

Category	Description	Affects Version
	empty crm_allocation_detail table. With this fix, the result tables are populated as expected.	
Credit Risk	<p>Prudential Backstop</p> <p>When filtering the non-performing exposures (NPE) for the prudential backstop calculations, the condition also included forbearance status of the exposures and if the exposure is restructured and resulted into the increase in exposure value, it checked whether the restructure date is after the regulation date for prudential backstop. The condition has now been revised to exclude the conditions based on forbearance status and restructuring information. The NPE time interval calculation that retrieves the applicable factors in insufficient coverage amount has also been revised to consider only the NPE date and exclude the restructure date.</p>	v09.2019 and later
Counterparty Credit Risk	<p>CRM Eligibility Checks in CCR Flow</p> <p>Any CRM was considered an eligible mitigant for a CCR exposure. This had been missed while refactoring the CRR flow in a prior release. With this fix, eligibility checks are performed for each CRM and the ineligible CRMs are removed from the processing and are reported into the diagnostic data sets All_exposure_crm_ineligible_*. </p>	v09.2019 and later
Credit Risk – Basel 4	<p>Retail QRRE Under IRB</p> <p>QRRE transactors under the IRB approach were identified through the IRB_PRODUCT_SUBCLASS, and this was inconsistent with the approach that was used under STD. With this fix, QRRE transactors are now identified</p>	v12.2019

Category	Description	Affects Version
	through the COUNTERPARTY_TRANSACTION_FLG at counterparty level or through BALANCE_NOT_REPAID_FLG and DRAWDOWN_FLG at the facility level to be consistent with STD approach. QRRE exposures that are not transactors are classified as revolvers.	
Credit Risk - Basel 4	EAD Floor Calculation The EAD floor was computed and checked for corporate exposures under the IRBA approach when CCF_PCT is populated by the user. With this fix, the EAD floor is also checked for exposures where EAD_AMT is directly provided by the user or when the exposure is entirely off-balance sheet with no links available in the link table, rd_stage.exposure_cf_link.	v12.2019
Credit Risk - Basel 4	EAD_AMT for Facilities When the EAD_AMT was populated for facilities, the undrawn portion was computed as the difference between EAD_AMT of the facility and drawn portion of the facility. With this fix, the difference is not computed, and the user-input is considered as EAD of the off-balance sheet part of the exposure.	All previous versions
Credit Risk - Basel 4	BASEL4: Exclusion of Insurance Companies from IRBA Earlier, the check on the IRBA approach to change it to IRBF (since IRBA is not allowed in Basel4 for these counterparties) was performed for only large corporations, banks, and securities firms. With this fix, insurance companies and any other financial institutions are also included in the check.	v12.2019

Category	Description	Affects Version
Credit Risk - Basel 4	<p>BASEL4: SCRA for Banks</p> <p>Under the BASEL4 configuration, in the jurisdictions that do not allow external ratings, the risk weight was not calculated for exposures to banks in foreign currency with no sovereign counterparty present in the staging data. Such exposures were reported in the diagnostic table RRM_diag.All_exposures_std_no_rw. With this fix, such exposures get the correct risk-weight and are part of the result tables.</p>	v09.2019 and later
Credit Risk - Basel 4	<p>CRE: Dedicated Parameter for LTV_PCT Threshold</p> <p>Under the BASEL4 configuration, for exposures to commercial real estate, where the repayment of the loan was not dependent on the cash flow generated by the property, the risk weight value was also used as the threshold value because they have same values to compare the LTV percentage with. With this fix, a new regulatory parameter CRE_LTV_PCT_THRESHOLD is introduced to store the threshold value.</p>	v09.2019 and later
Credit Risk - Basel 4	<p>Real Estate Exposure Secured by Multiple Real Estate Collateral</p> <p>Under the BASEL 4 configuration for the real estate exposures, the use case of a single exposure secured by multiple real estates was not implemented. With this fix, if a single exposure is secured by multiple residential or multiple commercial real estate properties, and when the repayment of the loan is not dependent on the cash flow generated by the real estate property, the collateral is split into fully and completely secured (FCS) and fully but not fully and</p>	v09.2019 and later

Category	Description	Affects Version
	completely secured (FS) parts under split-loan approach and are part of CRM allocation optimization.	
Credit Risk - Basel 4	<p>Split Loan Approach in BASEL 4</p> <p>The split-loan approach is similar in both BASEL 4 and CRD4, but current results are not comparable across configurations. Under the CRD4 configuration, the collateral is split in two parts — fully and completely secured (FCS) and fully but not fully and completely secured (FS) and the remaining exposure after the collateral allocation is treated as unsecured exposure. In the BASEL4 configuration however, the exposure is split in two parts — secured part and the residual exposure. With this fix, under BASEL4 configuration too, the collateral is split in two parts - fully and completely secured and fully but not fully and completely secured. As part of this revision, the column in the result data set IMMOV_PROP_RESIDUAL_FLG that distinguished the parts of the exposure has been removed.</p>	v09.2019 and later
Securitization	<p>Benchmark Securitization</p> <p>In the Benchmark Securitization subflow, the risk weight values under SEC-SA and SEC-ERBA approach are also calculated for securitization exposures running with SEC-IRBA approach. The risk weight values under benchmark flow are reported in the final output result table</p> <p>REV_BSEC.crm_allocation_detail_sec. In the node Update RWA and Capital - Revised Securitization these values are merged in the REV_SEC.crm_allocation_detail_sec_final to create the output result table</p>	v12.2019

Category	Description	Affects Version
	<p>REV_SEC.crm_allocation_detail_sec. Earlier, the merge resulted into duplicate rows due to an incorrect join condition. With this fix, the join condition is modified based on the granularity of the inputs to avoid duplication in the output table</p> <p>REV_SEC.crm_allocation_detail_sec.</p>	
Securitization	<p>Caps for Securitization Positions</p> <p>Under the revised securitization framework, both the look-through approach treatment and maximum capital treatment is applied to the securitization exposures (BCBS d374 paragraphs 88-93, CRR Articles (267, 268)). The effect of both these treatments was jointly reflected in the final RWA column. The columns that represented the RWA values before and after application of individual treatments were not available. With this fix, the following new columns are created in the crm_allocation_detail_sec result data set.</p> <ul style="list-style-type: none"> ■ RWA_BEFORE_CAP column represents the RWA value before applying any cap. ■ RWA_AFTER_LKT_CAP represents the RWA value after applying the look-through cap. ■ RWA_AFTER_MAX_CAP represents the RWA value after applying the maximum capital treatment. ■ RWA column represents the RWA values after applying the maximum capital treatment. This column also includes the impact of maturity mismatch for synthetic securitizations. <p>These columns are also used in the EBA COREP SEC reports.</p>	v09.2019 and later

Category	Description	Affects Version
Securitization	<p>Securitization Exposures Deducted From Own Funds</p> <p>Under the revised securitization framework, the securitization exposures that were deducted from own funds, were reported in the table REV_SEC.sec_exp_deducted_from_capital. With this fix, these exposures are also reported into the result table REV_SEC.crm_allocation_detail_sec. For these exposures, the value of the flag EXP_DEDUCTED_FROM_OWN_FUNDS_FLG is set to 1. This information is also used in the EBA COREP SEC reports.</p>	v02.2019 and later
Securitization	<p>EBA COREP SEC Reports</p> <p>As per EBA Taxonomy 2.9, under the revised securitization framework, the originator institution needs to report the risk transfer that is achieved through securitization. This is reported in the column RISK TRANSFER CLAIMED BY ORIGINATOR INSTITUTION (%) (304) of C14.00 (CR SEC Details Report). With this fix, a new column RISK_TRANSFER_CLAIMED_PCT is added to the transaction level output result table rev_sec.capital_detail_sec_transaction. This column is calculated as the ratio of sum of expected loss and unexpected loss for the securitized assets to the sum of expected loss and unexpected loss for the entire credit risk portfolio.</p>	v02.2019 and later
Securitization	<p>Exposures Not Owned by the Bank</p> <p>Under the revised securitization framework, the securitization exposures that are not owned by the institution were reported in the table rev_sec.exp_not_owned_detail .</p>	v02.2019 and later

Category	Description	Affects Version
	With this fix, all these securitization exposures are reported in the table <code>rev_sec.crm_allocation_detail_sec</code> , and the value of the column <code>EXP_NOT_OWNED_FLG</code> is set to 1. The existing table <code>rev_sec.exp_not_owned_detail</code> is removed.	
Securitization	<p>Pool-level Measures</p> <p>The calculated pool-level measures are now reported in the transaction level output result data set <code>rev_sec.capital_detail_sec_transaction</code>. This information is also used in the population of EBA COREP Reports. This includes pool-level attributes such as, <code>EFF_NUMBER_OF_EXPOSURES</code>, <code>K_IRB</code>, <code>K_SA</code>, percentage of retail exposures, exposure-weighted expected loss, exposure weighted unexpected loss, percentage of IRB exposures. These columns were being calculated, but not reported in the output transaction table. With this fix, all the interim columns are reported in the output result table <code>rev_sec.capital_detail_sec_transaction</code>.</p>	v02.2019 and later
Securitization	<p>Securitization Result Tables Documentation</p> <p>The SAS Regulatory Risk Management documentation has been enhanced with a detailed description of the columns of output result tables for securitization (<code>CAPITAL_DETAIL_SEC_TRANSACTION</code>, <code>CRM_ALLOCATION_DETAIL_SEC</code>) under the section Output Data Sets.</p>	All previous versions
Securitization	Facilities Covering the Securitization Transaction	v02.2019 and later

Category	Description	Affects Version
	Under the revised securitization framework, facilities that cover the securitization transaction were not processed. This had been missed in the refactoring of the new securitization flow. With this fix, facilities covering the securitization transaction are processed and are reported in the output data set rev_sec.crm_allocation_detail_sec.	
Securitization	Data Dictionary Enhancement The description of the columns SECURITIZATION_TRANSACTION_ID and SECURITIZATION_TRANSACTION_NAME in the table securitization_pool_mart has been updated to reflect their correct usage.	v09.2019 and later
Securitization	Maximum Capital Treatment Under the revised securitization framework, the maximum capital treatment is implemented at the securitization-transaction level. The effect of maximum capital treatment must be reflected in the RWA values of individual securitization exposure. With this fix, RWA at tranche level is calculated as $RWA = RWA * (1 - (MAX_PROP_RATIO * RWA_TOT_UND) / RWA_TOT_TRANCHES)$ RWA_TOT_UND = total RWA value of underlying securitized assets, MAX_PROP_RATIO = largest proportion of interest that the institution holds in relevant tranches and $RWA_TOT_TRANCHES$ = Total RWA value of all the tranches in a securitization transaction.	v09.2019 and later
Securitization	EBA COREP SEC Reports When the approach for securitization exposures is changed after applying the hierarchy of methods (CRR Article 254), the exposures were	v09.2019 and later

Category	Description	Affects Version
	<p>reported in the diagnostic table 'rrm_diag.revsec_apprch_chg_u ndr_hierarchy'. With this enhancement, the diagnostic table has been removed. The final output result data set rev_sec.crm_allocation_detail_sec is now updated with column REASON which holds the value of the associated reason for approach change. The corresponding column SEC_APPROACH_REASON is updated with a code that is further used in EBA COREP (CR SEC) reports.</p>	
Securitization	<p>Differentiated Capital Treatment</p> <p>A new column DIFF_CAPITAL_TREAT_FLG is created to identify securitization exposures that qualify for differentiated capital treatment (BCBS d374 Annex 2 A1-C14 & D15-D16 , (CRR Article 243)). Currently, the value of the column DIFF_CAPITAL_TREAT_FLG is set to 1 for all the STS securitization exposures. This column is also used in the population of EBA COREP C13.01 (CR Sec) report.</p>	v12.2019
Securitization	<p>Data Model Change</p> <p>A new column SEC_POOL_CUTOFF_DT has been added in the securitization_pool_mart table. This column fetches the cut-off or closing date of the securitization pool. This column is also used to populate the column ORIGINATION DATE in the EBA COREP C14.00 (CR SEC Details) report.</p>	All previous versions
Securitization	<p>EBA COREP SEC Reports</p> <p>For an originator institution of a traditional securitization transaction, if there has not been</p>	v12.2019

Category	Description	Affects Version
	<p>any significant risk transfer, the underlying exposures are reported in the credit risk portfolio. The corresponding securitization exposures are reported in the table rrm_diag.exposure_sec_no_sec_treatment. In addition, such securitization transactions are now reported in the output result table rev_sec.</p> <p>capital_detail_sec_transaction, and the value of the column SIGNIFICANT_RISK_TRANS_TYPE_CD is set to N. This information is also used in the EBA COREP securitization reports.</p>	
Securitization	<p>Securitization Output Result Table Enhancement</p> <p>The output result table rev_sec.capital_detail_sec_transaction has been enhanced by adding new attributes that capture the details of securitization transaction. The transaction-level attributes, which are not required to be populated at securitization exposure, are removed from the output result table rev_sec.crm_allocation_detail_sec.</p>	v12.2019
Securitization	<p>Benchmark Securitization</p> <p>Under the benchmark flow for securitization, the RWA values for rated securitization exposures are calculated under the SEC-SA and SEC-ERBA approach. The RWA values are now available in the output result table rev_sec.crm_allocation_detail_sec. This information is also used in the EBA COREP securitization reports.</p>	v12.2019
Back-end	<p>Risk Weight Assignment to Intra-group Transactions</p> <p>Intra-group transactions were assigned 0% risk weight whether the institution had the approval or not. With this fix, an option</p>	v09.2019 and later

Category	Description	Affects Version
	<p>IGT_ASSIGN_ZERO_PCT_RW has been added to the CONFIG.regulatory_settings data set so that the institution can assign risk weight based on regulatory rules to intra-group transactions.</p>	
Back-end	<p>Changes to Intra-group Transactions Data Set</p> <p>Intra-group transactions were stored in a separate data set and therefore were missed from aggregate calculations. This issue has now been fixed. An option IGT_ELIMINATE_TRANSACTION has been added to the CONFIG.regulatory_settings data set to store them in the result data set or as a separate data set.</p>	v09.2019 and later
Back-end	<p>Updates to Benchmark RWA Subflow</p> <p>In 'Benchmark RWA' subflow, while creating the all_exposures_std_0 data set, all the records from the exposure_others_0 and exposure_facilities_1 data set were incorrectly added in the all_exposures_std_0 data set. With this fix, the merge statement is corrected so that only the EAD amount is replaced based on EXP_ID values present in the all_exposures_std_0 data set.</p>	v12.2019
Back-end	<p>Error With Append Statement in Diagnostic Data Set</p> <p>With limited staging data, appending the data in Diagnostic data set resulted into errors. This fix appends data successfully by using the FORCE option in rrm_reg_unused_crm_min_coll_i rb.sas file.</p>	v12.2019
Back-end	<p>Use of CCG_ORIG Column With Value Zero</p>	v12.2019

Category	Description	Affects Version
	Dividing by CCF_ORIG means dividing by zero in some cases. This can lead to an incorrect calculation of the _COST_ column. To fix this, the code has been updated to exclude conditions when CCF_ORIG has a value of 0.	
EBA Taxonomy	Support for EBA Taxonomy 2.9.1.1 When the user executes the SAS Risk and Finance Workbench flow with EBA taxonomy version EBA_28, it refers to the previous version of federated area. For the EBA taxonomy 2.9.1.1, the securitization portfolio is created based on the revised securitization framework.	v12.2019
Documentation	Documentation of Output Variables The detailed description of the columns of RRM output result tables (CRM_ALLOCATION_DETAIL, CAPITAL_DETAIL_STD, CAPITAL_DETAIL_IRB) is provided with the fix. The output variables in the result tables are dependent on regulatory configuration. This information is provided in the column Regulatory Configuration.	v12.2019

Data Model Changes for Staging Tables in v04.2020

Table 45 Data Model Changes for Staging Tables in v04.2020

Table Name	Column Name	Nature of Change
COUNTERPARTY_MART	MONTHLY_INCOME_AMT	Column added The monthly income, from pension or salary, of the obligor. This is useful for

Table Name	Column Name	Nature of Change
		preferential treatment of retail loans that is given against transfer of pension or salary of borrower as per CRR2 Article 123(c).
COUNTERPARTY_MART	INFRA_PROJECT_FLG	<p>Column added</p> <p>This column indicates whether the counterparty was specifically created to finance or operate infrastructure projects. This 'flag' can take values of '1' or '0', where '1' indicates that counterparty finances or operates infrastructure projects. This is required for preferential treatment of such entities as per CRR2 Article 501a (1b).</p>
COUNTERPARTY_MART	INFRA_SF_CRITERIA_FLG	<p>Column added</p> <p>This column is set to '1' when the criteria for preferential treatment for infrastructure projects is fulfilled. Examples: the financial obligations of borrower are met under severely stressed conditions, the borrower uses derivatives for risk-mitigation purposes, and others. Refer to the Infrastructure Capital Deduction Treatment (tag of this subsection) for more details about this flag. This is as per CRR2 Article 501a (1c to 1o).</p>
COUNTERPARTY_MART	REVENUE_AVAILABILITY_FLG	<p>Column added</p> <p>This column is set to '1' when the revenues are availability-based or revenues are subject to a rate-of-return regulation. Revenue details are required to capture whether cash flows of counterparty are predictable or not as per CRR2 Article 501a (2a).</p>
COUNTERPARTY_MART	PAYMENT_FROM_LARGE_USERS_FLG	<p>Column added</p> <p>This column is set to '1' when the revenues of the obligor are funded by payments from a large number of users. This is used to derive the predictability of cash flows of the counterparty as per CRR2 Article 501a (2b).</p>
COUNTERPARTY_MART	CONSOLIDATED_ASSETS	Column added

Table Name	Column Name	Nature of Change
		<p>The total assets of the consolidated counterparty group. This amount is in the currency that is specified in the REPORTING_CURRENCY_CD column. This amount is used as an indicator of the firm size when the option IRB_USE_TASSETS_AS_FIRM_SIZE in the rd_stat.regulatory_option data set is set to YES.</p>
COUNTERPARTY_MART	CONSOLIDATED_ANNUAL_SALES	<p>Column added</p> <p>The total amount of annual sales of the consolidated counterparty group. This amount is in the currency that is specified in the REPORTING_CURRENCY_CD column. This amount is used as an indicator of the firm size while computing the risk weight of the exposures to corporate under the IRBA approach.</p>
ISSUE_ACCOUNT	MONTHLY_PAYMENT_AMT	<p>Column added</p> <p>The monthly installment amount toward the loan repayment. This is used for preferential treatment of retail loans that are given against transfer of pension or salary of borrower as per CRR2 Article 123(c).</p>
ISSUE_ACCOUNT	INSURED_FLG	<p>Column added</p> <p>This column indicates whether the exposure has an active insurance policy. The policy must cover risks of death, inability to work, unemployment or reduction of the net monthly pension, or salary of obligor as per CRR2 Article 123(b)</p>
SECURITIZATION_POOL_MART	SEC_POOL_CUTOFF_DT	<p>Column added</p> <p>The date of origination of the securitization. It is also referred to as cut-off date or closing date of the securitization pool.</p>

Content Release v12.2019

What's New in the v12.2019 Content Release

Overview

SAS Regulatory Risk Management 6.1 Content Release v12.2019 has the following enhancements:

- compliance with Basel IV credit risk
- what-if analysis
- prudential backstop
- inclusion of alter scripts for updating the staging data model
- documentation enhancements
- other fixes and enhancements
- data model changes

Compliance with Basel IV Credit Risk

This release supports Final Basel III (also known as 'Basel IV') capital calculations for credit risk, according to the Basel D424 guidelines.

Here are the major features:

- all asset classes covered across IRB and STD approaches
- output floor calculation
- out-of-the-box report for analyzing the impact of the new guidelines
- additional data requirements for Basel IV calculations.

These features are supported in addition to the revised securitization framework that was implemented in the earlier releases. For more information about these features, see “Credit Risk Capital Charge - Basel IV” in the *SAS Regulatory Risk Management 6.1 Content Release: Reference Manual*.

What-if Analysis

The what-if analysis feature enables you to run simulations on RWA calculations by changing values of specific parameters and portfolio attributes, and re-executing the calculation process. This feature also enables you to compare the results side-by-side and analyze the impact of changes on the result data with the help of out-of-the-box reports. For more information, see “What-if Analysis” in the *SAS Regulatory Risk Management 6.1 Content Release: Reference Manual*.

Prudential Backstop

This feature supports the EU regulation (EU) 2019/630 to report the minimum loss coverage (MLC) for non-performing exposures (NPE) and forborne exposures. According to this regulation, the minimum coverage requirement for exposure (MCE) and insufficient coverage amount are calculated at exposure level. A dedicated subflow has been introduced for these calculations.

Note: You can choose not to perform the prudential backstop calculation or not to adjust it in the final RWA calculation by changing the system-level options.

This feature also provides out-of-the-box reports that analyze the minimum coverage requirement and available coverage for non-performing and forborne exposures.

For more information, see “Prudential Backstop” in the *SAS Regulatory Risk Management 6.1 Content Release: Reference Manual*.

Inclusion of Alter Scripts for Updating the Staging Data Model

The alter scripts have been provided to update the staging data model. The data model that was delivered with the v09.2019 content release is considered as the baseline data model. The alter scripts can be run on the baseline data model to upgrade the staging data model according to the latest content release.

Documentation Enhancements

The *SAS Regulatory Risk Management 6.1 Content Release: Reference Manual* now offers full search capabilities. The regulatory references and treatments can be searched through the entire documentation. For more information about how to enable the full search capabilities, see “Customizing the Documentation” in the *SAS Regulatory Risk Management 6.1 Content Release: Reference Manual*.

Other Fixes and Enhancements

For more information, see [“Details of Other Fixes and Enhancements in v12.2019”](#).

Data Model Changes

For more information, see [“Details of Data Model Changes in v12.2019”](#).

Details of Other Fixes and Enhancements in v12.2019

Table 46 Details of Other Fixes and Enhancements in v12.2019

Category	Description	Affects Version
Back-end Data Management	Resolving Installation Errors Certain installation errors occurred when SAS Regulatory Risk Management was installed multiple times on the same computer. These errors occurred while creating a backup of the input data sets that are required for producing the SAS Visual Analytics reports. With this fix, the earlier backup is deleted first and then the current data sets are backed up.	v09.2019 and later
Counterparty Credit Risk	Ineligible Securities Under SFT Transactions The ineligible securities under SFT transactions were not assigned any haircuts earlier. According to BCBS128 paragraph 153 (CRR Article 224(4)), a haircut value of 25% should be assigned to the ineligible securities under SFT transactions. This has now been implemented.	All previous releases
Credit Risk	CRD-IV: Treatment for Private Equity Investments In the previous releases, the private equity investments were mapped to STD_PRODUCT_CLASS = EQUITY . Therefore, they were risk weighted as equity exposures under the STD approach. As per CRR Article 128(2)(c), private equity investments should be treated as high-risk exposures. With this fix, the private equity investments are mapped to	All previous releases

Category	Description	Affects Version
	STD_PRODUCT_CLASS = HIGH_RISK.	
Credit Risk	<p>CRD-IV: Assignment of Regulatory Exposure Class for Equity Exposures</p> <p>The exposures that were risk weighted at 250% were identified as non-equity exposures by excluding them from the REG_EXP_CLASS = EQUITY condition. According to CRR Article 133(3), only equity exposures that are issued by institutions should be excluded from the equity asset class. With this fix, the REG_EXP_CLASS column for the equity exposures that are issued by entities other than institutions and are subject to risk weight of 250% is set to EQUITY.</p>	v03.2018 and later
Credit Risk	<p>Defaulted IRB Exposures Covered by SA CRMs</p> <p>For a defaulted IRB exposure that is secured by CRMs with the STD approach, the RWA was being calculated for the secured part of the exposure by using the IRBA approach. This calculation was incorrect as the secured part had used the STD approach. With this fix, the RWA is calculated for the covered part of the defaulted exposure on the basis of the CRM_APPROACH column. In this case, the exposure's approach is not considered for the RWA calculation.</p>	All previous releases
Credit Risk	<p>CRD-IV: Double Default Treatment</p> <p>According to CRR Article 202, the double default treatment should be applied when the following criteria are fulfilled:</p> <ul style="list-style-type: none"> ■ the protection provider is regulated in a manner that is equivalent to credit quality step (CQS) 3 or above. 	All previous releases

Category	Description	Affects Version
	<ul style="list-style-type: none"> ■ the protection provider has an internal rating with a PD equivalent to or lesser than that associated with CQS3 or above. <p>Currently, SAS Regulatory Risk Management checks only for the internal rating when the external rating is not available for that protection provider. With this fix, this check on internal rating has been added along with the check on the external ratings.</p> <p>Note: CQS2 was being used as the threshold value for this check earlier and is now modified to CQS3.</p>	
Credit Risk	<p>Short-term Counterparty Ratings</p> <p>The short-term credit assessments at counterparty level were not supported in the earlier releases. With this fix, these short-term assessments if available for a counterparty, are considered in the risk-weighting treatment.</p>	All previous releases
Credit Risk	<p>Foreign Currency Rating versus Domestic Currency Rating</p> <p>When a foreign currency rating was available for a counterparty and the domestic currency rating was unavailable, the unrated domestic exposures were treated by considering the foreign currency rating. However, when there were multiple foreign currency ratings and the domestic currency rating was unavailable, the domestic exposures of that counterparty were being treated as unrated. With this fix, the domestic exposures to counterparties with multiple foreign currency ratings and without a domestic rating are assigned a rating based on the second-best rating that is derived</p>	All pervious versions

Category	Description	Affects Version
	from multiple foreign currency ratings.	
Credit Risk	<p>Exposure Class for Retail Securities</p> <p>According to BCBS128 paragraph 70 (CRR Article 123, D424 paragraph 55), securities are not eligible for the retail exposure class. With this fix, securities that are issued by retail counterparties are re-classified as 'Other Assets'.</p>	All previous releases
Credit Risk	<p>CRM Allocation for Collective Investment Units (CIUs)</p> <p>In the prior release, CRMs were not applied to CIU exposures. The CRM allocation for CIUs under the LTA approach is now implemented for the CRD-IV configuration. As per CRR Article 224(5), while applying the comprehensive method to financial collaterals, the weighted average of underlyings' haircuts is calculated at CIU-exposure level under the LTA approach. Similarly, when CIUs are posted as CRMs and bank has complete information about its underlyings, the weighted average is calculated from its underlying haircuts.</p>	v09.2019 and later
Credit Risk	<p>Intra-group Transactions</p> <p>As per CRR Article 113(6), capital instruments should be excluded from the RW treatment of intra-group transactions and the exposures that are part of the institutional protection scheme under the STD approach. These capital instruments are identified by the STD_PRODUCT_CLASS = EQUITY mapping.</p>	All previous releases
Credit Risk	<p>Intra-group Transactions Under IRB Approach</p> <p>The intra-group transactions treatment that is implemented as per CRR Article 113(6) is not</p>	v09.2019 and later

Category	Description	Affects Version
	applicable to exposures that are treated under the IRB approach. Earlier, this treatment was applied to all exposures regardless of the approach under which they are treated. With this fix, this treatment has been corrected.	
Credit Risk	Permanent Partial Use (PPU) with Intra-group Counterparties Permanent partial use (PPU) with intra-group counterparties is now supported as per CRR Article 150(1)(e). With this fix, the exposures to intra-group counterparties are eligible for PPU treatment.	v09.2019 and later
Credit Risk	A/B Loan Structure B loans are participation by commercial banks in a syndicated loan that is extended by selected MDBs. Banks can use domestic rating for these exposures even if the exposures are denominated in foreign currency. For more information, see "A/B Loans Structure" in the <i>SAS Regulatory Risk Management 61 Content Release: Reference Manual</i> .	-
Credit Risk	Effective Maturity of Qualifying Trade Finance Exposures As per CRR Article 162(3), effective maturity of qualifying trade finance exposures should be floored to 1 day, provided the residual maturity of such exposures is up to 1 year. Currently, the value of the QUALIFYING_SHORT_EXP_FLG column is being considered to apply the 1-day floor. With this fix, additional check of residual maturity along with the QUALIFYING_SHORT_EXP_FLG value has been added for trade finance exposures.	All previous releases

Category	Description	Affects Version
Credit Risk	<p>Past-due Preferential Treatment</p> <p>The past-due preferential treatment is implemented by calculating the ADJUSTMENT_PCT value. While calculating the ADJUSTMENT_PCT value, the value was not rounded. This resulted into an incorrect assignment of buckets. For example, a value of 19.999999999999 was considered as less than 20 and put into the RW bucket of 150%, thereby attracting a higher risk weight. With this fix, the ADJUSTMENT_PCT value is now rounded to 4 digits.</p>	All previous releases
Credit Risk	<p>Eligibility of Immovable Property Collaterals across Approaches</p> <p>The eligibility type of the immovable property collaterals under the STD and IRB approaches were mapped as ELIGIBLE_CRM_TYPE = 'IRB_COLLATERAL'. With this fix, a new ELIGIBLE_CRM_TYPE target value REAL_ESTATE has been introduced for the immovable property collaterals that are eligible under the STD and IRB approaches. The other IRB collaterals such as receivables, leases, and other physical collaterals are still mapped to IRB_COLLATERAL. The immovable property collaterals can also be mapped to ELIGIBLE_CRM_TYPE = 'IRB_COLLATERAL' if stricter eligibility criteria are to be recognized in the IRB approach.</p>	All previous releases
Credit Risk	<p>Real Estate Treatment</p> <p>Under the split loan approach, when there were liens on the property that were held by the bank only and the lien</p>	v09.2019 and later

Category	Description	Affects Version
	information was unavailable, the risk weight was not assigned correctly. With the fix, it is assumed that the bank holds the first lien on the property and is then risk weighted as per D424 SA for Credit Risk paragraphs 65 and 71.	
Credit Risk	CRD-IV: Trade Finance Exposures Under CRD-IV configuration, the trade finance exposures to unrated institutions with a residual maturity less than or equal to 3 months were not being assigned a risk weight that was applicable to short-term trade finance exposures. With this fix, these exposures are assigned a 20% risk weight.	All previous releases
Credit Risk	CRD-IV: New Provision Types for Additional value Adjustments Processing of new provision types for additional value adjustments (ADDITIONAL_VAL_ADJ) and other own fund deductions (OTH_OF_DEDUCTIONS) has been implemented to support adjustments as mentioned in CRR Article 111(1). These adjustments are processed only for the CRD-IV configuration.	All previous releases
Credit Risk	Performance Improvement The Credit Risk Calculations flow was consuming more time for its execution. This was because of an incorrect SQL subquery. With this fix, the query has been modified and as a result the execution time has reduced.	v09.2019 and later
Credit Risk	Asset Value Correlation Multiplier (AVCM) The AVCM was applied incorrectly for a non-equivalent country for Basel II, Basel III, and Basel IV configurations due to	All previous releases

Category	Description	Affects Version
	incorrect columns being used to check the eligibility. The EQUIVALENT_CREDIT_INST_L FI_TRT and EQUIVALENT_INVEST_FIRM_L FI_TRT columns of the rd_stat.mutual_recognition table that are specific to the CRD-IV configuration were being used. With this fix, the AVCM is now applied based on the EQUIVALENT_COUNTRY column of the rd_stat.mutual_recognition table for the Basel II, Basel III, and Basel IV configurations.	
Credit Risk	Asset Value Correlation Multiplier (AVCM) The AVCM must be applied when the asset value is greater than or equal to the regulatory threshold. In previous releases, AVCM was applied only when the total assets value was strictly greater than the threshold. This fix introduces the 'greater than or equal' condition to the threshold check.	v09.2019 and later
Credit Risk	Unrated Debt Security Any debt security without an issue-specific rating was considered as ineligible. With this fix, a debt security for which an issue-specific rating is not available but its counterparty has assessment equivalent or greater than the threshold as given in BCBS128 paragraph 145(c) (CRR Article 197 and D424 148(c) of Credit Risk SA) is considered as eligible.	All previous releases
Credit Risk	Unrated Debt Security When the issue-specific rating is not available for a security, the short-term credit assessments of a counterparty were not considered for the eligibility check. With this fix, any unrated debt security that is issued by a	All previous releases

Category	Description	Affects Version
	counterparty with short-term credit assessment lesser than CQS3 is considered ineligible.	
Credit Risk	<p>CRD-IV: Scaling Factor</p> <p>As per CRR Article 114(6)(c), the scaling factor that is applied to risk weight of exposures to central governments or central banks of EEA members denominated in non-domestic currencies must be set to 1 as of 1st January, 2020. With this fix, the value of the parameter SOV_EEA_NDOM_SCALING_FCTR in the table rd_stat.regulatory_parameter is updated to 1 for the CRD-IV configuration.</p>	-
Credit Risk	<p>CRM Eligibility for High-risk Exposures</p> <p>The possible values of the parameter HIGH_RISK_CRM_INELIG_TREAT were YES_SUBSTITUTION, YES_ALL, and NO. With this fix, the possible values of the parameter have been changed.</p> <p>Here are the updated values:</p> <ul style="list-style-type: none"> ■ YES_ALL: Indicates that all CRMs are ineligible for mitigation. ■ YES_SELECTIVE: Indicates that CRMs with substitution effect and mortgages are ineligible for mitigation. ■ NO: Indicates that all CRMs are eligible for mitigation. 	All previous releases
Credit Risk	<p>Credit Conversion Factor (CCF) for Unconditionally Cancelable Commitments</p> <p>Under the BASEL IV configuration, the CCF value that was applied to unconditionally cancelable commitments was incorrect. With this fix, the CCF value for the IRB_CCF_COMMITMENT_CANCELABLE and</p>	v09.2019 and later

Category	Description	Affects Version
	STD_CCF_COMMITMENT_CAN CELLABLE columns of the rd_stat.ccf table has been updated to 10% and the correct CCF is applied.	
Securitization	<p>Maximum Capital Treatment</p> <p>Under the revised securitization framework, as per D374 paragraphs 90-93 (CRR Article 268), the maximum capital for each securitization transaction is calculated as the maximum of the aggregated capital at the securitization transaction level, and the capital that is calculated using the underlying exposures as if the exposures are not securitized. The max formula was applied on RWA. With this fix, the max formula is now applied on the capital values. In addition, for the underlying exposures with the IRB approach, the expected loss of underlying exposures was earlier added to the RWA values of underlying exposures and then the capital was calculated as $\text{Total RWA} * \&\text{CAPITAL_RATIO}$. With this fix, the capital is first calculated as $\text{RWA} * \&\text{CAPITAL_RATIO}$ and then the expected loss of underlying exposures is added to the total capital of underlying exposures.</p>	v09.2019 and later
Securitization	<p>Seniority Status of Mezzanine Tranche</p> <p>The seniority status was earlier based on the value that was set for the TRANCHE_SENIORITY_RANK column. According to CRR Article 242(18), the mezzanine positions can be reclassified based on the risk weight value. With this fix, if the risk weight value of the mezzanine position is less than or equal to 25%, it is reclassified as senior securitization position. Also, if the risk weight value of the</p>	v02.2019 and later

Category	Description	Affects Version
	mezzanine position is greater than or equal to 1250%, it is classified as subordinate securitization position.	
Securitization	<p>Defaulted Exposures Under SEC-SA Approach</p> <p>The treatment of RWA calculation for the underlying defaulted exposures under the SEC-SA approach is now implemented. According to D374 paragraph 83 (CRR Article 261(2)), if the institution does not know the delinquency status of more than 5% of the underlying exposures in a pool, the position is risk weighted at 1250%. If the delinquency status is not known for less than or equal to 5% of the exposures, the KA calculation is based on the formula that is mentioned in D374 paragraph 83 (CRR Article 261(2)).</p>	v02.2019 and later
Securitization	<p>Deducted Securitization Exposures</p> <p>The securitization exposures that are deducted from the Common Equity Tier 1 capital are removed from the securitization portfolio and are reported in the output table</p> <p>REV_SEC.Sec_exp_deducted_from_capital. The CRM links for these exposures were still part of the exposure-CRM link tables. With this fix, all such links are removed from exposure-CRM link table.</p>	v02.2019 and later
Securitization	<p>Deducted Securitization Exposures</p> <p>In the new securitization framework, the regulatory exposure class (REG_EXP_CLASS) was not assigned for the securitization exposures that were deducted from the common equity tier 1 capital. With this fix, the</p>	v02.2019 and later

Category	Description	Affects Version
	REG_EXP_CLASS column of the REV_SEC.Sec_exp_deducted_from_capital output table is populated with the value SECURITIZATION for these exposures.	
Securitization	RW Floor for Non-senior STS Securitization According to CRR Articles 261(1) and 259(1), the risk weight of non-senior STS securitization exposures should be floored to 15% under the SEC-SA and SEC-IRBA approaches. However, an RW floor of 10% was being applied to these exposures. With this fix, the RW floor is applied to the non-senior STS securitization exposures as mentioned in the CRR Articles 261(1) and 259(1).	v09.2019 and later

Data Model Changes for What-if Analysis in v12.2019

Table 47 Data Model Changes for What-if Analysis

Table Name	Column Name	Nature of Change
ANALYSIS	-	Table added. For more information, see “ANALYSIS Table” .
ANALYSIS_X_RISK_FACTOR	-	Table added. For more information, see “ANALYSIS_X_RISK_FACTOR Table” .
RISK_FACTOR	-	Table added. For more information, see “RISK_FACTOR Table” .
RISK_FACTOR_X_DATASET	-	Table added.

Table Name	Column Name	Nature of Change
		For more information, see “RISK_FACTOR_X_DATASET Table” .
SEGMENT	-	Table added. For more information, see “SEGMENT Table” .
SEGMENT_X_DATASET_VARIABLE	-	Table added. For more information, see “SEGMENT_X_DATASET_VARIABLE Table” .

Data Model Changes for Staging Tables in v12.2019

Table 48 Data Model Changes for Basel IV Configuration

Table Name	Column Name	Nature of Change
COUNTERPARTY_MART	COUNTERPARTY_TRANSACTION_FLG	Column added. This column indicates whether the counterparty is a transactor as per D424 SA for Credit Risk paragraph 56. Valid values: 1 (if the counterparty is transactor) and 0 .
COUNTERPARTY_MART	SCRA_GRADE	Column added. This column specifies the bank's standardized credit risk assessment approach (SCRA) grades as described in D424 SA for Credit Risk paragraph 21. Valid values: A (for Grade A), B (for Grade B), and C (for Grade C).
COUNTERPARTY_MART	SOURCE_INCOME_CURRENCY	Column added. This column indicates the currency of the borrower's source of income as per D424 SA for Credit Risk paragraph 76. For example, currency values can be

Table Name	Column Name	Nature of Change
		EUR for EURO, USD for Dollar, and so on.
COUNTERPARTY_RATINGS	DUE_DILIGENCE_RATING	<p>Column added.</p> <p>This column specifies the rating of the counterparty as assessed by the bank after performing due diligence as described in D424 SA for Credit Risk paragraphs 4-6. This rating is in line with the ratings that are provided by the corresponding rating agency.</p>
EXPOSURE_ACCOUNT	HEDGED_EXP_FLG	<p>Column added.</p> <p>This column indicates whether the exposure to borrower has natural or financial hedge as per D424 SA for Credit Risk paragraph 77. Set the value to 1 if the exposure to borrower has natural or financial hedge. Valid values: 1 and 0.</p>
EXPOSURE_FACILITY	HEDGED_EXP_FLG	<p>Column added.</p> <p>This column indicates whether the exposure to borrower has natural or financial hedge as per D424 SA for Credit Risk paragraph 77. Set the value to 1 if the exposure to borrower has natural or financial hedge. Valid values: 1 and 0.</p>
ISSUE_ACCOUNT	ADC_SIGNIFICANT_CONTRACT_FLG	<p>Column added.</p> <p>This column indicates whether the pre-sale or pre-lease contracts for a land acquisition, development, and construction exposure amount to a significant portion of total contracts or substantial equity at risk as described in D424 SA for Credit Risk paragraph 75. Valid values: 1 (the pre-sale or pre-lease contracts</p>

Table Name	Column Name	Nature of Change
		amount to significant portion of the total contracts or substantial equity at risk) and 0 .
ISSUE_ASSET_MART	FINISHED_PROPERTY_FLG	<p>Column added.</p> <p>This column specifies that the property that secures the exposure is fully completed according to D424 SA for Credit Risk paragraph 60. Valid values: 1 (for fully completed property) and 0 (for under construction property).</p>
ISSUE_ASSET_MART	HOUSING_UNIT_NO	<p>Column added.</p> <p>This column specifies the housing unit for the residential property under construction or land upon which the residential property would be constructed.</p>
ISSUE_ASSET_MART	PRIMARY_RESIDENCE_FLG	<p>Column added.</p> <p>This column specifies that the residential property under construction or land upon which residential property would be constructed is the primary residence of the borrower. Valid values: 1 (property is the primary residence of borrower) and 0 (property is not the primary residence of the borrower)</p>
ISSUE_ASSET_MART	VALUE_AMT_AT_ORIGINATION	<p>Column added.</p> <p>This column stores the market value of the property at loan origination according to D424 SA for Credit Risk paragraph 62, footnote 37.</p>
ISSUE_FACILITY	ADC_SIGNIFICANT_CONTRACT_FLG	<p>Column added.</p> <p>This column indicates whether the pre-sale or pre-lease contracts for a land acquisition, development,</p>

Table Name	Column Name	Nature of Change
		and construction exposure amount to a significant portion of total contracts or substantial equity at risk as described in D424 SA for Credit Risk paragraph 75. Valid values: 1 (the pre-sale or pre-lease contracts amount to significant portion of the total contracts or substantial equity at risk) and 0 .
ISSUE_FACILITY	BALANCE_NOT_REPAID_FLG	<p>Column added.</p> <p>This column indicates whether the balance has been repaid fully for facilities such as credit cards or charge cards at each scheduled repayment date for the previous 12 months as described in D424 SA for Credit Risk paragraph 56. Set the flag to 1 if the balance has not been repaid fully. Valid values: 1 and 0.</p>
ISSUE_FACILITY	DRAWDOWN_FLG	<p>Column added.</p> <p>This column indicates whether there are withdrawals for overdraft facilities over the previous 12 months as described in D424 SA for Credit Risk paragraph 56. Set the flag to 1 if there are withdrawals for the overdraft facility. Valid values: 1 and 0.</p>
ISSUE_FACILITY	LTV_PCT	<p>Column added.</p> <p>This column specifies the percentage for amount of loan to property value ratio. If the bank estimates its own LTV percentage, it should be entered here. If the value exists here, the LTV percentage in the system uses the supplied value instead of the computed value.</p>

Table Name	Column Name	Nature of Change
ISSUE_FACILITY	REPAYMENT_DEPEND_PROP_CF_FLG	Column added. This column indicates whether the repayment of the loan is materially dependent on the cash flow that is generated by the real estate property. Valid values: 1 (repayment is materially dependent on cash flows) and 0 (repayment is not materially dependent on cash flows).
ISSUE_RATINGS	DUE_DILIGENCE_RATING	Column added. This column specifies the rating of the issue as assessed by the bank after performing due diligence as described in D424 SA for Credit Risk paragraphs 4-6. This column is applicable only for covered bonds as described in D424 SA for Credit Risk Paragraph 36. This rating should be in line with the ratings that are provided by the corresponding rating agency.

Table 49 Data Model Changes for Minimum Loss Coverage

Column Name	Table Names	Nature of Change
FIRST_FORBEARANCE_FLG	<ul style="list-style-type: none"> ■ ISSUE_ACCOUNT ■ ISSUE_FACILITY ■ ISSUE_INSTRUMENT ■ ISSUE_RECEIVABLE 	Column added. This column specifies if the forbearance measure that is granted is the first forbearance measure for this exposure after the exposure was classified as NPE.
FORBEARANCE_START_DT	<ul style="list-style-type: none"> ■ ISSUE_ACCOUNT ■ ISSUE_FACILITY ■ ISSUE_INSTRUMENT ■ ISSUE_RECEIVABLE 	Column added. This column stores the forbearance start date. This is the date on which the forbearance measures were granted.

Column Name	Table Names	Nature of Change
FORBEARANCE_STATUS	<ul style="list-style-type: none"> ■ ISSUE_ACCOUNT ■ ISSUE_FACILITY ■ ISSUE_INSTRUMENT ■ ISSUE_RECEIVABLE 	<p>Column added.</p> <p>This column stores the forbearance status of an exposure. Standard values: Forborne and Not_Forborne.</p>
FORBEARANCE_TYPE	<ul style="list-style-type: none"> ■ ISSUE_ACCOUNT ■ ISSUE_FACILITY ■ ISSUE_INSTRUMENT ■ ISSUE_RECEIVABLE 	<p>Column added.</p> <p>This column stores the type of forbearance as per Annexure V of Regulation (EU) No 680/2014. Standard values: FOR_TOT_PAR (Forborne: Totally or partially refinanced debt), FOR_MOD_INT (Forborne: Modified interest rate below market conditions), FOR_MOD_OTH (Forborne: Other modified terms and conditions), NOT_FOR (Not forborne or renegotiated), and RENEGO_WO_FOR (Renegotiated instrument without forbearance measure).</p>
NPE_CLASSIFICATION_DT	<ul style="list-style-type: none"> ■ ISSUE_ACCOUNT ■ ISSUE_FACILITY ■ ISSUE_INSTRUMENT ■ ISSUE_RECEIVABLE 	<p>Column added.</p> <p>This column captures the date on which the exposure was classified as non-performing. This column also stores the original NPE classification date in case of purchased NPEs.</p>
PERFORMING_STATUS	<ul style="list-style-type: none"> ■ ISSUE_ACCOUNT ■ ISSUE_FACILITY ■ ISSUE_INSTRUMENT ■ ISSUE_RECEIVABLE 	<p>Column added.</p> <p>This column stores the performing status of an exposure as per Annexure V of Regulation (EU) No 680/2014. Standard values: Performing and Non_Performing.</p>
PURCHASE_DT	<ul style="list-style-type: none"> ■ ISSUE_ACCOUNT ■ ISSUE_FACILITY ■ ISSUE_INSTRUMENT ■ ISSUE_RECEIVABLE 	<p>Column added.</p> <p>This column stores the date on which the exposures were purchased by the institution.</p>
PURCHASE_PRICE_AMT	<ul style="list-style-type: none"> ■ ISSUE_ACCOUNT ■ ISSUE_FACILITY ■ ISSUE_INSTRUMENT 	<p>Column added.</p> <p>This column stores the purchase price for exposures.</p>

Column Name	Table Names	Nature of Change
	■ ISSUE_RECEIVABLE	
PURCHASED_FLG	<ul style="list-style-type: none"> ■ ISSUE_ACCOUNT ■ ISSUE_FACILITY ■ ISSUE_INSTRUMENT ■ ISSUE_RECEIVABLE 	<p>Column added.</p> <p>This column identifies an exposure as purchased exposure.</p>
RESTRUCTURE_DT	<ul style="list-style-type: none"> ■ ISSUE_ACCOUNT ■ ISSUE_FACILITY ■ ISSUE_INSTRUMENT ■ ISSUE_RECEIVABLE 	<p>Column added.</p> <p>This column stores the date on which an exposure was restructured.</p>
RESTRUCTURE_FLG	<ul style="list-style-type: none"> ■ ISSUE_ACCOUNT ■ ISSUE_FACILITY ■ ISSUE_INSTRUMENT ■ ISSUE_RECEIVABLE 	<p>Column added.</p> <p>This column identifies the exposures that have been restructured.</p>
RESTRUCTURE_TYPE	<ul style="list-style-type: none"> ■ ISSUE_ACCOUNT ■ ISSUE_FACILITY ■ ISSUE_INSTRUMENT ■ ISSUE_RECEIVABLE 	<p>Column added.</p> <p>This column stores the type of restructuring of an exposure. Standard values: INC_EXP (for Restructured: With Increased exposure to obligor is) and NO_INC_EXP (for Restructured: No increased exposure to obligor)</p>

Data Model Changes for Static Tables in v12.2019

Table 50 Data Model Changes for Static Tables in v12.2019

Table Name	Column Name	Nature of Change
IRB_COLLATERAL_HAIRCUT	-	<p>Table added.</p> <p>For more information, see “IRB_COLLATERAL_HAIRCUT Table”.</p>
STD_RW_BUCKETS_BANK_SCRA	-	<p>Table added.</p> <p>For more information, see “STD_RW_BUCKETS_BANK_SCRA Table”.</p>

Table Name	Column Name	Nature of Change
NPE_APPLICABLE_FACTORS	-	Table added. For more information, see NPE_APPLICABLE_FACTORS Table .
REGULATORY_OPTION	CONFIG_VALUE_DESC	Column length modified.

Data Model Changes for Mapping Tables in v12.2019

Table 51 Data Model Changes for Mapping Tables in v12.2019

Table Name	Column Name	Nature of Change
MAP_EQUITY_POSITION_TYPE	EQUITY_POSITION_TYPE	Column length modified.

New Tables in v12.2019 for What-if Analysis

ANALYSIS Table

This table stores the information about the what-if analyses that are configured in the system.

Table 52 *Column Descriptions*

Column Name	Data Type	Not Null	Column Label	Column Description
ANALYSIS_ID	CHARACTER(32)	Yes	Analysis ID	The what-if analysis ID.
ANALYSIS_DESC	CHARACTER(256)	No	Analysis Description	The description of what-if analysis.
ANALYSIS_GROUP	CHARACTER(32)	No	Analysis Group	The what-if analysis group.
SEVERITY_LEVEL	CHARACTER(32)	No	Severity Level	The severity level of what-if analysis. For example, valid values can be BASIC , ADVERSE , and SEVERE .
RUN_ANALYSIS	CHARACTER(3)	No	Run Analysis Flag	The flag that indicates whether the analysis is to be run. Valid values: YES and NO .

ANALYSIS_X_RISK_FACTOR Table

Stores the association between analysis, risk factors, and segments.

Table 53 *Column Descriptions*

Column Name	Data Type	Not Null	Column Label	Column Description
ANALYSIS_ID	CHARACTER(32)	Yes	Analysis Identifier	The what-if analysis ID.
RISK_FACTOR_ID	CHARACTER(32)	Yes	Risk Factor Identifier	The risk factor ID.
SEGMENT_ID	CHARACTER(32)	No	Segment Identifier	The segment ID.
EFFECT_VALUE	CHARACTER(50)	No	Effect Value	The value that should be used to change the target variable value.

Column Name	Data Type	Not Null	Column Label	Column Description
				The column value that you specify here is case-sensitive.
EFFECT_TYPE	CHARACTER(32)	Yes	Effect Type	The effect type. Valid values: + (for adding), - (for subtracting), and = (for absolute change).
EFFECT_CATEGORY	CHARACTER(32)	Yes	Effect Category	The effect category. Valid values: percentage and value .

RISK_FACTOR Table

Stores the Risk factors that are required for What-if analysis.

Table 54 Column Descriptions

Column Name	Data Type	Not Null	Column Label	Column Description
RISK_FACTOR_ID	CHARACTER(32)	Yes	Risk Factor Identifier	The risk factor ID.
RISK_FACTOR_DESCRIPTION	CHARACTER(256)	No	Risk Factor Description	The description of the risk factor.
RISK_FACTOR_TYPE	CHARACTER(32)	Yes	Risk Factor Type	The risk factor type. Valid values: Configuration , Static , System , and Enrichment
RISK_FACTOR_VARIABLE	CHARACTER(32)	Yes	Risk Factor Variable	The name of the column that should be updated after the analysis is run. The name of the data set should be provided in the <code>risk_factor_x_dataset</code> table.
RISK_FACTOR_VARIABLE_TYPE	CHARACTER(32)	Yes	Risk Factor Variable Type	The column's data type. Valid values: Character , Numeric , or Date

RISK_FACTOR_X_DATASET Table

Stores the association between Risk factors and name of the data set specific to risk factor.

Table 55 Column Descriptions

Column Name	Data Type	Not Null	Column Label	Column Description
RISK_FACTOR_ID	CHARCTER(32)	Yes	Risk Factor Identifier	The risk factor ID.
RISK_FACTOR_DATASET	CHARCTER(32)	Yes	Risk Factor Data Set	The name of the data set that is updated after the analysis is run. The valid values can be the names of the data sets from static, system, configuration, and enriched output libraries. Here are the valid values of the data sets from enriched output libraries: ccr_collateral, crm_account, crm_derivative, crm_guarantee, crm_instrument, crm_insurance, crm_physical, crm_receivable, exposure_account, exposure_derivative_cem_oem, exposure_derivative_saccr, exposure_facility, exposure_instrument_tmp, and exposure_receivable

SEGMENT Table

This table stores the list of segments that are configured in the system.

Table 56 Column Descriptions

Column Name	Data Type	Not Null	Column Label	Column Description
SEGMENT_ID	CHARACTER(32)	Yes	Segment Identifier	The segment ID.
SEGMENT_DESC	CHARACTER(256)	No	Segment Description	The description of the segment.

SEGMENT_X_DATASET_VARIABLE Table

This table stores the association between the segment and name of the variable of the data set that is specific to the risk factor.

Table 57 Column Descriptions

Column Name	Data Type	Not Null	Column Label	Column Description
SEGMENT_ID	CHARACTER(32)	Yes	Segment Identifier	The segment ID.
SEGMENT_VARIABLE	CHARACTER(32)	Yes	Segment Variable	The column name that is used to define the segment.
SEGMENT_VARIABLE_TYPE	CHARACTER(32)	Yes	Segment Variable Type	The column's data type. Valid values: Character , Numeric , and Date
SEGMENT_VARIABLE_VALUE	CHARACTER(255)	No	Segment Variable Value	The value of segment variable of the target data that is used to the define segment
OPERATOR	CHARACTER(32)	Yes	Operator	The operator details.

New Table in v12.2019 for MLC Calculation

The NPE_APPLICABLE_FACTORS table has been added. This table contains the factors that are to be applied to the non-performing exposures during the period between the first and last day of the indicated years of non-performance.

Table 58 Column Descriptions

Column Name	Data Type	Not Null	Column Label	Column Description
YEARS_AS_NPE_START	NUM	No	Years as NPE Range Start	The starting value of range for NPE duration in years.
YEARS_AS_NPE_END	NUM	No	Years as NPE Range End	The ending value of range for NPE duration in years.
UNSECURED_PART_FACTOR	NUM	No	Unsecured Part Factor	The NPE factors that are applicable for the unsecured part of the exposure.

Column Name	Data Type	Not Null	Column Label	Column Description
IMMOV_PROP_RRE_FACTOR	NUM	No	Immovable Property or RRE Factor	The NPE factors that are applicable for the secured part of immovable property or residential real estate (RRE) exposure.
OTHER_CRM_FACTOR	NUM	No	Other Credit Protection Factor	The NPE factors that are applicable for the part of the exposure that are secured by other funded or unfunded credit protection.

New Static Tables in v12.2019 for Basel IV Configuration

IRB_COLLATERAL_HAIRCUT Table

This table contains information about the regulatory haircut values that are specified in D424 IRB Approach for Credit Risk paragraph 75.

Table 59 Column Descriptions

Column Name	Data Type	Not Null	Column Label	Column Description
CONFIG_NAME	CHARACTER(40)	Yes	Collateral Type	The haircut name.
CONFIG_VALUE	NUM	No	Haircut Percent	The regulatory haircut value in percentage.
CONFIG_VALUE_DESC	CHARACTER(200)	No	Collateral Description	The details about the haircut and reference to the regulatory articles.

STD_RW_BUCKETS_BANK_SCRA Table

This table maps the bank's standardized credit risk assessment grades into risk-weight buckets that are specified in D424 SA for Credit Risk paragraph 21.

Table 60 Column Descriptions

Column Name	Data Type	Not Null	Column Label	Column Description
BANK_SCRA_GRADE	CHARACTER(3)	No	Bank SCRA Grade	The bank's standardized credit risk assessment approach grades in D424 SA for Credit Risk paragraphs 21-29. Valid values: A (for Grade A), B (for Grade B), and C (for Grade C)
STD_RW_BUCKET_BANK_SCRA	CHARACTER(8)	No	STD RW Bucket Bank SCRA	The risk weight bucket for bank's standardized credit risk assessment approach grades in D424.

Content Release v09.2019

What's New in the v09.2019 Content Release

Overview

SAS Regulatory Risk Management 6.1 Content Release v09.2019 has the following enhancements:

- enhancements to the revised securitization framework
- support for intra-group transactions
- support for equity investment in funds
- implementation of permanent partial use
- support for real estate exposure class as per D424
- support for counterparty credit risk treatment for equity and commodity derivatives
- introduction of CCF in CRM optimization
- documentation enhancements
- other fixes and enhancements
- data model changes

Enhancements to the Revised Securitization Framework

Risk Weight Calculation for Re-securitization Positions

The risk weight calculation for re-securitization positions has been implemented as per D374 paragraphs 94–97 (CRR Article 269). For more information, see “Re-securitization Treatment” in the *SAS Regulatory Risk Management 6.1 Content Release: Reference Manual*.

Hierarchy of Methods

The hierarchy of methods has been implemented as per CRR Article 254 (1), (2), and (7). For more information, see “Hierarchy of Methods” in the *SAS Regulatory Risk Management 6.1 Content Release: Reference Manual*.

Maximum Capital Treatment

The maximum capital treatment has been implemented at the securitization transaction level. For more information, see “Maximum Capital Requirement” in the *SAS Regulatory Risk Management 6.1 Content Release: Reference Manual*.

Support for Intra-group Transactions

There can be exposures to a counterparty that is part of the internal organization structure of the entity being processed. The entity can be the counterparty's parent undertaking, its subsidiary, a subsidiary of its parent undertaking, or an undertaking as quoted by CRR Article 113 (6). In this case, the exposures are risk weighted at 0% as per CRR Article 113 (6). For more information, see "Intra-group Transactions" in the *SAS Regulatory Risk Management 6.1 Content Release: Reference Manual*.

Support for Equity Investment in Funds

SAS Regulatory Risk Management now supports the banks' equity investment in funds (collective investment units) treatment as per BCBS266 (CRR Article 132 and 152(1)). This treatment is implemented for RWA calculations of all types of funds that are held in the banking book. Here are the two approaches that are implemented as part of this enhancement:

- look-through approach (LTA) as per BCBS266 paragraph 80(i) and CRR Article 132 and 152(i)
- fall-back approach (FBA) as per BCBS266 paragraph 80(iii)

For more information, see "Exposure to Equity Investment in Funds" in the *SAS Regulatory Risk Management 6.1 Content Release: Reference Manual*.

Implementation of Permanent Partial Use

IRB banks are allowed permanent partial use (PPU) of the STD approach with regulatory approval for the exposures that are mentioned in CRR Article 150. The column APPROACH_USAGE is set to "PPU" in such cases. For more information, see "Permanent Partial Use" in the *SAS Regulatory Risk Management 6.1 Content Release: Reference Manual*.

Support for Real Estate Exposure Class as per D424

SAS Regulatory Risk Management now supports real estate exposure class treatment as per D424. The exposures that satisfy the requirements as per D424 SA for Credit Risk paragraph 60 are treated as real estate exposures. The treatments that are supported for the real estate exposure class include residential real estate (D424 SA for Credit Risk paragraphs 64–67) and commercial real estate (D424 SA for Credit Risk paragraphs 70–73).

A new node **Calculate LTV Ratio – STD BASEL4** has been added to process the EAD subflow. For more information about the treatment details, see "Real Estate Exposures" in the *SAS Regulatory Risk Management 6.1 Content Release: Reference Manual*.

Support for Counterparty Credit Risk Treatment for Equity and Commodity Derivatives

SAS Regulatory Risk Management now supports counterparty credit risk treatment for equity and commodity derivatives based on SA-CCR as per BCBS279. For more information, see "Standardized Approach for Counterparty Credit Risk" in the *SAS Regulatory Risk Management 6.1 Content Release: Reference Manual*.

Introduction of CCF in CRM Optimization

For the off-balance sheet exposure with CRM cases under CRD4 regulatory configuration and with the regulatory option `APPLY_CCF_AFTER_CRM` set to YES, the CRM allocation with optimal method was not producing optimal RWA. With the introduction of CCF, CRM optimization now produces optimal RWA.

Documentation Enhancement

The “Asset Value Correlation Multiplier” topic has been enhanced to describe the application of the AVC multiplier for equivalent third countries.

Other Fixes and Enhancements

For more information, see [“Details of Other Fixes and Enhancements in v09.2019” on page 251](#).

Data Model Changes

For more information, see [“Data Model Changes in v09.2019” on page 265](#).

Details of Other Fixes and Enhancements in v09.2019

Table 61 Details of Other Fixes and Enhancements in v09.2019

Category	Description	Affects Version
Counterparty Credit Risk	SA-CCR: Pre-calculated EAD The risk weight calculations for derivative exposures with pre-calculated EAD were not supported. With this fix, if the pre-calculated EAD is provided by the user, it is used in the capital calculations. For more information, see “Standardized Approach for Counterparty Credit Risk” in the <i>SAS Regulatory Risk Management 6.1 Content Release: Reference Manual</i> .	All previous versions
Counterparty Credit Risk	OEM Method: Add-on Values The add-on values for the OEM method were populated	All previous versions

incorrectly when the original maturity was an exact integer. With this fix, the values are now correctly calculated under the OEM method.

Counterparty credit risk	Risk Weights for Repo-style Transactions The risk weights for repo-style transactions were calculated based on issue ratings. With this fix, as repo style transactions are CCR exposures, risk weights are assigned based on the counterparty ratings instead of issue ratings.	All previous versions
Credit Risk	Benchmark RWA: CCF Re-assignment In the Benchmark RWA flow, the CCF was recalibrated incorrectly for the facilities with CRM. As a result, although the CCFs were different, the same EAD was computed under both normal and benchmark RWA flows. With this fix, the correct CCFs are assigned in the Benchmark RWA flow.	v02.2019 and later
Credit Risk	Benchmark RWA: Inclusion of STD and IRB Exposures In the previous releases, only the IRB portfolio was passed to the Benchmark RWA flow to produce the corresponding STD RWA results in the capital.capital_detail_irb output data set. With this fix, the STD portfolio that has common CRMs across STD and IRB exposures is also passed to the Benchmark RWA flow to produce the correct RWA under both STD and IRB approaches.	v02.2019 and later
Credit Risk	Defaulted IRB Exposures without PD The defaulted IRB exposures without PD were downgraded to the STD approach. With this fix, the PD of these exposures is	All previous versions

updated to 100% without any downgrading.

Credit Risk	<p>Behavior of Counterparty and Foreign Ratings.</p> <p>The UNRATD_FX_EXP_USE_CPTY_DOM_RATNG option has been removed from the config.calculation_options data set because it is negated by BCBS128 paragraph 102 (CRR Article 141). As an alternative to this option, the usage of the DOMESTIC_CURR_ASSESSMENT_FLG flag from the rd_stage.counterparty_ratings data set has been modified. When this flag is set to 0 and only one rating is available for a counterparty, both its domestic and foreign currency exposures are considered as rated. For more information, see the “Domestic Currency Rating versus Foreign Currency Rating” in the <i>SAS Regulatory Risk Management 6.1 Content Release: Reference Manual</i>.</p>	All previous versions
Credit Risk	<p>Institutional Protection Schemes</p> <p>SAS Regulatory Risk Management now supports the institutional protection schemes as per D424 paragraph 17 footnote 14 (CRR Article 113 (7)).</p>	All previous versions
Credit Risk	<p>CRD IV Retail Granularity Check</p> <p>The total drawn amount of all the exposures of a counterparty can be greater than the threshold amount of EURO 1 million. In this case, the counterparty class and subclass of all the exposures of the counterparty changes from retail to corporate. In the previous release, the counterparty class and subclass were not being changed as expected for the undrawn part of the exposures. With this fix, the counterparty class and subclass</p>	All previous versions

of the undrawn part of the exposures also change from retail to counterparty.

Credit Risk	<p>AVC Multiplier Treatment</p> <p>The AVC multiplier treatment was implemented based on the LARGE_FI_ENTITY_FLG column of the rd_map.map_counterparty_type data set. In the code rrm_de_process_cpty_data.sas, for small and unregulated financial institutions, this flag was being incorrectly set to 1. With this fix, a flag APPLY_AVCM_FLG is derived to identify the counterparties for which the AVC multiplier is to be applied as per BCBS189 paragraph 189 (CRR Article 153). The LARGE_FI_ENTITY_FLG column now denotes the large financial sector entity and is not used to apply AVC multiplier. For more information, see “Asset Value Correlation Multiplier” in the <i>SAS Regulatory Risk Management 6.1 Content Release: Reference Manual</i>.</p>	All previous versions
Credit Risk	<p>Off-balance Sheet Equity</p> <p>The off-balance sheet equity exposures were not being treated earlier. With this fix, the required CCF is applied to the off-balance sheet equity exposures and these exposures are treated accordingly.</p>	All previous versions
Credit Risk	<p>Debt Securities</p> <p>The unrated senior debt securities that were issued by central governments or central banks for which the issuer rating was available were being treated as ineligible CRMs. With this fix, these unrated senior debt securities are checked on the basis of the issuer rating.</p>	All previous versions
Credit Risk	<p>Effective Maturity for Cash Flow Exposures</p>	All previous versions

Under IRBA approach, for instruments that are subject to a cash flow schedule, the weighted average maturity is computed and used for calculating the risk weights. For more information about the rd_stage.cashflow_details data set, see the “Data Dictionary” in the *SAS Regulatory Risk Management 6.1 Content Release: Reference Manual*.

Credit Risk	<p>Treatment for SME Counterparties</p> <p>If an institution follows IRB approach, it can reclassify the retail SME counterparty as a corporate SME counterparty.</p> <p>With this fix, if the ELIGIBLE_CPTY_RECLASSIFICATION column in the rd_map.map_counterparty_class data set is set to Y, the retail counterparty is eligible to be reclassified as a corporate under IRB approach. The reclassified corporate exposure is treated under IRBA approach if both PD and LGD values are available and under IRBF approach when only PD is available.</p> <p>When both PD and LGD values are unavailable, the exposure downgrades to STD with the counterparty class remaining as a retail exposure.</p>	v05.2019 and later
Credit Risk	<p>Firm-size Adjustment for Equity Exposures</p> <p>For equity exposures, under the PD/LGD approach the firm-size adjustment was not used in the risk weight calculation. With this fix, a parameter USE_FIRM_SIZE_ADJUSTMENT has been added in the config.regulatory_settings data set. If the parameter value is set to YES, the firm-size adjustment is used for calculating the risk weight for equity exposures under the PD/LGD approach.</p>	All previous versions

Credit Risk	<p>Exposure Weighted Average LGD Value</p> <p>The exposure-weighted average LGD value for retail mortgage exposures that are secured by residential or commercial collateral and that are not benefited from guarantee by central government can be less than the floor values as per BCBS128 paragraph 266, footnote 68 (CRR Article 164(4)). In this case, the LGD correction factor is first computed and then it is applied to all exposures. This makes the weighted average LGD equal to the floor value. This was incorrectly implemented as the exposure-weighted average LGD was being calculated based on the counterparty country of the exposure. With this fix, now the exposure-weighted average LGD is calculated over the collateral's counterparty country.</p>	v03.2018 and later
Credit Risk	<p>Customization of a New Rating Agency</p> <p>SAS Regulatory Risk Management now supports customization for adding a new rating agency apart from the Standard and Poor's, Fitch, and Moody's rating agencies. For more information, see "Customization Guidelines for Adding a New Rating Agency" in the <i>SAS Regulatory Risk Management 6.1 Content Release: Reference Manual</i>.</p>	All previous versions
Credit Risk	<p>Temporary Partial Use</p> <p>SAS Regulatory Risk Management sets the value of the APPROACH_USAGE column to TMP for the exposures for which partial use of STD approach is temporarily allowed. However, the industry-specific standard code that is used for such cases is TPU. With this fix, the APPROACH_USAGE column of the</p>	All previous versions

rd_map.map_regulatory_approach data set is populated with the code TPU.

CRM Treatment	<p>Haircut Values for Unrated Senior Debt Securities</p> <p>The haircut values for unrated senior debt securities (issued by institutions) for which the issuer rating is not available were not assigned as per column 2, CQS 2-3 of table 1 of CCR Article 224. With this fix, the haircut is applied as per CQS 2-3 for the unrated senior debt securities that are issued by institutions.</p>	All previous versions
CRM Treatment	<p>As per CRD-IV, cash on deposit that was held by a third-party institution, life insurance policies pledged to lending institution, and instruments issued by third-party institutions and repurchased by that institution on request are considered as eligible other funded credit protections.</p> <p>In the previous releases, only cash on deposit and life insurance policies were considered for this treatment.</p> <p>With this fix, treatment of instruments that are issued by third-party institutions and repurchased by that institution as other funded credit protection is introduced. These instruments are treated as guarantee as per CRR Article 232.</p>	All previous versions
CRM Treatment	<p>CRM Eligibility for High-risk Exposures</p> <p>If the value of the parameter HIGH_RISK_CRM_INELIG_TREAT in the rd_stat.regulatory_option data set was set to YES, the CRM was treated as ineligible. With this fix, the parameter HIGH_RISK_CRM_INELIG_TREAT has been moved to the config.regulatory_settings data set.</p>	All previous versions

Here are the valid values for the HIGH_RISK_CRM_INELIG_TREAT parameter:

- **YES_ALL**: Indicates that all CRMs are ineligible for mitigation purposes.
- **YES_SUBSTITUTION**: Indicates that the CRMs with substitution effect are ineligible only for mitigation purposes.
- **NO**: All CRMs are eligible for mitigation purposes.

CRM Treatment	<p>A new column EAD_POST_CRM has been added in the capital.capital_detail_irb and capital.capital_detail_std data sets. This column represents the EAD value after the CRM is applied.</p> <p>In the case of a comprehensive approach, the value of the EAD_POST_CRM column is equal to the value of the EAD_PORTION corresponding to the covered portion of the exposure in the capital.crm_allocation_detail data set. In all other cases, it is the sum of EAD_PORTION of the exposures in the capital.crm_allocation_detail data set.</p>	All previous versions
CVA	<p>Exclusion of SFT Exposures</p> <p>After the approval from the competent authority, the bank can exclude its securities financing transactions (SFTs) from CVA risk calculations if the portfolio is immaterial as per BCBS189 Section 8 paragraph 97 (CRD4 Article 382 (2)). Earlier SAS Regulatory Risk Management considered all the SFTs for CVA risk calculations. It now excludes the SFT portfolio from CVA risk calculations based on the newly introduced regulatory setting parameter SFT_IMMATERIAL_UNDER_CVA_RISK.</p>	All previous versions

Securitization	<p>Method for Exposure-weighted Average LGD</p> <p>For the securitization exposures that were mapped to SFA method in the earlier securitization framework or to SEC-IRBA method in the revised securitization framework, the exposure-weighted average LGD was calculated based on the LGD_EFF and EAD_PORTION columns of the underlying exposures that were subject to only the IRB approach. With this fix, in case of credit risk substitution, if the underlying IRB exposures are collateralized by an STD collateral, the EAD_PORTION of the secured part is not considered in the exposure-weighted average LGD calculation.</p>	v02.2019 and later
Securitization	<p>Significant Risk Transfer</p> <p>Recognition of significant risk transfer in accordance with CRR Article 244 is introduced through the input column SIGNIFICANT_RISK_TRANS_TYPE_CD in the rd_stage.securitization_pool_market data set. For more information, see “Data Dictionary” in the <i>SAS Regulatory Risk Management 6.1 Content Release: Reference Manual</i>. If an originator institution of a traditional securitization program tags the securitization transaction with non-significant credit risk transfer, then such securitization exposures are reported in the diagnostic table and the corresponding underlying exposures are reported in the credit risk portfolio.</p>	v02.2019 and later
Securitization	<p>Revised Framework: Exposure Value for Positions Attracting 1250% RW</p> <p>Under the revised securitization framework, the securitization position originated by an institution is risk weighted at</p>	v02.2019 and later

1250% as per SEC-IRBA, SEC-SA, and SEC-ERBA approach or the securitization position is deducted from the common equity tier 1. However, in this case, the amount of the specific credit risk adjustments on underlying exposures was not being deducted from the exposure value of the securitization position. With this fix, it is now deducted as per D374 paragraph 37 (CRR Article 248 1(d)).

Securitization	<p>Revised Securitization Framework: Substitution Effect</p> <p>Under the revised securitization framework, the substitution effect was not recognized. With this fix, for securitization positions that are backed by IRB exposures pool, the underlying exposure type is derived using the CRM_COUNTERPARTY_CLASSES for the secured portion if the following conditions are fulfilled:</p> <ul style="list-style-type: none"> ■ The IRB exposure is secured by credit protection that is subject to credit risk substitution. ■ The value of the SEC_UL_EXP_TYPE_USE_CRM_CLASS option that is stored in the config.regulatory_settings data set is set to YES. <p>This assumes that the risk weight of the underlying exposures and CRM is calculated under IRB approach.</p>	v02.2019 and later
Securitization	<p>Revised Framework: Method for Effective Number of Exposures Calculation</p> <p>When the share of the largest exposure in the securitization pool is not more than 3%, the effective number of exposures in the pool of underlying exposures is calculated as per D374 paragraph 61 (CRR Article 259(6)). For more information,</p>	v02.2019 and later

see “Calculation of Granularity”
in the *SAS Regulatory Risk
Management 6.1 Content
Release: Reference Manual*.

SAS Visual Analytics Reports	Enhancement to SAS Visual Analytics Reports In the Credit Risk Monitoring report, a new tab has been added to support Basel IV implementation in SAS Visual Analytics. This tab displays the comparative information between Basel IV configuration and other configurations. The comparative information includes values for the EAD, RWA, and capital columns. The comparison is based on the Basel IV regulatory asset class values.	v02.2019 and later
SAS Visual Analytics Reports	Enhancement to SAS Visual Analytics Reports In the Securitization Analysis report, the transaction-level information of the securitization portfolio has been added. This information is required for maximum capital requirements.	v02.2019 and later
SAS Visual Analytics Reports	Enhancement to SAS Visual Analytics Reports In the SA-CCR EAD Calculations report, the remaining two asset classes equity and commodity are also now supported. Two new tabs RC and PFE have been added in the report. These tabs display the details of the attributes that are used in calculating the replacement cost (RC) and potential future exposure (PFE). The information about breakdown of netting set level add-on as per asset class is also displayed on the PFE tab.	v02.2019 and later

Data Model Changes for Staging Tables in v09.2019

Table 62 Data Model Changes for Basel IV Configuration

Table Name	Column Name	Nature of Change
EXPOSURE_CRM_LINK	LIEN_RK	Column added. The reference key that identifies the lien on the property that is defined in the rrm_stg.lien table.
ISSUE_ACCOUNT	LTV_PCT	Column added. This column specifies the percentage for the amount of the loan-to-property-value ratio. If the bank estimates its own LTV percentage, it should be entered here. If the value exists here, the LTV percentage uses the supplied value instead of the computed value.
ISSUE_ACCOUNT	REPAYMENT_DEPEND_PROP_CF_FLG	Column added. This column indicates whether the repayment of the loan is materially dependent on the cash flow that is generated by the real estate property. Valid values: 1 (repayment is materially dependent on cash flows) and 0 (repayment is not materially dependent on cash flows).
LIEN	-	Table added. For more information, see “LIEN Table” on page 273 .

Table 63 Data Model Changes for Other Configurations

Table Name	Column Name	
COUNTERPARTY_INTERNAL_ORG_LINK	-	Table added . For more information, see “COUNTERPARTY_INTERNAL_ORG_LINK Table” on page 267 .
COUNTERPARTY_MART	INST_PROTECTION_SCHEME_FLG	Column added. This column indicates whether there is an institutional p

Table Name	Column Name	
		scheme with the counterparty. If no scheme exists with the counterparty, the value is null.
EXPOSURE_DERIVATIVE	REFERENCE_ISSUE_KEY	Column added. This column is the identifier of the index. It connects the information of the issue_ratings table required only for the credit and equity derivatives.
EXPOSURE_INSTRUMENT	BANK_SHARE_HOLDING_PCT	Column added. This column specifies the bank's share holding in percentage of the fund. This column is used in calculating the risk weight for the bank's equity exposure in funds.
FUND_INFORMATION	-	Table added. For more information, see the "FUND_INFORMATION Table" on page 268.
FUND_UNDERLYING_POSITION_LINK	-	Table added. For more information, see the "FUND_UNDERLYING_POSITION Table" on page 269.
ISSUE_SECURITIZATION	SEC_EXP_CAPITAL_CHARGE	Column added. This column indicates the capital charge value for the securitized exposure. The value is used in the risk weight calculation of re-securitized positions.
NETTING_SET_MART	COUNTERPARTY_RK	Column added. This column stores the retained key (primary key) that uniquely identifies a counterparty.
SECURITIZATION_POOL_MART	DELINQUENCY_STATUS_INFO_PCT	Column added. The percentage of exposures for which the delinquency status is known in a securitization pool. If the delinquency status of more than 50% of exposures is unknown, the position is weighted at 1250% under SEC-S approach.
SECURITIZATION_POOL_MART	EXP_WEIGHTED_DELINQUENCY_RATE	Column added. The exposure-weighted delinquency rate in a securitization pool. This value is considered as W, and is used in the risk weight calculation under the SEC-S approach.
SECURITIZATION_POOL_MART	LARGE_EXP_THRESHOLD_NUMBER	Column added. The threshold value used in the calculation of the effective number of exposures in a securitization pool. The number is referred as n, and is used in the formula to calculate effective number.

Table Name	Column Name	
		exposures, as per BCBS d374 paragraph 61 (CRR Article 259(6)) for revised securitization framework and as per Article 262(2) for BASEL II securitization framework.
SECURITIZATION_POOL_MART	SECURITIZATION_TRANSACTION_ID	Column added. The securitization transaction ID. If the international identification number (ISIN) is not available, this column is reported as identification number in the securitization report.
SECURITIZATION_POOL_MART	SECURITIZATION_TRANSACTION_NM	Column added. The name that represents the securitization transaction. You specify the code that is used for registration of the securitization. If the code is not available, you can specify the code by which the securitization is known in the market or within the institution in internal or private securitization. For public transactions, if the ISIN code is available, the characters that are common to all tranches of securitization can be used in this column.
SECURITIZATION_POOL_MART	SEC_ISSUANCE_TYPE_CD	Column added. A code that represents whether the securitization is an internal, private, or public securitization. Values PRI (for Private), INT (for Intra-group), and PUB (for Public) is specified as per 02000000 group, Private, or Public Securitization column of the C14 COREP report.
SECURITIZATION_POOL_MART	SIGNIFICANT_RISK_TRANS_TYPE_CD	Column added. A code that indicates whether the significant risk has been transferred. The value N indicates that there has not been any significant risk transferred through securitization for the originating institution for its traditional securitization position. The underlying exposures in securitization positions are then included in the credit risk portfolio. If the value is populated or set as 'A', 'B', 'C', or 'D', 061 (Significant Risk Transfer) column of the C14.1 COREP report, it implements that there has been significant credit risk transferred through securitization.

Data Model Changes for Static Tables in v09.2019

Table 64 Data Model Changes for Basel IV Configuration

Table Name	Column Name	Nature of Change
B4_REGULATORY_ASSET_CLASS	-	Table added. For more information, see “B4_REGULATORY_ASSET_CLASS Table” on page 271.
B4_REGULATORY_ASSET_SUBCLASS	-	Table added . For more information, see “B4_REGULATORY_ASSET_SUBCLASS Table” on page 272.
STD_RW_BUCKETS_LTV_RE	-	Table added . For more information, see “STD_RW_BUCKETS_LTV_RE Table” on page 269.

Table 65 Data Model Changes for Other Configurations

Table Name	Column Name	Nature of Change
B4_REGULATORY_ASSET_CLASS	-	Table added. For more information, see “B4_REGULATORY_ASSET_CLASS Table” on page 271.
B4_REGULATORY_ASSET_SUBCLASS	-	Table added . For more information, see “B4_REGULATORY_ASSET_SUBCLASS Table” on page 272.

Data Model Changes for Mapping Tables in v09.2019

Table 66 Data Model Changes for Mapping Tables

Table Name	Column Name	Nature of Change
MAP_CCR_RISK_CATEGORY	RISK_SUBCATEGORY	Column added. This column identifies the risk subcategory of the trade. For the risk category selected in the RISK_CATEGORY column, this

Table Name	Column Name	Nature of Change
		column denotes the subcategory. For example, for COMMODITY risk category, values such as ELECTRICITY or METALS can be used.
MAP_EXT_RATINGS	AGN1	Column added. This column specifies the rating grade for RATING_AGENCY_CD value INT that is used to map to other external rating grades. For example, 01 might denote an internal rating grade equivalent to AAA. This value specifies the Agency 2's rating grade, such as A, A+, and so on.
MAP_EXT_RATINGS	AGN2	Column added. This value specifies the corresponding Agency 2's rating grade, such as A+, A, A-, and so on.
MAP_EXT_RATINGS	AGN3	Column added. This value specifies the corresponding Agency 3's rating grade, such as A2, A1, A3, and so on.
MAP_EXT_RATINGS	AGN4	Column added. This value specifies the Agency 4's rating grade, which is used to match rating grades between various rating agencies such as, A, A+, A-, and so on.
MAP_EXT_RATINGS	AGN5	Column added. This value specifies the corresponding Agency 5's rating grade, such as A, AH, AL, and so on.
MAP_EXT_RATINGS	AGN6	Column added. This value specifies the corresponding Agency 6's rating grade, such as A2, A1, A3, and so on.
MAP_EXT_RATINGS	AGN7	Column added. This value specifies the corresponding Agency 7's rating grade, such as A2, A1, A3, and so on.
MAP_EXT_SHORTTERM_RATINGS	AGN1	Column added. This value specifies the internal rating grade that is used to map to other external rating grades. For example, 01 might denote an internal rating grade equivalent to AAA.
MAP_EXT_SHORTTERM_RATINGS	AGN2	Column added. This value specifies the Agency 2's rating grade, such as A, A+, and so on.

Table Name	Column Name	Nature of Change
MAP_EXT_SHORTTERM_RATINGS	AGN3	Column added. This value specifies the corresponding Agency 3's rating grade, such as A2, A1, A3, and so on.
MAP_EXT_SHORTTERM_RATINGS	AGN4	Column added. This value specifies the Agency 4's rating grade, which is used to match short-term rating grades between various rating agencies, such as A, A+, A-, and so on.
MAP_EXT_SHORTTERM_RATINGS	AGN5	Column added. This column can be used to define a new rating agency.
MAP_EXT_SHORTTERM_RATINGS	AGN6	Column added. This column can be used to define a new rating agency.
MAP_EXT_SHORTTERM_RATINGS	AGN7	Column added. This column can be used to define a new rating agency.
MAP_RATING_AGENCY	-	Table added . For more information, see “ MAP_RATING_AGENCY Table ” on page 270.
MAP_SEC_PORTFOLIO_TYPE	-	Table added . For more information, see “ MAP_SEC_PORTFOLIO_TYPE ” on page 270.

Details of the New Tables in v09.2019

COUNTERPARTY_INTERNAL_ORG_LINK Table

This table links counterparties with internal organizations and lists the counterparties that are represented by internal organizations. There is a many-to-many relationship between counterparties and internal organizations. In addition, this table has been added to support the intra-group transactions feature. This feature is enabled only when data is populated in this table.

Table 67 Column Descriptions

Column Name	Data Type	Not Null	Label	Description
INSTID	CHARACTER(20)	Y	Unique Instrument ID	A unique ID for an exposure.

Column Name	Data Type	Not Null	Label	Description
CASHFLOW_DT	NUM	Y	Cash Flow Date	The date on which the cash flows are received for an exposure. This column is used for deriving the maturity date.
CASHFLOW_AMT	NUM	N	Cash Flow Amount	The cash flow amount that is received on a cash flow date for an exposure. This column is used for deriving the exposure amount at maturity.

FUND_INFORMATION Table

This table stores detailed information about the funds in which the bank holds an investment.

Table 68 Column Descriptions

Column Name	Data Type	Not Null	Label	Description
ISSUE_KEY	CHARACTER(32)	Y	Issue Key	The issue key. This key corresponds to the ISSUE_KEY column in the rrm_stg.issue_instrument table.
FUND_NAME	CHARACTER(50)	N	Fund Name	The name of the fund in which the bank holds an investment. It can be any type of fund. For example, valid values can be hedge funds, managed funds, and investment funds.
FUND_SHARE_CAPITAL_AMT	NUM	N	Fund Share Capital Amount	The share capital amount of the fund. It is the amount that is invested by a company's shareholders in exchange for shares of stock for use in the business. The amount can change over time.
RETAINED_EARNINGS_AMT	NUM	N	Retained Earnings Amount	The retained earnings amount of the fund. The retained earnings are the portion of the business' profits that are reserved for reinvestment into the business. They are reported under the shareholder's equity.

Column Name	Data Type	Not Null	Label	Description
TOTAL_ASSETS_AMT	NUM	N	Total Assets Amount	The total assets amount of the fund.

FUND_UNDERLYING_POSITION_LINK Table

This table stores the links between the underlyings and the funds.

Table 69 Column Descriptions

Column Name	Data Type	Not Null	Label	Description
FUND_ID	CHARACTER(20)	Y	Fund ID	A unique identifier for a fund exposure. This column refers to the INSTID column from the rrm_stg.exposure_instrument table.
UNDERLYING_ID	CHARACTER(20)	Y	Underlying ID	A unique identifier for a fund's underlying exposure. This column refers to the INSTID column from various exposure staging tables, such as rrm_stg.exposure_instrument.
UNDERLYING_ASSOC_TYPE	CHARACTER(30)	Y	Underlying Association Type	An association type of a fund's underlying exposure. Valid values: ON_BALANCE (for on-balance sheet exposures), DERIVATIVE (for derivative exposures), DERIVATIVE_UNDERLYING (for underlyings of derivative exposures)

STD_RW_BUCKETS_LTV_RE Table

This table maps risk-weight buckets of loan-to-value percentage for real estate in the standardized approach.

Table 70 Column Descriptions

Column Name	Data Type	Not Null	Label	Column Description
REAL_ESTATE_CATEGORY	CHARACTER(32)	N	Real Estate Category	The real estate category. Valid values: RESIDENTIAL_REAL_ESTATE, COMMERCIAL_REAL_ESTATE.
LTV_PCT_START	NUM	N	LTV Percentage Start	The starting value in percentage for the loan-to-value range buckets under the standardized approach.
LTV_PCT_END	NUM	N	LTV Percentage End	The ending value in percentage for the loan-to-value range buckets under the standardized approach.
STD_RW_BUCKET_LTV	CHARACTER(8)	N	STD RW Bucket LTV	The risk-weight bucket for real estate entries in the standardized approach.

MAP_RATING_AGENCY Table

This table contains a list of external rating agencies that are mapped to their internal codes. This table also serves as a lookup table for the internal rating agency code (INT_AGENCY_CD) for each external rating agency. For example, AGN2 corresponds to Standard and Poor's rating grade (S_P) as per this table.

Table 71 Column Descriptions

Column Name	Data Type	Not Null	Label	Description
INT_AGENCY_CD	CHARACTER(5)	Y	Rating Agency Code - Internal	This value specifies the code that corresponds to a rating agency. For example, AGN2 might denote a rating agency code of S_P.
RATING_AGENCY_CD	CHARACTER(5)	N	Rating Agency Code	This value specifies the rating agency. For example, use values such as S_P, ERA, or DBRS.

MAP_SEC_PORTFOLIO_TYPE

This table maps the securitization portfolio type code with the portfolio type value that is required for reporting.

Table 72 Column Descriptions

Column Name	Data Type	Not Null	Label	Description
SEC_PORTFOLIO_TYPE_CD	CHARACTER(16)	N	Securitization Portfolio Type Code	The code for the type of securitization portfolio.
SEC_RPT_PORT_TYPE	CHARACTER(32)	N	Securitization Reporting Portfolio Type	The value that indicates the type of assets in the securitized portfolio, such as residential mortgages and credit card receivables.

B4_REGULATORY_ASSET_CLASS Table

This table creates the rules to classify the exposures for the STD and IRB approaches using a combination of classification variables and their values. It also classifies the Basel IV (D424) regulatory exposures based on BCBS QIS (Basel III monitoring workbook). It follows the sequential order to ensure a consistent categorization of exposures into the different exposure classes as defined in Basel III monitoring workbook. The B4_REG_EXP_CLASS column is populated along with the REG_EXP_CLASS column. This helps understand how the particular exposure is categorized as per D424 regulations.

Table 73 Column Descriptions

Column Name	Data Type	Not Null	Label	Description
APPROACH	CHARACTER(16)	N	Approach (STD or IRB)	The regulatory approach for running credit risk analyses. For example, use STD for the standardized approach and IRB for internal ratings-based approach.
SEQUENCE	NUM	N	Sort Key for Classification	The hierarchy used while assigning the regulatory exposure class.
REG_EXP_CLASS_DESC	CHARACTER(256)	N	Regulatory Exposure Class Description	The description of the Basel IV regulatory exposure class.
REG_EXP_CLASS	CHARACTER(32)	N	Regulatory Exposure Class (Short)	The regulatory exposures code. For example, valid values can be CORPORATE_SME,

Column Name	Data Type	Not Null	Label	Description
				SOVEREIGN, BANKS, and so on.
VAR_NM	CHARACTER(32)	N	Variable Name	The classification variable. For example, column values can be CRM_TYPE, CRM_SUBTYPE, and so on.
VAR_DESC	CHARACTER(256)	N	Variable Description	The description of the classification variable.
OPERATOR	CHARACTER(20)	N	Operator	The mathematical operator such as equal to, not equal to, in, and not in.
VAR_VALUE	CHARACTER(256)	N	Variable Value	The value of the classification variable.
AND_OR	CHARACTER(8)	N	And or OR to Combine Conditions	The concatenation operator such as AND or OR that concatenates the conditions for classification.

B4_REGULATORY_ASSET_SUBCLASS Table

This table creates the rules to classify the exposures subclass for the STD and IRB approaches using combination of classification variables and their values. This table is used to classify the Basel IV (D424) regulatory exposures based on BCBS QIS (Basel III monitoring workbook). The B4_REG_EXP_SUBCLASS column is used specifically to categorize “of which” information of exposure class. It categorizes exposures classes to one or more granular levels as defined in Basel III monitoring workbook. The B4_REG_EXP_SUBCLASS column is populated along with B4_REG_EXP_CLASS.

Table 74 Column Descriptions

Column Name	Data Type	Not Null	Label	Description
APPROACH	CHARACTER(16)	N	Approach (STD or IRB)	The regulatory approach for running credit risk analyses. For example, use STD for the standardized approach and IRB for internal ratings-based approach.
SEQUENCE	NUM	N	Sort Key for Classification	The hierarchy used while assigning the regulatory exposure subclass.

Column Name	Data Type	Not Null	Label	Description
REG_EXP_CLASS_DESC	CHARACTER(256)	N	Regulatory Exposure Class Description	The description of the Basel IV regulatory exposure subclass.
REG_EXP_CLASS	CHARACTER(32)	N	Regulatory Exposure Class (Short)	The regulatory exposures code. For example, valid values can be CORPORATE_LARGE, SL_PROJ_FIN, EQUITY_PRIVATE, and so on.
VAR_NM	CHARACTER(32)	N	Variable Name	The classification variable. For example, column values can be CRM_TYPE, CRM_SUBTYPE, and so on.
VAR_DESC	CHARACTER(256)	N	Variable Description	The description of the classification variable.]
OPERATOR	CHARACTER(20)	N	Operator	The mathematical operator such as equal to, not equal to, in, and not in.
VAR_VALUE	CHARACTER(256)	N	Variable Value	The value of the classification variable.
AND_OR	CHARACTER(8)	N	And or OR to Combine Conditions	The concatenation operator such as AND or OR that concatenates the conditions for classification.

LIEN Table

This table stores information about the lien, internal or external to bank that is related to the credit risk mitigant.

Table 75 Column Descriptions

Column Name	Data Type	Not Null	Label	Description
LIEN_RK	CHARACTER(20)	N	Lien Key	The lien retained key.
CRM_ID	NUM	N	CRM ID	The unique identifier for a credit risk mitigant, and refers to the INSTID from various credit risk mitigant

Column Name	Data Type	Not Null	Label	Description
				staging tables, such as rrm_stg.crm_account.
LIEN_AMT	NUM	N	Lien Amount	The entire amount or some amount of the property that a bank puts hold on.
LIEN_EFFECTIVE_DATE	NUM	N	Lien Effective Date	The date from which the lien is effective, such as January 01, 2017.
LIEN_EXPIRATION_DATE	NUM	N	Lien Expiration Date	The maturity date of the lien, such as January 01, 2020.
LIEN_RANK	NUM	N	Lien Rank	The lien position held by the bank in relation to the collateral.
THIRD_PARTY_LIEN_FLG	NUM	N	Third-Party Lien Flag	A flag that indicates whether the lien position is held by an external organization in relation to the collateral.
INTERNAL_ORG_RK	NUM	N	Internal Organization Key	A key that identifies the business unit to which the exposure belongs. The internal organizations are defined in the rrm_stg.internal_org_mart table.

Content Release v07.2019

What's New in the v07.2019 Content Release

Overview

SAS Regulatory Risk Management 6.1 Content Release v07.2019 has the following new features, fixes, and enhancements:

- standardized approach for measuring counterparty credit risk.
- support for new management report in SAS Visual Analytics.
- documentation enhancements.
- fixes and enhancements.

Standardized Approach for Measuring Counterparty Credit Risk

SAS Regulatory Risk Management now supports Counterparty Credit Risk treatment based on SA-CCR as per BCBS279. It supports three asset classes for margined and unmargined trades: Interest Rate derivatives, Foreign Exchange derivatives, and Credit derivatives. A new subflow **EAD Calculation - SA-CCR** is added to the **Counterparty Credit Risk Capital** subflow. SAS Regulatory Risk Management continues to support Counterparty Credit Risk treatment based on CEM or OEM as per **BCBS128** and **CRR Article 274/275**. These calculations are processed under the **EAD Calculation - CEM/OEM** subflow.

The v07.2019 release also supports a data migration script to migrate CCR data.

Support for New Management Report in SAS Visual Analytics

A new management report has been introduced to view SA-CCR data in SAS Visual Analytics. The SA-CCR EAD Calculations report helps you with the detailed analysis of exposure at default (EAD) for SA-CCR and other components like replacement cost (RC), potential future exposure (PFE), and add-on.

Documentation Enhancements

- Detail documentation about the SME deduction factor is added under the *Special Treatments* section. This documentation details out the implementation of the SME deduction factor as per **CRR Article 501**.

Other Fixes and Enhancements

For more information, see [“Details of the Other Fixes and Enhancements in v07.2019”](#) on page 277.

Details of the Other Fixes and Enhancements in v07.2019

Table 76 Details of the Other Fixes and Enhancements in v07.2019

Category	Description	Affects Versions
Securitization	The reg_exp_class_desc column for securitization exposures was not populated in the SAS Visual Analytics reports. With this fix, the reg_exp_class_desc column is added in the final table, and is populated in the SAS Visual Analytics report.	v02.2019
Credit Risk	All exposures secured by immovable property were aggregated at exposure level in the CAPITAL_DETAIL_STD table. These exposures were assigned the asset class of the counterparty. With this fix, the exposures are separately populated into unsecured exposures, fully and completely secured exposures by mortgages, and fully secured by mortgages. The fully and completely secured exposures are assigned the MORT_IMV_PROP regulatory asset class, whereas the unsecured and fully secured exposures are assigned the asset class of the counterparty.	All previous versions
Credit Risk	Treatment for unrated covered bond was incomplete. With this fix, the unrated covered bond exposures are treated based on the available counterparty rating with a distinction based on the residual maturity of the exposures. If the counterparty rating is not available, the exposures are treated based on the sovereign rating.	All previous versions

Category	Description	Affects Versions
Credit Risk	There was no parameter to identify those exposures with a residual maturity less than three months. With this fix, a new parameter MAX_RES_MAT_IN_MON_SHO RT_EXP is introduced to identify such exposures for calculation.	All previous versions
Counterparty Credit Risk	Add-on values were populated incorrectly when the original maturity was an exact integer. With this fix, the add-on values are calculated correctly.	All previous versions

Data Model Changes for Staging Tables in v07.2019

Table 77 Data Model Changes for Staging Tables

Table Name	Column Name	Nature of Change
CCR_COLLATERAL		Table added. For more information, see “CCR_COLLATERAL” on page 293 .
	BANKRUPTCY_REMOTE_FLG	Column added.
	COUNTERPARTY_RK	Column added.
	CRM_EFFECTIVE_DATE	Column added.
	CRM_EXPIRATION_DATE	Column added.
	CRM_SUBTYPE_CD	Column added.
	CRM_TYPE_CD	Column added.
	CURRENCY	Column added.
	ELIGIBLE_CRM_TYPE_CD	Column added.
	ENTITY_ID	Column added.
	GRACE_PERIOD_DAYS	Column added.
	HAIRCUT_SET_ID	Column added.
	HAIRCUT_VALUE	Column added.
	HOLDING	Column added.
	HOLDING_PERIOD_DAYS	Column added.
	ILLIQUID_COLL_FLG	Column added.
	INCEPTION_DATE	Column added.
	INSTID	Column added.

Table Name	Column Name	Nature of Change
	INTERNAL_ORG_RK	Column added.
	ISSUE_KEY	Column added.
	LGD_ADJ_MODEL_ID	Column added.
	LGD_ADJ_MODEL_RATING_GRADE	Column added.
	LGD_CRM_ADJ_PCT	Column added.
	LGD_MODEL_ID	Column added.
	LGD_MODEL_RATING_GRADE	Column added.
	LGD_PCT	Column added.
	MARGIN_COLLATERAL_TYPE	Column added.
	MATURITY_DATE	Column added.
	PD_CRM_ADJUSTED_FLG	Column added.
	PD_MODEL_ID	Column added.
	PD_MODEL_RATING_GRADE	Column added.
	PD_PCT	Column added.
	PRODUCT_CD	Column added.
	PROTECTION_VALUE_AMT	Column added.
	REGULATORY_PRODUCT_CD	Column added.
	REVALUATION_FREQ_DAYS	Column added.
	RISK_WEIGHT	Column added.
	SENIORITY_CD	Column added.
	SUBPRODUCT_CD	Column added.
EXPOSURE_DERIVATIVE		Table added. For more information, see “EXPOSURE_DERIVATIVE” on page 286.
	ASSET_TRANSFERRABLE_FLG	Column added.

Table Name	Column Name	Nature of Change
	ATTACHMENT_POINT	Column added.
	BANKRUPTCY_REMOTE_FLG	Column added.
	BUY_CURRENCY	Column added.
	BUY_NOTIONAL_AMT	Column added.
	CCP_COUNTERPARTY_RK	Column added.
	COUNTERPARTY_RK	Column added.
	CURRENCY	Column added.
	DAYS_PAST_DUE_NO	Column added.
	DEFAULT_DATE	Column added.
	DETACHMENT_POINT	Column added.
	EAD_AMT	Column added.
	EFFECTIVE_FROM_DATE	Column added.
	EFFECTIVE_MATURITY_YEAR	Column added.
	EFFECTIVE_TILL_DATE	Column added.
	EL_MODEL_GRADE	Column added.
	EL_MODEL_ID	Column added.
	ENTITY_ID	Column added.
	EXPECTED_LOSS_PERCENT	Column added.
	FINANCIAL_BOOK_RK	Column added.
	FIRST_DUE_SETT_DT	Column added.
	FREE_DELIVERY_FLG	Column added.
	HAIRCUT_SET_ID	Column added.
	HAIRCUT_VALUE	Column added.
	HOLDING	Column added.

Table Name	Column Name	Nature of Change
	HOLDING_PERIOD_DAYS	Column added.
	ILLIQUID_TRADE_FLG	Column added.
	INCEPTION_DATE	Column added.
	INDEX_CDS_CVA_STD_RSK_WGT_PCT	Column added.
	INSTID	Column added.
	INTERNAL_ORG_RK	Column added.
	IN_DEFAULT_FLG	Column added.
	ISSUE_CODE	Column added.
	ISSUE_KEY	Column added.
	LATEST_CONTRACT_EXERCISE_DT	Column added.
	LGD_ADJ_MODEL_ID	Column added.
	LGD_ADJ_MODEL_RATING_GRADE	Column added.
	LGD_CRM_ADJ_PCT	Column added.
	LGD_MODEL_ID	Column added.
	LGD_MODEL_RATING_GRADE	Column added.
	LGD_PCT	Column added.
	MATURITY_DATE	Column added.
	MKT_RISK_CHG_AMT	Column added.
	NETTING_SET_RK	Column added.
	NEXT_CONTRACT_RESET_DATE	Column added.
	NOTIONAL_AMT	Column added.
	NO_LOSS_FROM_CM_BANKRUPTCY_FLG	Column added.
	OFF_BALANCE_SHEET_TYPE_CD	Column added.
	OPTION_BUY_SELL	Column added.

Table Name	Column Name	Nature of Change
	OPTION_EXERCISE_STYLE	Column added.
	PD_CRM_ADJUSTED_FLG	Column added.
	PD_MODEL_ID	Column added.
	PD_MODEL_RATING_GRADE	Column added.
	PD_PCT	Column added.
	POSITION_TYPE_CD	Column added.
	PRINCIPAL_EXCHANGE_REMAINING_NO	Column added.
	PRODUCT_CD	Column added.
	PUT_CALL_TYPE	Column added.
	QUALIFYING_REFERENCE_INST_FLG	Column added.
	REFERENCE_CPTY_RK	Column added.
	REFERENCE_INDEX_ISSUE_KEY	Column added.
	REGULATORY_PRODUCT_CD	Column added.
	REVALUATION_FREQ_DAYS	Column added.
	RISK_CATEGORY_CD	Column added.
	RISK_COUNTRY_CD	Column added.
	RISK_WEIGHT	Column added.
	SECOND_DUE_SETT_DT	Column added.
	SELL_CURRENCY	Column added.
	SELL_NOTIONAL_AMT	Column added.
	SENIORITY_CD	Column added.
	SETT_RISK_CHG_AMT	Column added.
	STRIKE_PRICE	Column added.
	SUBPRODUCT_CD	Column added.

Table Name	Column Name	Nature of Change
	TRADE_EXP_FLG	Column added.
	UNDERLYING_PRICE	Column added.
	VALUE_AMT	Column added.
MARGIN_AGREEMENT		Table added. For more information, see “MARGIN_AGREEMENT” on page 299.
	MARGIN_AGREEMENT_CURRENCY	Column added.
	MARGIN_AGREEMENT_ID	Column added.
	MARGIN_AGREEMENT_RK	Column added.
	MARGIN_AGREEMENT_TYPE	Column added.
	MARGIN_PERIOD_DAYS_CNT	Column added.
	MARGIN_THRESHOLD_AMT	Column added.
	MINIMUM_MARGIN_TRANSFER_AMT	Column added.
MARGIN_AGREEMENT_CRM_LINK		Table added For more information, see “MARGIN_AGREEMENT_CRM_LINK” on page 301.
	CRM_ID	Column added.
	MARGIN_AGREEMENT_RK	Column added.
NETTING_SET_MART	MARGIN_AGREEMENT_RK	Column added.
	MASTER_NETTING_AGRMNT_FLG	Column added.
	OUTSTANDING_DISPUTE_FLG	Column added.

Data Model Changes for Mapping Tables in v07.2019

Table 78 Data Model Changes for Mapping Tables

Table Name	Column Name	Nature of Change
MAP_CCR_APPROACH		Table added. For more information, see “MAP_CCR_APPROACH ” on page 301.
	CCR_APPROACH	Column added.
	RISK_CATEGORY	Column added.
MAP_CCR_RISK_CATEGORY		Table added. For more information, see “MAP_CCR_RISK_CATEGORY ” on page 302.
	RISK_CATEGORY	Column added.
	RISK_CATEGORY_CD	Column added.
	RISK_SUBCATEGORY	Column added.

Data Model Changes for Static Tables in v07.2019

Table 79 Data Model Changes for Static Tables

Table Name	Column Name	Nature of Change
SACCR_PARAMETER		Table added. For more information, see “SACCR_PARAMETER” on page 302.
	CONFIG_NAME	Column added.
	CONFIG_VALUE	Column added.
	CONFIG_VALUE_DESC	Column added.
SACCR_SUPERVISORY_PARAMETER		Table added. For more information, see “SACCR_SUPERVISORY_PARAMETER” on page 303.

Table Name	Column Name	Nature of Change
	CORRELATION	Column added.
	EXT_MAP_RATING	Column added.
	RISK_CATEGORY_NM	Column added.
	SUPERVISORY_FACTOR	Column added.
	SUPERVISORY_OPTION_VOLATILITY	Column added.

Details of the New Tables in v07.2019

EXPOSURE_DERIVATIVE

This table stores credit derivatives that are used in the computation of counterparty credit risk.

Table 80 Column Descriptions

Column Name	Type	Not Null	Label	Description
INSTID	CHARACTER(20)	Y	Unique Instrument Identifier	Retained key (primary key) to
ASSET_TRANSFERRABLE_FLG	NUM	N	Asset Transferrable Flag	Flag indicating that the expos clearing member or closed ou event the original clearing me
ATTACHMENT_POINT	NUM	N	Attachment Point	Attachment point of CDO tran
BANKRUPTCY_REMOTE_FLG	CHARACTER(1)	N	Asset Bankruptcy Remote Flag	Flag indicating the exposure of insolvency of the clearing m if the legal status of the expos in event of bankruptcy of its p
BUY_CURRENCY	CHARACTER(3)	N	Buy Currency	Currency code of the buying with Risk Category 'Foreign E code used for identifying curr and EUR for Euro.
BUY_NOTIONAL_AMT	NUM	N	Notional Amount in Buy Currency	Notional Amount denoted in t converted to reporting curren Reporting Currency) and use

Column Name	Type	Not Null	Label	Description
HOLDING	NUM	N	Number of Holdings	The number of holdings. This is the number of units of an instrument held by the bank.
HOLDING_PERIOD_DAYS	NUM	N	Holding Period Days	Specifies the minimum holding period in days for a transaction. This period is used to calculate the maturity factor of the transaction.
ILLIQUID_TRADE_FLG	NUM	N	Illiquid Trade Flag	This flag takes value 1 or 0, where 1 indicates that the transaction is illiquid. If it is set to 1, the maturity factor (MPOR) is floored to 20 business days. This is used to calculate maturity factor of the transaction. (BCBS279 Paragraph 164 (C))
IN_DEFAULT_FLG	NUM	N	In Default Flag	Under IRB approach, this flag indicates whether the transaction is in default. Enter 1 to denote that the transaction is in default. Under STD approach, the exposure is in default if the number of days past due is greater than or equal to the threshold. The bank can also decide to set the flag to 1 even if the threshold is not crossed.
INCEPTION_DATE	NUM	N	Inception Date	Start date at which the contract was entered into. For example, the start date can be the date of the first payment.
INDEX_CDS_CVA_STD_RSK_WGT_PCT	NUM	N	CVA Standard Risk Weight for An Index CDS (%)	The CVA Standard Risk Weight for An Index CDS (%).
INTERNAL_ORG_RK	NUM	N	Internal Organization Key	A key used to identify the business unit to which the transaction belongs. Internal organization key is defined in the rrm_stg.internal_org_master table.
ISSUE_CODE	CHARACTER(15)	N	Issue Code	Specifies alpha-numeric code used to identify the security at trading and settlement.
ISSUE_KEY	CHARACTER(32)	N	Issue Key	This value acts as a unique identifier for the issue. It connects issue information across different tables.
LATEST_CONTRACT_EXERCISE_DT	NUM	N	Latest Contract Exercise Date	For options, this column captures the date when the option maybe exercised and used to calculate supervisory delta (CRR2 Article 279a(1a)) and other parameters.
LGD_ADJ_MODEL_ID	CHARACTER(32)	N	Adjusted LGD Model ID	Unique identifier for adjusted LGD model in IRB approach.
LGD_ADJ_MODEL_RATING_GRADE	CHARACTER(20)	N	Adjusted LGD Model Rating Grade	Specifies the adjusted rating (LGD) model. This field applies to the IRB approach.

Column Name	Type	Not Null	Label	Description
LGD_CRM_ADJ_PCT	NUM	N	LGD CRM Adjusted (%)	Specifies the percentage for LGD adjusted for CRM. This field is used in the LGD model.
LGD_MODEL_ID	CHARACTER(32)	N	LGD Model ID	The ID for the loss given default solution runs an LGD model and matches the LGD_MODEL_ID in the rrm_stg.rating_grade table. This MODEL_ID value is used with the rating grades to use with the LGD_MODEL_RATING_GRADE table. The LGD_MODEL_RATING_GRADE table is used to determine the rating grade row that is used in a MODEL_TYPE of 'LGD'.
LGD_MODEL_RATING_GRADE	CHARACTER(20)	N	LGD Model Rating Grade	The rating grade for the loss given default solution runs an LGD model and matches the LGD_MODEL_ID in the RATING_GRADE value in the table. This helps to determine the LGD model.
LGD_PCT	NUM	N	LGD (%)	Specifies the estimated percentage (LGD) model. If this value is set to 25, the LGD_MODEL_ID and LGD_MODEL_RATING_GRADE are used. For example, enter 25 for a 25% LGD.
MATURITY_DATE	NUM	N	Maturity Date	This date indicates remaining time to maturity, latest when the derivative contract is an underlying derivative contract. This is the date of the underlying derivative contract. This column is as per B (CRR2 Article 279c (1a))
MKT_RISK_CHG_AMT	NUM	N	Market Risk Charge	Specifies market risk charge amount.
NETTING_SET_RK	NUM	N	Netting Set Key	Reference key associating the netting set in rrm_stg.netting_set_mart table with the exposure.
NEXT_CONTRACT_RESET_DATE	NUM	N	Next Contract Reset Date	The next contract reset date. This column is used to determine the next reset date under current exposure method.
NO_LOSS_FROM_CM_BANKRUPTCY_FLG	NUM	N	No Loss from Clearing Member Bankruptcy Flag	Flag indicating that the exposure is not from a clearing member or its other counterparty.
OFF_BALANCE_SHEET_TYPE_CD	CHARACTER(3)	N	OBSI Type Code	Used to map different types of derivatives.

Column Name	Type	Not Null	Label	Description
OPTION_BUY_SELL	CHARACTER(5)	N	Option Buy or Sell	This column takes value B or S. B means option is bought or sold. It is used to calculate Delta for options as per BCB 279a(1a))
OPTION_EXERCISE_STYLE	CHARACTER(32)	N	Option Exercise Style	This column captures option exercise style (European/Asian/American/Bermudan) to capture granular details. The length is 32 characters.
PD_CRM_ADJUSTED_FLG	NUM	N	PD CRM Adjusted Flag	Flag indicating whether the probability of default has been adjusted for credit risk transfer. If adjustment has been done, 'C' is set, otherwise 'N'.
PD_MODEL_ID	CHARACTER(32)	N	PD Model ID	The ID for the probability of default model. The solution runs a PD model against the data that matches the PD_MODEL_ID. The rrm_stg.rating_grade stage is used to determine which rating grade to use with the model. The solution also uses the PD_MODEL_RATING_GRADE to determine the rrm_stg.issue_account stage. The PD_MODEL_ID is a MODEL_TYPE value of 'PD'. The rrm_stg.rating_grade stage is used for IRB approaches.
PD_MODEL_RATING_GRADE	CHARACTER(20)	N	PD Model Rating Grade	The rating grade for the probability of default model. The solution runs a PD model against the data that matches the PD_MODEL_RATING_GRADE. The RATING_GRADE value is used in the model. This helps to determine the rating grade for the model.
PD_PCT	NUM	N	PD (%)	Probability of default value of 0 to 100. Certain approaches enable users to set a value for a counterparty. This is used for capital calculation. For example, 2.5 denote a 2.5% probability of default.
POSITION_TYPE_CD	CHARACTER(5)	N	Position Type	This column stores code of a position type. It is mapped to position type in the position type table.
PRINCIPAL_EXCHANGE_REMAINING_NO	NUM	N	Principal Exchange Remaining Number	The remaining number of principal exchange on values for CE approach and for CE approach.
PRODUCT_CD	CHARACTER(12)	N	Product Code	This value is a bank's own classification product code. For example, y for treasury bills, CRFAC to represent credit risk. Instruments are mapped by product code. 'rd_map.map_ead_insttype' is used to apply to certain instruments.

Column Name	Type	Not Null	Label	Description
				'rd_map.map_haircut_type' mapped to haircut type.
PUT_CALL_TYPE	CHARACTER(5)	N	Put Call Type Code	This column denotes whether is used for calculation of Supplemental Add-On as used to calculate Add-On as (CRR2 Article 279a(1a))
QUALIFYING_REFERENCE_INST_FLG	NUM	N	Qualifying Reference Instrument Flag	Flag indicating if the reference return swap is qualifying or not. Enter 1 if the reference instrument is a qualifying reference instrument add-on type for Part Three, T
REFERENCE_CPTY_RK	NUM	N	Reference Counterparty Key	The counterparty key for the instruments such as Credit D
REGULATORY_PRODUCT_CD	CHARACTER(3)	N	Regulatory Product Code	The code for the regulatory code at granular level. For example, 'F'. This value is mapped to information 'rd_map.map_product_class'
REVALUATION_FREQ_DAYS	NUM	N	Revaluation Frequency in Days	The revaluation frequency mapped to this value, re-margining (revaluation)
RISK_CATEGORY_CD	CHARACTER(3)	N	Risk Category Code	The code for classifying derivative primary risk driver. For example, Risk Category "Interest Rate" where Risk Category "Credit" and Risk Category "Commodity". This value is mapped to 'rd_map.map_risk_category' mapping table based on information of derivative transaction as per
RISK_COUNTRY_CD	CHARACTER(3)	N	Country of Exposure Origination	The country code of the exposure location of the relevant credit institution-specific counterparty standard ISO code 3166-1-alpha-2 country code such as 'SG' for SINGAPORE and 'US' for UNITED STATES.
RISK_WEIGHT	NUM	N	Risk Weight	Predetermined value of the risk weight. If the risk weight value is specified, then the risk weight is this value.
SECOND_DUE_SETT_DT	NUM	N	Second Due Settlement Date	The second contractual settlement date of the institution and its counterparty for commodities transaction.
SELL_CURRENCY	CHARACTER(3)	N	Sell Currency	Currency code of the selling currency with Risk Category 'Foreign Exchange'

Column Name	Type	Not Null	Label	Description
				code used for identifying currency and EUR for Euro.
SELL_NOTIONAL_AMT	NUM	N	Notional Amount in Sell Currency	Notional Amount denoted in trade to reporting currency (if sell currency) and is used to calculate the trade derivative contract as per BCBS279 (CRR2Article 279b (1b)).
SENIORITY_CD	CHARACTER(3)	N	Seniority Code	Code indicating the seniority of their configurations are listed in the rd_map.map_seniority map.
SETT_RISK_CHG_AMT	NUM	N	Settlement Risk Charge	Specifies settlement risk charge.
STRIKE_PRICE	NUM	N	Strike Price	Strike price of the option which Delta as per BCBS279 paragraph 1.
SUBPRODUCT_CD	CHARACTER(12)	N	Subproduct Code	Subproduct type code for the trade with product_cd is mapped to mapping information can be found in table.
TRADE_EXP_FLG	NUM	N	Trade Exposure Flag	Flag indicating the exposure is trade exposure.
UNDERLYING_PRICE	NUM	N	Underlying Price	Underlying price (spot or forward) option is applicable. This is used as per BCBS279 paragraph 1.
VALUE_AMT	NUM	N	Market Value	Specifies the marked-to-market transaction in the applicable derivative contract receives from.
REFERENCE_INDEX_ISSUE_KEY	NUM	N	Reference Index Issue Key	This value acts as a unique identifier connects index information from Required only for Credit and

CCR_COLLATERAL

Stores detailed information about credit risk mitigants of financial instruments. This table contains holdings and protection value amount about financial instruments that are specified as credit risk mitigants (of the financial collateral type). It also contains other information, such as protection value amount (PROTECTION_VALUE_AMT), CRM effective dates, CRM expiration dates (CRM_EFFECTIVE_DATE and CRM_EXPIRATION_DATE), and illiquid collateral flag (ILLIQUID_COLL_FLG). This table is used to create financial collateral positions.

Table 81 Column Descriptions

Column Name	Type	Not Null	Label	Description
INSTID	CHARACTER(20)	Y	Unique CRM Instrument Identifier	Retained key (primary key) to uniquely identify an exposure.
COUNTERPARTY_RK	NUM	N	Counterparty Key	This field identifies the retained key (primary key) used to uniquely identify a counterparty.
CURRENCY	CHARACTER(3)	N	Currency	Exposure's currency code. The standard ISO 4217 code used for identifying currency such as USD for US Dollar and EUR for Euro.
HOLDING	NUM	N	Number of Holdings	The number of holdings. This column represents the number of units of an instrument held by an individual or entity.
INTERNAL_ORG_RK	NUM	N	Internal Organization Key	A key used to identify the business unit to which the exposure belongs. Internal organizations are defined in the <code>rm_stg.internal_org_mart</code> table.
CRM_EFFECTIVE_DATE	NUM	N	CRM Effective Date	Specifies date from which credit risk mitigant is effective, such as June 01, 2019.
CRM_EXPIRATION_DATE	NUM	N	CRM Expiration Date	Specifies maturity date of credit risk mitigant, such as January 01, 2025.
ELIGIBLE_CRM_TYPE_CD	CHARACTER(3)	N	Eligible CRM Type Code	Code for eligibility type of credit risk mitigant under specific regulations. It is linked to the <code>ELIGIBLE_CRM_TYPE</code> column in the <code>rd_map.map_eligible_crm_type</code> table. For example, 001 is mapped to <code>crm type FINANCIAL_SIMPLE</code> .
CRM_TYPE_CD	CHARACTER(3)	N	CRM Type Code	Code for the credit risk mitigant type. The <code>CRM_TYPE_CD</code> is mapped to the <code>rd_map.map_crm_type</code> table.
CRM_SUBTYPE_CD	CHARACTER(3)	N	CRM Subtype Code	A code used to indicate the subtype for a type of credit risk mitigant. <code>CRM_SUBTYPE_CD</code> is

Column Name	Type	Not Null	Label	Description
				mapped to the rd_map.map_crm_type table.
ENTITY_ID	CHARACTER(3)	N	Reporting Entity	This column stores the code for business unit. Examples of entity ID include BHC-Bank Holding Companies, RLU-Retail Lending unit, CLU-Corporate lending unit, and GLU-Government lending unit. It is mapped to the rrm_bsdt.entity data set.
HOLDING_PERIOD_DAYS	NUM	N	Holding Period Days	Specifies the minimum holding period, in days, for the type of transaction. This period is used in haircut scaling.
ILLIQUID_COLL_FLG	NUM	N	Illiquid Collateral Flag	This flag takes value 1 or 0, highlights if the collateral is illiquid. When it is set to 1, then Margin Period of Risk (MPOR) is floored to 20 business days. This is used to calculate maturity factor of margined transactions as per BCBS279 Paragraph 164 (CRR2 Article 285(5))
GRACE_PERIOD_DAYS	NUM	N	Grace Period Days	The grace period for a given issuance, in days such as 30.
HAIRCUT_SET_ID	CHARACTER(32)	N	Haircut Set ID	The ID for the haircut set, which is used to group together the haircuts that are used in a particular regulation. For example, use 'CRD4' to denote the haircuts that apply to CRD4 regulations.
HAIRCUT_VALUE	NUM	N	Haircut Value	The bank's own estimates of volatility adjustment. If a haircut value is supplied, the regulatory haircut is not applied. For example, enter '20' to denote a 20% of haircut to apply.
INCEPTION_DATE	NUM	N	Inception Date	Start date at which the contractual agreement takes effect. For example, July 20, 2017.
ISSUE_KEY	CHARACTER(32)	N	Issue Key	This value acts as a unique identifier of the issue. The value

Column Name	Type	Not Null	Label	Description
				connects issue information across staging tables.
LGD_ADJ_MODEL_ID	CHARACTER(32)	N	Adjusted LGD Model ID	Unique identifier for adjusted LGD model. This column is used in IRB approach.
LGD_ADJ_MODEL_RATING_GRADE	CHARACTER(20)	N	Adjusted LGD Model Rating Grade	Specifies the adjusted rating grade for loss given at default (LGD) model. This field applies only to IRB approaches.
LGD_CRM_ADJ_PCT	NUM	N	LGD CRM Adjusted (%)	Specifies the percentage for loss given at default (LGD) model adjusted for CRM. This field applies only to IRB approaches.
LGD_MODEL_ID	CHARACTER(32)	N	LGD Model ID	The ID for the loss given default (LGD) model. When the solution runs an LGD model against a particular issuance, it matches the 'LGD_MODEL_ID' value with the 'MODEL_ID' value in the 'rrm_stg.rating_grade' staging table. This 'MODEL_ID' value is used to determine which row contains the rating grades to use with the model. The 'LGD_MODEL_RATING_GRADE' value is also used, and the rating grade row that is used for the LGD model must match a 'MODEL_TYPE' of 'LGD'.
LGD_MODEL_RATING_GRADE	CHARACTER(20)	N	LGD Model Rating Grade	The rating grade for the loss given default (LGD) model. When the solution runs an LGD model against a particular issuance, it matches the 'LGD_MODEL_RATING_GRADE' value with the 'RATING_GRADE' value in the 'rrm_stg.rating_grade' staging table, to determine the rating grades to use with the model.
LGD_PCT	NUM	N	LGD (%)	Specifies the estimated percentage for a loss given default (LGD) model. If this value is supplied, it is used instead of the 'LGD_MODEL_ID' and 'LGD_MODEL_RATING_GRADE' pair. For example, enter 25 for a

Column Name	Type	Not Null	Label	Description
				25% loss given default percentage.
MATURITY_DATE	NUM	N	Maturity Date	The maturity date for the issuance. This is the date on which there are no future accrued obligations and final payment occurs such as January 01, 2020. It is used to compute original and residual maturity of the issuance. If this value is kept blank, original maturity is set to missing and residual maturity is derived from the default residual maturity provided by the option EXP_RESIDUAL_MATURITY in 'rd_stat.regulatory_parameter' table.
PD_CRM_ADJUSTED_FLG	NUM	N	PD CRM Adjusted Flag	Flag indicating whether the probability of default assessment has been adjusted for credit risk mitigants or not. Enter '1' if the adjustment has been done, '0' otherwise.
PD_MODEL_ID	CHARACTER(32)	N	PD Model ID	The ID for the probability of default (PD) model. When the solution runs a PD model against a particular issuance, it matches the 'PD_MODEL_ID' value with the 'MODEL_ID' value in the 'rrm_stg.rating_grade' staging table. This 'MODEL_ID' value is used to determine which row contains the rating grades to use with the model. The solution also uses the 'PD_MODEL_RATING_GRADE' value in the 'rrm_stg.issue_account' staging table. The rating grade row that is used for the PD model must match a 'MODEL_TYPE' value of 'PD' in the 'rrm_stg.rating_grade' staging table. This field applies only to IRB approaches.
PD_MODEL_RATING_GRADE	CHARACTER(20)	N	PD Model Rating Grade	The rating grade for the probability of default (PD) model. When the solution runs a PD model against a particular issuance, it matches the

Column Name	Type	Not Null	Label	Description
				'PD_MODEL_RATING_GRADE' value with the 'RATING_GRADE' value in the 'rrm_stg.rating_grade' staging table, to determine the rating grades to use with the model.
PD_PCT	NUM	N	PD (%)	Probability of default value of the counterparty in percentages. Certain approaches enable user supplied probability of default value for a counterparty. This value is used in IRB approaches for capital calculation. For example, enter the value 2.5 to denote a 2.5% probability of default.
PRODUCT_CD	CHARACTER(12)	N	Product Code	This value is a bank's own classification of the instrument's product code. For example, you can use FI_BIL to represent treasury bills, CRFAC to represent credit facility, and so on. Instruments are mapped by product code through the 'rd_map.map_ead_insttype' mapping table. Haircuts are also applied to certain instruments based on the product code. The 'rd_map.map_haircut_type' mapping table maps product codes to haircut type.
PROTECTION_VALUE_AMT	NUM	N	Protection Value	The total amount of the credit risk mitigant. For the pledged collateral, the amount should be with a "-" sign. For the received collateral, the amount should be with a "+" sign.
REGULATORY_PRODUCT_CD	CHARACTER(3)	N	Regulatory Product Code	The code for the regulatory classification of the product at a granular level. For example, the code 522 denotes cash. This value is mapped to information about the product in the 'rd_map.map_product_class' mapping table.
REVALUATION_FREQ_DAYS	NUM	N	Revaluation Frequency in Days	The revaluation frequency measured in number of days.

Column Name	Type	Not Null	Label	Description
				Using this value, re-margining (revaluation) is performed.
RISK_WEIGHT	NUM	N	Risk Weight	Pre-determined value of the risk weight of the collateral.
SENIORITY_CD	CHARACTER(3)	N	Seniority Code	Code indicating the seniority of the loan. Seniority codes and their configurations are listed in the 'rd_map.map_seniority' mapping table.
SUBPRODUCT_CD	CHARACTER(12)	N	Subproduct Code	Subproduct type code for the collateral. Subproduct_cd along with product_cd is mapped to different instrument types. The mapping information can be found 'rd_map.Map_ead_insttype' table.
BANKRUPTCY_REMOTE_FLG	CHARACTER(1)	N	Asset Bankruptcy Remote Flag	Flag indicating the exposure is bankruptcy remote in the event of insolvency of the clearing member or its other clients. Enter 1 if the legal status of the exposure makes its obligations secure in event of bankruptcy of its parent or guarantor.
MARGIN_COLLATERAL_TYPE	CHARACTER(2)	N	Margin Collateral Type	This value indicates the type of margin collateral. Enter 'IM' for Initial Margin/Indepent Amount or 'VM' for Variation Margin as it is used to calculate total collateral and NICA as per BCBS279 Paragraph 143(CRR2 Article 275).

MARGIN_AGREEMENT

Stores details about margin agreement and related information. Margin agreement is a contractual agreement or provisions to an agreement under which one counterparty must supply collateral to a second counterparty when an exposure of that second counterparty to the first counterparty exceeds a specified level. It also stores information like Variation Margin Amount (VARIATION_MARGIN_AMT) and Margin Independent Amount (MARGIN_INDEPENDENT_AMT).

Table 82 Column Descriptions

Column Name	Type	Not Null	Label	Description
MARGIN_AGREEMENT_RK	NUM	Y	Margin Agreement Key	The margin agreement retained key. Because source data for the margin agreement can come from multiple systems, the keys supplied by the business systems might not be unique. The ETL process inserts this key as a surrogate key to ensure a unique identifier for the margin agreement.
MARGIN_AGREEMENT_ID	CHARACTER(32)	N	Margin Agreement ID	Specifies the business key for the margin agreement.
MARGIN_AGREEMENT_CURRENCY	CHARACTER(3)	N	Margin Agreement Currency	The currency used for MARGIN_THRESHOLD_AMT.
MARGIN_PERIOD_DAYS_CNT	NUMBER	N	Margin Period of Risk	The time period from the last exchange of collateral covering a netting set of transactions with a defaulting counterpart until that counterpart is closed out and the resulting market risk is re-hedged. Also known as the liquidation period. This captures the MPOR for margined transactions and is further used to calculate Maturity Factor as per BCBS279 Paragraph 164 (CRR2 Article 279c (1b)).
MARGIN_THRESHOLD_AMT	NUMBER	N	Positive Threshold Amount	Positive Threshold that triggers margin call. This is used to calculate Replacement Cost as per BCBS279 Paragraph 144 (CRR2 Article 281(2c))
MINIMUM_MARGIN_TRANSFER_AMOUNT	NUMBER	N	Minimum Transfer Amount	Minimum amount to be posted when margin call occurs and the threshold passed. This is used to calculate Replacement Cost as per BCBS279 Paragraph 144 (CRR2 Article 281(2c)).
MARGIN_AGREEMENT_TYPE	CHARACTER(10)	N	Margin Agreement Type	For unmargined trades, the value is mentioned as UNMARGINED. For margined trades, the value is mentioned as MARGINED. For trades where variation margin is not to be exchanged, it is treated

Column Name	Type	Not Null	Label	Description
				as unmargined as per BCBS279 Paragraph 136 (CRR2 Article 275(1)). Bilateral trades, where collateral/VM/IM is posted but not received, it is to be treated as unmargined as per BCBS279 Paragraph 138.

MARGIN_AGREEMENT_CRM_LINK

Links the margin agreements with credit risk mitigants.

Table 83 Column Descriptions

Column Name	Type	Type	Label	Description
MARGIN_AGREEMENT_RK	NUM	Y	Margin Agreement Key	Contains the margin agreement retained key. The source data for the margin agreement can come from multiple systems. Due to this the keys supplied by the business systems might not be unique. The ETL process inserts this key as a surrogate key to ensure a unique identifier for the margin agreement.
CRM_ID	CHARACTER(20)	Y	CRM ID	Contains the unique identifier for a credit risk mitigant. It refers to the INSTID from rrm_stg.ccr_collateral, the credit risk mitigant staging table.

MAP_CCR_APPROACH

Associates the risk category of counterparty credit risk portfolio to the corresponding approach to be used to treat it.

Table 84 Column Descriptions

Column Name	Type	Type	Label	Description
RISK_CATEGORY	CHARACTER(32)	N	Risk Category	Identifies the risk category of the trade. It denotes the asset class of the derivative such as INTEREST_RATE,

Column Name	Type	Type	Label	Description
				FOREIGN_EXCHANGE, CREDIT, EQUITY, or COMMODITY.
CCR_APPROACH	CHARACTER(32)	N	CCR Approach	Contains the values for SA-CCR (SA-CCR) and CEM/OEM (CEM/OEM) for counterparty credit risk portfolio. The default value for the INTEREST_RATE, FOREIGN_EXCHANGE, and CREDIT asset classes is SA-CCR.

MAP_CCR_RISK_CATEGORY

Contains a list of risk categories and sub-categories that help identify the primary risk driver of trade as required in Standardised Approach for Counterparty Credit Risk (SA-CCR).

Table 85 Column Descriptions

Column Name	Type	Type	Label	Description
RISK_CATEGORY_CD	CHARACTER(3)	Y	Risk Category Code	Identifies the risk category and subcategory of a derivative trade. For example, the value 008 can be used to denote a commodity derivative on oil or gas.
RISK_CATEGORY	CHARACTER(32)	N	Risk Category	Identifies the risk category of the trade. It denotes the asset class of the derivative such as INTEREST_RATE, FOREIGN_EXCHANGE, CREDIT, EQUITY, or COMMODITY.
RISK_SUBCATEGORY	CHARACTER(32)	N	Risk Subcategory	This column identifies the risk subcategory of the trade. For the risk category selected in the above RISK_CATEGORY column, this column denotes the subcategory. For example, for COMMODITY risk category, value such as ELECTRICITY, or METALS can be used.

SACCR_PARAMETER

Contains a list of regulatory parameter names and associated values as required in SA-CCR.

Table 86 Column Descriptions

Column Name	Type	Type	Label	Description
CONFIG_NAME	CHARACTER(40)	N	Regulatory Parameter Name	Specifies the regulatory parameter name.
CONFIG_VALUE	NUM	N	Parameter Value	Specifies the value associated with the regulatory parameter.
CONFIG_VALUE_DESC	CHARACTER(250)	N	Regulatory Parameter Description	Specifies the description of the regulatory parameter.

SACCR_SUPERVISORY_PARAMETER

Contains Supervisory factor, Correlation and Supervisory option volatility as required for computation in SA-CCR. These values are associated with the risk category and sub-category (RISK_CATEGORY_NM column) as defined in the MAP_CCR_RISK_CATEGORY table

Table 87 Column Descriptions

Column Name	Type	Type	Label	Description
RISK_CATEGORY_NM	CHARACTER(32)	N	Risk Category Name	Links the risk category and subcategory of the derivative trade with the supervisory parameters as required in SA-CCR.
EXT_MAP_RATING	CHARACTER(5)	N	External Map Rating	Groups similar external rating grades and internal rating grades for the purpose of bucketing data and assigning different risk weights. For example, Moody's might have a rating grade of A2 that is the equivalent of Fitch's rating grade of A and a S&P rating grade of A. These rating grades are associated with an internal ratings grade of 06. All of these grades are mapped to an external map rating of EXT06. This grouping is done in the rd_map.map_ext_ratings and rd_map.map_ext_shortterm_ratings tables. When the solution reads data that contains ratings grades, it first uses these mapping tables to determine which external rating grades the data belongs to. Then, depending on the analysis (IRB or STD), it uses the risk weight

Column Name	Type	Type	Label	Description
				buckets applicable to that rating grade, which are mapped in the rd_map.map_irb_rw_buckets and rd_map.map_std_rw_buckets tables.
SUPERVISORY_FACTOR	NUM	N	Supervisory Factor	Supervisory Factor as given in SA-CCR.
CORRELATION	NUM	N	Correlation	Correlation as given in SA-CCR.
SUPERVISORY_OPTION_VOLATILITY	NUM	N	Supervisory Option Volatility	Supervisory Option Volatility as given in SA-CCR.

Content Release v05.2019

Overview

SAS Regulatory Risk Management 6.1 Content Release v05.2019 has the following fixes and enhancements:

- Review of equity methods mapping.
- Extended support to flag high-risk exposures after inception.
- Comparative analysis of IFRS9 transitional provisions.
- Revised mapping for debt securities as collateral.
- Enhancements to SAS Visual Analytics reports.
- Documentation enhancements.
- Other fixes and enhancements.

Review of Equity Methods Mapping

The equity position type DIVERSIFIED was not referenced. This equity position type is now available. The equity position is used in Simple Risk Weight approach for Equity exposures as per CRR Article 155 (2). It is also used for PD flooring as per CRR article 165 (2), and for LGD assignment as per CRR Article 155 (3) under PD or LGD approach. For more information, see “Equity Exposures” in the *SAS Regulatory Risk Management: Reference Manual*.

Extended Support for High-risk Exposures

SAS Regulatory Risk Management did not provide any provision to flag if any exposure turns high risk after inception. The HIGH_RISK_CATEGORY_FLG column has now been introduced in the ISSUE_* staging tables. The exposures that have the value of HIGH_RISK_CATEGORY_FLG set to 1 will be risk-weighted as per high risk treatment as specified in BCBS paragraph 79 (CRR Article 128).

Comparative Analysis of IFRS9 Transitional Provisions

SAS Regulatory Risk Management supports the comparative analysis of credit risk capital calculations with or without IFRS9 Transitional Arrangement (BCBS D401 (CRR Article 473a)). This feature was supported through SAS Risk and Finance Workbench. Now, it is also supported through SAS Infrastructure for Risk Management through a customized job flow called IFRS9 Provisioning Impact on RWA.

Revised Mapping for Debt Securities as Collateral

All the debt collateral mapped to the crm_subtype DEBT_SEC_UNRATED were considered as ineligible collateral. With this enhancement, the existing crm_subtype DEBT_SEC_RATED and DEBT_SEC_UNRATED have been removed and only one crm_subtype DEBT_SEC is maintained to identify debt_collateral. Unrated securities are identified based on the absence of issue rating and unrated debt collateral are treated as ineligible if it does not satisfy the criterion as mentioned in BCBS128 paragraph 145 (d) (CRR Article 197(4)).

Enhancements to SAS Visual Analytics Reports

The Credit Risk Dashboard report has been enhanced to display the summary of the entire portfolio based on the risk types such as credit risk, counterparty credit risk (CCR), and securitization. A new report called the Securitization Analysis report has been introduced. This report displays the overview of the securitization portfolio.

Documentation Enhancements

- The usage of RW floor for comparison with adjusted risk weight of guaranteed portion and its calculation has been documented in the **Substitution Approach for Unfunded Credit Protection** ⇒ **General Treatment** section of the *SAS Regulatory Risk Management Content Release: Reference Manual*.

- Information about how to apply entity-level security while viewing the SAS Visual Analytics reports has been documented in the post-installation instructions of the *SAS Regulatory Risk Management Content Release: Installation Guide*.

Other Fixes and Enhancements

For more information, see [“Details of Other Fixes and Enhancements in v05.2019”](#) on page 307.

Details of Other Fixes and Enhancements in v05.2019

Table 88 Details of the Other Fixes and Enhancements in v05.2019

Category	Description	Affects Versions
Back-end Data Management	The equivalence of the third countries to the European Union was implemented in the rd_stat.mutual_recognition table as per 2016/2358/EU (Article 1-5). This has now been updated as per 2019/536/EU (Article 1-5).	All previous versions
Back-end Data Management	The Counterparty Credit Risk portfolio summary was not visible in the RRM_IFRS9_Provisioning_Impact worksheet in SAS Risk and Finance Workbench. The summary has now been added to the worksheet and to the output of the IFRS9 Provisioning Impact on RWA job flow in SAS Infrastructure for Risk Management.	v02.2019
Back-end Data Management	The default length of the INSTID column in all the staging data sets is 20. If the column length of INSTID that is provided in the DDL scripts is greater than 20 characters, the ID columns in the results data sets were truncated. With this fix, if the column length of INSTID is modified in the DDL scripts of the staging tables, the same column length is used throughout in SAS Regulatory Risk Management.	All previous versions
Workflow	The diagnostic data sets created at various steps of the flow were added to different libraries. With this fix, all diagnostic data sets are added to a single library called RRM_DIAG.	All previous versions

Category	Description	Affects Versions
Credit Risk	The SCALE_ONLY parameter in the %get_haircut macro (that controls the derivation of the scaling up or down of the volatility adjustment if the HOLDING_PERIOD_DAYS is different from the assumed holding period days in the static table), was not getting resolved as Y in any cases. With this fix, the SCALE_ONLY parameter is now getting resolved when specified as Y, and the scaling up or down is not done.	All previous versions
Credit Risk	When the APPLY_CCF_AFTER_CRM option was set to YES and CRM allocation method was BY_RANK, incorrect RWA values were calculated for the unsecured portion. With the fix, the RWA values are correctly calculated by multiplying RW_EFF with the EAD_PORTION column.	v02.2019
Credit Risk	The value of CPTY_CLASS_CHANGED_FLG was set to 1 for all Retail and Corporate exposures under one counterparty group, after the retail granularity check. With this fix, only Retail exposures that are converted to Corporate have the value of CPTY_CLASS_CHANGED_FLG as 1.	All previous versions
Credit Risk	In the calculation of total exposures owed to counterparty for the purpose of checking eligibility for SME supporting factor deduction treatment, the exposure value used was total exposure (on-balance and off-balance sheet). This was the net exposure value after applying provisions, conversion factor, and any CRMs. As per EBA Q&A 2013/416, for off-balance sheet items such as facilities, the total exposure owed to the	All previous versions

Category	Description	Affects Versions
	<p>counterparty should be the drawn amount.</p> <p>With this fix, for off-balance sheet exposures, only drawn amount is considered in calculation of the total exposures owed to the counterparty. It is then checked for EUR 1.5 million limit. Also, the exposure amount used now is gross of the specific provision and any credit risk mitigation effect.</p>	
Credit Risk	<p>Under STD approach, preferential treatment for repo exposures was being overwritten by non-preferential counterparty RW. With this fix, if the transaction qualifies for any preferential treatment, it is correctly applied and not overwritten.</p>	All previous versions
Credit Risk	<p>Maturity floor of one day was being applied to all short term transactions regardless of their eligibility as per BCBS paragraph 321 and CRR Article 162(3). After this fix, maturity floor of one day is applied only to qualifying short term exposures (as defined by QUALIFYING_SHORT_EXP_FLG in ISSUE_* tables). Maturity floor for corporate purchased receivables for CRD4 has also been introduced. In addition, short-term trade finance exposures that were earlier identified by the condition of residual maturity less than one year are also now identified by QUALIFYING_SHORT_EXP_FLG.</p>	All previous versions
Credit Risk	<p>Under STD approach for trade finance exposures to unrated institutions, the RWs were not correct. With this fix, the RWs are now correct as per the CRR Article 119(4).</p>	v09.2019

Category	Description	Affects Versions
Credit Risk	Risk weights for past due or defaulted loans were determined based on the percentage of specific provisions with respect to EAD, which is the exposure value after applying conversion factor, if any. With this fix, the risk weights for past due or defaulted loans are now determined based on the percentage of specific provisions with respect to original exposure value without any adjustments.	All previous versions
Credit Risk	In SAS Regulatory Risk Management, AVCM was applied to all PSE exposures where the counterparty class is SOVEREIGN . With this fix AVCM will not be applied to PSE exposures with counterparty class as SOVEREIGN.	5.4 onwards
Credit Risk	Maturity mismatch calculations were being applied to purchased receivables and life insurance policies (under CRD4) pledged as collaterals. With this fix, those collaterals will be excluded from maturity mismatch calculations.	All previous versions
Credit Risk	Seniority type of CRM was not captured at CRM level. With this fix, the seniority characteristics are fetched at CRM level and used in setting the LGD value for CRM under IRBF approach.	All previous versions
Credit Risk	If the exposure was under STD approach and CRM was under IRB approach, the expected loss (EL_EFF) and expected loss amount (EL_AMT) was not calculated for the secured portion of the exposure under substitution effects. With this fix, the expected loss (EL_EFF) and expected loss amount (EL_AMT) are calculated for the secured portion of the exposure.	v09.2018

Category	Description	Affects Versions
Credit Risk	Under IRB approach, EL_EFF of the secured part of the defaulted exposure was assigned the value as bank's own EL estimate of the exposure. With this fix, for the secured part the value of EL_EFF is calculated based on the PD_EFF and LGD_EFF of secured part of the exposure.	v09.2018
Credit Risk	When an exposure was not eligible for SME deduction treatment but the CRM was eligible, the deduction was applied to the secured part even when the exposure is in default. With this fix, the SME deduction factor is applied to the secured part of the exposure only when the exposure is not in default.	v09.2018
Credit Risk	For specialized lending exposures, internal issue rating, if available, was being overwritten by incorrect assignments. With this fix, internal issue rating is now being correctly used.	All previous versions
Credit Risk - Basel 4	After the retail granularity check, COUNTERPARTY_CLASS and COUNTERPARTY_SUBCLASS of all retail Non-SME exposures were updated to CORPORATE/ CORPORATE under BASEL4 configuration. With this fix, for all NON_SME Retail exposures not meeting the retail granularity criteria, COUNTERPARTY_SUBCLASS is changed as OTHER_RETAIL under BASEL4 configuration.	V02.2019
Counterparty Credit Risk	Under CEM/OEM, the add on is calculated based on the maturity bands defined with residual maturity. Previously, when the maturity was exactly equal to the boundaries of the bands (like 0, 1, or 5), add on was not calculated. With this fix, these	All previous versions

Category	Description	Affects Versions
	boundary conditions of maturity are handled correctly.	
CRM Allocation	Guarantees that were mapped to the eligibility as per IRB approach were also eligible under STD approach. With this fix, such guarantees are now ineligible under STD approach.	v02.2019
CRM Allocation	CRMs were invalidated if the risk weight of CRM was greater than the risk weight of exposure under the STD approach or if the value of STD_CRM_METHOD is BY_RANK under the IRB approach. With this fix, CRMs are invalidated if the risk weight of CRM is greater than or equal to the risk weight of exposure in all conditions.	All previous versions
CRM Allocation	When the exposure followed IRB approach and CRM's followed STD approach, the Expected Loss (EL) value was populated for secured part of the exposures subject to credit risk substitution. With this fix, the EL value is not populated for the secured part in such cases.	All previous versions
CRM Allocation	When a counterparty pledges a collateral issued by another counterparty, risk weight was computed based on the counterparty posting the collateral. After this fix, risk weight is computed based on the rating of issuer counterparty as per CRR Article 139, BCBS128 paragraph 99.	All previous versions
Securitization	In the BASEL II securitization framework, treatment to calculate maximum risk-weighted exposure amounts was not implemented. With this fix, the treatment is implemented as per BCBS128 paragraph 610 (CRR Article 260 of (EU) No 575/2013).	All previous versions

Category	Description	Affects Versions
Securitization	<p>Maximum capital requirements for revised securitization framework was not implemented. With this fix, the maximum capital requirement treatment is implemented as per D374 paragraphs (90-93) (CRR Article 268 (EU) 2017/2401).</p> <p>In the calculation of largest proportion of interest that the institution holds in the relevant tranches, it is assumed that an institution will have only one securitization position in a single tranche.</p>	v02.2019
Securitization	<p>Look through approach for securitization exposures was not being applied for positions under the SEC-ERBA approach in the revised securitization framework. With this fix, the treatment is applied to securitization positions under SEC-ERBA approach, as per CRR Article 267 of (EU) 2017/2401 .</p>	v02.2019
Securitization	<p>Risk weight floor for STS securitizations was not being applied under the SEC-ERBA approach in the revised securitization framework. With this fix, the floor is applied to risk weight for STS securitizations under SEC-ERBA approach, as per CRR Article 263(6) of (EU) 2017/2401.</p>	v02.2019
Securitization	<p>Securitization exposures for which the SEC-IRB, SEC-SA, or SEC-ERBA approaches could not be applied, were assigned a risk weight of 1250%. These exposures needed to be classified in a category other than SEC-IRBA, SEC-SA, or SEC-ERBA.</p> <p>With this fix, a new approach value SEC-1250 is defined for all such exposures, as per D374 paragraph 42, CRR Article 254(7) of (EU) 2017/2401.</p>	v02.2019

Category	Description	Affects Versions
Securitization	For securitization exposures under the SEC-SA approach in the revised securitization framework, during K-SA calculation the value of the underlying exposures should be the gross of any credit risk adjustments as per CRR article 255(6), second paragraph of (EU) 2017/2401. With this fix, the EXP_VALUE column is used in the K-SA calculation, which is the gross of any credit risk adjustments and CCF.	v02.2019
Securitization	In a securitization program, an institution can deduct the exposure value of a securitization position, (which is assigned a risk weight of 1250%) from the amount of Common Equity Tier 1 items as per CRR article 36 (1) (k). Also, for an originator institution, the entire amount of any gain on sale and credit-enhancing interest-only strips arising from the securitization transaction can be deducted from the Common Equity Tier 1 items as per D374 paragraph 93 and CRR Article 268(4) of (EU) 2017/2401. This deduction treatment is now implemented for the revised securitization framework.	v02.2019
Securitization	SAS Regulatory Risk Management applies the scaling factor of 1.06 to the RW. As per CRR Article 261 (EBA Q&A 2014_1179), for securitization exposures under IRB Ratings Based Approach, the scaling factor of 1.06 should be multiplied to the RWA value. With this fix, the scaling factor is correctly applied to the RWA.	All previous versions
Securitization	Underlying exposures of a securitization pool were excluded from retail granularity check. With this fix the underlying exposures of a securitization	All previous versions

Category	Description	Affects Versions
	pool are passed through retail granularity check.	
Securitization	Under revised securitization framework, the original risk weight was replaced with the risk weight after applying max RW treatment using look-through approach as per article 267. With this fix the original risk weight value before applying max RW treatment is retained in the RW_BEFORE_CAP column.	v02.2019
Securitization	Under revised securitization framework, specific provisions were not deducted from exposure values. With this fix, specific provisions are getting subtracted from exposure values for securitization positions.	v02.2019
Securitization	In the BASEL II securitization framework, CRMs were being allocated twice for the underlying exposures. Now, the double allocation has been removed by directly referencing the capital.sec_underlying_detail data set wherever necessary.	All previous versions
Leverage Ratio	CCF_LR was not getting populated when CCF_PCT was provided as direct input. CCF_PCT is for CCF of credit risk whereas CCF_LR is the regulatory value of CCF to be used in Leverage Ratio calculations. With this fix, CCF_LR is populated with the correct regulatory CCF values for LR.	All previous versions
SAS Visual Analytics Reports	New reports have been added to the Credit Risk Monitoring reports. Also, two new input data sets have been added for the new reports. One of these data sets stores information about the Securitization portfolio and the second one is a concatenated data set that contains information about the entire portfolio. The	v02.2019

Category	Description	Affects Versions
	two data sets that were introduced in the previous release have been renamed.	

Data Model Changes for Staging Tables in v05.2019

Table 89 Data Model Changes for Staging Tables

Table Name	Column Name	Nature of Change
ISSUE_ACCOUNT	HIGH_RISK_CATEGORY_FLG	Column added.
	QUALIFYING_SHORT_EXP_FLG	Column added.
ISSUE_SECURITIZATION	HIGH_RISK_CATEGORY_FLG	Column added.
ISSUE_ASSET_MART	HIGH_RISK_CATEGORY_FLG	Column added.
ISSUE_FACILITY	HIGH_RISK_CATEGORY_FLG	Column added.
	QUALIFYING_SHORT_EXP_FLG	Column added.
ISSUE_INSTRUMENT	HIGH_RISK_CATEGORY_FLG	Column added.
	QUALIFYING_SHORT_EXP_FLG	Column added.
ISSUE_RECEIVABLE	HIGH_RISK_CATEGORY_FLG	Column added.
	QUALIFYING_SHORT_EXP_FLG	Column added.

Data Model Changes for Mapping Tables in v05.2019

Table 90 Data Model Changes for Mapping Tables

Table Name	Column Name	Nature of Change
MAP_COUNTERPARTY_CLASSES	ELIGIBLE_CPTY_RECLASSIFICATION	Column added.

Content Release v02.2019

What's New in the v02.2019 Content Release

Overview

SAS Regulatory Risk Management 6.1 Content Release v02.2019 has the following fixes and enhancements:

- Support for SAS Visual Analytics Reports.
- Separation of reporting job flows from SAS Regulatory Risk Management.
- Support for revised securitization framework calculations as per regulation (EU) 2017/2401.
- Support for D424 (commonly known as BASEL IV) calculations for Retail and Corporate asset classes.
- Support for CRR Article 473a, which requires institutions to apply transitional arrangements for IFRS 9 provisioning.
- Support for Benchmark RWA feature that helps users compare between the risk-weighted assets of the portfolio run with IRB approach and risk-weighted assets obtained by running the same portfolio with STD approach.
- Documentation enhancements.
- Fixes and enhancements.

Support for SAS Visual Analytics Reports

SAS Regulatory Risk Management now uses the reporting features of SAS Visual Analytics Administration and Reporting to leverage SAS high-performance analytic technologies for the reporting features of the solution. The Credit Risk Monitoring report helps you assess the impact of focused portfolio sectors, and ad hoc investigation and analysis.

Separation of Reporting Job Flows from SAS Regulatory Risk Management

SAS Regulatory Risk Management now uses SAS Regulatory Content for EBA Taxonomies to complete the end-to-end tasks of regulatory report submission for all reporting frameworks.

Support for Revised Securitization Framework

SAS Regulatory Risk Management now supports revised securitization framework calculations as per EU 2017/2401 regulations. The revised framework supports the SEC-IRBA, SEC-ERBA, and SEC-SA approaches. A new subflow called Process Securitization Exposures – Revised Securitization is added to the Process Securitization Exposures subflow. For regulatory calculations, SAS Regulatory Risk Management continues to support securitization calculations as per Basel II guidelines. These calculations are processed under the Process Securitization Exposures – Basel II Framework subflow.

Support for D424 (BASEL IV) Calculations

SAS Regulatory Risk Management supports a new configuration set called Basel4 to perform Pillar 1 calculations for D424 (Basel IV) regulations. The Retail and Corporate asset classes are supported under STD and IRB approaches. The output floor calculations are also supported as per the regulations.

Support for Article 473a for Transitional Arrangements

SAS Regulatory Risk Management supports calculations for transitional arrangement that are applicable under IFRS9 provisioning.

Support for Benchmark RWA Feature

SAS Regulatory Risk Management supports the benchmark RWA feature that is required for calculating the output floor as per D424 regulations. This feature is also used for comparison by computing RWA under standardized approach for IRB portfolio.

Documentation Enhancements

- Information about how diagnostic data sets are generated is added to the document. There are two types of diagnostic data sets: Exposures that are removed from calculations and exposures that are processed with change of information.
- The document provides details of treatment of exposures to sovereign and central government as per BCBS128 paragraph 53 (CRR Article 114).
- A new subsection *Third Country Equivalence* is introduced to provide details of preferential treatment to third country exposures in RRM solution.
- Customization guidelines subsection is modified so that the steps to modify existing job flows and nodes are simpler.
- The Regulatory Calculation chapter is restructured for more granular information.

Fixes and Enhancements

Critical Fixes

The All Pillar 1 Calculations job flow used to fail intermittently due to the IRBF_M parameter not being resolved. With the fix, the rd_stat.regulatory_parameter data set is added as node input, which results in the correct resolution of the IRBF_M parameter, and the flow executes without failures.

Other Fixes and Enhancements

For more information, see [“Details of the Other Fixes and Enhancements in v02.2019”](#) on page 321.

Details of the Other Fixes and Enhancements in v02.2019

Table 91 Details of the Other Fixes and Enhancements in v02.2019

Category	Description	Affects Versions
Calculations	SAS Regulatory Risk Management calculated the haircut values as per BCBS128 paragraphs 151, 168, and 169 (CRR Articles 224 and 225). The calculated haircut values were used without rounding off. This resulted in validation issues. This fix rounds off the haircut values to three decimal places as specified in CRR Article 224.	All previous versions
Calculations	SAS Regulatory Risk Management calculated risk weight for significant investments in the common shares of unconsolidated financial institutions as per BCBS189 paragraph 89 (CRR Article 48(4)). This was implemented only in case of STD approach. With this fix, the risk weight is also calculated under IRB (IRB_PD_LGD and IRB_SIMPLE_RW) approach.	All previous versions
Calculations	As per CRR Article 501, SAS Regulatory Risk Management applied SME deduction factor to RWA to all eligible retail and corporate exposures. The SME deduction factor was applied after capital calculation. This resulted in incorrect capital calculation as the SME deduction factor was considered in the RWA value but not in the capital value. With this fix, the capital amount is correctly calculated considering the SME deduction factor.	v09.2018

Category	Description	Affects Versions
Back-end Data Management	REST APIs in SAS Infrastructure for Risk Management and the corresponding calling scripts used in SAS Risk and Finance Workbench to create instances, have been updated. The new scripts now support the UI feature (Load Data Sets) for modifying the input data sets.	Current version and all previous versions from v12.2017
ETL	The SAS Regulatory Risk Management ETL Data Integration Studio job rrm_stg_245_live_etl_preprocess uses the recursive_delete macro. This macro uses a hardcoded path-separator value that resulted in failure on a UNIX based operating system. With this fix, the path separator is resolved dynamically based on the operating system.	All previous versions
Calculations	SAS Regulatory Risk Management would not compute CCF values specified by the leverage ratio report (LR). With the fix, the CCF values are correctly calculated under CRD-IV configuration.	All previous versions
Back-end Data Management	The SAS Infrastructure for Risk Management flow failed during securitization processing, when executed with cases where underlying exposures had CRMs. With the fix, a missing macro variable is added, and the flow executes without failure.	All previous versions
Back-end Data Management	SAS Regulatory Risk Management was reporting the underlying exposures of a securitization exposure in the capital.crm_allocation_detail data set, which was incorrect. With the fix, the underlying exposures are now correctly reported in the capital.sec_underlying_detail data set.	All previous versions

Category	Description	Affects Versions
Calculations	SAS Regulatory Risk Management calculated the exposure weighted average LGD value using LGD_EXP. The exposure weighted average LGD was further used in the risk weight calculation under supervisory formula approach for securitization exposures. With the fix, LGD_EFF and EAD_PORTION are used instead of LGD_EXP to calculate the exposure weighted average LGD.	All previous versions
Calculations	SAS Regulatory Risk Management classified retail lease residuals as lease residuals to other NCO class as per CRR Article 147 (9). The article does not consider counterparty being retail or otherwise. With the fix, the lease residual is correctly classified as lease residuals to other NCO regardless of COUNTERPARTY_CLASS under CRD-IV configuration.	All previous versions
Calculations	SAS Regulatory Risk Management was not applying SME deduction factor to exposures underlying in a securitization pool. With the fix, the SME deduction factor is applied to the underlying exposures.	All previous versions
Calculations	SAS Regulatory Risk Management calculated aggregated exposure values using EAD in post-processing code for the BASEL II securitization framework. This resulted in duplicated totals. With the fix, the EAD_PORTION column is used, which results into correct aggregated values.	All previous versions
Calculations	The USE_UNFUND_CRED_PROTECT_CLASS_RW parameter in the prepare_crm_allocation code	v09.2018

Category	Description	Affects Versions
	was not getting resolved due to trailing spaces. With the fix, the trailing spaces are removed and the parameter value is resolved.	
Calculations	CRMs were reported as ineligible if the LGD values were adjusted for CRM. With the fix, such CRMs are reported as unused CRMs in the all_exposure_crm_unused_irb data set in the REG_CALC library.	All previous versions from v08.2017
Calculations	SAS Regulatory Risk Management calculated the EAD_PORTION for secured portion with CCF based on the approach of the exposure, when the exposure is subject to substitution treatment. With the fix, CCF for the secured part is determined based on the approach of CRM.	All previous versions
Calculations	In SAS Regulatory Risk Management, the flags for third-country equivalence treatment in the mutual_recognition data set were outdated or incorrect in some cases. The flags are now updated as per (EU)2014/908 and (EU)2016/2358.	All previous versions
Calculations	In SAS Regulatory Risk Management, the pd_lgd_by_exp data set in the Capital library were empty when the allocation method was set to BY_RANK. With the fix, the table is populated with correct values.	All previous versions
Back-end Data Management	During installation of SAS Regulatory Risk Management, the logs displayed a note for invalid argument because of empty lines in all the *.properties files. With this fix, the empty lines are removed and the installation is clean.	Current version and all previous versions from v12.2017
Back-end Data Management	SAS Regulatory Risk Management job flows that	All previous versions

Category	Description	Affects Versions
	performed the allocation of credit risk mitigants are modified to make the flows more modular. Extra steps performed as part of that sub-job flow are moved to later job flows.	
Back-end Data Management	The script (<fa_rrm>/client_scripts/jobflow_builder.sas) for building SAS Regulatory Risk Management job flows has been parameterized so that it is easier to run it in SAS Studio and batch mode.	All previous versions
Back-end Data Management	The output SAS library _le_cal, which holds granular data for Large Exposures has been removed from the TMPLIB libraries list. It can now be consumed by other solutions.	All previous versions from v03.2018
Back-end Data Management	SAS Regulatory Risk Management is now fully security compliant with SAS internal policies.	v02.2019

Data Model Changes for Staging Tables in v02.2019

Table 92 Data Model Changes for Staging Tables

Table Name	Column Name	Nature of Change
IFRS9_SCALING_FACTOR		Table added. For more information, see “IFRS9_SCALING_FACTOR ” on page 328.
	AB_IRB	Column added.
	AB_SA	Column added.
	ENTITY_ID	Column added.
	RA_SA	Column added.
	SCALING_FACTOR	Column added.
COUNTERPARTY_MART	INVEST_GRADE_CPTY_FLG	Column added.
ISSUE_ACCOUNT	OPERATIONAL_PHASE_FLG	Column added.
ISSUE_SECURITIZATION	TRANCHE_ATTACH_POINT_PCT	Column added.
	TRANCHE_DETACH_POINT_PCT	Column added.
SECURITIZATION_POOL_MART	STS_SEC_EXP_FLG	Column added.
	UNDERLYING_EXPOSURE_TYPE	Column added.

Data Model Changes for Mapping Tables in v02.2019

Table 93 Data Model Changes for Mapping Tables

Table Name	Column Name	Nature of Change
MAP_IRB_RW_BUCKETS	ERBA_RW_BUCKET_SEC	Column added.
	ERBA_RW_BUCKET_SEC_SHORT	Column added.

Data Model Changes for Static Tables in v02.2019

Table 94 Data Model Changes for Static Tables

Table Name	Column Name	Nature of Change
SEC_IRBA_REG_PARAMETER		Table added. For more information, see “SEC_IRBA_REG_PARAMETER” on page 329.
	A	Column added.
	B	Column added.
	C	Column added.
	D	Column added.
	E	Column added.
	GRANULARITY_TYPE	Column added.
	SENIORITY_TYPE	Column added.
	UNDERLYING_EXPOSURE_TYPE	Column added.
MUTUAL_RECOGNITION	EQUIVALENT_COUNTRY	Column added.
	STD_SOV_DOM_PREF_TREATMENT	Column deleted.

Data Model Changes for System Configuration Tables in v02.2019

Table 95 Data Model Changes for System Configuration Tables

Table Name	Column Name	Nature of Change
IFRS9_SETTINGS		Table added. For more information, see “IFRS9_SETTINGS” on page 331 .
	CONFIG_NAME	Column added.
	CONFIG_VALUE	Column added.
	CONFIG_VALUE_DESC	Column added.

Details of the New Tables in v02.2019

IFRS9_SCALING_FACTOR

Contains the IFRS9 scaling factor and its components. The scaling factor is used to scale down the provisions if the bank uses the IFRS accounting standard and opts to use the transitional arrangement.

Table 96 Column Descriptions

Column Name	Type	Not Null	Label	Description
ENTITY_ID	CHARACTER(32)	Y	Reporting Entity	Contains the reporting entity identifier. This column must be populated to run the SAS Regulatory Risk Management job flows in SAS Infrastructure for Risk Management.
AB_SA	NUM	N	AB(SA)	Contains the AB _{SA} amount. This value is computed as per CRR Article 473a paragraph 1, second subparagraph point (a).
AB_IRB	NUM	N	AB(IRB)	Contains the AB _{IRB} amount. This value is computed as per CRR

Column Name	Type	Not Null	Label	Description
				Article 473a paragraph 1, second subparagraph point (b).
RA_SA	NUM	N	RA(SA)	Contains the total amount of specific credit risk adjustments as referred in CRR Article 473a paragraph 7 point (b).
SCALING_FACTOR	NUM	N	Scaling Factor-Provisions	Contains the scaling factor to be applied to provisions to consider the effect of transitional arrangement. If this column is populated, it is directly consumed. Otherwise, the scaling factor is computed using the AB_SA and RA_SA columns.

SEC_IRBA_REG_PARAMETER

Contains the regulator prescribed constant values (A, B, C, D, E). These values are used in the risk weight calculation under the revised securitization framework. The parameters A, B, C, D, E are derived on the basis of the underlying exposure type in a securitization pool, seniority of the tranche, and granularity of the securitization pool as per D374 paragraph 56 (CRR Article 259).

Table 97 Column Descriptions

Column Name	Type	Not Null	Label	Description
UNDERLYING_EXPOSURE_TYPE	CHARACTER(32)	N	Type of the underlying exposure in a securitization pool	Indicates the type of underlying exposure in a securitization pool. These include RETAIL for retail exposures and NON-RETAIL for wholesale exposures. The underlying exposure type is used to derive the regulatory constants used in the risk weight calculation under the revised securitization framework.
SENIORITY_TYPE	CHARACTER(32)	N	Seniority Type	Indicates the seniority type of tranche. The type SEN represents senior tranche and type SUB represents subordinate tranche. The type SUB includes all tranches other than the senior tranche. The seniority type is used to derive the regulatory constants used in the risk weight

Column Name	Type	Not Null	Label	Description
				calculation under revised securitization framework.
GRANULARITY_TYPE	CHARACTER(32)	N	Granularity Type	Indicates the type of tranche granularity. If the effective number of underlying exposures in a securitization pool is greater than or equal to the value of the SEC_GRANULARITY_THRESHOLD parameter (the configured value is 25), then the granularity type is set to GRANULAR. If it is less than 25, then it is set to NON-GRANULAR. The granularity type is used to derive the regulatory constants for SEC-IRBA under the revised securitization framework.
A	NUMBER	N	A	Holds the value of the regulatory constant A. This constant is used in the risk weight calculation under the revised securitization framework.
B	NUMBER	N	B	Holds the value of the regulatory constant B. This constant is used in the risk weight calculation under the revised securitization framework.
C	NUMBER	N	C	Holds the value of the regulatory constant C. This constant is used in the risk weight calculation under the revised securitization framework.
D	NUMBER	N	D	Holds the value of the regulatory constant D. This constant is used in the risk weight calculation under the revised securitization framework.
E	NUMBER	N	E	Holds the value of the regulatory constant E. This constant is used in the risk weight calculation under the revised securitization framework.

IFRS9_SETTINGS

Contains the settings related to the IFRS9 transitional arrangement, which impact the RWA. This table contains the parameters in the form of name-value pair.

Table 98 Column Descriptions

Column Name	Type	Not Null	Label	Description
CONFIG_NAME	CHARACTER(32)	N	Config Name	This column contains the parameter name.
CONFIG_VALUE	CHARACTER(20)	N	Config Value	This column contains the parameter value.
CONFIG_VALUE_DESC	CHARACTER(255)	N	Description	This column contains the description of the parameter values.

Content Release v09.2018

What's New in the v09.2018 Content Release

Overview

SAS Regulatory Risk Management 6.1 Content Release v09.2018 has the following fixes and enhancements:

- support for EBA Taxonomy 2.8 COREP reporting
- support for independent job flows for RWA calculations and LE computations
- separation of the subflows for counterparty credit risk
- enhanced filter criterion for staging data
- version-based identification of federated area in metadata
- enhancements to job flows to resolve data pooling issues
- inclusion of input data sets for computing risk weight using SFA
- documentation enhancements
- other fixes and enhancements

Support for EBA Taxonomy 2.8 COREP Reporting

SAS Regulatory Risk Management now supports the aggregation of credit risk data according to the EBA Taxonomy 2.8 for which the submission date is December 31, 2018. This enhancement splits the formally single COREP module into two modules: COREP Own Funds (COREP OF) and COREP Leverage Ratio (COREP LR). The **Regulatory Reports (COREP) Data Aggregation** flow in SAS Infrastructure for Risk Management has been modified accordingly for Taxonomy 2.8 to produce consolidated data for these modules separately.

Support for Independent Jobs Flows for RWA Calculations and LE Computations

In addition to the job flows that need to be run in sequence to perform regulatory calculations and report submission tasks, SAS Regulatory Risk Management supports certain optional job flows. These job flows are a subset of the **All Pillar 1 Calculations** flow. SAS Regulatory Risk Management supports independent job flows to perform only RWA calculations and combination of RWA calculations and LE computations. You can run these job flows in batch mode.

Separation of the Subflows for Counterparty Credit Risk

The counterparty credit risk (CCR) treatment for derivative exposures has been separated from the credit risk capital calculations. As a result, a new subflow **Counterparty Credit Risk Capital** has been added to the **All Pillar 1 Calculations** flow. The CCR treatment now has its own valuation, risk weight assignment, and capital charge computation.

Enhanced Filter Criterion for Staging Data

In the **Data Checks and Enrichment** flow, while building the entity hierarchy for filtering staging data, the ASSOCIATION_TYPE_CD column was partially used. With this enhancement, only those relationships are considered for which the ASSOCIATION_TYPE_CD column is set to SYS.

Version-Based Identification of Federated Area in Metadata

The federated area for SAS Regulatory Risk Management is identified in the metadata by adding the content release version (in YYYYMM format) as a suffix in its software component property name. For example, the metadata name of the federated area that is laid out when you install this content release is identified with the suffix rrm.201809.

Enhancements to Job Flows to Resolve Data Pooling Issues

Some data sets were created in the persistent area but were not defined as output data sets of the nodes. This caused issues to the functionality of data pooling and rerunning of nodes. To resolve these issues, the data sets that were directly created in the persistent area have been defined as the output data sets for the specific nodes.

Inclusion of Input Data Sets for Computing Risk Weight Using SFA

The `rrm_reg_process_sfa_sec_irb` (**Compute Risk Weight using SFA for IRB**) node was failing under certain circumstances. This was because the two data sets `calculation_options` and `crm_allocation_options` were not added as input data sets for this node. These tables have now been added to the list of input data sets of the node.

Documentation Enhancements

Additional usage information has been added to the data dictionary of the staging tables. For each column of a staging table, this information indicates whether the column is specifically used in STD approach, IRB approach, CVA calculations, CRD-IV regulations, or COREP reporting.

Other Fixes and Enhancements

For more information, see [“Details of the Other Fixes and Enhancements in v09.2018”](#) on page 334.

Details of the Other Fixes and Enhancements in v09.2018

Table 99 Details of the Other Fixes and Enhancements in v09.2018

Category	Description	Affects Versions
Calculations	According to CRR Article 201, retail entities are treated as ineligible guarantee providers. SAS Regulatory Risk Management supports this regulation if you set the value of the RETAIL_GUARANTEE_INELIG_TREAT option in the rd_conf.regulatory_settings data set to YES.	v08.2017 and later
Calculations	In the rrm_ead_sme_capital_deduct_check.sas code, while sorting the SME-level data set, cases with multiple exposures belonging to the same counterparty were removed from the data set. This fix includes all exposures to a counterparty.	v12.2017 and later
Calculations	According to CRR Article 154(3), the correlation coefficient of 0.15 should be applied to retail exposures secured by immovable property. This article does not differentiate between residential and commercial properties. However, the current valuation method treated only the residential mortgage according to this article. With this fix, the commercial mortgages are also treated according to CRR Article 154(3).	All previous releases
Calculations	According to BCBS128 paragraph 60, an unrated bank cannot receive a risk weight lower than that applied to claims on its sovereign of incorporation. For this standard, SAS Regulatory Risk Management did not consider the preferential treatment that can be applied to the sovereign. This fix considers the preferential risk weight if it is applied to the sovereign.	All previous releases
Calculations	SAS Regulatory Risk Management splits the CRM value of the immovable property (residential or commercial) into two parts to form fully and completely secured (FCS) part and fully but not completely secured (FS) part. The MORTGAGE_ELIG_PREF_RW_TRT_FLG was defined for the eligibility criteria that is specified in CRR Article 125(2). However, this flag was not used while splitting the CRM value into FCS and FS parts. With this fix, the CRM value is split only when this flag is set to 1.	All previous releases
Calculations	According to CRR Article 262, under the supervisory formula (SF) approach for securitization exposures, the loss given default (LGD) should be weighted average LGD for each securitization pool. While calculating the weighted average LGD for each pool, SAS Regulatory Risk Management considered the LGD of exposure belonging to the pool. However, this is not correct as per the CRR guidelines. With this fix, the weighted average LGD for each obligor (counterparty) is calculated, and	All previous releases

Category	Description	Affects Versions
	then it is further used to calculate the weighted average LGD at securitization pool level.	
Calculations	The STD_RW_FROM_CENTGOV_FLG flag was set to 1 even though the sovereign was unrated. With this fix, the flag is set to 0 according to the EBA Question ID EBA 2018_3748 for all exposures that are linked with unrated sovereigns.	All previous releases
Calculations	A new option HIGH_RISK_CRM_INELIG_TREAT has been added in the rd_stat.regulatory_option data set. SAS Regulatory Risk Management uses this option to check the eligibility of CRMs that are associated with high-risk exposures. For BCBS standards, the default option is set to NO to indicate that the collaterals are considered as eligible CRMs. For CRD-IV regulations, the value is set to YES to indicate that the collaterals are considered as ineligible CRMs.	All previous releases
Calculations	If the risk weight is prepopulated for the counterparty, the STD_RW_FROM_CENTGOV_FLG flag should be set to 0. SAS Regulatory Risk Management did not fulfill this requirement. With this fix, when the risk weight is prepopulated for the counterparty, the flag is set to 0 as required.	All previous releases
Calculations	For the defaulted exposures under IRBA or IRBF approach, it is expected that EL_PCT is provided as an input value. However, when this value was available, it was not being used for computing the final input variables such as EL_EFF and EL_AMT. With this fix, EL_PCT is now considered while computing the final variables.	All previous releases
Calculations	The capital.capital_detail data set was produced as an output data set of the Pillar 1 Calculations flow. With this enhancement, this data set is split into two data sets—capital.capital_detail_std and capital.capital_detail_irb—based on the regulatory approach of the exposure.	All previous releases
Calculations	When the CRM_APPROACH is IRB, risk weight for the covered portion of exposures secured by unfunded credit protection is calculated using the risk weight function of the CRM counterparty as specified in BCBS128 paragraph 303. According to EBA Question ID 2013_415, the risk weight function to calculate the risk weight of the covered portion does not need to be different from that of the exposure's risk weight function. SAS Regulatory Risk Management defines the option USE_UNFUND_CRED_PROTECT_CLASS_RW in the rd_conf.regulatory_settings table to address this difference. If the value of this option is set to YES, the risk weight is calculated using the risk weight function of the CRM's counterparty class. Also, all the relevant attributes of CRM are considered, such as asset value correlation multiplier (AVCM) and firm size adjustment (CRM_FRIM_SIZE). The AVCM multiplier is derived from CRM_LARGE_FI_ENTITY_FLG.	All previous releases
Calculations	According to CRR Article 127(1), for exposures in default, the risk weight for the unsecured part is based on the percentage of specific provision to unsecured portion of the exposure value. While calculating the adjustment percentage, SAS Regulatory Risk Management computes the unsecured	All previous releases

Category	Description	Affects Versions
	exposure value before CRM allocation based on the CRM_VALUE. This is used to calculate the risk weight based on the adjustment percentage. With this fix, the adjustment percentage is revised after CRM allocation based on the actual allocated CRM's value, CRM_USED_AMT_EFF. The risk weight for unsecured portion of defaulted exposures is then readjusted using the revised adjustment percentage.	
Calculations	When the exposure is to be treated under STD approach and the CRM under IRB approach, the CRM was downgraded to STD approach. With this fix, instead of downgrading the CRM, the risk weight of the covered portion is calculated according to IRB approach by using the attributes of the CRM.	v10.2017 and later
Calculations	For unrated institutions exposures, if both original effective maturity and residual maturity are less than three months, incorrect risk weights were computed. With this fix, SAS Regulatory Risk Management calculates the risk weight as specified in CRR Article 121(3).	All previous releases
Calculations	SAS Regulatory Risk Management did not derive the risk weight based on the sovereign rating information when the counterparty rating of CRM was not available, but its sovereign rating was available. With this fix, for these cases, respective sovereign rating information is used to derive the correct risk weight.	All previous releases
Calculations	The Create CRM Counterparties Portfolio node did not retrieve information about the sovereign ratings that was required for CRM allocation. This issue has now been fixed and the required information is retrieved correctly.	All previous releases
Sample Data	SAS Regulatory Risk Management identified the term permanent partial use with the code PRM. However, the industry-specific standard code that is used for this term is PPU. With this fix, the APPROACH_USAGE column of the rd_map.map_regulatory_approach data set is populated with the code PPU.	All previous releases
COREP Reports	Few exposures were not reported in the CR IRB reports. This issue has now been fixed and the exposures are now correctly reported.	All previous releases
Back-end Data Management	SAS Regulatory Risk Management enables you to change the library name of an existing library. This enhancement provides the flexibility to change the library names in the SAS Infrastructure for Risk Management job flows. For more information, see "Modify an Existing Library Name" in the Customization Guidelines section of the <i>SAS Regulatory Risk Management: Reference Manual</i> . Note: SAS Regulatory Risk Management enables you modify the library name of only the staging library.	All previous releases
Back-end Data Management	The sec.all_exp_pool_irb_0 data set was used in the rrm_reg_process_sfa_sec_irb.sas (Compute Risk Weight using SFA for IRB) node. However, it was not defined as an input data set for this node.	All previous releases

Category	Description	Affects Versions
	With this fix, the SEC.all_exp_pool_irb_0 data set has been added as the input data set of the rrm_reg_process_sfa_sec_irb.sas (Compute Risk Weight using SFA for IRB) node. In addition, the output data sets sec.all_exp_pool_irb_1 and sec.all_exp_ur_sec_irb_1 of the rrm_reg_process_sfa_sec_irb.sas (Compute Risk Weight using SFA for IRB) node are not used in further processing. Therefore, these data sets have been moved to the work library instead of the SEC library and also removed from the list of output data sets.	

Content Release v06.2018

What's New in the v06.2018 Content Release

Overview

SAS Regulatory Risk Management 6.1 Content Release v06.2018 has the following changes and enhancements:

- support for Pillar 1 calculations for BCBS (Basel II / Basel III) regulations
- other fixes and enhancements

Support for Pillar 1 Calculations for BCBS Regulations

SAS Regulatory Risk Management 6.1 Content Release v06.2018 supports a new configuration set to perform Pillar 1 calculations for BCBS regulations—BCBS128 and BCBS189.

Other Fixes and Enhancements

For more information, see [“Details of the Other Fixes and Enhancements in v06.2018”](#) and [“Data Model Changes in v06.2018”](#).

Details of the Other Fixes and Enhancements in v06.2018

Table 100 Details of the Other Fixes in v06.2018

Category	What was Fixed?	Affects Versions
Calculations	<p>In the CRD-IV configuration, retail mortgage exposure in default was assigned 75% RW instead of 100% RW. This incorrect assignment was due to incorrect bucketing.</p> <p>If the exposure was fully secured, the ADJUSTMENT_PCT variable that is further used to determine past-due buckets was calculated as 1000 according to the following formula: $\text{ADJUSTMENT_PCT} = \min(1000, \text{sum}(0, \text{SPECIFIC_PROVISION}) / \max(0.001, \text{sum}(\text{EAD}, -\text{CRM_VALUE_STD})) * 100);$. The past-due buckets were 0-20 and 20-1000 and the upper limit was not included in the range values. Therefore, when the ADJUSTMENT_PCT was 1000, no bucket was assigned and the exposure was assigned 100% RW.</p> <p>To resolve this incorrect bucketing, the formula has been changed as follows: $\text{ADJUSTMENT_PCT} = \min(999, \text{sum}(0, \text{SPECIFIC_PROVISION}) / \max(0.001, \text{sum}(\text{EAD}, -\text{CRM_VALUE_STD})) * 100);$.</p>	All previous versions
Calculations	<p>Under STD approach, the past-due bucket lookup was incorrectly implemented. This has been updated according to BCBS128 paragraphs (75-78) / CRR Article 127 as mentioned below :</p> <ul style="list-style-type: none"> ■ If the specific credit risk adjustment < 20%, the unsecured exposure value is assigned 150% risk weight. ■ If the specific credit risk adjustment >= 20%, the unsecured exposure value is assigned 100% risk weight. 	All previous versions
Calculations	<p>According to CRR Article 232(3), LIFE_INSURANCE should be treated as guarantee under STD and IRB approach. This requirement has now been implemented.</p>	All previous versions
Calculations	<p>Two new flags have been added to replace the complex conditions in the code that need to be checked multiple times. As a result, this change improves performance.</p>	All previous versions

Category	What was Fixed?	Affects Versions
	<p>CRM_RISK_SUBSTITUTION_EFF_FLG This flag is set to 1 for all the CRM types that are eligible to get the substitution treatment under STD and IRB approaches. The CRM types can be: Guarantee, Credit Derivative, and Insurance. The CRM subtypes can be: Cash_3rd_party, and Life_insurance.</p> <p>CRM_UNFUNDED_FLG This flag is set to 1 for all the CRM types that are identified as unfunded credit protection. The CRM types can be: Guarantee, Credit Derivative, and Insurance.</p>	
Calculations	<p>Under IRB approach, if the issue RISK_WEIGHT for an exposure is specified by the user in the issue_facility data set, then this user-specified risk weight should be used. This requirement has now been implemented. As a result, in the following two scenarios, the user-specified issue RISK_WEIGHT is used:</p> <ul style="list-style-type: none"> ■ RISK_WEIGHT is provided in the issue_facility data set. ■ RISK_WEIGHT is provided in both issue_facility and counterparty_mart data sets. 	All previous versions
Calculations	In the rd_stat.mutual_recognition data set, EUR was incorrectly added as the secondary currency for some countries. This has now been corrected. Also, in the same data set, the primary currency has been updated for some countries.	All previous versions
Calculations	The Create Counterparty Data - STD node retrieved the risk weight column from both data sets that are available for exposure and counterparty levels. With this fix, the risk weight column is retrieved only from the counterparty-level data set.	All previous versions
COREP Reports	SAS Regulatory Risk Management supports the requirement of including the market risk information in the C 33.00 (CRGOV) General governments exposures by country of the counterparty (GOV) report. A new staging table EXPOSURE_MARKET_DATA has been added to capture this information. For more information, see “Details of New Tables in v06.2018” on page 341 .	v01.2018 and v03.2018
Back-end Data Management	The Regulatory Reports (COREP) Data Aggregation job flow has been rearranged. For each report, the ROW-Column-Sheet format data creation node was included in the data preparation subflow. Now this node has been included as a separate subflow after the data preparation subflow.	All previous versions

Category	What was Fixed?	Affects Versions
Back-end Data Management	Higher level job flows have been altered so that Large Exposures (LE) and Credit Valuation Adjustment (CVA) subflows are distinctly visible.	All previous versions
Process Flow	In the SAS Risk and Finance Workbench landing area, the data set name was suffixed with <code>con</code> that represented consolidated data. Now the suffix is added to the data set name based on the entity role. The suffix is <code>con</code> or <code>ind</code> depending on whether the entity role is Group or Solo , respectively.	All previous versions

Data Model Changes in v06.2018

Table 101 Data Model Changes

Table Category	Table Name	Column Name	Nature of Change
Staging	EXPOSURE_MARKET_DATA	-	Table added. For more information, see “EXPOSURE_MARKET_DATA Table” on page 341.
Reporting: Static	RW_BUCKETS_REGRPT_SEC	-	Table deleted.
Reporting: Mapping	MAP_CPTY_CLASS_GOV		Table added. For more information, see “MAP_CPTY_CLASS_GOV Table” on page 344.
Reporting: Rules Framework Tables	SSR_REG_REPORT_LIST	FRAMEWORK_ID	Column deleted.
	SSR_REG_REPORT_LIST	MODULE_ID	Column deleted.
	SSR_REG_REPORT_LIST	TEMPLATE_ID	Column deleted.
	SSR_REG_REPORT_LIST	OWNER	Column deleted.
	SSR_REG_REPORT_LIST	CONFIG_SET	Column deleted.
	SSR_REG_REPORT_LIST	ALLOCATION_METHOD	Column deleted.

Table Category	Table Name	Column Name	Nature of Change
	SSR_REG_REPORT_LIST	FRAMEWORK_CD	Column deleted.
	SSR_REG_REPORT_LIST	TAXONOMY_CD	Column deleted.
	SSR_REG_REPORT_LIST	MODULE_CD	Column deleted.
	SSR_REG_REPORT_LIST	TEMPLATE_LABEL	Column deleted.
	SSR_REG_REPORT_LIST	RPT_SHORT_DESC	Column deleted.
	SSR_REG_REPORT_LIST	REPORT_GROUP	Column deleted.

Details of New Tables in v06.2018

EXPOSURE_MARKET_DATA Table

This table contains accounting and financial data attributes of a contract or a position that are captured in the trading book. This table serves as the source table for market risk data for C 33.00 report generation. The granularity of this table is at instrument level. SAS Detail Data Store for Banking does not populate data into this table. Therefore, data needs to be populated in this table manually.

Table 102 Column Details

Column Name	Type	Not Null	Label	Description
INSTID	CHARACTER(20)	Y	Unique Instrument Identifier	This value is a unique identifier and primary key.
INTERNAL_ORG_RK	NUM	N	Internal Organization Reference Key	A key used to identify the business unit to which the market risk belongs. Internal organizations are defined in the rrm_stg.internal_org_mart table.
AS_OF_DATE	NUM	N	As Of Date	Specifies the as of date of the bank's portfolio.
ACCOUNTING_FRAMEWORK	CHARACTER(8)	N	Accounting Framework	Accounting framework applicable for the institution. For example,

Column Name	Type	Not Null	Label	Description
				column values can be GAAP or IFRS.
ACCOUNTING_PORTFOLIO_TYPE_CD	CHARACTER(3)	N	Accounting Portfolio Type Code	Portfolio types as defined by the Accounting frameworks. The related mapping table for this column is rpt_map.map_accounting_portfolio_type.
COUNTERPARTY_COUNTRY	CHARACTER(3)	N	Counterparty Country	The country code of the counterparty specified in ISO 3116 alpha-2 standard, such as US for United States, DE for Germany, and so on.
COUNTERPARTY_CLASS_CD	CHARACTER(3)	N	Counterparty Class Code	A code for counterparty class to be treated as General Government . For example, the code 001 might denote a Central Government. This value is mapped in the rpt_map.map_cpty_classes_gov table to one of the counterparty classes included in the General Government counterparty sector as defined in paragraph 42 (b) of Part 1 of Annex V.
OFF_BALANCE_SHEET_FLG	NUM	N	Off Balance Sheet Flag	Flag that indicates whether the position is an off-balance sheet item. Column values can be 1 or 0. Enter 1 to indicate an off-balance sheet item.
PORTFOLIO_CLASS	CHARACTER(32)	N	Portfolio Class	Indicates the portfolio class of the underlying instrument position. For example, column values can be DERIVATIVE, NON_DERIVATIVE or REPO.
POSITION_TYPE	CHARACTER(8)	N	Position Type	This value indicates whether the position type is considered as a

Column Name	Type	Not Null	Label	Description
				short position or long position. Column values can be SHORT or LONG.
RESIDUAL_MATURITY	NUM	N	Residual Maturity	For a given instrument, this column specifies the duration between the contractual maturity date and the reporting reference date. The column value must be entered in years.
CARRYING_AMT	NUM	N	Carrying Amount	Carrying amount, in accordance with paragraph 27 in Annex V of FINREP, Part 1, of non-derivative financial assets to General governments for all accounting portfolios under IFRS or national GAAP based on Bank Accounts Derivatives (BAD) defined in paragraphs 15 to 22 in Annex V, Part 1.
ACC_IMPAIRMENT_AMT	NUM	N	Account Impairment Amount	Accumulated impairment according to Annex V of FINREP, Part 2, paragraphs 70 and 71.
ACC_NEG_CHG_FV_CR_AMT	NUM	N	Accumulated Negative Changes in Fair Value	Accumulated negative changes in fair value due to credit risk as per Annex V of FINREP, Part 2, paragraph 69.
NOMINAL_AMT	NUM	N	Nominal Amount	Nominal amount of commitments and financial guarantees.
PROVISION_AMT	NUM	N	Provision Amount	Provisions for off-balance sheet items.

MAP_CPTY_CLASS_GOV Table

This table maps the COUNTEPARTY_CLASS_CD column from the EXPOSURE_MARKET_DATA table to one of the counterparty classes included in the General Government counterparty sector.

Table 103 Column Details

Column Name	Type	Not Null	Label	Description
COUNTEPARTY_CLASS_CD	CHARACTER(3)	N	Counterparty Class Code	This column stores the counterparty class code from the rrm_stg.exposure_market_data table.
COUNTEPARTY_CLASS	CHARACTER(32)	N	Counterparty Class	This column stores the counterparty class system values to be included in the 'General Government' counterparty sector as defined in paragraph 42 (b) of Part 1 of Annex V.
DESCRIPTION	CHARACTER(256)	N	Description	This column stores information about the counterparty that is included in the General Government counterparty sector.

Content Release v03.2018

What's New in the v03.2018 Content Release

Overview

SAS Regulatory Risk Management 6.1 Content Release v03.2018 has the following changes and enhancements:

- support for the EBA Taxonomy 2.7.0.1 COREP Reporting
- support for multiple portfolio versions
- data partitioning at entity level
- generation of diagnostic data sets summary
- inclusion of input and output items at subflow level
- implementation of data pooling feature for certain nodes

Support for the EBA Taxonomy 2.7.0.1 COREP Reporting

SAS Regulatory Risk Management is now compliant with the EBA Taxonomy 2.7.0.1. It supports the aggregation of credit risk data according to the EBA Taxonomy 2.7.0.1.

Support for Multiple Portfolio Versions

SAS Infrastructure for Risk Management supports multiple portfolio versions for each base date. SAS Regulatory Risk Management enables you to support this feature by creating subfolders in each base date folder of the landing area and customizing certain code. For more information, see “Support for Multiple Portfolio Versions” in the *SAS Regulatory Risk Management 6.1 Content Release: Installation Guide*.

Data Partitioning at Entity Level

SAS Regulatory Risk Management supports data partitioning at entity level. To enable this feature, you need to specify the entity ID in the system configuration tables for the entities for which you want to partition the data. For more information, see “Configure the Parameter for Data Partitioning” in the *SAS Regulatory Risk Management 6.1 Content Release: Installation Guide*

Generation of Diagnostic Data Sets Summary

SAS Regulatory Risk Management generates large number of diagnostic data sets. To quickly analyze the flow execution, the **Summary of Diagnostic Data Tables** result data set is generated. This data set contains comprehensive information about the diagnostic data sets.

Inclusion of Input and Output Items at Subflow Level

Input and output items such as data sets and collections have been added at subflow level for the SAS Regulatory Risk Management job flows.

Implementation of Data Pooling Feature for Certain Nodes

The data pooling feature was not consumed completely for certain nodes. Therefore, the job flows have been updated so that the nodes do not rerun if the data is pooled. This enhancement speeds up the execution of the job flows.

Other Enhancements

For more information about the other enhancements, see [“Details of the Other Fixes in v03.2018”](#) and [“Data Model Changes in v03.2018”](#).

Details of the Other Fixes in v03.2018

Table 104 Details of Fixes

Category	What was Fixed
Calculations	The CRR Article 164(4) was not implemented for the commercial real estate (CRE) mortgages. This fix now implements the CRR Article 164(4) correctly for the CRE mortgages. According to this article, for all retail exposures secured by CRE mortgages and not benefited from sovereign guarantee, if the exposure weighted average LGD (averaged over counterparty country) is less than a pre-specified threshold, then the LGD value is adjusted by multiplying it with the LGD correction factor. These exposures are reported in the reg_calc.comm_mortgages_low_lgd data set.
Calculations	The CRR Article 164(4) was incorrectly implemented. This fix corrects the calculation as per CRR Article 164(4) and BCBS128 paragraph 266 (footnote 68). For all retail exposures secured by residential real estate (RRE) mortgages and not benefited from sovereign guarantee, if the exposure weighted average LGD (averaged over counterparty country) is less than a pre-specified threshold, then the LGD value is adjusted by multiplying it with the LGD correction factor. These exposures are reported in the reg_calc.res_mortgages_low_lgd data set.

Category	What was Fixed
Calculations	<p>To accommodate different interpretations of the CRR Article 114(6) regarding applicable exposures that can receive a discount factor to their risk weight, a new option APPLY_SOV_EEA_NDOM_SCALING_FCTR has been added in the rd_conf.regulatory_settings table. When the value of this option is set to YES, SAS Regulatory Risk Management applies a discount factor to all STD exposures to EEA member central governments or central banks that are denominated in non-domestic other EEA members' currencies. This option reverts to the previous STD risk weight treatment of such exposures. When the value is set to NO, the discount factor is not applied to those STD exposures.</p> <p>Note:</p> <ul style="list-style-type: none"> ■ This discount factor has not been applied to IRB equity exposures as this is considered as a fringe case. ■ After this fix, in the years 2018 and 2019, central government or central bank exposures might have risk weight numbers such as 4%, 25%, 30%, and 75%.
Calculations	<p>To implement the CRR Article 129(5) completely, the STD risk weight treatment has been added for unrated covered bonds when the issue rating and counterparty rating of the issuer are missing. The updated treatment derives the risk weight based on the following cases:</p> <ul style="list-style-type: none"> ■ When the information about the sovereign counterparty that is either rated or not rated, is available for the issuing institution, the risk weight is based on the sovereign rating. ■ When the information about the sovereign counterparty is not available for the issuing institution, the risk weight is derived from the default unrated issuer's risk weight.
Calculations	<p>The CRM eligibility checks were performed just before CRM allocation. However, the CRM information is required in processes such as retail granularity and default processing. Therefore, the eligibility checks are required to be performed before these processes.</p> <p>After this fix, all eligibility checks under STD approach are performed during EAD calculation. Under IRB approach, the CRM checks that can be performed before creating the RW project, are performed during EAD calculation. The rest of the eligibility checks that require variables derived in the RW project are processed after RW calculation.</p> <p>Note: This fix has no impact on the securitization portfolio because securitization exposures are not included either in the retail granularity checks or default exposure processing.</p>
Sample Data	<p>In the rd_map.map_crm_type data set, the column value for CRM_SUBTYPE has been changed from CASH_INSTITUTIONS to CASH.</p>
Back-end Data Management	<p>Cash flow aggregation for Large Exposure reports is now processed in the Regulatory Reports (COREP) Data Aggregation flow. Earlier it was processed in the Pillar 1 Calculations flow.</p>
Back-end Data Management	<p>SAS Regulatory Risk Management supports the feature that SAS Infrastructure for Risk Management provides to declare certain SAS libraries as temporary libraries. This feature improves disk space consumption by deleting intermediate</p>

Category	What was Fixed
	data. For more information, see “Improve the Disk Space Consumption” in the <i>SAS Regulatory Risk Management 6.1 Content Release: Installation Guide</i> .
Performance	Disk I/O has been reduced for some nodes. This has reduced the execution time for these nodes.

Data Model Changes in v03.2018

Table 105 Data Model Changes

Table Category	Table Name	Column Name	Nature of Change
Analytics: Configuration	CALCULATION_OPTIONS	-	Table moved to the system_configuration area.
	CRM_ALLOCATION_OPTIONS	-	Table moved to the system_configuration area.
Analytics: Static	REGULATORY_PARAMETER_CCY	-	Table added. This table contains the parameters that can be currency converted. For more information, see “REGULATORY_PARAMETER_CCY Table” .
	REGULATORY_PARAMETER	APPROACH_TYPE_CD	Column deleted.
	REGULATORY_PARAMETER	PARAMETER_CURRENCY_CD	Column deleted.
Reporting: Configuration	CCB_PARAMS	-	Table renamed from REPORTING_PARAM.
Reporting: Mapping	MAP_EXP_CLASS_LEVEL_1_REGRPT	-	Table deleted.
	MAP_EXP_CLASS_LEVEL_2_REGRPT	-	Table deleted.
	MAP_SA_CLASS	-	Table deleted.

Table Category	Table Name	Column Name	Nature of Change
Reporting: Static	GB_IRB_CLASS	-	Table deleted.

Details of the New Table in v03.2018

REGULATORY_PARAMETER_CCY Table

The REGULATORY_PARAMETER_CCY table contains a list of regulatory parameters that can be converted into reporting currency and associated values. These regulatory parameters are a set of configurable and user-supplied values that influence the SAS Risk Engine processing.

Table 106 *Column Descriptions*

Column Name	Type	Not Null	Label	Description
CONFIG_NAME	CHAR(32)	N	Config Name	This column contains the parameter name.
CONFIG_VALUE_D ESC	CHAR(500)	N	Description	This column contains description of the parameter and the values that it can take.
CONFIG_VALUE	CHAR(255)	N	Config Value	This column contains the parameter value.

Content Release v01.2018

What's New in the v01.2018 Content Release

Support for EBA Taxonomy 2.7 COREP Reporting

SAS Regulatory Risk Management now supports the aggregation of credit risk data according to the EBA Taxonomy 2.7 for which the submission date is March 31, 2018. This enhancement includes producing data for the new C 33.00 report. A new staging table EXPOSURE_FINREP_DATA has been added to support the report data preparation. For more information about this table, see [“Details of the New Tables in v01.2018”](#).

Introduction of Data Partitioning in Job Flows

Some SAS Regulatory Risk Management tasks now support data partitioning. You must set up the number of partitions in the system configuration tables. The number of partitions that you need to specify depends on the size of your portfolios and the number of CPU cores available. For more information, see “Configure the Parameter for Data Partitioning” in the *SAS Regulatory Risk Management 6.1 Content Release: Installation Guide*.

Other Enhancements

For information about the other enhancements, see [“Details of the Other Fixes in v01.2018”](#) and [“Data Model Changes in v01.2018”](#).

Details of the Other Fixes in v01.2018

Table 107 Details of Fixes

Category	What was Fixed
Calculations	CRR Article 127 (3) and (4): The placement of the "if-then-else" clauses in the rrm_get_defaulted_std.sas code that assigns STD risk weight bucket for defaulted cases for mortgage-related exposures has been corrected.
Calculations	CRR Article 127 (3) and (4): The rrm_get_defaulted_std.sas code that considers both the upper limit and lower limit while associating the risk weight buckets for defaulted mortgage exposures under STD approach has been corrected.

Category	What was Fixed
Calculations	<p>CRR Article 230: Before this fix, the CRM eligibility check—the ratio of the collateral value to the exposure value must be greater than C* (given in Table 5)—failed for multiple collaterals that were linked to a single exposure. After this fix, SAS Regulatory Risk Management supports the CRM eligibility check for one exposure linked to multiple collaterals under the IRB approach.</p> <p>Note: The eligibility check performed does not support the case of a given collateral linked to multiple exposures. Also, all IRB collaterals to a given exposure must have the same C*.</p>
Calculations	CRR Article 201: After the fix, corporate guarantees that do not have any rating are considered as ineligible guarantee providers.
Calculations	CRR Article 155((2) and (3)): Unfunded credit protection is considered as the only eligible CRM for equity exposures. Therefore, after the fix, non-risk transferable collaterals are considered as ineligible CRMs for equity exposures under the IRB approach.
Calculations	CRR Article 153(5): After the fix, collaterals associated with Specialized lending (SL) exposures are considered as ineligible CRMs.
Calculations	CRR Article 501: In certain cases, the exposure's counterparty is not a qualified entity to receive the SME supporting factor, but the counterparty of the CRM is qualified to receive this factor. After the fix, in these cases, the SME supporting factor is applied to the secured part of the exposure.
Calculations	CRR Article 153(4): Firm size adjustment should be applied only to corporate exposures. Hence, after the fix, now firm size adjustment is not applied to equity exposures.
Calculations	CRR Article 222(3): In case of financial collateral eligible for simple method, the risk weight is based on the issue RW bucket. After this fix, it is now implemented for the counterparty class retail.
COREP Reports	The inflow amount and outflow amount across distinct reports were incorrectly reported in some cases. This has now been fixed.
COREP Reports	The C09.04 report was not produced. SAS Regulatory Risk Management now prepares data for this report. A new table CCBATES has been added in the static area. For more information, see “Details of the New Tables in v01.2018” on page 353 .
Documentation	The source files of the SAS Regulatory Risk Management 6.1 Content Release documentation are now included in the content package. You can customize the documentation according to your requirements. For more information, see “Customizing the Documentation” in the <i>SAS Regulatory Risk Management 6.1 Content Release: Reference Manual</i> .
Performance	The job flows have been modified to improve performance.

Data Model Changes in v01.2018

Table 108 Data Model Changes

Table Category	Table Name	Column Name	Nature of Change
Staging	ASSESSMENT_RATING_GRADE	-	Table renamed to CREDIT_ASSESSMENT_RATINGS.
	COUNTERPARTY_MART	COUNTERPARTY_CD	Column renamed to NATIONAL_RGLTRY_CPTY_CODE.
	CRM_DERIVATIVE	UNFUNDED_FLG	Column deleted.
	CRM_GUARANTEE	UNFUNDED_FLG	Column deleted.
	CRM_INSURANCE	UNFUNDED_FLG	Column deleted.
	EXPOSURE_FINREP_DATA	-	Table added. For more information, see “EXPOSURE_FINREP_DATA Table” on page 353.
Analytics: Configuration	OUTPUT_OPTIONS	-	Table deleted
Reporting: Static	CCBRATES	-	Table added. For more information, see “CCBRATES Table” on page 354.
	GOV_MAT_BUCKETS	-	Table added. For more information, see “GOV_MAT_BUCKETS Table” on page 354.
Reporting: Mapping	MAP_ACCOUNTING_PORTFOLIO_TYPE	-	Table added. For more information, see “MAP_ACCOUNTING_PORTFOLIO_TYPE Table” on page 355.
	MAP_FINREP_COREP	-	Table added. For more information, see “MAP_FINREP_COREP Table” on page 356.
Reporting: Control	CRGBCCB_PARAM	-	Table added. For more information, see “CRGBCCB_PARAM Table” on page 357.
	CRGOV_PARAM	-	Table added. For more information, see “CRGOV_PARAM Table” on page 357.
Reporting: Rules	CA_RULES	TAXONOMY_ID	Column deleted.

Table Category	Table Name	Column Name	Nature of Change
Framework Tables	ROW_RULE_DETAIL	TAXONOMY_ID	Column deleted.
	RPT_COL	TAXONOMY_ID	Column deleted.
	RPT_SHEET	TAXONOMY_ID	Column deleted.
	RULE_MASTER	TAXONOMY_ID	Column deleted.
	SSR_REG_REPORT_LIST	TAXONOMY_ID	Column deleted.

Details of the New Tables in v01.2018

EXPOSURE_FINREP_DATA Table

This table contains accounting and financial data attributes of a contract or a position that are not captured in SAS Regulatory Risk Management. This information is expected to be populated in the SAS Detail Data Store for Banking from the source systems such as IFRS9 or ECEL. The granularity of this table is contract or position that is Loan Account, Facility, or Repo Instrument. This table along with EXPOSURE_ACCOUNT, EXPOSURE_INSTRUMENT, and EXPOSURE_FACILITY tables serve as the source tables for C 33.00 report generation.

Table 109 Column Descriptions

Column Name	Type	Not Null	Label	Description
INSTID	CHAR(20)	Y	Unique Instrument Identifier	This value is a unique identifier, and the FK of EXPOSURE_ACCOUNT, EXPOSURE_INSTRUMENT, and EXPOSURE_FACILITY tables.
ACCOUNTING_FRAMEWORK	CHAR(8)	N	Accounting Framework	Accounting framework applicable for the institution. For example, column values can be GAAP or IFRS.
ACCOUNTING_PORTFOLIO_TYPE_CD	CHAR(3)	N	Accounting Portfolio Type Code	Portfolio types as defined by the accounting frameworks. The related mapping table for this column is MAP_ACCOUNTING_PORTFOLIO_TYPE.
CARRYING_AMT	NUM	N	Carrying Amount	Carrying amount, in accordance with paragraph 27 in Annexure V

Column Name	Type	Not Null	Label	Description
				of FINREP, Part 1, of non-derivative financial assets to General governments for all accounting portfolios under IFRS or national GAAP based on BAD defined in paragraphs 15 to 22 in Annexure V, Part 1.
ACC_IMPAIRMENT_AMT	NUM	N	Account Impairment Amount	Accumulated Impairment according to Annexure V of FINREP, Part 2, paragraphs 70 and 71.
ACC_NEG_CHG_FV_CR_AMT	NUM	N	Accumulated Negative Changes in Fair Value	Accumulated negative changes in fair value due to credit risk as per Annex V of FINREP, Part 2, paragraph 69.
NOMINAL_AMT	NUM	N	Nominal Amount	Nominal amount of the commitments and financial guarantees.

CCBRATES Table

This table contains the country-specific countercyclical capital buffer (CCB) rate set by designated authority and published by ESRB.

Table 110 Column Descriptions

Column Name	Type	Not Null	Label	Description
COUNTRY	CHAR(32)	N	Country	This value specifies the name of the country in question.
COUNTRY_CD	CHAR(2)	N	Country Code	This value specifies country code of the country in question.
CCB_RATE	NUM	N	CCB Rate Set by Designated Authority	This value specifies countercyclical capital buffer rate set for the country in question by the designated authority of that country.

GOV_MAT_BUCKETS Table

This is a mapping table that is used for maturity buckets of the C 33 report.

Table 111 Column Descriptions

Column Name	Type	Not Null	Label	Description
MAT_START	NUM	N	Start of maturity bucket (in months)	Month specifying top of the range of maturity bucket.
MAT_END	NUM	N	End of maturity bucket (in months)	Month specifying bottom of the range of maturity bucket.
MAT_DESCRIPTOR	CHAR(36)	N	Maturity bucket mapping definition	Maturity bucket mapping definition.

MAP_ACCOUNTING_PORTFOLIO_TYPE Table

This table contains information about the accounting portfolio type.

Table 112 Column Descriptions

Column Name	Type	Not Null	Label	Description
ACCOUNTING_PORTFOLIO_TYPE_CD	CHAR(3)	N	Accounting Portfolio Type Code	Accounting Portfolio Type Code (Portfolio type as per FINREP ANNEX V (para 4.1))
ACCOUNTING_PORTFOLIO_TYPE	CHAR(32)	N	Accounting Portfolio Type	Accounting Portfolio values used in solution. Sample values are FIN_ASSET_HFT, TRD_FIN_ASSET, NT_FIN_ASSET_FVTPL, FIN_ASSET_FVTPL, NT_NON_DER_FIN_ASSET_FVTPL, FIN_ASSET_FVTOCI, NT_NON_DER_FIN_ASSET_FVTEQ, FIN_ASSET_AMOT_COST, NT_NON_DER_FIN_ASSET_CBM, and OTH_NT_NON_DER_FIN_ASSET.
DESCRIPTION	CHAR(200)	N	Description	Description of ACCOUNTING_PORTFOLIO_TYPE

MAP_FINREP_COREP Table

This table contains mapping of exposure classes between FINREP and COREP.

Table 113 Column Descriptions

Column Name	Type	Not Null	Label	Description
APPROACH	CHAR(32)	N	Regulatory approach	Regulatory approach such as IRB and STD.
COREP_EXPOSURE_CLASS	CHAR(32)	N	COREP Exposure Class	This field specifies COREP exposure class as per CRR Article 112
COREP_COUNTERPARTY_CLASS	CHAR(32)	N	COREP Counterparty Class	This field specifies counterparty exposure class as per CRR Article 112.
FINREP_EXPOSURE_CLASS	CHAR(32)	N	FINREP Exposure Class	FINREP exposure class as per ANNEX V of FINREP
FINREP_EXPOSURE_SUBCLASS	CHAR(32)	N	FINREP Exposure Subclass	FINREP exposure sub-class as per ANNEX V of FINREP.
DESCRIPTION	CHAR(256)	N	Description	FINREP exposure class description.

CRGBCCB_PARAM Table

This table contains the macro variables that are required for the report - (CCB) Breakdown of credit exposures relevant for the calculation of the countercyclical buffer by country and institution-specific countercyclical buffer rate.

Table 114 Column Descriptions

Column Name	Type	Not Null	Label	Description
CONFIG_NAME	CHAR(40)	Y	Parameter Name	This is the name of the macro variable.
CONFIG_VALUE	CHAR(255)	N	Parameter Value	This is the value of the macro variable.
CONFIG_VALUE_DESC	CHAR(500)	N	Parameter Value Description	This is a description of the value of the macro variable.

Table 115 Column Values

Name	Value	Description
REPORT_CD	CRGBCCB	Provides report code for CRGBCCB report.

CRGOV_PARAM Table

This table contains the macro variables that are required for the report - General Governments exposures by country of the counterparty (GOV).

Table 116 Column Descriptions

Column Name	Type	Not Null	Label	Description
CONFIG_NAME	CHAR(40)	Y	Parameter Name	This is the name of the macro variable.
CONFIG_VALUE	CHAR(255)	N	Parameter Value	This is the value of the macro variable.
CONFIG_VALUE_DESC	CHAR(500)	N	Parameter Value Description	This is a description of the value of the macro variable.

Table 117 Column Values

Name	Value	Description
REPORT_CD	CRGOV	Provides report code for CRGOV report.

Content Release v10.2017

What's New in the v10.2017 Content Release

Fixes for Gaps in Compliance with CRD-IV/CRR

Here is the list of major fixes that were added in this content release:

- Assignment of approach and regulatory asset class, at exposure and credit risk mitigant (CRM) level (in the substitution approach) for exposures that are secured by unfunded credit protection and other funded protection. This fix handles cases in which the exposure and the associated CRMs need to be treated with separate regulatory approaches. (For example, IRB for exposure, but STD for the guaranteed part.)
- Fixing of CRM eligibility checks.
- Fixing of preferential risk weight (RW) assignment to short-term exposures issued in domestic currency to institutions that are domiciled in equivalent countries.
- Identification of large exposures in the analytics flow. These exposures were earlier being identified in the reporting flow.

For more information about these fixes, see the CRD-IV Compliance section in the Details of the Fixes for v10.2017 table.

Reporting Fixes

Several fixes have been added to address EBA reporting validation rule failures in C02.00, C07.00, C10.00, and C13.00 reports. Noncredit obligation exposure class for IRB approach will now be correctly reported on C02.00. Also, the Large Exposures reporting templates will now be produced from the dedicated tables that are produced in analytics processing. For more information about these fixes, see the Reporting section in the Details of the Fixes for v10.2017 table.

Other Fixes

For more information about the other fixes and updates that are added in this content release, see the “Back-end Data Management”, “Process Flow”, “Data Model Changes”, and “Performance sections” in [“Details of the Fixes in v10.2017” on page 358](#).

Documentation Updates

The *SAS Regulatory Risk Management 6.1 Content Release: Installation Guide* is now available on a secure site that requires an access key.

Note: Licensed customers can request the access key from [SAS Technical Support](#). In order to expedite your request, please include “SAS Regulatory Risk Management 6.1 Content Release v10.2017” in the subject field of the form.

Details of the Fixes in v10.2017

Table 118 Details of the Fixes

Category	What was Fixed?
Back-end Data Management	In SAS Infrastructure for Risk Management 3.4, the base date and the library name of the sample federated area and that of the federated

Category	What was Fixed?
	<p>area for SAS Regulatory Risk Management were the same. Therefore, there was a conflict in recognizing the internal_org_association staging data set. Also, the LIBNAME staging had name clashes with LIBNAMES in other content releases. Therefore, the LIBNAME staging has been changed to rrm_stag in the SAS Regulatory Risk Management flows. The changed name has also been updated in relevant places in the <i>SAS Regulatory Risk Management 6.1 Content Release: Reference Manual</i>.</p>
Back-end Data Management	<p>The sample data scripts for certain mapping data sets such as map_sec_bank_role, map_sec_eap_type, map_sec_structure_type were not writing data to the mapping table folder. This was because of a coding error. After this fix, these mapping tables will have the necessary rows.</p>
Back-end Data Management	<p>Before this fix, if a user were to run the Pillar 1 Calculations flow with the regulatory approach set to STD for all asset classes, the SAS Infrastructure for Risk Management flow would fail. This was because of the condition that there are no exposures with approach = IRB. After this fix, the Pillar 1 Calculations flow finishes without error even if there is no IRB exposure in the portfolio.</p>
Back-end Data Management	<p>The SAS Risk and Finance Workbench artifacts have been versioned. From the v10.2017 content release and onward, a version number suffix will be added to (i) All SAS Risk and Finance Workbench scripts that are imported during deployment (ii) SAS Risk and Finance Workbench process definition template (iii) Entity and Time hierarchies that are created during import.</p>
Back-end Data Management	<p>To use the SAS Infrastructure for Risk Management 3.4 feature “Configurable job flow parameters”, the column structure of some SAS Regulatory Risk Management configuration data sets has been changed. With this feature, a user can modify the values in the configuration data sets during instance creation. In the previous content releases that were on SAS Infrastructure for Risk Management 3.3, this modification was possible only after instance creation. For this feature to work, data sets that are present in the landing area and are listed in the macrovarload.txt file will have three columns: CONFIG_NAME, CONFIG_VALUE, and CONFIG_VALUE_DESC. This list includes the following data sets: rd_stat.regulatory_option, rd_stat.regulatory_risk_weight, rd_stat.regulatory_pd, config.crm_allocation_options, config.calculation_options, config.regulatory_settings, and config.output_options.</p>
Back-end Data Management	<p>Macro variables holding regulatory option values from the static.regulatory_options data set were not being read and were used in the rrm_ead_process_defaulted node. After this fix, the regulatory option values will be read from the data set and used appropriately.</p>
Back-end Data Management	<p>Before this fix, for Linux installations, derivation of the source path and the fa_id was incorrect. This was because of an extra path separator</p>

Category	What was Fixed?
	that is required for Linux. After the fix, the source path and fa_id will be correctly determined.
Back-end Data Management	While running SAS Infrastructure for Risk Management flows from the SAS Risk and Finance Workbench UI, the SAS Risk and Finance Workbench logs were not being written. With this fix, when running the flows, the logs generated by the SAS Infrastructure for Risk Management flows will be written to a folder location. Moreover, the SAS Risk and Finance Workbench user will have appropriate Write permissions for the specific location. The folder generation will be handled during the deployment of the content release.
Back-end Data Management	SAS Regulatory Risk Management 6.1 Content Release v10.2017 is now compliant with SAS Infrastructure for Risk Management 3.4. The code has been modified, so that the scripting client can generate job flows from the nodes.
Back-end Data Management	In the SAS Regulatory Risk Management job flows, the Large Exposures node received input data from the Securitization node only. The flow has been rearranged, so that the Large Exposures node now takes the input data from the Allocate CRM node.
Back-end Data Management	With this fix, deductible equity exposures will not be appended to the capital.crm_allocation_details data set and will be available only in the ead.equity_exp_deducted_from_capital data set.
Back-end Data Management	C07.00 validation failures and invalid RW for mortgage exposures: In case of CRM Allocation method = BY_RANK and in case of STD Exposures under CRM Allocation = OPTIMAL, all the cases for which Risk Weight (RW) of CRM > RW of Exposure, will now be filtered from the crm_allocation_detail data set. Earlier, such cases were being written to the crm_allocation_detail data set and C07.00 reports, resulting in report validation failures. These report validation failures will now not appear in the C07.00 Retail sheet.
Back-end Data Management	The EXP_VALUE of derivative exposures has been changed back to the mark-to-market (MtM) value or current value of such exposures. Now, EAD is used in analytics and reporting code as the regulatory exposure value of derivatives.
CRD-IV Compliance	CRR Article 201: Retail entities are treated as ineligible guarantee providers if the user sets the value of the RETAIL_GUARANTEE_INELIG_TREAT option in the regulatory_settings configuration data set to YES.
CRD-IV Compliance	CRR Article 128: After this fix, collaterals that are associated with high-risk exposures will be considered ineligible CRMs.
CRD-IV Compliance	As a Q&A clarifies, institutions shall assign a 150 % risk weight to exposures that are associated with particularly high risks, which are either listed in CRR Article 128(2) or meet the criteria of CRR Article 128(3). Consequently, these shall not be allocated to any other class

Category	What was Fixed?
	of exposure, not even “in default” under CRR Article 127, regardless of whether these exposures are securitized by collateral.
CRD-IV Compliance	The condition to apply the SME supporting factor according to CRR Article 501 has been enhanced. Earlier the COUNTERPARTY_CLASS and other variables were used. With this fix, the REG_EXP_CLASS variable is now used along with the approach as screening variables in applying the SME supporting factor to RWA.
CRD-IV Compliance	CRR Article 119(2) - Preferential RW treatment for short-term institutions exposures: With this fix, short-term exposures to institutions will now be correctly assigned a preferential risk weight under the STD approach. This assignment is subject to the conditions that exposures are designated in domestic currency and the institution are domiciled in countries with equivalent regulations. The implementation for institution preferential risk weight is done by risk weight lookup on STD risk weight bucket associated with the exposure: Given the risk weight bucket for a rated counterparty or the risk weight bucket of the central government for an unrated counterparty, the preferential risk weight for the institution equals the risk weight for its central government in the next risk weight bucket.
CRD-IV Compliance	For exposures secured by unfunded credit protection (guarantees and credit derivatives) and other funded protection (cash by third party, life insurance, and so on), the approach and regulatory asset class value must be assigned at exposure and CRM level. For this, CRM_APPROACH and CRM_REG_EXP_CLASS columns are derived in the capital.crm_allocation_detail result data set. For example, for a guarantee's risk weight, the approach of the guarantor shall be used. This information is also required for inflow and outflow processing in COREP report generation. For such CRMs, if the asset class is different from that of the exposure, then such cases are recorded in reg_calc.crm_class_chg_post_substitution data set. The CRM's approach is downgraded if it does not have adequate IRB components or if the exposure is STD and the CRM is IRB. This is noted in corresponding diagnostic data sets: rd_pos.crm_*_invalid components or reg_calc.all_crm_convert_to_std.
CRD-IV Compliance	CRR Article 201(1(b)): According to EBA Q&A 2015_1908, CRR Article 201(1)(b), the eligibility of credit risk mitigant providers cannot be extended to churches or religious communities, even though they can be treated as regional governments or local authorities for exposure risk weighting. SAS Regulatory Risk Management 6.1 Content Release v10.2017 supports this change.
CRD-IV Compliance	CRR Article 121(3): Short-term unrated exposures to institutions should attract 20% risk weight. SAS Regulatory Risk Management 6.1 Content Release v10.2017 now supports this risk weighting.
Data Model Changes	To support the cases for counter-cyclical template COREP C09.04, the data model has been enhanced. A RISK_COUNTRY_CD column has been added to the exposure_account, exposure_instrument,

Category	What was Fixed?
	exposure facility, exposure securitization, and exposure receivable staging data sets. For details, see <i>Data Model Changes in the SAS Regulatory Risk Management 6.1: Reference Manual</i> .
Data Model Changes	The STD_BANK_DOM_PREF_TREATMENT column has been deleted from the mutual_recognition analytics static data set. For details, see <i>Data Model Changes in the SAS Regulatory Risk Management 6.1: Reference Manual</i> . This column was created under BASEL configuration for identifying countries whose institution exposures are subject to preferential risk weight treatment. The column is not necessary for either CRD-IV or BASEL configuration because those countries can be identified from another column STD_SOV_DOM_PREF_TREATMENT according to CRR Article 119(2) and BCBS128 paragraph 64.
Performance	To improve performance, some of the data sets of the check CRM eligibility nodes have been moved to the WORK library. This fix has reduced the data footprint on the disk.
Performance	Issue-level data processing has been moved from the Filter Staging Data node to the Data Enrichment node. The issue-level data is not filtered now to save disk space.
Performance	The counterparty data set creation process for the SAS Risk Dimensions risk weight calculation has been enhanced for performance improvement. The merge with the sovereign counterparty data set is not required for the IRB flow and has been removed. For the other portfolios, the sort procedure and subsequent merge with the sovereign counterparty data set has been replaced with a hash lookup. In addition, the %rrm_reg_create_cpty_data macro has been renamed to %rrm_get_cpty_portfolio to distinguish it from the node code.
Process Flow	Before this fix, the drilldown script had to be copied manually from the Regulatory Reporting folder of SAS Risk and Finance Workbench. Now, it can be alternatively accessed from the rfw_samples folder of the SAS Regulatory Risk Management 6.1 Content Release v10.2017 package.
Process Flow	SAS Infrastructure for Risk Management 3.4 provides a SAS scripting client to create job flows. SAS Regulatory Risk Management 6.1 Content Release v10.2017 provides a SAS script, so that custom job flows can be developed on top of the existing flows.
Reporting	C13.00 validation rule v0532_m failure: Before this fix, the validation rule—EAD in Column c190 should equal the EAD broken by CQS—was failing. This was because the EAD for unrated and rated with CQS other than CQS1-11 were being calculated incorrectly. This EAD column has now been correctly computed and the validation failure does not occur.
Reporting	Before this fix, if a user were to run the EBA CoRep Data Preparation flow with regulatory approach set to STD for all asset classes, the flow

Category	What was Fixed?
	would fail. After this fix, the flow will complete without errors, even if there is no IRB exposure in the portfolio.
Reporting	LE Report templates: Before this fix, Large exposures were being identified in the reporting processing code. Now, the Pillar 1 Calculations analytics flow identifies such large exposures and produces four new result data sets: large_exposures_inst, large_exposures_tenperc, large_exposures_irb, and large_exposures_ufe. These result data sets are thus available at the end of Pillar 1 Calculations processing and are then used in report processing code for aggregated LE templates.
Reporting	C02.00 identity check failure: For C02.01 report, for certain subtotal rows, SAS Regulatory Risk Management was extracting values from C08.01, and so on. It was then calculating (in the processing for C02.01) to derive rows 060 (STD approach), row 250 (IRBF Total), and row 310 (IRBA Total). The identity check was failing due to data rounding in the landing area. To resolve this, instead of recalculating row 310, the values will be taken from C08.01 (row 010 column 260, and so on) instead of a calculation. The C02.01 row 250 will be sourced from C08.01, sheet=002, row=010, and column=260. The C02.01 row 060 will be sourced from C07.00, sheet=001, row=010, and column=220.
Reporting	C10.00: Validation rules v0492_m and v0340_m were failing. These rules have been included in the deactivated list, and a clarification from EBA is awaited.
Reporting	C07.00: Outflows from cash collaterals were being incorrectly reported on the CRM-counterparty's exposure class sheet. This was resulting in validation rules failures (v4896 and v4895) also. With this fix, the columns after outflows of cash collaterals will be reported on "Other Items" sheet of CR SA.
Reporting	C02.00: Noncredit obligation exposure class for IRB approach will now be correctly reported on C02.00 (CA template Row 450). Earlier, these were being incorrectly reported on C08.00.
Reporting	C00.01: SAS Regulatory Risk Management 6.1 Content Release v10.2017 now supports the C00.01 report. The values for this report are extracted from the reporting_params data set. The default values in the reporting_params data set for this report are ACCOUNTING_STANDARD='IFRS' and REPORTING_LEVEL='Consolidated', which are set in the form of Config Name and Config Value pair.
Reporting	C07.00: "Of Which SMEs" data was being reported only for a subset of exposure classes: Total, corporate, retail and secured by Mortgage. This was based on reporting instructions, available then. After the fix, "Of Which SMEs" data will be reported for all exposure classes (where data points are available) on C07.00.

Category	What was Fixed?
Reporting	All Reports: The reporting code reported EXP_VALUE as the original exposure value that is only the current exposure value. This value was incorrect for derivative exposures. For example, under the Current Exposure Method (CEM), for derivative exposures, it is equal to current exposure value (EXP_VALUE) + potential future exposure value. In SAS Regulatory Risk Management 6.1 Content Release v10.2017, for derivatives, this exposure value is equal to the EAD value. Therefore, the reporting code for derivative exposures has been updated to use EAD instead of EXP_VALUE.
Reporting	EAD was being set to 0 for securitization exposures that were deducted from own funds. This prevented deductions from being properly reported in CR SEC SA and CR SEC IRB templates. With this fix, deduction cases have been moved to a separate data set sec.sec_exp_deducted_from_capital after risk weight calculation. Also, EAD is no longer set to 0, which allows these exposures to be reported correctly.
Sample Data	Before this fix, running sample exposure data (with approach set to STD for all exposures) would return errors in the node where CCF and exposure values were being computed for credit facility exposures. With this fix, values have been added to the shipped CCF data set (for STD_CCF_STLOC, STD_CCF_STLOC_LR, and IRB_CCF_STLOC_LR), so that all credit facility exposures will be assigned a CCF.
Sample Data	QUOTE_FX has been updated to reflect recent FX rate data.
Sample Data	More cases with high-risk items have been added to the sample data.

Content Release v08.2017

What's New in the v08.2017 Content Release

Fixes for Gaps in Compliance with CRD-IV/CRR

Here is the list of major fixes that were added in this content release:

- Correcting the scaling of risk weight of equity exposures that use the IRB-PD/LGD approach.
- Correcting the risk weight assignment for on-balance sheet netting exposures.

- Using exposure (pre-CCF) or EAD as driven by the APPLY_CCF_AFTER_CRM option for IRB collateralization-level calculation

For more information about these fixes, see the CRD-IV Compliance section in the Details of the Fixes for v08.2017 table.

Reporting Fixes

Several fixes were added to address the EBA reporting validation rule failures. These validation failures were mainly occurring in the CR SA, CR SEC-SA, and CRSEC-IRB reporting templates. For more information about these fixes, see the Reporting section in the Details of the Fixes for v08.2017 table.

Other Fixes

For more information about the other fixes and updates that are added in this content release, see the “Back-end Data Management”, “Process Flow”, “Data Model Changes”, “ETL”, “Performance”, and “Sample Data” sections in [“Details of the Fixes in v08.2017” on page 365](#).

Documentation Updates

The *SAS Regulatory Risk Management 6.1 Content Release v08.2017: Installation Guide* is now on a secure site that requires an access key.

Note: Licensed customers can request the access key from [SAS Technical Support](#). In order to expedite your request, please include “SAS Regulatory Risk Management 6.1 Content Release v08.2017” in the subject field of the form.

Details of the Fixes in v08.2017

Table 119 Details of the Fixes

Category	What was Fixed?
Back-end Data Management	The Post CRM Allocation Processing – Securitization node (rrm_sec_post_processing_after_crm_for_sec_portfolio.sas) of the Pillar 1 Calculations flow was failing when the APPLY_CCF_AFTER_CRM option is set to No in the rd_stat.regulatory_option data set. This was because of an unsorted data set in a MERGE operation. The fix corrects the error.
Back-end Data Management	The risk weight (RW) for QCCP should be 2% or 4% as per CRR Article 306(1) a or 305(3) depending on the NO_LOSS_FROM_CM_BANKRUPTCY_FLG. These exposures were being incorrectly assigned institution-related RWs because of incorrect

Category	What was Fixed?
	assignment of instrument type for the QCCP exposures. This has now been fixed.
Back-end Data Management	The parameter values of the SAS Risk and Finance Workbench scripts that are used for the SAS Regulatory Risk Management workflow have been changed. Also, these scripts have been renamed according to the SAS naming standards.
Back-end Data Management	To support the cases for which the issuer has short-term issuer credit ratings, the data model has been enhanced. A SHORTTERM_FLG has been added to the counterparty_ratings data set.
Back-end Data Management	The SAS Risk and Finance Workbench user who copies the EBA regulatory reporting data into the landing area requires OS permission to write to the <code>ebarepcnt/landing_area</code> folder. This has now been documented in the SAS Regulatory Content for EBA Taxonomies: Installation Guide and the <i>SAS Regulatory Risk Management: Reference Manual</i> .
Back-end Data Management	The processing of the TREAT_FS_AS_SECURED_BY_IP option was incorrect. The macro variable was not being resolved. After this fix, the assignment of fully secured part of mortgages to the correct <code>reg_exp_class</code> will happen correctly according to the TREAT_FS_AS_SECURED_BY_IP option.
Back-end Data Management	The <code>quote_ir</code> data set has been removed from the input staging area data model, and ETL flows. This table is not being used anymore in the SAS Regulatory Risk Management job flows.
Back-end Data Management	The FREE_DELIVERY_AMT_IMMATERIAL column has been renamed to IMMATERIAL_FREE_DELIVERY_FLG. The column will now be part of the entity data set as this is an entity-level option. Previously, this column was defined in the regulatory_option data set.
Back-end Data Management	The HOLDING_PERIOD_DAYS column has been added to the <code>exposure_*</code> data sets, and has been removed from the <code>issue_*</code> tables. This is because, when holding period is specified for repo style transactions and similar transactions, then it is considered as a holding attribute.
Back-end Data Management	Several risk weight attributes were columns in the <code>regulatory_parameters</code> data set. These columns have now been moved to the <code>regulatory_risk_weight</code> data set. This list includes the following attributes: STD_CRM_SIMPLE_RW_FLOOR, STD_SHORT_BANK_RW_FLOOR, STD_CORP_SINGLE_RW, CCR_QCCP_RW_DEFAULT, CCR_QCCP_RW_CLIENT, FREE_DELIVERY_RW_FLOOR, FREE_DELIVERY_RW_CEILING, and FREE_DELIVERY_RW_ALTERNATIVE.
CRD-IV Compliance	The shipped configuration set has now been renamed to CRD4_EBA_26 to reflect that the reporting data aggregation features in SAS Regulatory Risk Management now support EBA taxonomy 2.6.

Category	What was Fixed?
CRD-IV Compliance	The scaling of risk weight of equity exposures that use the IRB-PD/LGD approach has been corrected. The IRB_RW_SCALE_PD_LGD_EQUITY scaling ($1.5 \times \text{RW}$) was being applied incorrectly after checking the RW capping condition ($\text{EL} \times 12.5 + \text{RWA}$ cannot exceed $\text{Exposure} \times 12.5$). After the fix, the scaling will be applied before checking the capping condition.
CRD-IV Compliance	The risk weight for the on-balance sheet netting covered portion of exposures was being incorrectly assigned due to incorrect classification of the mitigants. Such on-balance sheet netting in the same currency as that of the exposure will now be treated as cash collateral and will get an RW = 0%.
CRD-IV Compliance	CRR Article 222(6)(b): A risk weight of 0% will be assigned to covered portions of the exposure (under Financial Collateral Simple method) if the collateral is in the form of debt securities issued by central governments or central banks eligible for a 0 % risk weight under CRR Article 114, and its market value has been discounted by 20 %. The discounting of eligible securities will now be done as $\text{CRM_value} \times (1 - \text{Discount_pct}/100)$ instead of the previous logic in which discount was applied as $\text{CRM_value} \times 1/(1 + \text{Discount_pct}/100)$.
CRD-IV Compliance	When IRB_Collateral was being checked for minimum collateralization levels, the principle of "Apply CCF after CRM = Yes or No" was not being used to use exposure value (pre-CCF) or EAD as driven by the APPLY_CCF_AFTER_CRM flag. This logic has been replaced, so that EXP_VALUE is used if the APPLY_CCF_AFTER_CRM flag is set to Yes, and EAD is used if the flag is set to No.
CRD-IV Compliance	Checks have been added based on rating buckets for CRM eligibility as per CRR Article 197(b) through (e).
Documentation	Definition for the securitization_pool_mart.ORIGINATION_COUNTRY_CD column has been added to the DDL files.
Data Model Changes	New columns have been added in the following staging data sets: counterparty_ratings, crm_instrument, entity, exposure_account, exposure_facility, exposure_facility, exposure_instrument, and exposure_receivable. For more information, see "Data Model Changes" in the <i>SAS Regulatory Risk Management: Reference Manual</i> .
Data Model Changes	Column names have been changed in the regulatory_lgd and regulatory_parameter analytics static data sets. For more information, see "Data Model Changes" in the <i>SAS Regulatory Risk Management: Reference Manual</i> .
Data Model Changes	Columns have been deleted from the following staging data sets: exposure_account, exposure_instrument, exposure_securitization, issue_account, issue_instrument, issue_receivable, issue_securitization, netting_set_mart, and securitization_pool_mart. Also, the quote_ir staging table has been deleted. For more information,

Category	What was Fixed?
	see "Data Model Changes" in the <i>SAS Regulatory Risk Management: Reference Manual</i> .
ETL	Several columns and tables in the staging area have been removed or renamed. The corresponding metadata for these tables has been updated in the ETL package that extracts and transforms the data from the Banking DDS, and then loads it into the input staging area.
Performance	To improve performance for CRM allocation using BY_RANK, in the rrm_run_by_rank SAS Risk Dimensions project the OUTALL option is replaced with the ALLMITIGATION and INSTVALS options. This is because, these are the only two data sets (allmitigation and instvals) that are used in post processing of BY_RANK. SAS Risk Dimensions BY_RANK project will write out fewer data sets, leading to better performance.
Performance	To improve performance in CRM allocation post processing, instead of having a separate step to update the EAD column of &IN_EXP_DS and &IN_EXPCRM_DS, the EAD column will be updated (with CCF) at a later stage, at the time &IN_EXP_DS is used in the rrm_create_crm_alloc_det_ds_rnk code.
Performance	An initial processing node Filter staging data filters exposure_* and crm_* tables by INTERNAL_ORG_RK that is tied to the entity being run. Currently, this node is triggered even if one exposure_* table is altered. This part of the flow has now been parallelized, so that filtering code is run only for the specific exposure_* table for which the data has been altered. This will lead to better performance, and reduce the number of downstream tasks that will run.
Performance	Several variables were read from the input tables, and processed as required. However, these variables were not needed in any calculation. For example, this list includes variables such as CONTRACT_RATE_OR_PRICE_AMT, DISCOUNT_REFUNDABLE_FLG, OPTION_TYPE_CD, and PURCHASED_DISCOUNT_RT. These variables have now been removed from the data model and processing, thus improving performance.
Process Flow	The users with the Chief Risk Officer role who perform the SAS Risk and Finance Workbench tasks listed in the shipped process definition template had the Risk and Finance Workbench: Admin role. These users will now have the Risk and Finance Workbench: User role. The <i>SAS Regulatory Risk Management: Reference Manual</i> has been updated accordingly.
Reporting	In the C 14.00 (CR SEC Details) reporting template, incorrectly formatted date column values were causing XBRL parsing errors. Now ORIGINATION DATE will be formatted as mm/yyyy e.g. 01/2017; "LEGAL FINAL MATURITY DATE" and FIRST FORESEEABLE TERMINATION DATE will be formatted in the dd/mm/yyyy.

Category	What was Fixed?
Reporting	The on-balance sheet netting covered portion of exposures was being incorrectly reported in the COREP templates due to incorrect classification of the mitigants. These on-balance sheet netting will now be treated as cash collateral and will get an RW = 0%. Also, these exposures or mitigants will now be correctly reported in the COREP reporting templates.
Reporting	In the C08.01 and C08.02 reporting templates, validation rules v4820 v4822 v4821 v4823 were failing because exposure-weighted average LGD in columns 230 and 240 was being reported in percentage. These columns will be reported in decimal, so that the validation rules will now pass.
Reporting	To support EU reporting requirements for credit risk mitigants for asset quality review, and so on, unused CRMs (where RW of CRM > RW of exposure) will be stored as output in the all_exp_crm_unused data set (for STD, IRB and, SEC). CRMs that fail eligibility checks, will be reported in the all_exp_crm_ineligible data set.
Reporting	In the LE2 reporting template, (for deduction cases, where RWA is 0) the following validation rule currently fails: {c210} = {c040} + {c190} + {c200}. After this fix, deduction cases will be handled correctly for the large exposure LE2 processing. This fix will compute OUTV_EXP_PRE_CRM_AMT as SUM(SUM_EAD_PORTION, OUTV_VALUE_ADJ_AMT, OUTV_DED_OWN_FUNDS).
Reporting	Lease residuals were earlier reported in the counterparty's sheet in CR SA report. Now they are reported in Other Items.
Reporting	Deductible equity exposures were incorrectly reported in the CR SA report. They have now been excluded from the report.
Reporting	Past due fully and completely secured mortgage exposures were being reported in incorrect RW buckets in the CR SA report. They now appear correctly in the report.
Sample Data	The entity.ENTITY_ROLE_CD column has been specified as NOT NULL. This is because the SAS Infrastructure for Risk Management UI might not display the flow instances that are created with a blank ENTITY_ROLE_CD. An appendix in the <i>SAS Regulatory Risk Management: Installation Guide</i> describes the valid values for the ENTITY_ROLE_CD column, and how to populate them.
Sample Data	In the sample reporting project that is defined in SAS Risk and Finance Workbench, the reporting as of date has now been set to 30th June 2017. As a result, the correct EBA Taxonomy 2.6 can be picked up. The RRM Report Data Preparation script that triggers the reporting job flow will populate the landing area data set with two date columns: REPORT_AS_OF_DT and CALC_AS_OF_DT. The REPORT_AS_OF_DT will now be populated with the SAS Risk and Finance Workbench project as-of-date, which is 30th June 2017. However, the CALC_AS_OF_DT will be populated with the SAS

Category	What was Fixed?
	Infrastructure for Risk Management base date for the fa_rrm_v082017 federated area, which is 31st March 2017.
Sample Data	Additional cases have been added to the sample data for the following scenarios: mutual recognition cases, netting treatment, checks for ineligible and unused CRMs, and IRB_PD_LGD method—capping for risk weights for equity exposures per CRR Article 155(3).
Sample Data	The DDS sample data scripts, corresponding to staging mart sample data, have been provided in this content release.
Sample Data	In the sample data that is shipped for entities that are used in SAS Risk and Finance Workbench, large entity identifiers (LEI) values have been added to the hierarchies.csv and entity.csv files. With this change, the LEI values of the submitting entity can be reported in the XBRL instances produced.
Sample Data	Sample data has been augmented by including cases with many exposures that are attached to many mitigants. This change will show the optimal allocation of CRM achieved by the solution using the sample data.

Content Release v06.2017

What's New in the v06.2017 Content Release

Fixes for Gaps in Compliance with CRD-IV/CRR

Standardized (STD) approach risk weight (RW) scaling factor for sovereign exposures: Based on an update to CRR article 114 (in which 114(5) was deleted by a Corrigenda of 30/11/2013 and 114(6) was modified so that the scaling factors are to be applied to items in CRR article 495(2)), the RW scaling factor that is based on year of calculation does not apply to sovereign exposures. This is because the exposures in scope for the RW scaling factor are equity exposures only. This fix removes the code that is related to SOV_EEA_NDOM_SCALING_FACTOR from the RW method for sovereign exposures.

Third country equivalence, CRR article 107(3): Third country INSTITUTION counterparty (credit institution, investment firms, and exchanges) are recognized as INSTITUTION only if the EU determines that the third country applies equivalent supervisory rules. The EQUIVALENT_CREDIT_INST_TRT column and four other columns have been added to the rd_stat.mutual_recognition data set to flag whether a country's credit institution can be treated equivalent.

Handling PD=0 exposures in IRBA and relaxing PD floor application for corporates and institutions, CRR article 153(ii): For internal rating based (IRB) exposures, PD=0, RW=0, is a special case. This situation, is now handled correctly in RW methods for banks and corporates for IRBA approach (pm_exp_bank_irba.sas and pm_exp_corporate_irba.sas). In addition, in a related fix, the conditions for applying the regulatory PD floors have been relaxed for banks and corporate exposures. Now specific bank and corporate counterparties can be exempted from the PD floors. Therefore, there can be a possibility for exposures or counterparties to have PD=0.

For more information about these fixes, see the CRD-IV Compliance section in the Details of the Fixes for v06.2017 table.

Reporting Fixes

Several fixes have been added to address the EBA reporting validation rule failures. These validation failures mainly occurred in CR SA, CR-IRB, CR SEC-SA, CRSEC-IRB, and CR-GB reporting templates. For more information about these fixes, see the Reporting section [“Details of the Fixes in v06.2017” on page 371](#).

Other Fixes

For more information about the other fixes and updates that are added in this content release, see the “Back-end Data Management”, “Data Model Changes”, “ETL”, and “Sample Data” sections in [“Details of the Fixes in v06.2017” on page 371](#).

Details of the Fixes in v06.2017

Table 120 Details of the Fixes

Category	What was Fixed?
Back-end Data Management	The Pillar 1 Calculations ⇒ Calculate Risk Weight - CRM node was failing intermittently due to unavailability of the rd_mkt.mkt_current data set. Now rd_mkt.mkt_current has been added as an input data set to the processing node. This change fixes the intermittent error that occurred when the node could not find the data set.
Back-end Data Management	Certain SAS macro files—a15_create_function_package.sas, b05_process_ccf_sets.sas, c00_create_template_environment.sas, create_ccf_sets.sas, and rrm_copy_map_table.sas— are not used in any processing node. These files added redundant content in the online documentation, and have been removed.
Back-end Data Management	Some exposures were being incorrectly filtered resulting in an empty data set other_items_unclassified. This was because the condition, “if COUNTERPARTY_CLASS = ” and COUNTERPARTY_CLASS had been previously set to _#. Now those exposures will be filtered correctly and will be available in the other_items_unclassified data set.
Back-end Data Management	The values in the rd_stat.regulatory_parameter data set are converted to numeraire currency in convert_reg_parm_ccy to create data in

Category	What was Fixed?
	rd_conf.regulatory_parms. Here, the converted values are now truncated to two decimal places, so that correct comparison can be made with amounts in exposure attributes.
Back-end Data Management	On-balance sheet netting positions (accounts and instruments with negative balances, which would flow to the crms_netting data set) were not being included when creating the ead.all_crms_0 data set. This meant that, such mitigant data would be missing from the follow-up processing and final set of results. These on-balance sheet netting positions will now be separately reported after Exposure and CRM value processing in [EAD] CRM - Netting Instruments and [EAD] CRM - Netting Accounts.
CRD-IV Compliance	CRR Article 107(3) Third country INSTITUTION counterparty (credit institution, investment firms, and exchanges) are recognized as INSTITUTION only if EU determines that the third country applies equivalent supervisory rules. The EQUIVALENT_CREDIT_INST_TRT column and four other columns have been added to rd_stat.mutual_recognition to flag whether a country's credit institution can be treated equivalent.
CRD-IV Compliance	The firm size adjustment $_adj_ = 1 - \max(\min(\&IRB_SME_MAX_FIRM_SIZE, \&FIRM_SIZE) - \&IRB_SME_MIN_FIRM_SIZE, 0) / (\&IRB_SME_MAX_FIRM_SIZE - \&IRB_SME_MIN_FIRM_SIZE)$ had been removed from the irb_rw_corporate correlation factor calculation. This adjustment factor has been added again.
CRD-IV Compliance	CRR Article 131 (RW driven by short-term credit assessment) is now applied to short-term exposures with short-term assessment regardless of the residual maturity. This treatment was earlier being applied when the residual maturity was short-term.
CRD-IV Compliance	While preparing data for exposures in default to non-retail counterparties, the solution was incorrectly including exposures for which the counterparty data was missing. With this fix, defaulted exposures and counterparties data will exclude such exposures for which counterparty key is missing.
CRD-IV Compliance	Based on an update to CRR Article 114 (in which 114(5) was deleted by a Corrigenda of 30/11/2013 and 114(6) was modified so that the scaling factors are to be applied to items in CRR Article 495(2)), the RW scaling factor that is based on year of calculation, does not apply to sovereign exposures. This is because the exposures in scope for the RW scaling factor are equity exposures only. This fix removes the code that is related to the SOV_EEA_NDOM_SCALING_FACTOR parameter from the RW method for sovereign exposures.
CRD-IV Compliance	Preferential RW treatment for exposures to institutions when the residual maturity is three months or less and exposure is denominated in the domestic currency: In accordance with CRR Article 120(3)(b-c),

Category	What was Fixed?
	the preferential treatment (floored to 20%) will be applied when a short-term assessment is not available.
CRD-IV Compliance	CRR Article 501: SME discount factor will be correctly applied or not applied to SME exposures based on the IN_DEFAULT_FLG = 0 condition only. Previously, it was also based on the PAST_DUE_CLAIM_FLG.
CRD-IV Compliance	The conditions for applying regulatory PD floors to bank and corporate exposures have been relaxed. Now specific bank and corporate counterparties can be exempted from PD floors if the OVERRIDE_REG_PD_FLOOR_TRT_FLG flag is set to 1. Therefore, there can be possibility for exposures or counterparties to have PD=0.
CRD-IV Compliance	<p>CRR Article 162 (3): The effective maturity (M) must be floored to 1 day for the following instruments:</p> <ul style="list-style-type: none"> ■ fully or nearly-fully collateralized derivative instruments ■ fully or nearly-fully collateralized margin lending transactions ■ repurchase transactions ■ securities or commodities lending or borrowing transactions <p>The solution now will use STD_PRODUCT_CLASS = 'TRADE_FIN' to identify such transactions and put a floor on M.</p>
CRD-IV Compliance	CRR Article 107 (3) Mutual recognition condition for third country INSTITUTIONS to be recognized for treatment as institutions: To comply with CRR Articles 107(3) and 142(2), institutions asset class has been updated in counterparty enrichment processing. This change ensures that that only exposures to credit institutions, investment firms, and exchanges of identified countries retain their mapped counterparty class and subclass. However, the asset class of the institution exposures from other countries will be changed to CORPORATE asset class. The enriched LARGE_FI_ENTITY_FLG for institutions exposures under the IRB approach will also be updated to reflect the equivalent regulatory treatment of mutually recognized countries.
CRD-IV Compliance	As part of the implementation of the SME supporting factor deduction, the EUR 50 million turnover threshold check was not addressed (CR 2003/361/EC Title 1 CRR Article 2(1)). As a fix, a new parameter THRESHOLD_TURNOVER_SME_AMT has been added in the rd_stat.regulatory_parameter table to hold the value of EUR 50 million. Annual turnover is captured in the ANNUAL_SALES column of the rd_stage.counterparty_mart table. Now turnover check for SME is performed.
Data Model Changes	Five columns have been added in the rd_stat.mutual_recognition data set and one column has been added in the staging.counterparty_mart data set.

Category	What was Fixed?
ETL	The ETL jobs that extract data from the SAS Detail Data Store and populate the solution data mart were not fetching data from the dds.forward_instrument table. This has now been fixed.
Reporting	C09.00: If for an exposure, country code is other than valid ISO code in the 3166-1-alpha-2 list, it will now be correctly reported in the x28 (OTH) sheet of the CR GB reports (C09.01 and C09.02). The list of valid country codes will be read from the rd_stat.country_info data set.
Reporting	C 07.00 (CR SA) and C 08.01 (CR IRB): Validation failures occurred in the CR SA and CR IRB reports due to negative balances in exposure columns that are related to on-balance sheet netting positions. These validation failures have now been fixed.
Reporting	C 29.00 (Large Exposures report LE 3, or Detail of the exposures to individual clients): Validation rule {c050} = sum(c070-190) was failing. This validation failure has now been fixed by adding additional filter conditions in processing large exposures.
Reporting	C 07.00: In the CR SA report, the fully but not completely secured (FS) part of the mortgage exposures were being incorrectly classified in 150% RW bucket. With this fix, such parts of the exposures will be assigned to 100% RW bucket. The validation rule failure v0326_m: [C 07.00.a (All sheets)] { {r240,c215} } = { {r240,c200} } * 150% has been fixed.
Reporting	C 28.00 (LE2, or C 28.00 (LE 2) Exposures in the non-trading and trading book by group): Validation rule eba_v0647_m was failing for column 040 and multiple rows. This validation failure has now been fixed by adding additional filter conditions in processing large exposures.
Reporting	C 10.01: In the CR EQU IRB report, the exposure value and RWA values for CRMs were also being reported on the same report even though the CRMs do not belong to the Equity asset class. Due to this, validation rules such as "v0484_m: [C 10.01] { {r070,c080} } = { {r070,c060} } * 190%" were failing. This fix excludes CRM values from the CR EQU report, so that the validation failures are not triggered. The current fix does not support the cross reporting of the CRM outflows on other reports.
Reporting	C 07.00, C08.01: Validation rule v0010_h and others: On-balance sheet netting positions (Accounts and Instruments with negative balances) were not being correctly processed for reporting, leading to validation rule failures. After this fix, EXP_VALUE will be floored to zero for such on-balance sheet netting positions. Also, for such on-balance sheet netting positions (CRMs), the eligible_crm_type and crm_type will be set properly. ELIGIBLE_CRM_TYPE will be set to FINANCIAL_SIMPLE or FINANCIAL_COMPREHENSIVE based on parameter STD_CRM_APPROACH and CRM_TYPE will be set as FINANCIAL_COLLATERAL according to regulatory reporting guidelines. These CRMs will be written into ead.crms_netting_inst and

Category	What was Fixed?
Reporting	<p>ead.crms_netting_accts data sets. Further, validation failures related to C07.00 and C08.01 reports will not be triggered.</p> <p>C 12.00: In the CR SEC SA report, validation rule v0506_m was failing: [C 12.00 (r010-240)] { {c140} } = { {c120} } + { {c130} }. FULLY ADJUSTED EXPOSURE VALUE (E*) = NET EXPOSURE AFTER CRM SUBSTITUTION EFFECTS PRE CONVERSION FACTORS + (-) CREDIT RISK MITIGATION TECHNIQUES AFFECTING THE AMOUNT OF THE EXPOSURE: FUNDED CREDIT PROTECTION FINANCIAL COLLATERAL COMPREHENSIVE METHOD ADJUSTED VALUE (Cvam). After this fix in the reporting code, the column 140 will be correctly computed and validation rule v0506_m will now pass.</p>
Reporting	<p>C 14.00: In the CR SEC DETAILS report, validation rule v0553_m was failing. v0553_m: [C 14.00 (All rows)] { {c340} } + { {c350} } + { {c360} } = { {c370} } + { {c380} } + { {c390} } + { {c400} }. This rule was failing because there were unmapped off-balance sheet type codes, which were corrected.</p>
Reporting	<p>C14:00: In the CR SEC DETAILS report, values in column 170 "Approach APPLIED (SA/IRB/MIX)" were being reported as "Standardized Approach IRB Approach", whereas it should be reported as "Standardized Approach, IRB Approach". There is a missing comma (,). This was resulting in failure of validation rule v4007_a. After the fix, this rule will now pass.</p>
Reporting	<p>C07.00 and C09.00: The validation rule v0350_m was failing: Totals of Exposure (r010, c010) on C07.00-s002 (Central Government) must equal Totals of Country Split C09.00.<allSheets> (r010,c010). This was because, in the sample data counterparty country for many counterparties was GBR and EU. Only two-letter ISO codes are allowed. These country codes have been fixed in sample data, and the validation rule will now pass.</p>
Reporting	<p>CR 12.00: In the SEC-SA report, for the "EARLY Amortization" row 100, column 210: "SUBJECT TO RISK WEIGHTS" should be equal to column 280: "LOOK-THROUGH". Column 280 is derived through the RW_LOOK_THROUGH_UPDATE_FLG. This flag was not being populated correctly in the analytics results due to a bug in the rrm_reg_process_lookthru_sec_std node code. After this fix, RW_LOOK_THROUGH_UPDATE_FLG is populated correctly and the validation failure has been fixed.</p>
Reporting	<p>CR 12.00: In the SEC-SA report, validation rule v0507_m was failing for column 210 "SUBJECT TO RISK WEIGHTS": v0507_m: [C 12.00 (r010-090;110-290)] { {c210} } = { {c190} } + { {c200} }. Column C190 was being incorrectly computed for the deduction case. An additional filter condition has been added in the reporting logic. For the deduct case, column 190 will be set to the Exposure Value (if DEDUCT_FROM_OWN_FUNDS_FLG eq 1 then OUTV_EAD=EXP_VALUE);</p>

Category	What was Fixed?
Reporting	CR 13.00: In the SEC-IRB report, validation rule v3749_s was failing for column 110 (Effect of Credit Risk Mitigation). This should be a negative number. After this fix, haircut applied exp_val will be computed as a negative number and the validation rule will not fail.
Reporting	CR 13.00: In the SEC-IRB report, validation rule v0530_m was failing for column 120 "FULLY ADJUSTED EXPOSURE VALUE (E*)": $[C\ 13.00\ (r010-420)]\ \{c120\} = \{c100\} + \{c110\}$. C120 will now be correctly computed and the validation rule will not fail.
Reporting	C14: In the CR SEC DETAILS report, validation rule v2054_s was failing. $[C\ 14.00\ (All\ rows,\ c210;420)]\ \{ \{C\ 14.00\} \} \leq 0$. The values in column 210 "(-) VALUE ADJUSTMENTS AND PROVISIONS" should be reported with a minus sign (-), that is a negative number. C210 will now be correctly reported with a negative sign and the validation rule will not fail.
Sample Data	Sample data for COUNTERPARTY_CD in staging.counterparty_mart data set has been amended by populating COUNTERPARTY_CD (concatenating "C_" to COUNTERPARTY_RK).
Sample Data	<p>Several exposures and counterparties in the supplied sample data were fixed, so that validation failures are not triggered for such incorrect sample values. These sample data fixes include the following:</p> <ul style="list-style-type: none"> ■ Counterparty country for many counterparties was GBR and EU. There is no country as EU in mutual_recognition data set. Only two-letter ISO codes are allowed. These country codes have been fixed. ■ There was a mismatch between the values of Row 650 of C_02.00 and the values in C_25.00 (CVA) because the value in the CVA_RISK_AM_AMT column of the rd_stage.financial_reporting_data data set is directly populated in 650 row of CA report. As the solution does not support advanced method for CVA, CVA_RISK_AM_AMT has been set to zero in the sample data. Also, this change does not trigger the validation failures.

Content Release v03.2017

What's New in the v03.2017 Content Release

SAS Regulatory Risk Management 6.1 is a major release of SAS Regulatory Risk Management on the SAS Infrastructure for Risk Management platform, and also includes SAS Risk and Finance Workbench. Installation of the SAS Risk and Finance Workbench 2.3 Hotfix (A4G002) is required.

SAS Regulatory Risk Management contains a process flow template that regulatory analysts can use to launch and track all tasks in a regulatory calculation and report submission cycle. The functional features of previous releases—Credit Risk Measures, Credit Valuation Adjustment (CVA) Capital Charge, and Large Exposure Measures—will be calculated as before for all approaches and exposure classes.

Parallel Processing

Risk-weighted assets, CVA, and Large Exposure processing is supported in a parallel and traceable environment.

SAS Infrastructure for Risk Management has a parallel job execution environment with its own User Interface. The input portfolio data is processed by the job flows in SAS Infrastructure for Risk Management to perform regulatory calculations and prepare regulatory reporting data.

All the processing code from previous versions of SAS Regulatory Risk Management has been now converted to a sequence of processing nodes. The sequence of processing nodes for job execution is called a flow or a subflow. SAS Regulatory Risk Management on SAS Infrastructure for Risk Management has the following features:

Full traceability of processing

The process flows are traceable and auditable. All processing steps are documented in a clickable online format. The input data sets and output data sets are fully exposed and can be examined for tracing a result or troubleshooting.

Interactivity and support for “What-If?”

Certain input data sets at processing nodes are editable, (identified with a “Pencil” icon) and can be modified to change the parameters of a calculation run.

Exposure-level results and diagnostics

Key result data sets for risk-weighted assets (RWA) processing, Large Exposures, and CVA and Diagnostic data sets are available in the SAS Infrastructure for Risk Management “Results” area. Each data set is enhanced with column labels which are meaningful to business analysts.

Faster execution

SAS Regulatory Risk Management processing nodes can be run in parallel in this release, leading to up-to 50% reduction in processing time for a typical large portfolio.

Regulatory Reporting Submission Cycle

There is full support for regulatory calculations and reporting cycle on SAS Risk and Finance Workbench and backward integration with SAS Regulatory Risk Management for COREP RWA reports.

A regulatory analyst can now use SAS Risk and Finance Workbench to launch the tasks that are involved in a typical regulatory calculation and report submission cycle:

- Orchestrate job flows for regulatory calculations and preparation of regulatory reporting data.
- Create report packages for submission.
- Generate Microsoft Excel, HTML, and XBRL versions of the report based on a regulator-supplied data point model.
- Run validation rules (typically, regulatory validation rules) and provide notification of validation failures.
- Enable users to manually add cell-level data or override cell-level data.

- Generate the submission XBRL instances.

For several CoRep- Own Fund Reports, the RWA and other results data are supplied by the SAS Regulatory Risk Management flows described in the previous section. Thus, for several CoRep RWA reports, there is full backward integration between SAS Risk and Finance Workbench, the reporting module and SAS Regulatory Risk Management.