Oracle Financial Services Basel Regulatory Compliance for US

User Guide

Release 8.1.2.4.0

December 2023

ORACLE
Financial Services

ORACLE

Oracle Financial Services Basel Regulatory Compliance US User Guide

Copyright © 2024 Oracle and/or its affiliates. All rights reserved.

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this is software or related documentation that is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, then the following notice is applicable.

U.S. GOVERNMENT END USERS: Oracle programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, delivered to U.S. Government end users are "commercial computer software" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, use, duplication, disclosure, modification, and adaptation of the programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, shall be subject to license terms and license restrictions applicable to the programs. No other rights are granted to the U.S. Government.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Xeon are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Opteron, the AMD logo, and the AMD Opteron logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

This software or hardware and documentation may provide access to or information about content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services unless otherwise set forth in an applicable agreement between you and Oracle. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services, except as set forth in an applicable agreement between you and Oracle.

For information on third party licenses, see the OFSAA Licensing Information User Manual.

Document Control

Version Number	Revision Date	Change Log
1.0	December 2023	Created the user guide for OFS Basel Regulatory Compliance - US jurisdiction.

Table of Contents

1 Getting Started vii

1.1 Intended Audience vii
1.2 Conventions vii
1.3 Installing this Major Release vii
1.4 Related Information Sources viii

2 What's New in this Release 9

3 Introduction to Basel Regulatory Capital 10

3.1 Key Features 12

4 Overview of OFSAA Infrastructure 13

4.1 Components of OFSAAI 13

5 Application Processing 15

6 US Jurisdiction 16

6.1 US III Regulatory Capital Rules 16
6.1.1 US III Regulatory Capital Rules – Standardized Approach 16
6.1.2 US II Regulatory Capital Rules – Internal Ratings Based Approach 128

7 Account Clustering 172

8 User Interface For Reclassification and Regulatory Predefined Values 173

9 Annexure A: Key Concepts 174

9.1 Slow Changing Dimensions 174
9.2 Exhibit 1 - Mitigant Allocation Optimizer 176
9.2.1 FIRB Minimum Collateralization Check (IRB Approach) 176
9.2.2 FIRB Over Collateralization Amount Adjustment (IRB Approach) 177
9.2.3 Double Default Treatment (IRB Approach) 177
9.2.4 Double Mitigant Treatment (Standardized Approach and IRB Approach) 177
9.2.5 Allocation of Mitigants (IRB Approach and Standardized Approach) 178
9.3 Exhibit 3: Currency Conversion 181

9.4 Exhibit 4: FSI_CAPITAL_STANDARD_MAPPING Table Mapping 182
9.5 Exhibit 5: Data Expectations for few of the Basel Products 183
9.5.1 Equity Exposures Data Expectations 183
9.5.2 Securitization Exposures Data Expectations 183
9.5.3 Securities Financing Transaction Related Exposures Data Expectations 184
9.5.4 Account Mitigant Mapping Data Expectations 184
9.5.5 Commitment Contract Data Expectations 184
9.5.6 Credit Line Issued Data Expectations 184
9.5.7 Forward Contract Data Expectations 185
9.5.8 Asset Sold Data Expectations 185
9.5.9 Spot Forex Data Expectations 185
9.5.10 Underlying Exposures for Derivatives 185
9.5.11 Underlying Exposures for CIU 186
9.6 Exhibit 6: Design Changes 187
9.6.1 Design Changes for Handling Organization Structure 187

10 Annexure B: Technical Details 188

10.1 Download Specifications 188
10.2 Regulatory Definition Setup for Creating a Run 188
10.2.1 Selecting Run Definition For Execution 188
10.2.2 Importing Run Definitions 189
10.2.3 Exporting Definitions 190
10.2.4 BackDated Execution - Run Execution Parameter 191
10.3 Using Process Modelling Framework 192
10.3.1 Basel CAP PACK Process Modelling Framework Filters and Decision Rules 192
10.4 Data Transformation Details for Portfolio or Module 199
10.4.1 DT Details - Banking 199
10.4.2 DT Details - Investment 199
10.4.3 DT Details – Derivative 199
10.4.4 DT Details - Secured Financial Transactions (SFT) 200
10.4.5 DT Details – Securitization 200
10.4.6 DT Details - Market Risk 201
10.4.7 DT Details - Operational Risk 201

10.4.8 DT Details - Capital Structure *202*
10.5 Implementing Basel 202
10.6 Seeded Values Used 202
10.7 Basel Analytics Table Population - Reporting T2T 202

11 Annexure C: Frequently Asked Questions 203

11.1 Leverage Ratio 203
11.2 Capital Buffers 203
11.3 Credit Valuation Adjustment 205
11.4 Operational Risk 205
11.5 Capital Structure (Basel III) 206
11.6 Securitization 206
11.7 Capital Structure (Basel II) 210
11.8 Market Risk (Basel II) 210
11.9 Mitigant Eligibility (Basel III) 211
11.10 Haircut Assignment (Basel III) 211
11.11 Cleared Transactions 211
11.12 AOCI Opt-Out Option (US Basel III – Standardized Approach) 212

1 Getting Started

1.1 Intended Audience

Welcome to Release 8.1.2.0.0 of the Oracle Financial Services Basel Regulatory Compliance User Guide.

This guide is intended for:

- **Technical Analyst**: This user ensures that the data is populated in the relevant tables as per the specifications, executes, schedules, and monitors the execution of Runs as batches.
- **Business Analyst**: This user reviews the functional requirements and information sources, like reports.
- **Data Analyst**: This user is involved with cleaning, validation, and importing of data into the OFSAA Download Specification Format.
- **Administrator**: The Administrator maintains user accounts and roles, archives data, loads data feeds, and so on. The administrator controls the access rights of users.

1.2 Conventions

The following text conventions are used in this document.

Table 1: Document Conventions

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action or terms defined in text or the glossary.
Italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
`Monospace`	Monospace type indicates commands within a paragraph, URLs, code in examples, file names, text that appears on the screen, or text that you enter.
Hyperlink	Hyperlink type indicates the links to external websites and internal document links.

1.3 Installing this Major Release

For detailed instructions to install this Major Release, see the Oracle Financial Services Capital Adequacy Installation and Configuration Guide Release 8.1.2.0.0.

1.4 Related Information Sources

We strive to keep this and all other related documents updated regularly; visit the OHC Documentation Library to download the latest version available there. The list of related documents is provided here.

- OHC Documentation Library **for OFS Capital Adequacy (OFS CAP) Application Pack:**
  - Oracle Financial Services Capital Adequacy Pack Installation Guide
- OHC Documentation Library **for OFS AAAI Application Pack:**
  - *OFS Advanced Analytical Applications Infrastructure (OFS AAAI) Application Pack Installation and Configuration Guide*
  - *OFS Analytical Applications Infrastructure User Guide*
  - *OFS Analytical Applications Infrastructure Administration Guide*
  - *Oracle Financial Services Analytical Applications Infrastructure Environment Check Utility Guide*
- **Additional documents:**
  - OFSAA Licensing Information User Manual Release 8.1.2.0.0
  - OFS Analytical Applications Infrastructure Security Guide
  - OFSAAI FAQ Document
  - OFS Analytical Applications 8.1.2.0.0 Technology Matrix
  - Oracle Financial Services Analytical Applications Infrastructure Cloning Guide

2 What's New in this Release

In the OFS Basel Regulatory Capital Release 8.1.2.4.0, we are catering to the latest guidelines pertaining to Reserve Bank of India, in terms of the Master Circular 2023 changes. This release also complies with the latest draft guidelines of CRR III as published by EBA, for the Standardized Approach. This release also complies with the latest draft guidelines of Basel 3.1 as published by PRA, for the Standardized Approach. This also complies with the Basel 3 guidelines for Bangko Sentral NG Pilipinas, Philippines.

As part of this release, RBI Jurisdictional compliance for IRB calculations of Basel III has been updated with the technical changes to comply with the Process Modeling Framework updates that will help in parallel processing.

There were also enhancements to the optimized credit enhancement allocation, for scenarios wherein the pool has multiple exposures mapped to multiple eligible mitigants. There were also enhancements for memory management.

There were also enhancements for bringing in the User Approval Workflow for Operational Risk Threshold changes and Capital Threshold changes.

Common Functionality Impacting Across Jurisdictions:

As part of this release, there have been newer functionalities introduced to cater across jurisdictions:

- Enhancements for the Optimizer
  - Functionality allowing the handling of all scenarios of pools having multiple exposures mapped to multiple eligible mitigants (N-N cardinality), using an inbuilt logic of allocation, instead of dependency on external libraries.
  - Multi-threaded processing has been incorporated for parallel processing of pools.
  - Batch based input data loading has been incorporated for efficient memory management.
- User Approval Workflow for Operational Risk Threshold Changes and Capital Threshold Changes
  - The Operational Risk Threshold and Capital Threshold User Interface allows the bank to make changes to the out of box values, as and when there are regulatory changes, using a controlled workflow process.
- Treatment of General Ledger Exposures for Credit RWA
  - Functionality allowing the user to provide certain type of exposures in the General Ledger Staging tables instead of the Product Processor Staging tables and calculating the Credit RWA for the same.

3 Introduction to Basel Regulatory Capital

In 1988, the Bank for International Settlements published the first guidelines on Capital Adequacy called the Basel I accord which primarily focused on credit risk. Assets of banks were classified and grouped into five categories of credit risk, with specific risk weights. On 4 July 2006, the BIS Committee issued a comprehensive version of the Basel II Framework. This document also consisted of the changes in the June 2004 Basel II Framework, the elements of the 1988 Accord that were not revised during the Basel II process, and the 1996 Amendment to the Capital Accord to incorporate Market Risks. The major outlines of the Basel II accord are to comply with the three pillars.

- The First Pillar: Minimum Requirements for:
  - Tier 1, Tier 2 and Tier 3 capital
  - Credit Risk
  - Market Risk
  - Operational Risk
- The Second Pillar: Supervisory Review Process and
- The Third Pillar: Market Discipline

In 2010, the regulatory body met and published the guidelines of Basel III. The main highlights of Basel III accord of December 2010 (rev June 2011) were:

- Capital Buffer: Basel III also introduces additional capital buffers, (i) a mandatory capital conservation buffer of 2.5% and (ii) a discretionary countercyclical buffer, which allows national regulators to require up to another 2.5% of capital during periods of high credit growth and (iii) a discretionary G-SIB / D-SIB buffer as applicable.
- Leverage Ratio: Also, Basel III introduces a minimum leverage ratio and two required liquidity ratios. The leverage ratio is calculated by dividing Tier 1 capital by the bank's Total Exposure. Banks are expected to maintain the leverage ratio above 3%.
- CVA Risk: Basel III introduced CVA risk charge in addition to counterparty default risk charge for Over the counter derivative portfolio.

Post 2011, there were multiple revisions to the guidelines. The main highlights of the changes were:

- Counterparty Credit Risk: The changes were to the existing treatment of Exposure measure calculation, and the new calculations pertaining to the Standardized Approach of EAD Calculation (SA CCR) was published, along with changes to the Internal Model Method. As these exposures also impact the Central Counterparty, changes were published for the same.
- Securitization: The Securitization framework underwent complete change in the way the treatment happened for the exposures, with a new hierarchy of approaches. There was a significant new treatment for Simple, transparent and comparable securitization transactions.

- Leverage Ratio: There were changes to the Exposure Measure calculation
- Total Loss Absorbing Capacity: This was mostly the requirement to hold long term debt instruments to absorb the losses as a Tier 2 Capital instrument. And this also included specific buffer requirements to be met by G-SIBs.
- Large Exposure: There were significant calculation requirements to restrict the exposure measure to a group of related counterparties, and to ensure there are stricter capital requirements to be met, in case of them breaching the threshold.

Basel III – Finalizing Post Crisis Reforms was published in December 2017. There were changes published as part of the consolidated Basel framework that comes into effect from January 2023. The main highlights of these changes were:

- Credit Risk: Changes to the Standardized Approach of Capital Calculations by updating the risk weight across multiple asset classes. IRB had changes specifically on the modeling aspects and also for applying output floors as per the transition.
- CVA: The CVA calculations were revamped, and new approaches were suggested for the calculations.
- Operational Risk: The operational risk calculation were revamped and new standardized approach was suggested.
- Market Risk: Different approaches for catering to the trading book exposures were suggested.

The Oracle Financial Services Basel Regulatory Capital application consists of Capital Adequacy and Risk-Weighted Assets computations as prescribed in Basel I, Basel II, Basel III and Basel III: Finalizing Post Crisis Reforms Accord.

The Oracle Financial Services (OFS) Basel Regulatory Capital application is categorized into two versions:

- OFS Basel Regulatory Capital Basic supports the Standardized Approach and its variant for the BIS Jurisdiction.
- OFS Basel Regulatory Capital Internal Rating Based Approach: is based on the approaches supported by the OFS Basel Regulatory Capital Basic Application and the advanced approaches for BIS Jurisdiction.

The following approaches are supported in the application:

- Credit Risk
  - Credit Risk – Standardized Approach & IRB Approach
  - Basel III
  - Basel III : finalizing Post Crisis Reforms for Standardized Approach
  - Securitization Risk – Standardized Approach & IRB Approach
- Counterparty Credit Risk
  - Counterparty Credit Risk – Standardized Approach & IRB Approach
- Market Risk

  - Market Risk – Standardized Approach & FRTB Standardized Approach
- Operational Risk
- Operational Risk – Basic Indicator Approach, Standardized Approach, Alternative Standardized Approach
- Capital Structure & Buffers

3.1 Key Features

The important features of the OFS Basel Regulatory Capital application are as follows:

- One integrated application which allows for different approaches configured for various portfolios.
- Financial institutions can migrate to more advanced approaches as and when required.
- Comprehensive coverage of Credit Risk Mitigation techniques which ensures optimum allocation of Credit Risk Mitigants to exposures for maximum RWA reduction using the optimizer functionality in the application.
- Extensive, pre-built instrument coverage, built to meet Basel III and Basel III : Finalizing Post Crisis Reforms guidelines, which means banks, can get 'up and running' quickly with minimal pre-processing.
- It is a fully transparent application where all Rules and Approaches are visible to business users, reviewers, or auditors.
- It is fully traceable with metadata lineage to ensure it is compliant with BCBS 239 guidelines on Risk Data Aggregation.
- Audit Trail is present to maintain accountability of Rules changes, user activity, or system modifications.

4 Overview of OFSAA Infrastructure

Oracle Financial Services Analytical Applications Infrastructure is the complete end-to-end Business Intelligence solution that is easily accessible via your desktop. A single interface lets you tap your company's vast store of operational data to track and respond to business trends. It also facilitates analysis of the processed data. Using OFSAAI you can query and analyze data that is complete, correct, and consistently stored at a single place. It has the prowess to filter data that you are viewing and using for analysis.

It allows you to personalize information access to the users based on their role within the organization. It also provides a complete view of your enterprise along with the following benefits:

- Track enterprise performance across information data store.
- Use one interface to access all enterprise databases.
- Create consistent business dimensions and measures across business applications.
- Automate the creation of coordinated data marts.
- Use your own business language to get fast and accurate answers from all your databases.
- Deploy an open XML and web-based solution against all major relational or multi-dimensional databases on Microsoft Windows and UNIX servers.

This chapter provides an overview of Infrastructure, its components, and explains how these components are organized in the Splash window with the user login process.

4.1 Components of OFSAAI

The OFSAA Infrastructure consists of the following components/modules that are used to deploy an analytical solution.

- Data Model Management
- Data Management Tools
- Unified Analytical Metadata
- Rules Run Framework
- Metadata Browser
- Operations
- Questionnaire
- Process Modelling Framework
- System Configuration & Identity Management
- Object Administration
- Forms Framework

See OFS Analytical Applications Infrastructure User Guide for more information on all important components/modules of OFSAAI.

5 Application Processing

This section provides details on the application processing components.

See OFS Basel Regulatory Compliance User Guide for more information.

6 US Jurisdiction

6.1 US III Regulatory Capital Rules

6.1.1 US III Regulatory Capital Rules – Standardized Approach

6.1.1.1 US III – High-Level Process Flow for Standardized Approach

The application supports capital computations for Credit Risk along with Capital Structure, Capital Buffers, and Capital Consolidation process as per US Regulatory Capital Rules for Implementation of Basel III in US as finalized by the agencies.

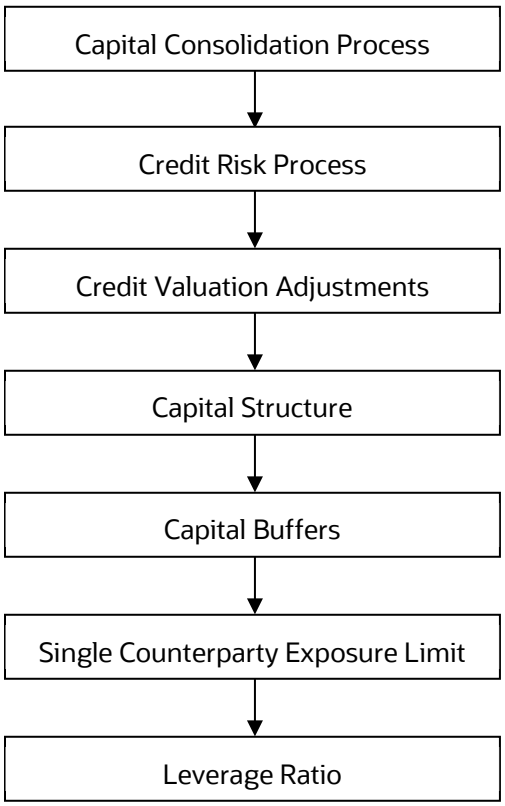
For more information on the pre-defined Runs available with the application, see OFS Basel Regulatory Capital Run Charts.

The US Regulatory Capital Rules are termed as Regulatory Capital, Implementation of Basel III, Capital Adequacy, Transition Provisions, Prompt Corrective Action, Standardized Approach for Risk-Weighted Assets, Market Discipline and Disclosure Requirements, Advanced Approaches Risk-Based Capital Rule, and Market Risk Capital Rule.

The sequence-wise flow of processes included in the application is as follows.

6.1.1.1.1 Process Flow for Capital Adequacy Ratio calculation

Figure 1: Process Flow Diagram for Capital Adequacy Ratio Calculation



The Capital Calculation Run depicted in the preceding process flow is a single run that is joined together by multiple processes. Each process is a block, compiled together to form an entire Capital Adequacy run. The individual blocks like the Credit Risk process exist as individual runs which are described in the following sections.

6.1.1.1.2 Capital Consolidation Process

Capital Consolidation is a process common to each of the individual blocks when they are triggered separately as an individual run. For example, the standard out-of-box Market Risk run has Capital Consolidation and Market Risk process bundled together as a single Market Risk run. This is applicable for a Credit Risk run and Operational Risk run as well.

The Capital Consolidation is explained in the following section and is not repeated under the Non-Securitization process and Securitization process section of this document.

In Capital Consolidation, the application processes the following.

Capital Consolidation Level Selection

The reporting bank can be a part of a financial group that has multiple legal entities like parent or child entities (subsidiaries) under its name. The entity on which you are required to process should be selected by you. Subsequently, the level at which a Run is to be executed (solo or consolidated) should also be selected. You can select these options in the Run Management UI. However, if the Run is executed in the Run Rule Framework (RRF), then these options have to be set using the Rule 'Capital Consolidation Level Selection' in the process '**CAPITAL_CONSOLIDATION**'.

CAPITAL_CONSOLIDATION is the first process to be added in all the Runs defined in the RRF except for the Staging Data Population Run. The Run Management UI selects this process by default.

Run Parameters Assignment

The US Regulations states different approaches for calculating RWA. The Run Management UI in the application allows the reporting bank to define and execute a Run by selecting a combination of different approaches for RWA computation.

Run Parameter Assignment is also a part of the Capital Consolidation process. The Rule 'Run Definition User Defined Run Param Assignment' is used to assign the Run parameters if a Run is executed in the RRF. If the Run is executed from the Run Management UI, then the parameters are populated based on the Run defined in the Run Definition window.

Currency Conversion

The exposure amount and other general ledger amount data attribute that are provided as input (in stage tables) are in the natural currency (exposure currency) and this is usually different for exposures across different countries. The application converts them to reporting currency columns so that processing for all exposures happens in one single currency. The rules which do the currency conversion from natural currency into reporting currency are based on the exchange rate provided.

Reclassification

- The application reclassifies the bank's product types and party types to Basel standard product and party types. Based on standard Basel product and party type, it forms an asset class for each exposure. Equity is reclassified by the application in a separate Rule. Similarly, the application does reclassification for mitigant based on its mitigant types and reclassifies it to standard mitigant types.

Product Type Reclassification

Product types used by the reporting bank as input data are reclassified to standard product types as recommended in the US Basel III Final Accord. The product types after reclassification are stored as Basel product types. For example, a Housing Loan is reclassified as Residential Mortgage Exposure as per the Basel II guidelines.

Party Type Reclassification

Similar to the product type, the customer type and issuer type (which are stored as counterparty type) are also reclassified as standard counterparty types. The Basel application is designed to include customer type, issuer type, and legal entity type in a single table (STG_PARTY_MASTER). This is applicable for staging and the dimension model. These are reclassified together as well. Party type reclassification Rules handle reclassification for customer types, issuer, and entity types. For example, an Individual is reclassified as Retail.

Asset Class Reclassification

Based on Basel product type and standard counterparty type, an asset class is formed by the application. This asset class is used for data processing.

For example:

When a standard counterparty is a large corporate, the asset class is large corporate, except when exposure has product types like cash and real estate.

For Basel product type gold, the asset class is gold, however, when the standard counterparty type is Central Counter Party, the asset class is Central Counter Party.

For standard counterparty type Corporate Non-SME and Basel product type as Loan, the asset class is Corporate Non-SME.

Asset class for all equity products is reclassified based on equity-type and Basel product type.

Mitigant Reclassification

For mitigants, the application reclassifies the mitigant type to the standard mitigant type like the debt securities, credit derivative, cash, and so on. It also reclassifies the mitigant issuer type to the standard mitigant issuer type like Banks, Corporate, and so on. The reclassification tasks are present in the Mitigant Reclassification sub-process.

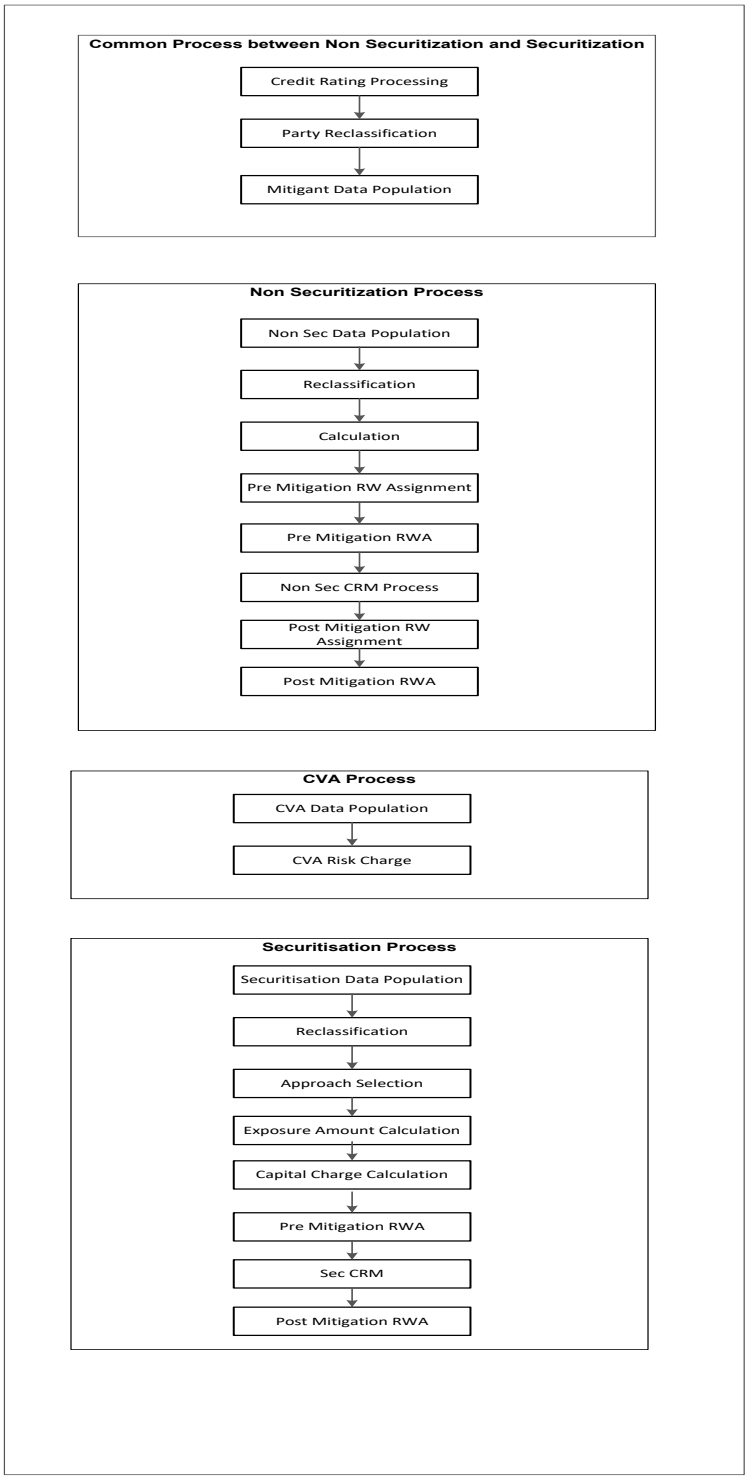
The following file has details of asset re-classification, product type reclassification, and party type reclassification for Non-Sec only. Equity reclassification remains the same as defined in USA Basel III Advanced Approach (US III Reclassification Rule).

Shareholding Percent Multiplication

For all entities in Capital Consolidation, the application updates the shareholding percentage against each entity data in the **Fact Capital Accounting Head** table from the **Fact Entity Share holding Percent** table. The parent data in **Fact Capital Accounting Head** is updated with 1 as value and for each child entity, the data is based on the parent's holding percentage specified for each child in the fact entity share holding percent table.

6.1.1.1.3 Process Flow for Credit RWA

Figure 2: Process Flow for Credit RWA



Credit RWA Run is a combination of Non-securitization RWA, Credit Valuation Adjustment (CVA) RWA, and Securitization RWA. For Credit Risk for Non-Securitized exposures and Securitization positions, the application follows the Standardized Approach.

CVA calculation has two approaches, the Standardized Approach, and Advanced Approach, which is detailed separately under the Credit Valuation Adjustment section under Credit RWA.

A few processes like Credit Rating, Party Type Reclassification, and Mitigant data population are common between Non-Securitization, CVA, and Securitization processes. These are executed only once under the Credit RWA Run even though these sub-processes are explained separately in Non-Securitization, CVA, and Securitization section of this document.

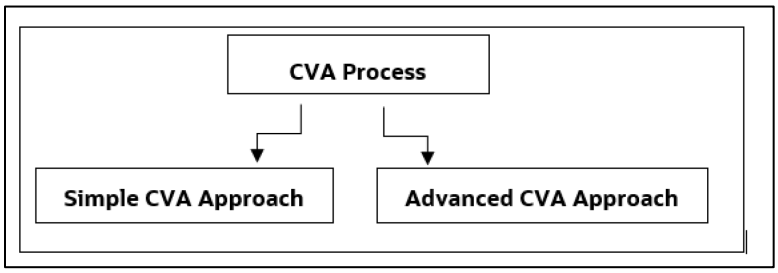
Certain sub-processes under the Non-Securitization process, like Reclassification, are common across Non-Securitization exposures for over-the-counter derivative transactions and securities financing transactions. These are executed only once in the Run. The details of these sub-processes are explained under 'Reclassification' and 'Risk Weight Assignment' sub-process of the Non-Securitization section of the user guide.

For more information on these sub-processes, see Non Securitization – Advanced Approach for US.

The risk Weight assignment method, which is a part of the Pre-Mitigation Capital Charge, is explained in the 'Pre-Mitigation Capital Charge' section under Non-Securitization exposures. Credit Risk Mitigation for Securitization and Non-Securitization is handled in two separate sub-processes. For more details, see the Risk Weight Assignment sections in the User Guide.

6.1.1.1.4 Process Flow for Credit Valuation Adjustments

Figure 3: Process Flow for Credit Valuation Adjustments



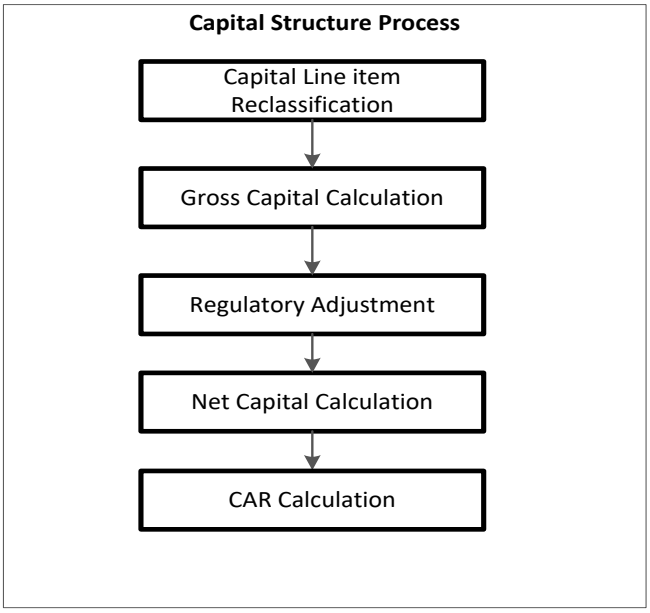
Basel committee has introduced a new Credit Valuation Adjustment (CVA) capital charge, which is added to default risk capital charge to arrive at the new Counterparty Credit Risk (CCR) capital charge. The mark to market counterparty credit losses or the spread migration risk is captured with CVA, which was not directly capitalized before. CVA is the difference between the risk-free portfolio value and the true portfolio value that takes into account the possibility of the counterparty's default. In other words, CVA is the market value of counterparty credit risk.

This process flow is divided into two sections: Simple Approach and Advanced Approach.

For more information on the sub-processes as detailed in the process flow, see Credit Valuation Adjustments.

6.1.1.1.5 Process Flow for Capital Structure

Figure 4: Process Flow for Capital Structrure



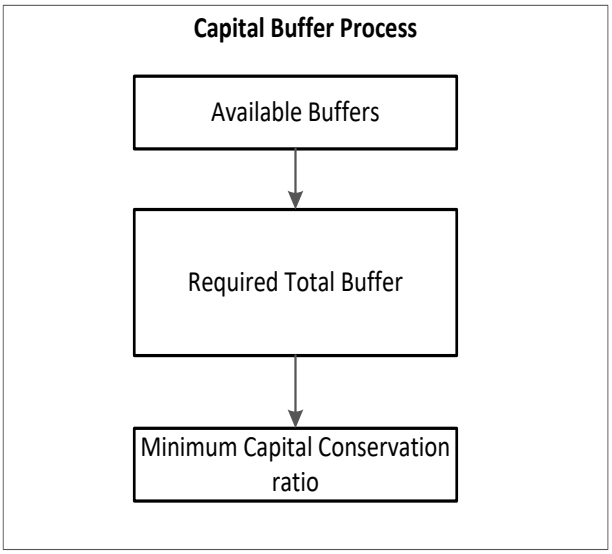
Capital Structure is executed along with Capital Consolidation and Credit RWA process. Each sub-process mentioned in the preceding flow chart has a detailed explanation present in the Capital Structure section of this document.

For example: 'Gross Capital Calculation' mentioned in the preceding flow chart is explained in detail under the 'Gross Capital Calculation' sub-process section of the Capital Structure. Likewise 'Regulatory Adjustment' and 'Net Capital Calculation' are detailed under the 'Regulatory Adjustment' and 'Net Capital Calculation' sub-process section of Capital Structure.

For more information, see Capital Structure

6.1.1.1.6 Process Flow for Capital Buffers

Figure 5: Process Flow for Capital Buffers

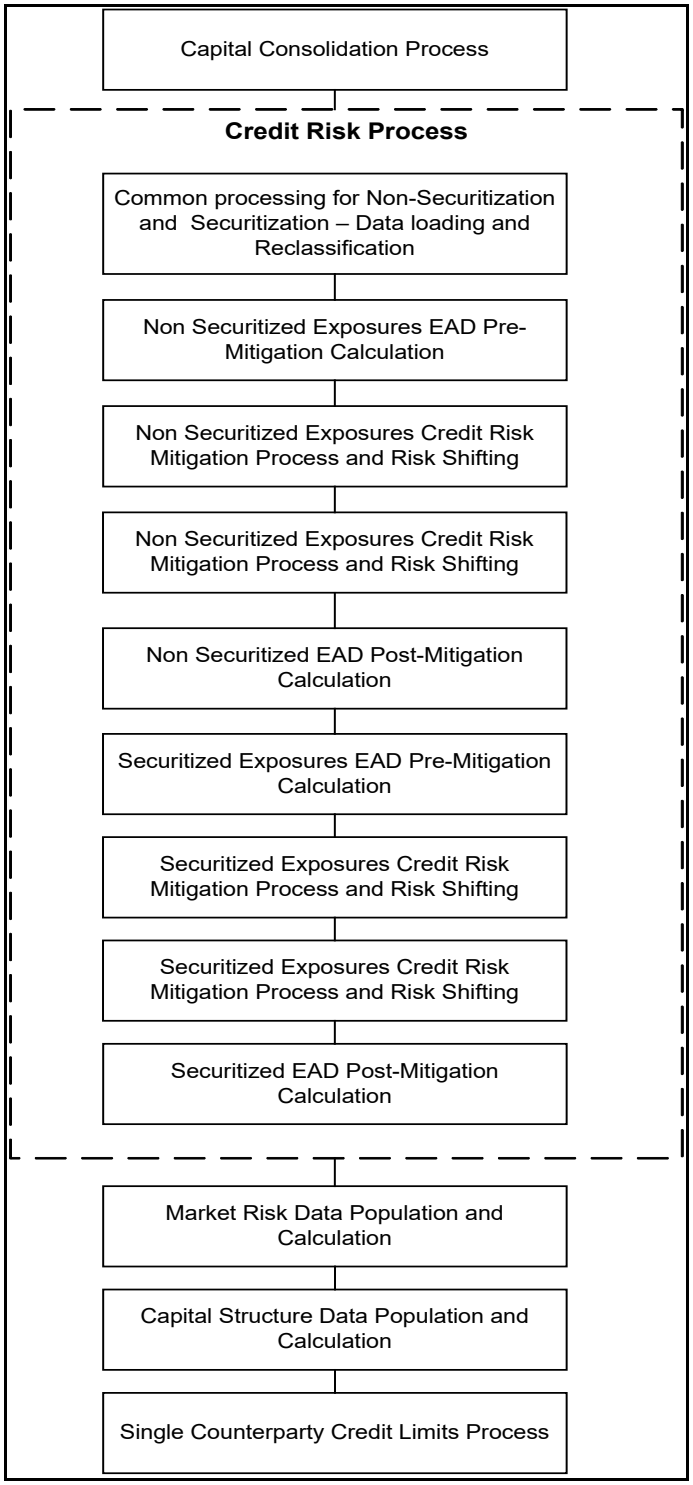


Capital Buffer is calculated post capital ratios are calculated, as they go as an input to Buffer calculation. Each sub-process is explained in detail under the Capital Buffer section of this document.

For example, the required total buffer and capital conservation buffer calculation are detailed in this document. For more information, see Capital Buffers.

6.1.1.1.7 Process Flow for Single Counterparty Exposure Limit

Figure 6: Process Flow for Single Counterparty Exposure Limit



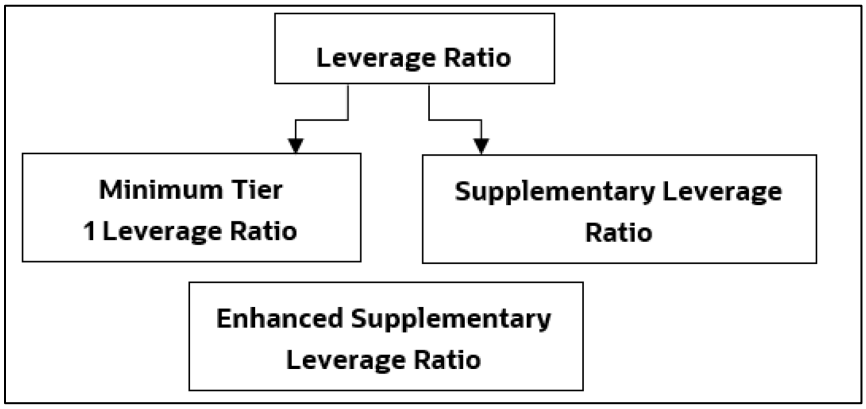
The Single Counterparty Exposure Limit calculation is designed to identify the counterparties whose aggregate credit exposure to the bank breaches the maximum limit as described by the Dodd Frank Single

Counterparty Limit proposal. The Exposure Limit proposal is mitigating the threat to financial stability posed by systemically important financial companies.

For more information, see Single Counterparty Exposure Limit.

6.1.1.1.8 Process Flow for Leverage Ratio

Figure 7: Process Flow for Leverage Ratio



The leverage ratio calculations are a separate run and not part of the regular capital calculation run. This is because of the changes in the Credit conversion factor assigned to the exposures, and also the exemption of few exposures from the calculation which are part of the capital charge calculations. Also, mitigation is not required for these exposures, and the exposure measure calculations are different from the regular EAD calculations.

For more information on the revised leverage ratio, see Leverage Ratio.

6.1.1.2 Credit RWA

The application supports the computation of Credit RWA as per the guidelines laid out in the US Regulatory Capital Rules. Credit RWA computation is broken down into Credit Risk for Non-Securitized Exposures and Credit Risk for Securitized Exposures. For Credit Risk for Non-Securitized Exposures, the application follows the Standardized Approach, Foundation Advanced Approach for the US, and Advanced Approach for the US. Credit RWA computation also consists of computation of Credit Valuation Adjustments that follows Advanced and the Standardized Approach which is explained in a later section.

6.1.1.2.1 Non Securitization – Standardized Approach for the US

All the credit risk exposures are identified by their product types, counterparty types, and their corresponding asset classes. A sample list of products types, party types, mitigant types, and credit ratings are pre-defined in the Basel application. However, this list and naming convention differ from one bank to another. Hence, the application reclassifies the bank's data into standard data as per the US Regulatory Capital Rules. The application reclassifies the bank's product types and party types to Basel standard product and party types.

Based on these standard Basel product types and party types, an asset class for each exposure is formed. For equity exposures, the asset class is formed based on equity-type and Basel product type. A further data processing is done based on these standard reclassifications.

Some exposures can be hedged against Credit Risk through various mitigants like guarantors, collaterals, credit derivatives, and so on. These provide mitigation to credit risk and should be considered while

computing Credit RWA as per US Regulatory Capital Rules. Hence, the application calculates pre-mitigation exposure amount and post-mitigation exposure amount.

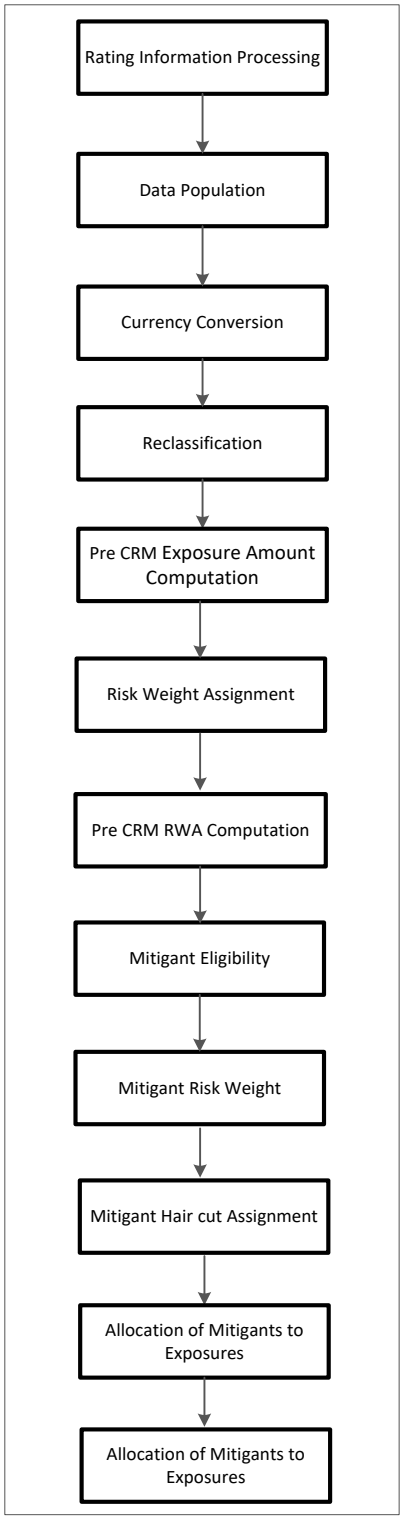
The Basel Committee has revised Credit Risk Mitigation (CRM) guidelines to a large extent and the same is incorporated in the application. The changes at a macro level relate to the recognition of the eligible mitigants, applicable for the Securitized and the Non-Securitized exposures. The US regulators have also revised the haircuts to be applied for the debt securities issued by a securitization transaction that act as collateral.

The remaining processing for CRM remains the same as per the previous releases of the Basel application. Depending upon the asset class, the application calculates the pre-CRM exposure amount for each exposure. This value signifies the maximum loss that the bank can suffer in case of default on this exposure, before considering any mitigation effects. Through the CRM process, the bank takes into account the mitigation effect and calculates the post-mitigation exposure at the default amount.

This signifies the maximum loss that the bank can suffer in case of default on this exposure, after considering all the mitigation effects.

The application also computes pre-mitigation risk-weighted assets (Pre-CRM RWA) and post-mitigation risk-weighted assets (Post CRM RWA) by multiplying the respective exposure amount by risk weight. The risk weight, in this case, is arrived at by analyzing the OECD Country Risk Classifications (CRCs) of the exposures or other such criteria as specified in the US Regulatory capital rules. Some Credit Risk exposures that fall under the category of internal transactions like holding own subsidiaries shares or investment in its capital, reciprocal cross-holding, and so on, are treated separately under Capital Structure.

Figure 8: Non Securitization – Standardized Approach for US



For the processing of all the other line items for banking book products, securities financial transactions, and over-the-counter products, see **Error! Reference source not found.**.

CCF Assignment

As per the US Regulatory Capital Final Rules for Standardized Approach, the following are the CCF assigned to off-balance sheet items:

- 0% CCF to the unused portion of a commitment that is unconditionally cancelable by the bank.
- 20% CCF to commitments with an original maturity of one year or less that are not unconditionally cancelable by the bank.
- 20% CCF to self-liquidating trade-related contingent items with an original maturity of one year or less.
- 50% CCF to commitments with an original maturity of more than one year that is not unconditionally cancelable by the bank.
- 50% CCF to transaction-related contingent items.
- 100% CCF to guarantees, repurchase agreements, c redit-enhancing representation and warranties that are not securitization exposure, securities lending, and borrowing transactions, financial standby letters of credit, and forward agreements.

Also, banking organizations must apply the lower of 20% or 50% CCFs to the exposures related to commitments to extend letters of credit. Banking organizations must make this determination based upon the individual characteristics of each letter of credit.

- Equity commitments are assigned as conversion factor as follows:
- Conditional equity commitments with an original maturity of one year or less receive a CF of 20%.
- Conditional equity commitments with an original maturity of over one year receive a CF of 50%.
- Unconditional equity commitments receive a CF of 100%.

Table 2: CCF Assignments

Basel II Product	Original Maturity	Non Sec Unconditionally Cancellable Facility	CCF Assignment (%)
Loan Commitment	-	Yes	0
Loan Commitment	Less than equal to1 year	No	20
Loan Commitment	More than 1 year	No	50
On Balance sheet	Less than equal to1 year	-	20
On Balance sheet	More than 1 year	-	50
Off-Balance sheet	Less than equal to1 year	-	20
Off-Balance sheet	More than 1 year	-	50
Short-term Self-liquidating Trade Contingencies	Less than equal to1 year	-	20

The following is the mapping of the CCF Assignment according to the Basel product.

Table 3: Mapping of CCF Assignment According to Basel Product

Basel II Product	Drawn CCF Assignment (%)
Transaction-related Contingencies	50
Financial Standby Letter of Credit	100
Guarantee	100
Forward Agreements	100

Equity Commitments depending upon the conditional or unconditional flag are also assigned conversion factor values which are as follows:

Table 4: Table for Conversion Factor Values for Equity Commitments

Basel II Product	Conditional Equity Commitments	Original Maturity	CF
Equity Commitments	Y	Less than equal to1 year	20%
Equity Commitments	Y	More than 1 year	50%
Equity Commitments	N	Higher level	100%

Credit-Enhancing Representations and Warranties

The accord states that Credit-Enhancing Representations and Warranties do not include the following:

- Early default clause, covering, one-to-four family first-lien residential mortgage loans that qualify for a 50 percent risk weight for a period not to exceed 120 days from the date of transfer.
- Premium refund clauses covering, one-to-four family first-lien residential mortgage loans that qualify for a 50 percent risk weight for a period not to exceed 120 days from the date of transfer.
- Premium refund clauses that cover assets guaranteed by the U.S. government, a U.S. Government agency, or a GSE, provided the premium refund clauses are for a period not to exceed 120 days from the date of transfer.
- Warranties that permit the return of underlying exposures in instances of misrepresentation, fraud, or incomplete documentation.

If the Credit-Enhancing Representations and Warranties are fulfilling these criteria, the capital need not be calculated and is applied a risk weight of zero for these exposures. If these criteria are not met, a CCF of 100% is assigned.

The mapping must be as follows:

Table 5: Credit-Enhancing Representations and Warranties

Basel II Product	Early Default Clause	Transfer Days	RW
CER	Y	<=120	0
WARNTY	Y	<=120	0

Table 6: Credit-Enhancing Representations and Warranties

Basel II Product	Premium Refund Clause	Transfer Days	RW
CER	Y	<=120	0
WARNTY	Y	<=120	0

If Credit-Enhancing Representations and Warranties do not follow any of the criteria as mentioned, CCF of 100% is assigned.

Table 7: 100% CCF allocation for Credit-Enhancing Representations and Warranties

Basel II Product	Early Default Clause	Premium Refund Clause	Securitized Flag	Return of Underlying Exposure	CCF (%)
Credit Enhancement Facility	N	N	N	N	100
Warranties	N	N	N	N	100

The accord also states that warranties and Credit Enhancing representation that has a premium refund clause and the asset against which the warranties and Credit Enhancing representation is provided are guaranteed by the U.S. government, a U.S. Government agency, or a GSE and original maturity of warranties are below 120 days and no capital is kept. Hence, zero risk weight is assigned.

Table 8: Warranties and Credit Enhancing representation with Premium Refund Clause

Basel II Product	Underlying Exposure Guaranteed by Soveriegn/US/GSE	Premium Refund Clause	Transfer Day	RW
CRE	Y	Y	<=120	0
WARNTY	Y	Y	<=120	0

For Warranties that permit the return of underlying exposures in instances of misrepresentation, fraud, or incomplete documentation, the mapping is as follows:

Table 9: Mapping for Warranties

Basel II Product	Return of Underlying Exposure	RW
WARNTY	Y	0

Exposure amount against Warranties that have premium refund clause should be equal to servicing premium and other earned fees. Exposure amount against Warranties that have a return refund clause should be equal to full loan value. Both the exposure amount should be stored in column 'n_exposure_amount'.

EAD Computation

EAD amount computation for on-balance sheet exposure, each OTC contract, off-balance-sheet commitment exposure type is the same as that of BIS Standardized Approach.

Exposure amount for AFS or held-to-maturity debt securities and AFS preferred stock not classified as equity that is held by a banking organization that has made an AOCI opt-out election, the exposure amount is the banking organization's carrying value (including net accrued but unpaid interest and fees) for the exposure, less any net unrealized gains, and any net unrealized losses.

Exposure amount for AFS preferred stock classified as equity security under GAAP that is held by a banking organization that has made an AOCI opt-out election, the exposure amount is the banking organization's carrying value (including net accrued but unpaid interest and fees) for the exposure, less any net unrealized gains that are reflected in such carrying value but excluded from the banking organization's regulatory capital.

Equity/ UCITS/ Mutual Fund/ Equity Commitments EAD Calculation

The EAD calculation for Equity/ UCITS/ Mutual Fund is as follows:

Equity /UCITS / Mutual Fund EAD amount = Exposure carrying value – Exposure Unrealized Gain + Exposure Unrealized Gain Loss

Here,

- Equity commitments EAD = Effective notional principal amount * Conversion Factor

The equity derivative EAD calculation is the same as defined in the USA Advanced run and the failed transaction EAD computation is the same as defined in the USA Advance Approach.

Risk Weight Assignment

Non-Sec Risk Weight Assignment for Exposures on US Government, Supranational and MDB, GSE, Corporate, Statutory Multifamily Mortgages, HVCRE, and Others.

Risk weight assignment is based on Basel Asset class which is formed based on Basel Standard Party Type and Standard Product Type. The following are the risk weight assignments for other asset types:

Sovereign Exposures

Exposure to US Government - A rule termed as USA - US III - Non-Sec RW Assignment based on asset class is created to assign risk weight based on Basel Asset class, this rule caters to risk weight assignment for multiple asset classes, namely – Domestic Sovereign, Supranational and MDB, GSE, Corporate, Statutory Multifamily Mortgages, HVCRE, and others.

The rule is termed as "USA - US III - Non-Sec RW Assignment based on asset class.".

The mapping is as follows:

Table 10: Mapping for Sovereign Exposures

Basel II Asset Class	Risk Weight
Domestic Sovereign	0%
Supranational Entities	0%
Government-sponsored Entities	20%
Corporate Exposure	100%
Statutory Multifamily Mortgages	50%
High-Volatility Commercial Real Estate (HVCRE) Exposure	150%
Cash	0%
Cash items in the process of collection	20%
Other Asset	100%

Other Sovereign Exposure

The rule "USA - US III - Non Sec RW Assignment for Other Sovereign Exposures" is created to assign Risk weight based on Basel II Asset Class, Issuer CRC class, OECD Country Indicator, and Sovereign Default Indicator.

The required source hierarchy is present. The mapping is as follows:

Table 11: Mapping for Other Sovereign Exposures

Basel II Asset Class	Issuer CRC Class	OECD Country Indicator	Sovereign Default Indicator	Risk Weight
Sovereign Exposure	Issuer CRC class	OECD Country Indicator	Y	150%
Sovereign Exposure	CRC0	OECD Country Indicator	N	0%
Sovereign Exposure	CRC1	OECD Country Indicator	N	0%
Sovereign Exposure	CRC2	OECD Country Indicator	N	20%
Sovereign Exposure	CRC3	OECD Country Indicator	N	50%
Sovereign Exposure	CRC4	OECD Country Indicator	N	100%
Sovereign Exposure	CRC5	OECD Country Indicator	N	100%
Sovereign Exposure	CRC6	OECD Country Indicator	N	100%
Sovereign Exposure	CRC7	OECD Country Indicator	N	150%
Sovereign Exposure	No CRC	Y	N	0%
Sovereign Exposure	No CRC	N	N	100%

If an exposure or a portion of an exposure that is conditionally guaranteed by the US Government or FDIC, or National Credit Union Administration, then you must assign 20% Risk weight through the rule "USA - US III - Mitigant RW Assignment for exposures Guaranteed by US Government".

Certain Sovereign Exposures

As per the US Regulatory Capital Final Rule, wherein bank assigns to a sovereign exposure a risk weight that is lower than the applicable risk weight if:

The exposure is denominated in the sovereign's currency.

The bank has at least an equivalent amount of liabilities in that currency; and

The risk weight is not lower than the risk weight that the home country supervisor allows banks under its jurisdiction to assign to the same exposures to the sovereign.

In such cases, the conditions related to applying lower risk weight is more subjective. Hence, the standard product does not have any specific rule for it. Other Risk weight assignment rules are customized to accommodate this requirement if required.

Since the conditions related to applying lower risk weight is more subjective, the standard product does not have any specific rule for it. Customize the other risk weight assignment rules to accommodate these requirements.

Certain supranational entities and Multilateral Development Banks (MDBs): Exposures on MDBs which qualify for 0% risk weight are classified as Supranational entities asset class through asset reclassification rules. The rule "**USA - US III - Non Sec RW Assignment based on asset class"** caters to the Risk Weight assignment. See section Exposure to US Government for details of the mapping.

Exposures to Government-Sponsored Entities (GSEs): The rule "USA - US III - Non Sec RW Assignment based on asset class" assigns 20% Risk Weight to an exposure to a GSE that is not an equity exposure or preferred stock. Also, a new rule "USA - US III - Non Sec RW Assignment - GSE Exposures on Preferred Stock" is created to assign 100% Risk weight to preferred stock, based on Basel Asset class and Standard Product Type.

Table 12: Rish Weight for GSEs

Basel II Asset Class	Standard Product Type	Risk Weight
Government-sponsored Entities	Preferred Stock	100%

Exposures to Depository Institutions, Foreign Banks and Credit Unions

Exposures to U.S. depository institutions and credit unions: A new rule "USA - US III – Non Sec RW Assignment - Depository Institutions and Credit Unions" is created to assign risk weight based on Basel Asset class and Sovereign Default indicator.

Table 13: Risk Weight for Exposures to Depository Institutions, Foreign Banks and Credit Unions

Basel II Asset Class	Sovereign Default Indicator	Risk Weight
U.S. depository institutions and credit unions	Y	150%
U.S. depository institutions and credit unions	N	20%

The conditions for assigning 100% risk weights are handled in capital structure.

Exposures to Foreign Banks: A new rule "USA - US III - Non Sec RW Assignment - Foreign Banks" is created to assign risk weight based on Basel II Asset Class, Issuer CRC class, OECD Country Indicator, Sovereign Default Indicator, and Standard Product Type. For risk weight assignment for exposure to foreign banks, data of trade-related contingent items are expected to be related to only those contingencies that arise from the movement of goods.

Exposures to public sector entities (PSEs)

Exposure to US PSEs: A new rule "USA - US III - Non Sec RW Assignment - US PSEs" is created to assign risk weight based on Basel Asset class and PSE Obligation Type. A new hierarchy for PSE obligation type is created and PSE Obligation Type data is available at an exposure level.

Table 14: Risk Weight for Exposures to US PSEs

Basel II Asset Class	PSE Obligation Type	Risk Weight
US PSEs	General Obligation	20%
US PSEs	Revenue Obligation	50%

Exposures to Foreign PSEs: A new rule ""USA - US III - Non Sec RW Assignment - Non-US PSEs" is created to assign risk weight based on Basel II Asset Class, Issuer CRC class, OECD Country Indicator, Sovereign Default Indicator and PSE Obligation Type. The mapping is as follows:

Table 15: Risk Weight for Exposures to Foreign PSEs

Basel II Asset Class	Issuer CRC Class	OECD Country Indicator	Sovereign Default Indicator	PSE Obligation Type	Risk Weight
Foreign PSE	Issuer CRC class	OECD Country Indicator	Y	PSE Obligation Type	150%
Foreign PSE	CRC0	OECD Country Indicator	N	General Obligation	20%
Foreign PSE	CRC1	OECD Country Indicator	N	General Obligation	20%
Foreign PSE	CRC2	OECD Country Indicator	N	General Obligation	50%
Foreign PSE	CRC3	OECD Country Indicator	N	General Obligation	100%
Foreign PSE	CRC4	OECD Country Indicator	N	General Obligation	150%
Foreign PSE	CRC5	OECD Country Indicator	N	General Obligation	150%
Foreign PSE	CRC6	OECD Country Indicator	N	General Obligation	150%
Foreign PSE	CRC7	OECD Country Indicator	N	General Obligation	150%
Foreign PSE	No CRC	Y	N	General Obligation	20%
Foreign PSE	No CRC	N	N	General Obligation	100%
Foreign PSE	CRC0	OECD Country Indicator	N	Revenue Obligation	50%
Foreign PSE	CRC1	OECD Country Indicator	N	Revenue Obligation	50%
Foreign PSE	CRC2	OECD Country Indicator	N	Revenue Obligation	100%
Foreign PSE	CRC3	OECD Country Indicator	N	Revenue Obligation	100%
Foreign PSE	CRC4	OECD Country Indicator	N	Revenue Obligation	150%
Foreign PSE	CRC5	OECD Country Indicator	N	Revenue Obligation	150%
Foreign PSE	CRC6	OECD Country Indicator	N	Revenue Obligation	150%

Foreign PSE	CRC7	OECD Country Indicator	N	Revenue Obligation	150%
Foreign PSE	No CRC	Y	N	Revenue Obligation	50%
Foreign PSE	No CRC	N	N	Revenue Obligation	100%

The conditions related to applying lower risk weight is more subjective in nature; hence standard product does not have any specific rule for it. Customize the risk weight assignment rules to accommodate this requirement.

Residential Mortgage Exposures (RMEs)

A new rule “USA - US III - Non Sec RW Assignment - Residential Mortgage Exposures” is created to assign risk weight based on Basel II Asset Class, Non Sec Past Due Flag, Assumed Lien position on RME, Occupancy Type and Restructured indicator. The restructured indicator is expected as "No" when a residential mortgage exposure is modified or restructured on a permanent or trial basis solely according to the U.S. Treasury’s Home Affordable Mortgage Program (HAMP) assumption that prudent underwriting standard is followed by the bank for the Residential Mortgage Exposure. The assumption is that prudent underwriting standard is followed by the bank for the Residential Mortgage Exposure.

The mapping is as follows:

Table 16: Risk Weight Mapping for RMEs

Basel II Asset Class	Non Sec Past Due Flag	Assumed Lien Position on RME	Occupancy Type (v_occupancy_cd)	Restructured Indicator	Risk Weight
Residential Mortgage exposure	Non Sec Past Due Flag	Assumed Lien position on RME	Occupancy Type	Restructured Indicator	100%
Residential Mortgage exposure	N	First	Owner Occupied	N	50%
Residential Mortgage exposure	N	First	Rented	N	50%

The Non Sec Past Due flag, which is an existing hierarchy, indicates whether Residential Mortgage Exposure is past due or not.

Three new hierarchies must to be created for the rule:

Assumed Lien Position on RME: It is necessary to identify whether exposure must be treated like a first-lien residential mortgage exposure or junior-lien RME. Lien Position is typically an attribute of mitigant. However, at the mitigant level, specify it as an absolute lien position number. It cannot clarify whether the bank holds the first-lien and junior-lien(s) RMEs and no other party holds an intervening lien, and hence it is treated as a first lien. Therefore, it is required to directly capture the assumed lien position at an exposure level. More so, as there is a column v_lien_position_cd in stg_loan_contracts, which can be brought to fact table and metadata can be defined on it. It is assumed that the bank provides Lien position data as per the applicable treatment. This means, if the bank holds the first-lien and junior-lien(s) RMEs,

and no other party holds an intervening lien then it must combine the exposures and treat them as a single first-lien residential mortgage exposure. In such a case, the Assumed Lien position on RME is given as “First”.

Occupancy Type: The Occupancy Type indicates whether RME is “Owner-occupied” or “Rented” or “Others” (like, vacation home and so on; it is inferred that Owner-occupied means primary residence of the home loan borrower). There is a column v_occupancy_cd in stg_loan_contracts, which can be brought to the fact table and metadata can be defined on it.

Restructured Indicator: It is to indicate that the loan is restructured for the key attributes like rate, amount, tenor, and so on. The values can be “Yes” or “No”. There is a column f_restructured_ind in stg_loan_contracts for this purpose, which can be brought to fact table and metadata can be defined on it. The null values in the column can be treated as “No”. The condition regarding mortgage is made by following the prudent underwriting standards including standards relating to the loan amount as a percent of the appraised value of the property; is an operational requirement. For the standard Basel product release, it is assumed that the bank has fulfilled this operational requirement before classifying such exposures eligible for 50% risk weight. If there are any exceptions to fulfill such due diligence and, due to which, applicable risk weight is 100%. Then the application is customized accordingly.

Pre-sold Construction Loans

The existing rule “USA - US III - Non Sec Pre-Mitigation RW Assignment - Pre-sold construction Loan - STD” can be used for treatment to Pre-sold construction loans.

Past Due Exposures

A new rule “USA - US III - Non Sec RW Assignment for Past Due Exposures” is created to assign 150% risk weight to the uncovered portion of the exposure based on Basel asset class (except for US Government, Sovereign Exposure and Residential Mortgage exposure asset class) and past due flag.

Other Assets

The rule “USA - US III - Non Sec RW Assignment based on asset class” caters to risk weight assignment for Cash, Cash items in the process of collection, and other assets. See section exposure to US government for details of the mapping.

A rule "USA - US III - Non Sec RW Assignment - Gold" is created to assign zero percent risk weight to Gold asset class.

The requirement for assigning 100% risk weight for DTAs is covered in the rule- USA - US III RWA Calculation for DTA due to temporary Difference. The DTAs should be provided as net of any related valuation allowances and net of DTLs.

The requirement for assigning 250% risk weight for MSAs and DTAs is covered under the capital structure. It is mapped to the Credit RWA capital component group.

Sold Credit Protection

The sold credit protection in the form of guarantees and credit derivatives is under the regulatory framework. The treatment specific to the sold credit protection are as follows:

Guarantees and Credit Derivatives

Protection Provided to Non-Sec Exposures: In the case of guarantees and credit derivatives provided to the exposures which are not securitized, the protection provided is treated as an exposure to the underlying reference asset.

Guarantees and Credit Derivatives

Protection Provided to Sec Exposures: In the case of guarantees and credit derivatives provided to the exposures which are securitized, the protection provided is treated as if the portion of the reference exposure is held by the protection provider.

Nth to Default Credit Derivatives

In the case of nth to default credit derivatives, it is risk-weighted using the SSFA approach. If the SSFA Approach is not applicable for the transaction, it is risk-weighted at 1250%.

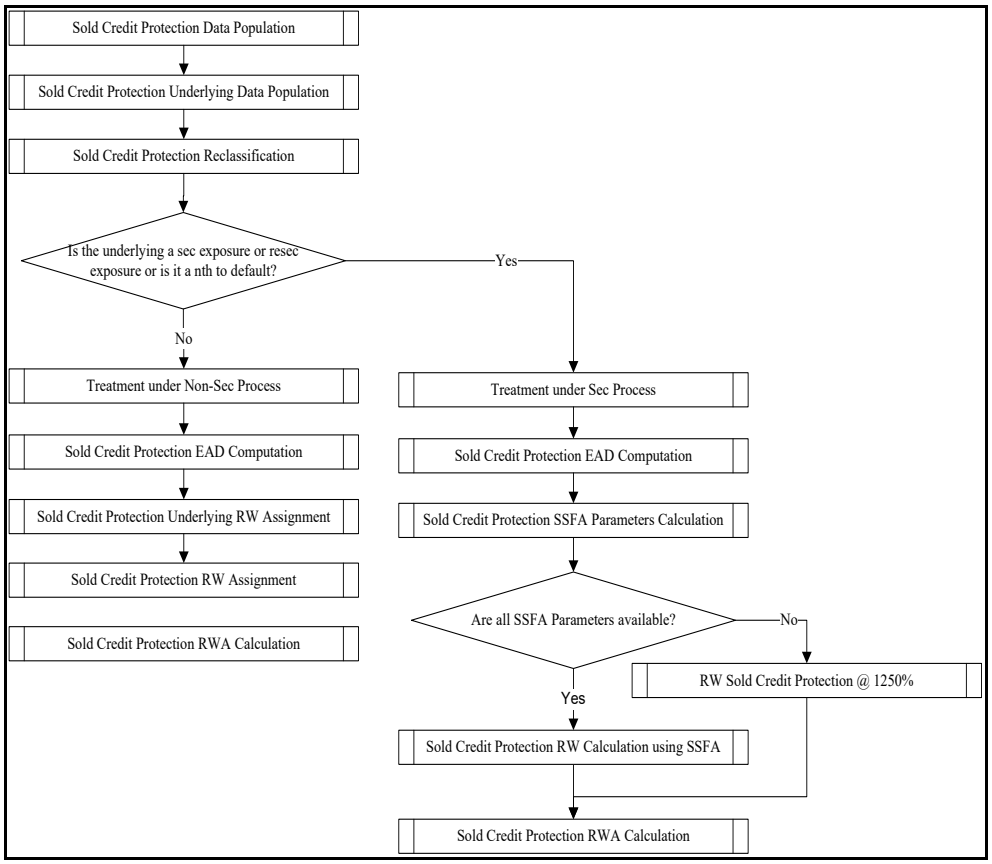
Assumptions

As per Accord, a bank that is the protection provider under an OTC credit derivative must treat the OTC credit derivative as exposure to the underlying reference asset.

Interpretation in the application:

- This is a mention of the treatment for the credit derivative which is sold as credit protection to exposures that are not securitized.
- Guarantees and non- nth to default credit derivatives are treated using the same guidelines for the recognition of the credit risk mitigant and the treatment for protection provided to securitized exposures.
- It is not specified the guarantees which are sold as credit protection to non-securitized exposures.
- It is assumed that the same treatment is applied for guarantees which are provided as protection to the non-securitized exposures.

Figure 9: Sold Credit Protection Data Population



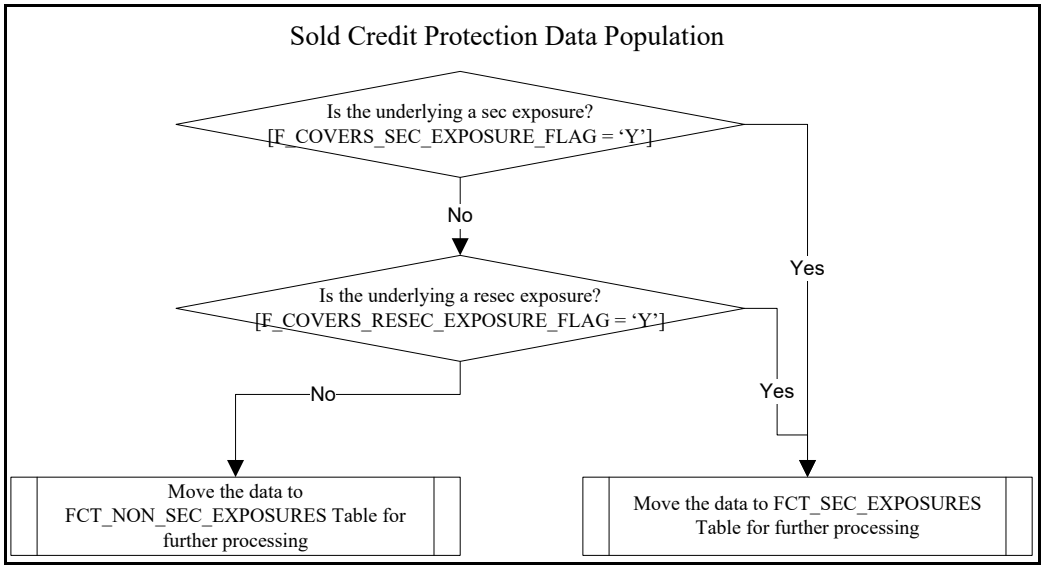
Sold Credit Protection Data Population

The sold credit protection data is specific to the sold guarantees and sold credit derivatives. This data is available in the product processor tables of **STG_GUARANTEES** and **STG_CREDIT_DERIVATIVES**. These sold credit protection exposures have the following data:

"**F_COVERS_SEC_EXPOSURE_FLAG**" or "**F_COVERS_RESEC_EXPOSURE_FLAG**" has a flag as "Y" in the case of the exposure satisfying the following condition:

- The sold credit protection is provided on a securitized or resecuritized exposure.
- In the case of nth to default credit derivative, unless the sold credit protection is provided to a resecuritized exposure, the **F_COVERS_SEC_EXPOSURE_FLAG** must be "Y".
- If the **F_COVERS_SEC_EXPOSURE_FLAG** or the **F_COVERS_RESEC_EXPOSURE_FLAG** has a value of "Y", then these sold credit protection data is processed under the securitization framework. Hence this is processed to the **FCT_SEC_EXPOSURES** table.
- Else, the sold credit protection data is processed under non-securitization framework. Hence is processed to **the FCT_NON_SEC_EXPOSURES** table.

Figure 10: Sold Credit Protection Data Population



Sold Credit Protection Underlying Data Population

The underlying data are required for all the sold credit protection. The underlying data is provided in the **STG_UNDERLYING_EXPOSURES** table.

These underlying for the sold credit protection have the following data:

- **V_UNDERLYING_DATA_IDENTIFIER:** The underlying of the sold credit protection has the **"V_UNDERLYING_DATA_IDENTIFIER"** as "SCP", to recognize this for the Sold credit protection treatment.
- **V_PARENT_EXPOSURE_ID**: The underlying of the sold credit protection has the **"V_PARENT_EXPOSURE_ID**" as the "**V_EXPOSURE_ID**" of the sold credit protection.
- In the case of guarantees and credit derivatives, there is only one underlying for the sold credit protection.

- In the case of nth to default credit derivative, there is more than one underlying for the sold credit protection.
- These underlying for the sold credit protection are processed to the **FCT_NON_SEC_EXPOSURES** table, wherein all the calculations required are processed. At the end of the processing, this is moved to the **FCT_SCP_UNDERLYING** table.

If the underlying data for the sold credit protection are not provided, this is treated as sold credit protection, and hence is treated as a regular exposure.

Treatment Specific to Sold Credit Protection

The sold credit protection is treated specifically in the case of the protection covering sec exposures and non-sec exposures.

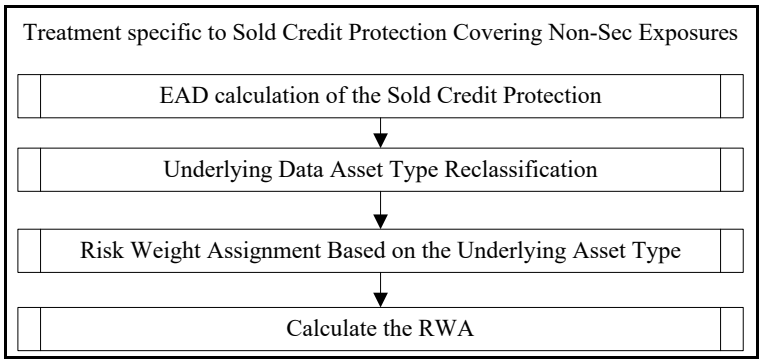
Sold Credit Protection Covering Non-Sec Exposures

The risk weight for the sold credit protection is based on the underlying exposure's asset class.

The risk-weighting is applicable based on the underlying exposure's asset class.

Process Flow for the Calculations

Figure 11: Process Flow for Calculations



EAD Calculation of the Sold Credit Protection

The EAD for the sold credit protection is equal to the notional amount of the contract.

Underlying Data Asset Type Reclassification

The asset type reclassification for the underlying of the sold credit protection is the same as any other non-sec exposure Asset type reclassification. This is handled in the Non-Sec Exposures asset type reclassification.

Risk Weight Assignment based on the Underlying Asset Type

The risk weight assignment for the sold credit protection is based on the asset type of the underlying exposure, which is the same as any other non-sec exposure.

The risk weight for the underlying exposure is calculated and this is updated to the sold credit protection exposure.

Calculate the Risk Weight Assessment

The RWA is calculated as the Pre-mitigation EAD multiplied by the Pre-Mitigation Risk Weight.

In the case of sold credit protection exposures, the Pre-Mitigation EAD and the Post Mitigation EAD are the same since there are no mitigants for these exposures.

Sold Credit Protection Covering Sec Exposures

The risk weight for the sold credit protection is calculated using the SSFA Approach.

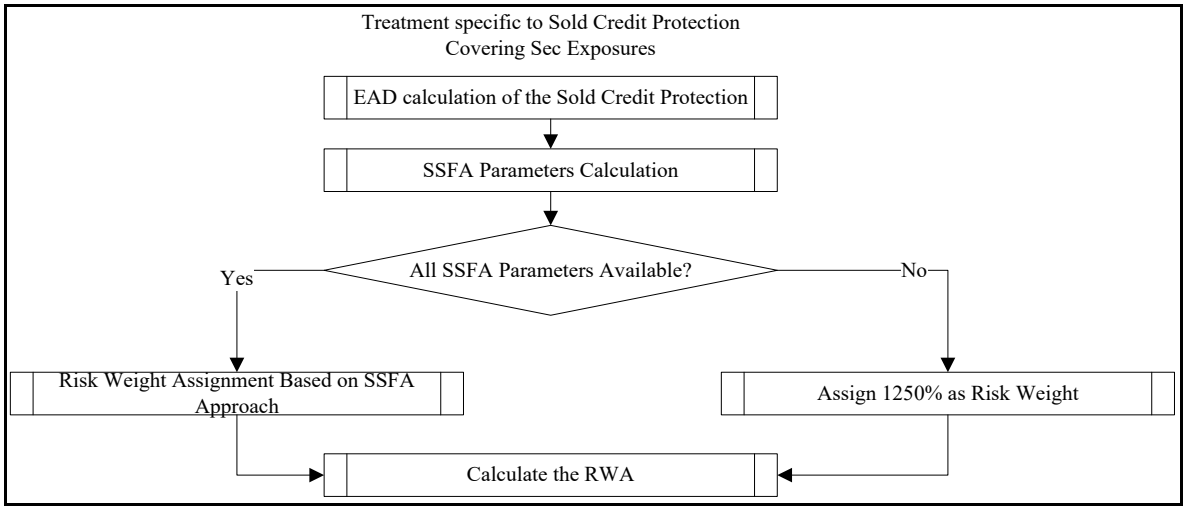
If any of the SSFA parameters are not available for calculation, then the sold credit protection is risk-weighted at 1250%.

Hence the hierarchy of approaches for SCP is, SSFA Approach and Risk Weight at 1250%

This hierarchy of approaches is different from the securitization exposures.

Process Flow for the Calculations

Figure 12: Process Flow for the Calculations



EAD Calculation of the Sold Credit Protection

The EAD for the sold credit protection is the notional amount of the transaction.

In the case of nth to default credit derivative, the EAD is the largest notional amount of all underlying exposures.

SSFA Parameters Calculation

In the case of nth to default credit derivative, the pool parameters of SSFA (Kg, W, and p) are calculated in the same manner as any other securitized exposure.

The tranche parameters A and D are calculated differently, from the calculation for the securitized exposures. They are calculated as follows:

Parameter A

It is calculated as the ratio of the sum of the notional amount of all underlying exposures that are subordinated to the bank's exposure to the total notional amount of all underlying exposures.

The smallest (n-1) exposures are subordinated to the bank's exposure.

This is the same as the existing calculation in the US Basel III Advanced approach SCP treatment under SSFA.

Parameter D

It is equal to Parameter A + the ratio of the notional amount of the bank's exposure to the total notional amount of all underlying exposures.

This is the same as the existing calculation in the US Basel III Advanced approach SCP treatment under SSFA.

In the case of guarantee and credit derivative, the pool parameters of SSFA (Kg, W, and p) and the tranche parameters (A and D) are calculated in the same manner as any other securitized exposure.

Check to find whether all the SSFA Parameters are available.

There is a check to identify whether all the SSFA parameters (KG, W, p, A and D) are available for the sold credit protection exposure.

If yes, calculate the risk weight as per the SSFA Approach,

If not, assign the sold credit protection with 1250% Risk weight.

Calculate the RWA

The RWA is calculated as the Pre-mitigation EAD multiplied by the Pre-Mitigation Risk Weight.

In the case of sold credit protection exposures, the Pre-Mitigation EAD and the Post Mitigation EAD are the same since there are no mitigants for these exposures.

Simple Risk-Weight Approach (SRWA)

Assigning Risk weights based on equity issuer, and categorization of Risk Weights and calculation of RWA is similar to US Advanced Approach.

This means:

- Risk Weight = 0% for equity exposure to Standard party type Sovereign, Highly Rated Multilateral Development Bank, Multilateral Development Bank, US Government
- Risk Weight = 20% for equity exposure to Standard party type US PSE, Federal Home Loan Bank or the Federal Agricultural Mortgage Corporation (Farmer Mac)
- Risk Weight = 100% for equity exposure to Community Development Institution, the effective portion of a hedge pair, Non-significant equity exposures.

The effective portion of a hedge pair is calculated from an effective hedge wherein two equity exposures either have the same remaining maturity or each has a remaining maturity of at least three months; the hedge relationship is formally documented in a prospective manner specifying measure of effectiveness (E). A hedge is called effective if the measure of effectiveness (E) is greater than or equal to 0.8. This condition is same as in the Advanced approach and US Basel II. Additionally, the calculation of the effective and ineffective portion of the hedge pair also remains the same as in the Advanced approach and US Basel II.

The definition of Non-significant equity exposures remains the same as in the advanced approach.

Which is:

- Risk Weight = 250% for Significant investments in the capital of unconsolidated financial institutions in the form of common stock that are not deducted from capital. This is the same as in the advanced approach.

- Risk Weight = 300% for Publicly-traded equity exposure and other than those equity exposures that receive 600 percent risk weight
- Risk Weight = 400% for Equity exposure that is not publicly traded and other than those equity exposures that receives 600 percent risk weight
- Risk Weight = 600% for Equity exposure to an investment firm meeting the definition of a traditional securitization and has greater than immaterial leverage. These conditions are the same as in the Advanced approach.

The look-through approaches for the equity exposure to investment funds remain the same as in the advanced approach.

Most of the rules and processes used for Equity exposure treatment in the US Advanced approach can be used for Equity exposure treatment in US Standardized approach; except following changes:

A rule "US - US III - STD - Equity RW Assignment for Sovereign Fed Home Loan and Community Development – SRWA" is created in the sub-process "Equity Exposures - Simple Risk Weight Method" for Standardised approach run. This is similar to the rule "USA - Equity Non Inv Fund RW Assignment Hedge Pair – SRWA" in the Advanced approach run.

The mapping for Risk Weight Assignment is as follows:

Table 17: Mapping for Risk Weight Assignment

Basel II Asset Class	USA - Non Investment Fund Equity Approach	Standard Equity Issuer Type	Risk Weight
Equity Exposures	Simple Risk Weight Approach	Sovereign	0%
		Highly Rated Multilateral Development Bank	0%
		Multilateral Development Bank	0%
		US Government	0%
		Federal Home Loan Bank	20%
		Government Sponsored Entities	20%
		US PSE	20%
		Community Development Institution	100%

A rule "US - US III - STD - Equity RWA Calculation for Sovereign Fed Home Loan And Community Development – SRWA" is created, for RWA calculation, in the sub-process Equity Exposures - Simple Risk Weight Method in the standardized approach run. It is similar to calculation rule USA - Equity RWA Calculation for Sovereign Fed Home Loan And Community Development – SRWA in the Advanced approach run, is replaced with RWA calculation formula and, hence, the associated BP is same as in US advanced approach. However, the following is the mapping for Standard Equity Issuer type:

Table 18: Mapping for Standard Equity Issuer Type

Basel II Asset Class	USA - Non Investment Fund Equity Approach	Standard Equity Issuer Type

Equity Exposures	Simple Risk Weight Approach	Sovereign
		Highly Rated Multilateral Development Bank
		Multilateral Development Bank
		US Government
		Federal Home Loan Bank
		Government Sponsored Entities
		US PSE
		Community Development Institution

Hedge Effectiveness and Calculation of Effective Portion of Hedge pairs:- Two equity exposures form an effective hedge if the measure of hedge effectiveness is >= 0.8, in addition to the other conditions on remaining maturity and documentation criteria. The measure of hedge effectiveness is given as download (n_msr_hedge_effectiveness). Effective Portion of hedge pair is calculated through DT **CAL_EFF_PORTION_HEDGE**.

While calculating the effective Portion of the hedge, check if the measure of hedge effectiveness is greater than or equal to 0.8.

Which means:

IF Hedge Effectiveness Measure >= 0.8

Then,

Effective Portion of Hedge Pair = Hedge effectiveness measure X greater of the adjusted carrying values of the equity exposures forming a hedge pair.

Ineffective Portion of Hedge Pair = (1- Hedge effectiveness measure) X greater of the adjusted carrying values of the equity exposures forming a hedge pair.

Else,

Ineffective Portion of Hedge Pair = Greater of the adjusted carrying values of the equity exposures forming a hedge pair.

Ensure to check if it calculates the effective portion of hedge pair as it is required to have a check on the value of the measure of hedge effectiveness.

Significant investments in the capital of unconsolidated financial institutions that are not deducted from capital, as per capital structure treatment are mapped to the Credit RWA capital component group. The risk weight of 250% applies to such equity exposures.

Mitigant Eligibility and Haircut Assignment

As per the Regulatory Capital rules guidelines, BCBS recognizes the must change certain criteria in the eligibility of mitigants due to the economic crisis of 2008. It has revised the criteria for recognition of the eligible mitigants, applicable for the Securitized and the Non-Securitized exposures. The US regulator has also revised the haircuts to be applied for the debt securities issued by a securitization transaction that acts as collateral. These changes are an outcome of the financial crisis of 2008, as these transactions are sensitive to fluctuations in the price. This is applicable in the case of Standardized Approach and Advanced Approach for the US.

The process flow for CRM is the same as in the existing Basel II computation except for a few differences. The differences are in the Mitigant Eligibility and the Mitigant Haircut Assignment procedures. The Mitigant Eligibility depends on the original ratings in the case of Securitized exposures. Hence, this affects the credit rating processing.

All the rating information of the mitigants is populated from the staging tables to the processing tables. The mitigants' rating information is captured in the instrument rating details. The flag Y in the **F_ORIG_CREDIT_RATING_IND** indicates that the rating is the original rating or the rating of the instrument at the time the protection was given and N indicates that the rating is the current rating.

This is handled in the **CREDIT_RATING_PROCESSING** process.

Also, multiple assessment is performed for the mitigants current rating and the original rating. This is handled along with the multiple assessments of the exposures.

The Mitigant Eligibility, Mitigant Risk Weight, Haircut Assignment, and Allocation of Mitigants to Exposures are handled in the CRM sub-process.

Mitigant Eligibility

The application identifies the eligible mitigants based on the criteria as mentioned by the US Regulatory Capital Rules. The application identifies the following mitigants– collateral, guarantees, and credit derivatives. The application is capable of using the Simple Approach and the Collateral Haircut Approach for the mitigants which are part of the collateral. The application identifies the eligibility of the financial collateral separately for the simple approach and the Collateral Haircut Approach. The eligibility of the collateral mitigants is based on the issue of the mitigant, mitigant types, the credit rate with investment-grade assigned to the party (as applicable), and the classification of collateral as senior or not. For equity, the eligibility is based on the equity trading status.

The application also identifies whether the mitigant is a Re-securitized exposure and if yes, makes it ineligible. The application identifies the eligibility of the guarantees and credit derivatives based on the party type of the mitigant and the credit rating assigned to the issuer of the mitigant. This is based on the satisfaction of the criteria as specified in the US Regulatory Capital Rules. All the guarantees and credit derivatives issued by issuers who are reclassified as Other Entities are treated as eligible for Non-Securitization exposures if at the time the guarantee is issued or anytime thereafter, has issued and outstanding unsecured debt security without credit enhancement that is investment grade. All the guarantees and credit derivatives issued by issuers that are reclassified as Other Entities are treated as eligible for Securitization exposures if they satisfy the current rating and the original rating criteria specified by the US Regulatory Capital Rules. For processing the original rating of these issuers, the solution performs multiple assessments of the initial ratings. This is performed by the Data Transformation “Mult_Asses_Initial”. The details of the Data Transformation for Securitization are as follows:

Table 19: Data Transformation for Securitization

Data Transformation Name	Objective	Processing Logic
Mult_Asses_Initial	The objective of this Data Transformation is to perform multiple assessments of the initial ratings and assign a normalized rating and risk weight to the mitigants. This is specific to the Basel III Securitization CRM framework.	For each mitigant, the various standard ratings associated with that mitigant as of the time it was initially issued and the respective risk weights are identified. If the number of ratings is 1, then the same rating gets assigned as the standard initial rating for the mitigant. If the number of ratings is greater than or equal to 2, then the mitigant is assigned a standard initial rating which corresponds to the worst of the best two risk weights associated with the initial ratings assigned.

Haircut Assignment

The application assigns the various haircuts, as applicable to the Mitigants. For collaterals following the Simple Approach for recognition, no haircuts are assigned to the mitigant. For collateral following the Collateral Haircut Approach, the application is flexible to use the supervisory haircuts and scale up, if required, based on the minimum holding period. The application can also use the bank's estimate of haircuts. The application applies the volatility haircut, FOREX haircut, and the maturity mismatch haircut to the mitigants as appropriate. This is as per the US Regulatory Capital Rules regulations. The volatility haircuts for debt securities which are mitigants are modified to include the Securitized exposures.

Only eligible mitigants are considered for haircut assignment. The eligible mitigants are moved from the mitigants table to the sub-exposures table.

- The CRM change is applied in the following processes:
- USA - US III - Non-securitization Exposure Treatment – STD
- USA - US III - Securitization Exposure Treatment - STD

This is applicable for Basel III Standardized Approach, Advanced Approach. This change has an impact on the Securitized Exposures and the Non-Securitized exposures.

Key Data Elements

For a complete list of tables and columns to be updated, see the Download Specifications document.

For Mitigants

Re-securitized exposures Mitigant – The mitigants belonging to re-securitized exposures have a "Y" value in this field. The is marked as ineligible mitigants.

Securitized exposures Mitigant – The mitigants belonging to securitized exposures have a "Y" value in this field. The application assigns different volatility haircuts for these, depending on the current ratings and the residual maturity.

For Ratings

Current Rating for the Guarantees and Credit derivatives issued to Non-Securitized Exposures.

Current Rating and Original Rating for the guarantees and credit derivatives issued to Securitized Exposures.

6.1.1.2.2 Cleared Transactions

The G20 Leaders, at their Pittsburgh summit in September 2009, agreed to many measures to improve the over-the-counter (OTC) derivatives markets, including creating incentives for banks to increase their use of Central Counterparties (CCP). Central clearing decreases the possibility of systemic risk by reducing the possibility of transferring financial contagion risk problems from one institution to another institution. This movement of a transaction to a CCP and the eventual failure of CCP can be catastrophic to the entire financial system. The US III, in line with Basel committee guidelines, has introduced a new capital requirement for a bank's exposure arising from OTC, exchange-traded derivatives, and repo style transactions which are cleared through CCP. The application calculates the risk charge for the transaction involving CCP's as per the guidelines laid out in US III.

This concept is applicable for all the OTC and exchange-traded derivatives and SFT products cleared through Qualified Central Counterparty (QCCP). For more information on terms such as Central Counterparty, Qualifying Central Counterparty, Clearing Member, Clearing Member Client, and Bankruptcy Remote, see **Error! Reference source not found.**.

Assumption

The fair value of the collateral is at counterparty and collateral type level.

Interpretation

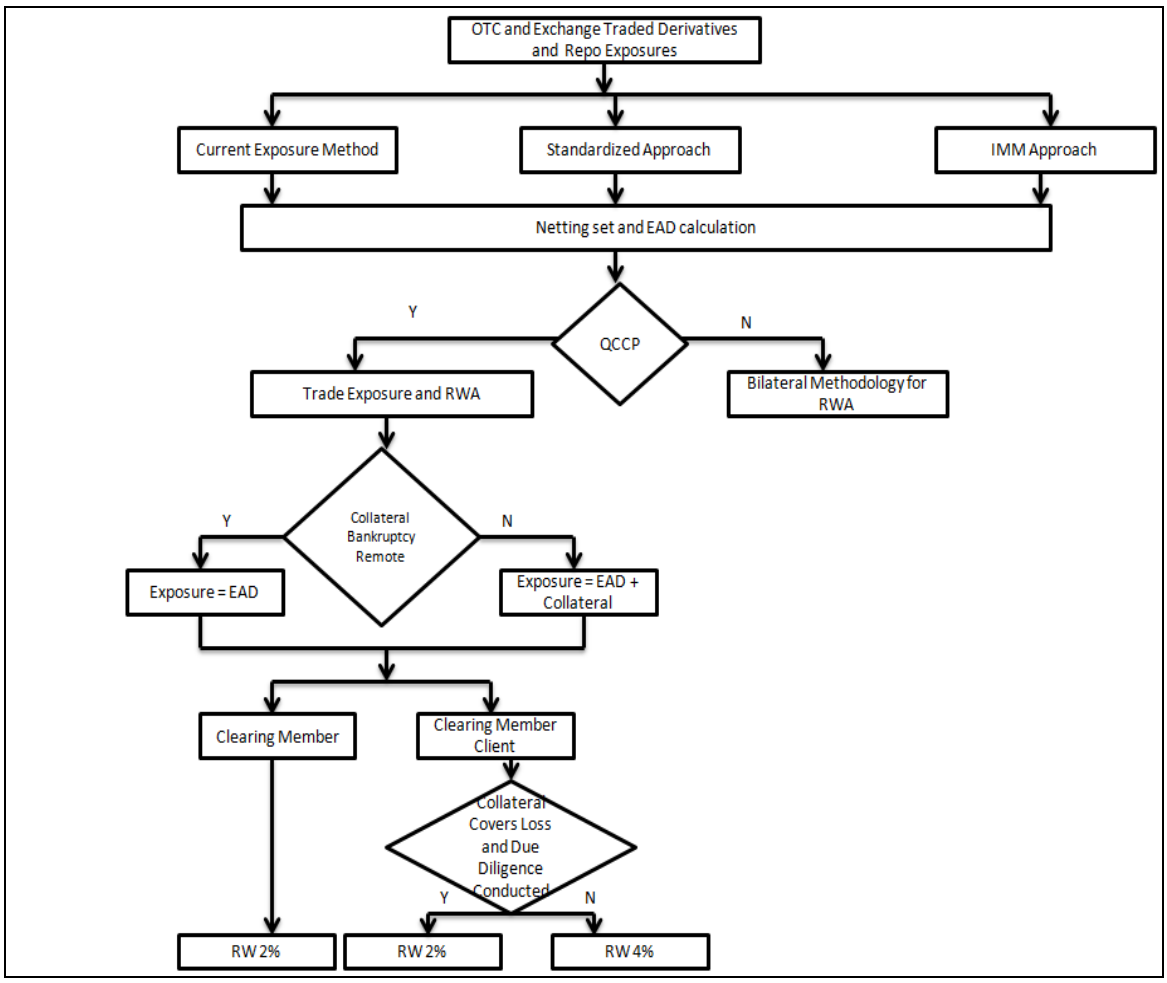
US III does not clearly mention the treatment of collateral posted with non-qualifying CCP. Therefore, the application currently applies the treatment of bilateral trade for the exposure of banks with non-qualifying CCP (NQCCP).

For the collateral posted with NQCCP, concerning Reserve Bank of India (RBI) directives, the application currently applies the same risk weight to the collateral posted with NQCCP with transactions of the same nature.

US III does not state a differential treatment for transactions between clearing member and client, which arises due to the clearing member acting as an intermediary between client and CCP. The application currently does not support any such functionality.

Process Flow

Figure 13: Process Flow for Cleared Transactions



EAD Calculation

EAD calculation is computed as per the Current Exposure Method (CEM) or should be provided as an input for the Standardized or IMM approach. The Rule Non-Sec Pre-Mitigation EAD Amount for Cleared Transaction Collaterals under the EAD Calculation sub-process computes this.

Treatment of Exposure with Qualified CCP when Reporting Bank act as Clearing Member

The application expects you to identify all the transactions which fall under the group of cleared transactions. The application calculates risk charges separately for exposures and collaterals posted with the QCCP. All the exposures with the QCCP are assigned a risk weight of 2%. If the collateral posted with the QCCP is not bankruptcy remote, then a risk weight of 2% is assigned. Otherwise, a 0% risk weight is assigned.

Treatment of Exposure with Qualified CCP when Reporting Bank act as Clearing Member Client

The application expects you to identify all the transactions which fall under the group of cleared transactions. Risk weight assignment for the exposure with QCCP is based on the validation of the collateral posted by the reporting bank with the clearing member or QCCP. A risk weight of 2% is assigned if the following conditions are met:

If the collateral posted covers all the losses arising for the clearing member or QCCP

Due diligence is conducted on the collateral wherein there is no restrictions on the clearing member or QCCP for using posted collateral, in case of any legal proceeding at 2%.

These two conditions (that is, collateral covers the loss and due diligence conducted) are expected to be provided as input.

If the preceding two conditions are not met, then a risk weight of 4% is assigned. These conditions are collateral specific and the application expects it for the collateral posted with QCCP. It automatically assigns the same to all the exposures of reporting bank with the QCCP. Collateral posted with the QCCP is also assigned the same risk weight which gets assigned to the exposure.

Treatment of Exposure with Non-qualifying CCP when Bank acts as Clearing Member or Clearing Member Client

The application expects you to identify all the transactions which fall under the group of the cleared transaction. Risk weight assignment for exposure and collateral posted with the non-qualifying CCP is assigned the same risk weight as that of bilateral trade. The CCP is considered as a bank or corporate for the treatment.

The Risk Weight is assigned by the Rule Risk Weight Assignment for Cleared Transactions under the sub-process Risk Weight Assignment and the Capital Charge for these transactions are calculated by the Rule Non-Sec Pre-Mitigation Capital Charge Calculation for Cleared Transactions under the sub process Capital Calculation.

The US Regulatory Capital Final Rules provides that a clearing member banking organization for the following:

- Acts for its account
- Is acting as a financial intermediary (with an offsetting transaction or a guarantee of the client's performance to a QCCP)
- Guarantees a QCCP's performance to a client

Which is applied to a 2% risk weight to the banking organization's exposure to the QCCP. Transaction details where reporting bank role is a Clearing Member (CM) or a Clearing member client (CMC) is provided in the following images:

Figure 14: Reporting Bank Role is a Clearing member (CM) or a Clearing Member Client (CMC)

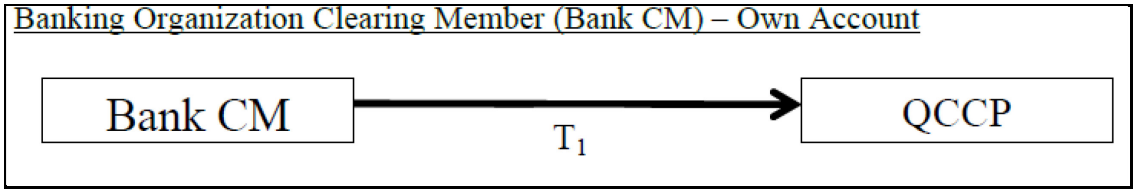


Figure 15: Reporting bank role is a Clearing member (CM) or a Clearing member client (CMC)

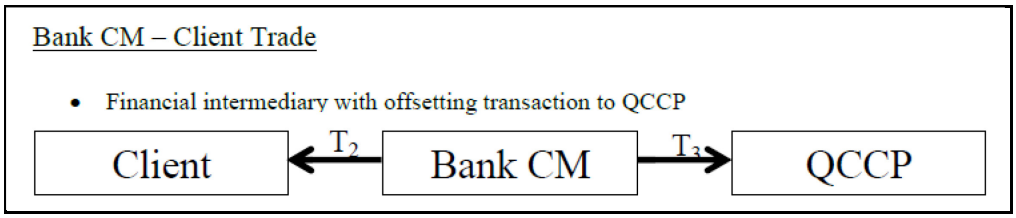
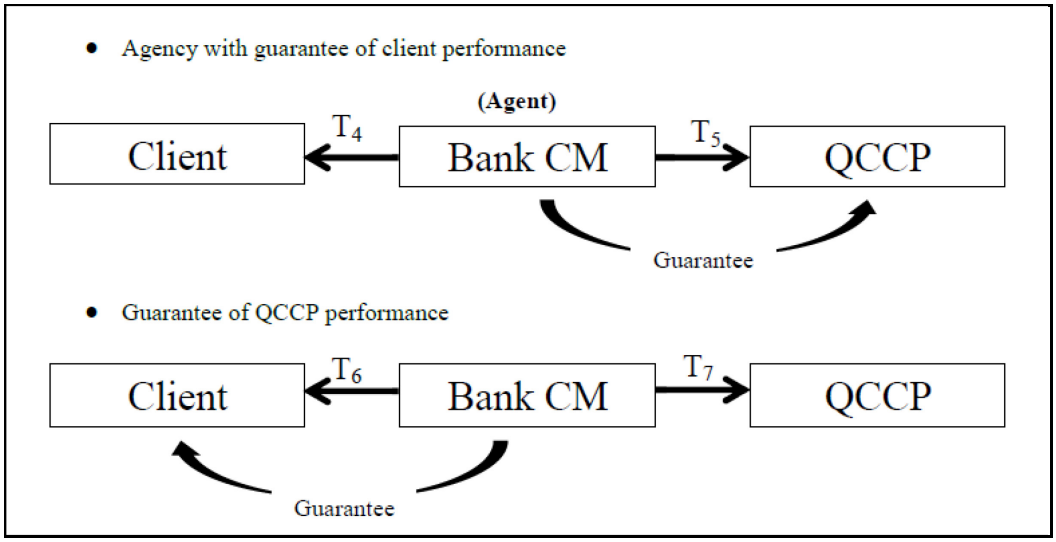


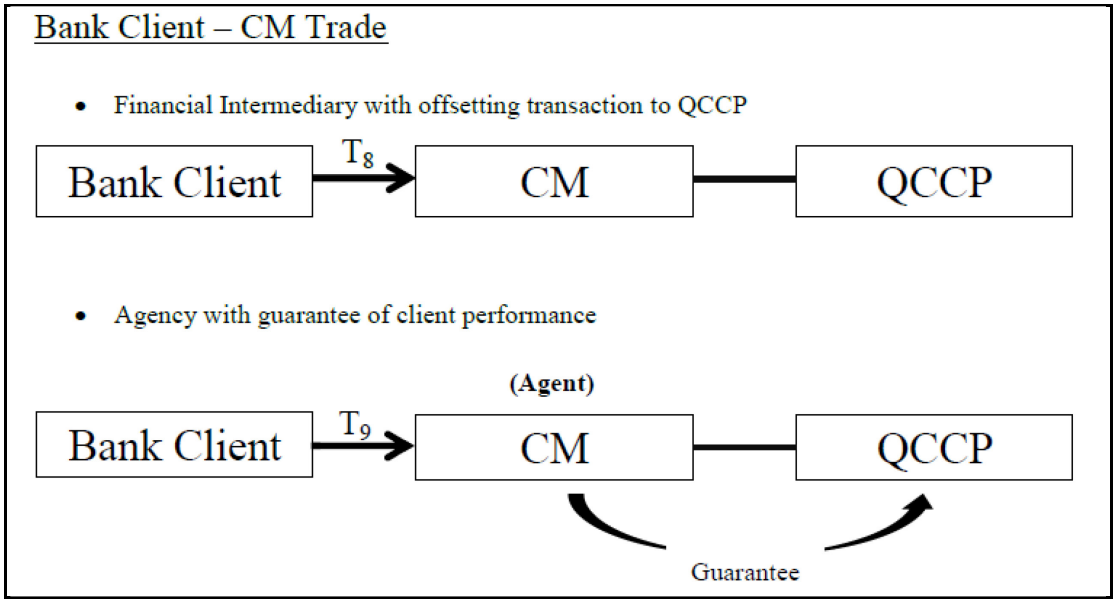
Figure 16: Reporting Bank Role is a Clearing member (CM) or a Clearing member Client (CMC)



Banking organizations can play an agency role for a direct transaction between CMC and CCP by providing a guarantee to CCP on behalf of the client or a guarantee to the client on behalf of CCP.

In case of guarantee to CCP on behalf of a client, there is no exposure to CCP but the guarantee is exposure to the client. This is treated as OTC exposure to the client. In case of guarantee toward the performance of CCP, exposure is taken for client and CCP as displayed in the following chart detailing for all the transactions.

Transaction details where reporting bank role is a Clearing member client (CMC):



Treatment details for Cleared Transactions

Table 20: Risk-Weighted Treatment for Cleared Transactions

	Exposure to	Description	Risk-weighting treatment under the US Regulatory Capital Final Rule
T1	QCCP	Own Account	2% risk weight on trade exposure amount
T2	Client	Financial intermediary with offsetting trade to QCCP	OTC derivatives with CEM scalar**
T3	QCCP	Financial intermediary with offsetting trade to QCCP	2% risk weight on trade exposure amount
T4	Client	Agent with guarantee of client performance	OTC derivatives with CEM scalar**
T5	QCCP	Agent with guarantee of client performance	No exposure
T6	Client	Guarantee of QCCP performance	OTC derivatives with CEM scalar**
T7	QCCP	Guarantee of QCCP performance	2% risk weight on trade exposure amount
T8	CM	CM financial intermediary with offsetting trade to QCCP	2% or 4% risk weight on trade exposure amount
T9	QCCP	CM agent with guarantee of client performance	2% or 4% risk weight on trade exposure amount

- Risk weight varies depending on compliance with bankruptcy remoteness of collateral and probability of client positions.
- Advanced approaches banking organizations using the IMM can reduce the margin period of risk. Under the US Regulatory Capital Final Rules, a clearing member banking organization treats its counterparty credit risk exposure to clients as an OTC derivative contract, irrespective of whether the clearing member banking organization guarantees the transaction or acts as an intermediary between the client and the QCCP. Consistent with the BCBS CCP interim framework, to recognize the shorter close-out period for cleared transactions, under CEM approach a clearing member banking organization can calculate its exposure amount to a client by multiplying the exposure amount, calculated using the CEM, by a scaling factor.

Table 21: Scaling Factor

Holding Period (days)	Scaling Factor
5	0.71
6	0.77
7	0.84
7	0.89
9	0.95
10	1.00

Key Data Elements

Some key data expectations are the following:

- For the exposure, the application expects the counterparty for the trades which are stamped as a cleared transaction, to be CCP.
- The application also has captured the clearing member code if the role of the bank for the transaction is a clearing member client.
- For the collateral posted with clearing member, the application expects the counterparty to be a clearing member and in addition, the application also captures the QCCP for which collateral is posted.
- When the collateral is posted with CCP, transactions similar to exposures are expected. Collateral is also expected at counterparty and collateral type levels.
- All the collateral records are assigned the risk weight separately.
- The following data elements are expected as an input from the client:
  - Central Counterparty is Qualifying or Non Qualifying.
  - Collateral covering losses and due diligence conducted by CMC for the collateral contract.
  - Bankruptcy Remote status for the collateral posted with CCP.
  - The fair value of the collateral at counterparty and collateral type.
  - Bank's role in the transaction with the Central Counterparty

6.1.1.2.3 Default Fund Contribution

According to the US Regulatory Capital Final Rule, a default fund contribution refers to the funds contributed or commitments made by a clearing member to a Central Counterparty's (CCP) equalized loss-sharing agreement. The purpose of such default funds is to provide capital, in addition to the collateral posted by participants and in addition to capital provided by the clearinghouse, as a safeguard against extraordinary losses that might occur in connection with.

For example a financial crisis in the market or the simultaneous defaults of several large members. The clearing members contribute to such default funds kept with the central counterparty (clearing house) in the proportion of their exposure to the central counterparty. The default fund contributions by the clearing members contribute toward the central counterparty's regulatory capital along with CCP's

contributions to the default fund. These contributions act as collaterals to mutually share in the losses incurred by the clearing members due to counterparty defaults.

For each clearing member, a contribution is made to the central counterparty's default fund. This contribution acts as a relief's against the defaults by any clearing member of the central counterparty.

US Regulatory Capital Final Rules explains the methods that the banking organization playing the part of a clearing member of the CCP, must adopt and compute risk-weighted assets (RWA) for a non-qualifying and a qualifying CCP.

If the CCP is not qualified (Non-QCCP), then the risk-weighted asset amount for the banking organization's default fund contribution is the sum of default fund contribution multiplied by 1250%.

If the CCP is a qualified CCP (QCCP), then the RWA amount is computed using one of the following two approaches stated below:

Table 22: RWA Amount Calculation

Approaches	Subprocess
Total Default Fund Contribution Approach	RWA for Default Fund Contribution with QCCP Total Default Fund Contribution Approach
Bank's Own Default Fund Contribution Approach	RWA for Default Fund Contribution with QCCP Banks Own Default Fund Contribution Approach

Approach 1

To compute the clearing member's capital requirement, which is the reporting bank's capital requirement for the contributions made to the CCP's default fund, the hypothetical capital requirement of the central counterparty for the default fund must be known. This must be computed by the central counterparty based on the exposures of all the clearing members to the default fund. After this figure is calculated by the CCP, it is shared with all the clearing members to enable them and to compute their respective capital requirements against the default fund.

When the reporting bank gets the hypothetical capital requirement from the QCCP, the next step is to compute the capital requirement of the reporting bank by finding out the proportion of the reporting bank's contribution in the total default fund contribution.

The parameters considered for this purpose include the following QCCP's:

- Net potential exposure to the two largest clearing members
- The total net potential exposure to all the clearing members
- Total default fund contribution by all the clearing members
- QCCP's contribution to the default fun
- The total number of clearing members for the default fund.

The last step is to compute the risk-weighted assets of the reporting bank corresponding to the default fund contribution to the QCCP by using the capital computed in the previous step.

These steps and the calculation involved are the following:

Step 1

It requires the QCCP to calculate its hypothetical capital requirement (KCCP) for the default fund. This is done by the QCCP and is published to the clearing members for them to use for their respective capital calculations.

Step 2

Compare KCCP with the funded portion of the default fund of a QCCP and calculate the capital requirement of the bank (KCM) by using the total of all the clearing members' capital requirements (K*CM). This capital requirement is considered on the contribution that the clearing members make to the default fund of the QCCP.

Approach 2

RWA amount for the default fund contribution is equal to 1250% multiplied by default fund contribution subject to a cap based on the banking organization's trade exposure amount for all of its transactions with a QCCP. RWA amount for default fund contributions is a minimum of:

(1250% * default fund contribution to the QCCP, 18% * Trade Exposure Amount to the QCCP).

Key Data Elements

Key data elements to be noted are listed in this section. To view the complete list of tables used, see the Download Specification document.

Default fund contributions and related data are expected at the Default fund – Central Counterparty level in the entity Stage Central Counterparty Details (STG_CCP_DETAILS).

Hypothetical Capital Requirement of CCP, Maximum Net Potential Exposure of clearing member of CCP, 2nd Maximum Net Potential Exposure of clearing member of CCP, Total Net Potential Exposure of clearing member of CCP, Number of Clearing Members to the CCP, Total funded Default Fund Contribution of all clearing members to the CCP, Total unfunded Default Fund Contribution of all clearing members to the CCP and Default fund contribution of CCP from its funds for each central counterparty level required.

The application supports only the capital requirement of the bank (KCM) based on Funded/Unfunded default contributions from all clearing members not by Initial Margin. But data model supports placeholders to capture Total Initial Margin by all clearing members to CCP and Bank's initial margin posted to CCP.

Other Amendments

Eligible Guarantees

US III has amended the definition of eligible guarantee. An eligible guarantee, as per the proposed rule, now includes a contingent obligation of the U.S. Government or an agency of the U.S. Government, the validity of which is dependent on some affirmative action on the part of the beneficiary or a third party.

Hence, the following list of agencies (if issued a guarantee) is termed as an eligible guarantor:

- US Government
- Federal Home Loan Bank
- Federal Agricultural Mortgage Corporation (Farmer Mac)
- Depository institution
- Bank holding company

- Savings and loan holding company
- Credit union
- Foreign Bank
- Securities Firm

Party type reclassification Rule and mitigant eligibility Rule are modified to incorporate this amendment in the current release.

Qualified Revolving Exposure

As per US III, unsecured and unconditionally cancellable revolving exposures with a pre-established maximum exposure amount of $100,000 (such as credit cards) are classified as Qualified Revolving Exposure (QRE). Unsecured, unconditionally cancellable exposures that require payment in full and have no communicated maximum exposure amount (often referred to as charge cards) are instead classified as 'other retail'. Hence, as proposed in US III, a charge card qualifies as a QRE, subject to an upper exposure limit of $100,000. Based on the exposure limit, the revolving exposure is classified into different asset classes. Hence, the reclassification rules are modified to include charge card which is reclassified into QRE in the product re-classification to standard product

Cash Item in Process of Collection

Cash item in process of collection is now risk-weighted at 20%. To assign this risk weight a new Rule (USA - Non Sec RW Assignment for Cash in Process of Collection) is introduced in the application.

Trade-Related Letter of Credit

In US III, a trade-related letter of credit exposure's effective maturity must be not less than one day. Hence, the effective maturity floor of 1 year is removed from the application. This change is brought into effect in the Rule Non-Sec Effective Maturity Assignment for all Exposures.

Money Market Fund Approach

Under the Money Market Fund approach, banks were permitted to assign a 7 percent risk weight to exposures to money market funds. These exposures were subject to restrictions under SEC rule 2a-7 and had an applicable external rating in the highest investment grade rating category. US III has proposed to eliminate the money market fund approach. The agencies believe it is appropriate to eliminate the preferential risk weight for money market fund investments due to their experience with them during the recent financial crisis, in which they demonstrated, elevated credit risk at times. Therefore, the Money Market Fund rule is removed in the current release.

Defaulted Exposures Guaranteed by US Government

Under the US Regulatory Capital Final Rules 2007 for defaulted exposure banking the organization should apply a capital charge of 8% for each wholesale and retail exposure.

Now as per US Regulatory Capital Final Rules, the treatment to defaulted exposure is made more risk-sensitive. Any wholesale or retail defaulted exposures must assign a 1.6 percent capital charge for the portion of exposure that is covered by an eligible guarantee from the US government.

The portion that is not covered by an eligible guarantee from the US government continues to be assigned an 8.0 percent capital requirement.

Eligible Double Default Guarantor

US Regulatory Capital Final Rules has introduced a term called Eligible Double Default Guarantor. The Eligible Double Default Guarantor for a guarantee or credit derivative obtained by a bank are as follows:

- Depository institution
- Bank holding company
- Savings and loan holding company
- Credit union
- Foreign Bank
- Securities Firm
- Non-US Based Securities Firm

Standard Supervisory Haircuts for Repo, Margin Loans, and Financial Collateral

Earlier in the US Regulatory Capital Final Rules, the volatility haircut for collateral and repo transactions was based on the credit rating of the issuer. However, now as per US Regulatory Capital Final Rule, the volatility haircut for Repo and Collateral is based on the risk weight of the issuer. The risk weight assigned to a different issuer is based on the risk classification or based on the investment-grade definition.

Risk-Weight Assignment to Sovereign Issuer

The risk-weight assignment for the sovereign issuer is based on the sovereign's Country Risk Classification (CRC). This is applicable for exposure volatility haircuts for repo transactions. The following table details the risk-weight assignment based on the different CRCs:

Table 23: Risk-Weight Assignment to Sovereign Issuer

Issuer Type - Sovereign	
CRC	**Risk Weight**
0	0%
1	0%
2	20%
3	50%
4	100%
5	100%
6	100%
7	150%
No CRC	100%
Sovereign Default	150%

For the following issuers, the risk weight assigned is detailed as follows:

- US Depository Institutions: a direct risk weight of 20% is assigned.

- Credit Unions: a direct risk weight of 20% is assigned.
- For a corporate issuer, a direct risk weight of 100% is assigned.
- Risk-weight assignment for foreign banks and foreign PSEs depends on the bank's native sovereign's CRC. For example, if a foreign bank is giving financial collateral to an entity in the US, and the foreign bank's headquarters are in the UK, then the CRC of the UK is used.

Table 24: Risk-Weight Assignment for Foreign Banks and Foreign PSEs

Issuer Type - Foreign Banks	
CRC of entity's home country	**Risk Weight**
0	20%
1	20%
2	50%
3	100%
4	150%
5	150%
6	150%
7	150%
No CRC	100%
Sovereign Default	150%

For all other issuers, a risk weight of 100% is assigned.

Securitization Exposures - Definition of Investment Grade

Securitization exposures which are of investment-grade are applicable as eligible financial collateral. Securitization exposures' investment grade is defined in the following table:

Table 25: Securitization Exposures - Definition of Investment Grade

Rating						Rating Type
Moody's		S&P		Fitch		
LT	ST	LT	ST	LT	ST	
Aaa	P-1	AAA	A-1+	AAA	F1+	Investment Grade
Aa1		AA+		AA+		Investment Grade
Aa2		AA		AA		Investment Grade
Aa3		AA-		AA-		Investment Grade
A1		A+	A-1	A+	F1	Investment Grade
A2		A		A		Investment Grade
A3	P-2	A-	A-2	A-	F2	Investment Grade
Baa1		BBB+		BBB+		Investment Grade
Baa2	P-3	BBB	A-3	BBB	F3	Investment Grade
Baa3		BBB-		BBB-		Investment Grade

If a bank has two ratings provided by two different rating agencies, where one rating is a Non-Investment Grade and the other is Investment Grade, then you must perform multiple assessments. Based on this risk weight assignment to different categories of issuers, the Standard Supervisory Volatility Haircut is as follows:

Table 26: Standard Supervisory Volatility Haircut

Residual Maturity	Issuer - Sovereign				Issuer - Non-Sovereign			Investment grade securitization exposures
	RW @ 0%	RW @ 20%	RW @ 50%	RW @ 100%	RW @ 20%	RW @ 50%	RW @ 100%	
<= 1 year	0.50 %	1.00%	1.00%	15.00%	1.00%	2.00%	4%	4.00%
> 1 year and <= 5 years	2.00 %	3.00%	3.00%	15.00%	4.00%	6.00%	8%	12.00%
> 5 years	4.00 %	6.00%	6.00%	15.00%	8.00%	12.00%	16%	24.00%
Main Index Equities	N/A	N/A	N/A	N/A	15.00%			
Gold	N/A	N/A	N/A	N/A	15.00%			
Other publicly traded equities	N/A	N/A	N/A	N/A	25.00%			
Mutual Funds	N/A	N/A	N/A	N/A	Highest haircut applicable to any fund (this is currently happening in the solution as equal to 25%)			
Cash Collateral	N/A	N/A	N/A	N/A	0.00%			

The volatility haircut is based on the ten-business day holding period. Sovereign issuers include the foreign PSEs. Foreign PSE that has a 0% risk-weight is allocated the same volatility haircut like that of a sovereign issuer that is being risk-weighted at 20%. For counterparty to be reclassified to a 'Foreign PSE' party type reclassification Rules and asset class reclassification Rules are modified in this current release.

6.1.1.2.4 Securitization – Standardized Approach for the US

The US Regulatory Capital Rules differentiates the Credit Risk computation of the Securitized exposures from Non-Securitized exposures. As securitized exposures are part of off-balance-sheet transactions, it follows a waterfall cash flow mechanism, unlike the other exposures. Hence these exposures are treated differently. Due to the economic crisis of 2008, the Basel Rule has categorized securitized exposures into securitized and re-securitized exposures.

Securitized exposures are exposures that are issued out of a pool of underlying exposures for the transfer of risk. Re-securitized exposures are the exposures that are issued out of a pool of underlying exposures which constitutes non-securitized exposures and some portion of securitized exposures. The application is capable of handling both securitized exposures and re-securitized exposures. It also handles the calculation for the originator and the investor bank roles. At a broad level, there are two categories of Investors:

- **An Investing Bank that has invested heavily in securitization.**
- **An Investing Bank that has invested minimally in securitization.**

For both the investors, the data is expected in the Stage Underlying Exposures (**STG_UNDERLYING_EXPOSURES**) for the underlying of the pool, Total Pool Level attributes in the Stage Pool table (**STG_SECURITIZATION_POOL**), Tranche Level attributes in the Stage Tranche table (**STG_SECURITIZATION_TRANCHE**), and the Exposure Level Attributes in the respective product processor (PP) tables.

For an originator, the data is expected in the same manner as the Investor, except for the Underlying Exposures. The underlying exposures of the pool are expected in the respective PP tables, depending on the product type of the underlying exposures.

If the exposure is credit protection in the form of guarantee, it is expected in the Stage Guarantees table (**STG_GUARANTEES**), and if it is a credit derivative, it is expected in the Stage Credit Derivatives table (**STG_CREDIT_DERIVATIVES**). If it is a regular investment in the Tranches by an investment bank, or it is part of the mandate for retention in the pool or tranche for an originating bank, the data is expected in the Stage Investments table (**STG_INVESTMENTS**).

For exposures being a facility like liquidity facility, or servicer cash advance, the exposures are expected in the Stage Commitment Contracts table (**STG_COMMITMENT_CONTRACTS**).

The US Regulatory Capital Rules specifies the following broad approaches for the calculation of the capital charge for the Securitization exposures:

- Standardized Approach
- Advanced Approach for the US
- Ratings Based Approach (RBA)
- Internal Assessment Approach (IAA)
- Supervisory Formula Approach (SFA)

Both the standardized approach and Advanced Approach for the US are handled by the application. In some computations, the calculations about the underlying exposures of the securitization transaction are required. This is computed before processing the Securitization exposures.

Standardized Approach

Due to the economic crisis in 2008 and other amendments brought in by the Dodd-Frank Act, US III has revised the treatment of securitized exposures. The application supports the following revised hierarchy of approaches for securitization exposures:

- Gross up Approach
- Simplified Supervisory Formula Approach (SSFA)
- Risk Weight at 1250%

Assumptions

The following is an interpretation about SSFA:

- In sec USA, investment grade is not based on Ratings; for low rated exposures, CRC ratings of the Originator are used for applying risk weight to the low rated exposures.

The following interpretation is about Gross up Approach:

- Banks that are not subject to market risk rule can only opt for Gross up Approach Assuming that the Bank is aware of its trading activity portfolio (for the Market Risk Rule Check), the Bank provides the approach selection that it wants to apply to all its sec exposures.

A few of the interpretations about SSFA are as follows:

- Investment-grade are ratings equivalent to BBB- or above
- Low ratings are ratings equivalent to BB+ or below

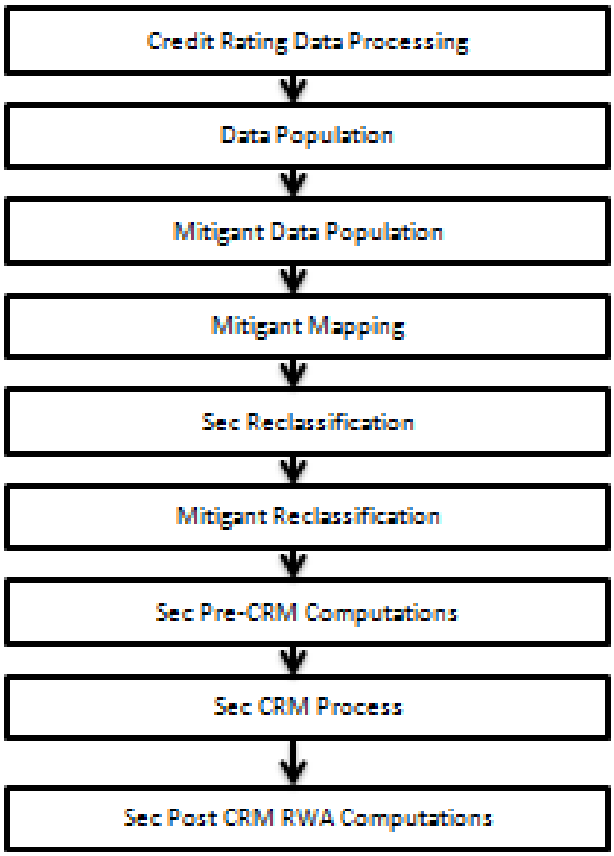
The following interpretation is about the Gross up Approach:

- Banks that are not subject to market risk rule can only opt for Gross up Approach Assuming that the Bank is aware of its trading activity portfolio (for the Market Risk Rule Check), the Bank provides the approach selection that it wants to apply to all its sec exposures.

Process Flow for Securitization – Standardized Approach

The process flow for Standardized Approach of Securitization exposures are as follows:

Figure 17: Process Flow for Securitization – Standardized Approach



The only change in the computation of the Securitization - Standardized Approach process, in the Basel III processing of the current release of the application, is in the Sec Pre-CRM Computation Process. Under this process, for Sec Deduction Process, the exposures which are lower than the investment grade and the unrated exposures are risk-weighted at 1250%.

For more information on the processing of the remaining line items Securitization –Standardized approach process flow, see **Error! Reference source not found.** on page **Error! Bookmark not defined.**.

Credit Rating Process

The entire rating information of the exposures and the mitigants are populated from the staging tables to the processing tables. The exposure and the tranche rating information are captured in the account rating (**STG_ACCOUNT_RATING_DETAILS**) tables and the mitigant rating information is captured in the instrument rating details (**STG_INSTRUMENT_RATING_DETAILS**) table. Though the ratings are no longer relevant, the investment-grade criteria are handled in the application with the help of these ratings. Any rating below BBB, are all non-investment grades and are low rated. The rating processing is handled in the USA Credit Rating processing.

Securitization and Mitigant Data Population with Mitigant Mapping

The data about pool, tranche, and exposures are populated from the staging tables to the processing tables. The underlying exposures data are captured in the respective product processor tables for originator records. The underlying exposures are captured in the underlying exposures (**STG_UNDERLYING_EXPOSURES**) table for investor and sold credit protection. The underlying exposures data follows the process of the non-securitization exposures. The securitization transactions which are backed by non-financial assets or by operating companies are excluded from the securitization treatment. They are instead treated as non-securitization exposures. Exposures created out of re-tranching of single assets such as Re-Remic positions need not be treated as re-securitization positions. Exposures that are created by re-tranching a single asset (like Re-Remic positions) are treated as securitization exposures, as mentioned by the accord. If the bank has provided a cleanup call, then consider the following scenarios:

- If Eligible clean up call indicator ='Y', then the call option exposure is a part of Sec RWA.
- If Eligible clean up call indicator ='N/Null', then the call option exposure which includes all the underlying exposures associated with securitization is a part or Non- Sec RWA.
- If Implicit support indicator ='Y', then the exposure is a part of Non-Sec RWA.
- If Implicit support indicator ='N/Null', then the exposure which includes all the underlying exposures associated with securitization is a part of Sec RWA.
- For Sec portfolio reporting purposes, capital of sec exposures belonging to the pool on which originator has provided implicit support is 0.

If a securitization (1) includes one or more underlying exposures in which the borrower is permitted to vary the drawn amount within an agreed limit under a line of credit, and (2) contains an early amortization provision, then Risk-based capital for these transferred exposures are calculated as per non-securitization framework.

If the bank has provided Early amortization provision, and at the pool level, the pool type= Revolving and Early amortization types are the following:

- Controlled committed Early Amortization Provision
- Controlled uncommitted Early Amortization Provision
- Uncontrolled committed Early Amortization Provision
- Uncontrolled uncommitted Early Amortization Provision

The RWA for this condition is calculated as per the non-sec framework, RWA is calculated for the Underlying of the Pool. For regulatory purposes, RWA, EAD and Risk weight for the securitized exposures are updated as zero. Early amortization type is expected as a download value at the pool level.

The mitigants data are populated from the staging table to the processing table. The exposures which are mapped to the mitigants are captured and populated from the staging table to the processing table. Securitization data population is handled by the process US III Sec Data Population. Mitigant data population is handled by the process USA Mitigant Data Population and exposure mitigant mapping population is handled in the process USA Sec Exp Mitigant Mapping Pop.

Sec Reclassification

The application uses the standard data for all kinds of calculations (product type like Eligible Liquidity Facility, bank role like Originator, pool type like Mortgage-Backed Securities). Before any calculation, the application reclassifies the bank-specific data to standard data. The application reclassifies the bank role to the standard bank role of an Originator or Investor. Other bank roles like Sponsor, Credit Protection Provider, and so on, are reclassified into Originator, Investor, and so on, respectively. The application also reclassifies the pool type to the standard pool type like Credit Cards Receivable Pool, Auto Loans, and so on. The application also reclassifies the product type to the standard product type like Mortgage-Backed Securities, Eligible Liquidity Facility, and so on. It reclassifies the mitigant type to the standard mitigant type like the Debt Securities, Credit Derivative, Cash, and so on. It reclassifies the mitigant issuer type to the standard mitigant issuer type like Banks, Corporate, and so on. These reclassification tasks are present in the Sec Reclassification sub-process.

Approach Selection

Due Diligence Requirement for Securitization Exposures

Except for exposures that are deducted from CET1 capital and exposures which are subject to Small-business loans and leases on personal property transferred with retained contractual exposure, if a banking organization is not able to meet due diligence requirements, it is required to assign a risk weight of 1250% to the exposures.

Due diligence requirement includes a comprehensive understanding of features of securitized exposures which affects the performance of the exposures which includes the following:

- Analyzing the risk characteristics of a securitization exposure before acquiring the exposure
- Understanding the Structural features of securitization that materially impacts the performance of the exposure
- Getting relevant information regarding the performance of the underlying credit exposure

Relevant market data of the securitization.

If a banking organization can meet due diligence requirements, a Bank can opt for SSFA, Gross up Approach or 1250% risk weight consistently to all its securitized exposures. For all the three approaches (opted by the bank), based on data availability, the methodology is assigned by the application. If the exposures are not qualified for the approaches opted by the bank, the exposures are risk-weighted at 1250%.

The application assigns the appropriate approach to the exposures, based on the criteria specified in the US III. SSFA parameters Kg for re-securitization positions are arrived at by using the capital of underlying securitization positions.

These approaches are applicable for all the bank roles. If the bank has opted for Gross up Approach for all its securitized exposures, the same cannot be assigned to the sold credit protection to calculate the risk weight, instead, it is risk-weighted at 1250%. This approach selection is handled in the sub-process Sec Approach Selection.

That is, in the case of re-securitization positions, if any of the underlying securitization positions are using any approach other than SSFA (Example: 1250%), the solution does not assign SSFA for the re-securitization position.

6.1.1.3 Credit Valuation Adjustments

Basel committee has introduced a new Credit Valuation Adjustment (CVA) capital charge, which is added to default risk capital charge to arrive at the new counterparty credit risk capital charge. In line with US Regulatory Capital Rules, The US Federal Reserve System has also introduced CVA as part of US III. The mark to market counterparty credit losses or the spread migration risk is captured with CVA that was not directly capitalized before. CVA is the difference between the risk-free portfolio value and the true portfolio value that takes into account the possibility of the counterparty's default. In other words, CVA is the market value of counterparty credit risk.

The application calculates the CVA charge for the OTC portfolio of a bank. When using the standardized approach, it is calculated at the portfolio level and for the advanced approach, it is calculated at the counterparty level. CVA charge is not applicable for the trades with a Central Counterparty and Structured Financial Transactions. Structured Financial Transaction is applicable only if the supervisor specifically mentions the same. You can include or exclude Structured Financial Transaction in CVA calculations in the Run Management screen. The portfolio level considers all the trades in different OTC products with all counterparties. The charge is calculated for the entire exposure of OTC products.

Counterparty level calculations consider all trades in different OTC products with a counterparty for calculation of CVA Charge. The charge is calculated for all counterparties with which banks have OTC exposures. The CVA charge for all the counterparties is summed up to ascertain the portfolio level charge. The manner of consolidation is dependent on the IMM approval status and Specific Interest Rate (SIR) Value at Risk (VaR) model approval status of the bank. The following section describes two ways of consolidating default risk charge and CVA capital charge:

- If the bank does not have IMM approval and SIR risk as a part of the approved VaR model for bonds

CCR Capital Charge = Default Risk Capital Charge (Current Exposure Method or Standardized Method based, whichever the bank is using for CCR) + Standardized CVA Capital Charge

- If the bank has IMM approval SIR risk as a part of the approved VaR model for bonds

CCR Capital Charge = Default Risk Capital Charge + Advanced CVA Capital Charge

All the OTC Derivatives products are part of CVA calculations. SFTs are included if you select the option from Run Management Screen. Also, trades with Central Counterparty (CCP) are excluded from CVA charge calculations.

6.1.1.3.1 Assumptions

CVA hedge should be identified by the clients separately. Only single-name CDS and Index Hedge are eligible for CVA. The US Federal Agency does not mention whether the index hedge position should be marked to the counterparty or not. The Basel Regulatory Capital application handles the index position in the following manner:

- Both index positions are marked to the level of the counterparty or not marked to the level of the counterparty is handled by the application.
- Effective index hedge amount is considered in CVA charge calculation at portfolio level without considering whether it is marked to the counterparty or not.
- If the index position is marked to the counterparty, then the index hedge amount is considered while allocating the total CVA charge to the counterparty CVA Charge, while using the standardized approach.

This process flow is divided into the following sections:

- Standardized (Simple CVA) approach
- Advanced approach.

6.1.1.3.2 Simple CVA Approach

The application calculates CVA capital charge at a portfolio level using the following formula as specified by US III guidelines:

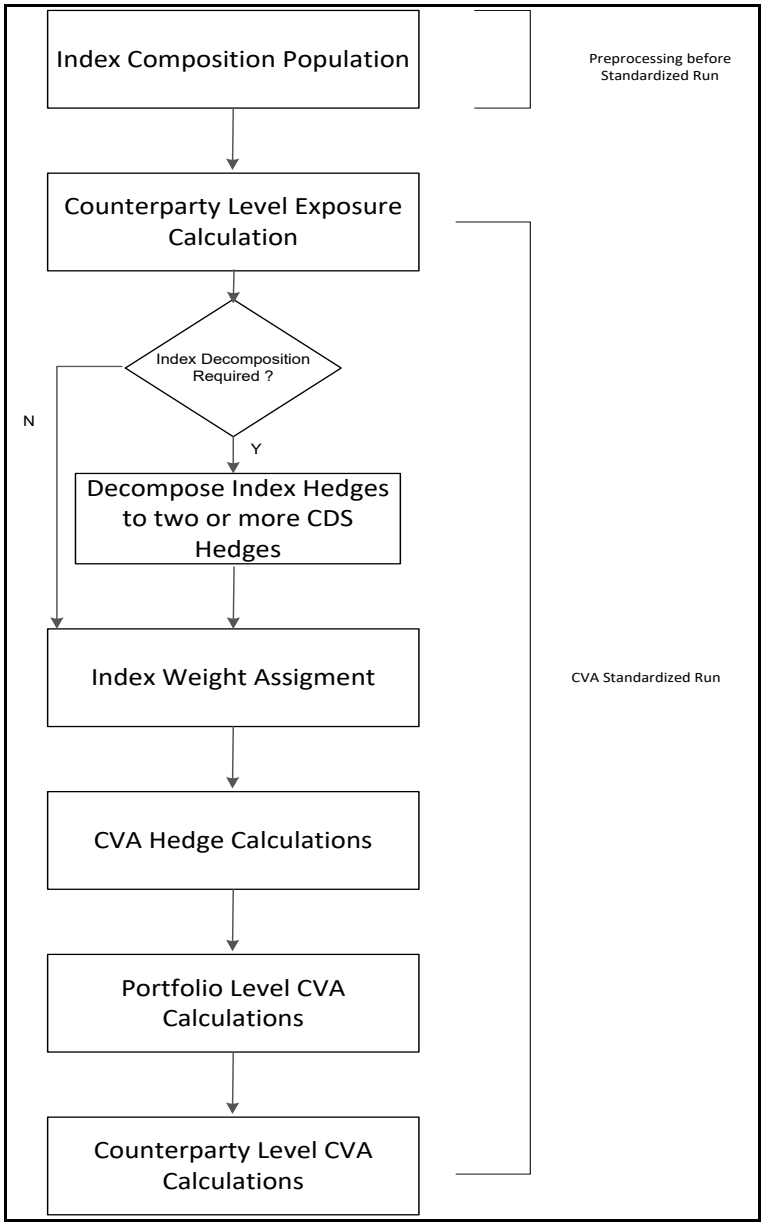
Figure 18: Formulae for Simple CVA Approach

$$K_{CVA} = 2.33 \times \sqrt{\left(\sum_i 0.5 \times w_i \times \left(M_i \times EAD_i^{total} - M_i^{hedge} \times B_i \right) - \sum_{ind} w_{ind} \times M_{ind} \times B_{ind} \right)^2 + A}$$

Where:

$$A = \sum_i 0.75 \times w_i^2 \times \left(M_i \times EAD_i^{total} - M_i^{hedge} \times B_i \right)^2$$

Figure 19: Pre-processing before Standardized Approach



CDS Spread Population and Index Composition Population

Pre-processed data for CVA is required to be populated only once for a particular execution date. The process USA_USIII_CVA_DATA_POPULATION in the Run Staging Data Population - USA Credit Value Adjustment is responsible for populating pre-processed data for CVA.

CVA Hedge Data Population

Mitigants data marked as CVA hedge is populated as a part of the CVA hedge data population. The application loads all the single-name CDS hedge and index hedge data. The hedge data marked as CVA does not flow in the application during the CCR process. New tables are not added for hedge records. However, a few columns are added to the existing table to capture CVA-specific data. CVA specific data is present in the following tables:

- **Fact Mitigants (F_CVA_HEDGE)**: Identifier for CVA hedge records by which the application identifies it as CVA hedge.
- **Stage Mitigants (V_REF_ENTITY_PARTY_ID)**: This field captures the counterparty of the hedge transaction.

Counterparty Level Exposure Population

The application expects the uncovered EAD at the netting agreement level or trade level. This is available as an output of the Current Exposure Method (CEM). If more than one netting agreement is available, then the exposures are summed at the counterparty level. These aggregated data are stored in the FCT_REG_COUNTERPARTY_CVA table using COUNTERPARTY_EXPOSURE_POPULATIO T2T.

The maturity adjustment discount factor is computed at the netting agreement level or for each netting agreement using the formula 1- exp (-0.05*Mi)/ (0.05*Mi).

Maturity is the notional weighted maturity at the netting agreement level. The application sums the data for exposure at the counterparty level. If more than one netting agreement is available, the exposures are discounted and then summed at the counterparty level. Weight assessment is performed based on the Counterparty PD as specified in the following table. Data is aggregated at the counterparty level and stored in a separate counterparty table.

Table 27: Weight Assessment Based on the Counterparty PD

Internal PD (in percent)	Weight (in percent)
0.01 to 0.07	0.7
>0.07 to 0.15	0.8
>0.15 to 0.4	1.0
> 0.4 to 2	2.0
>2 to 6	3.0
>6	10.0

Index Decomposition Required

You can select index decomposition from the Run Management screen. Index decomposition option creates single-name CDS hedge positions for the counterparties which are part of the CDS Index and also have exposures. Index hedge amount is adjusted by the same amount for which the single-name CDS hedge is created to get the maximum benefit from hedging. The maturity of the single-name CDS hedge is considered the same as the maturity of the index.

Index Weight Assignment

For index weight assignment, index composition and counterparty probability of default is expected as a download in the application. Weight for the index is the sum of all counterparty weights multiplied by the weight of the counterparty in the index.

CVA Hedge Calculations

After the population of hedge data and the creation of single-name CDS hedge from the index, the application sums the notional to counterparty level and populates in the CVA specific table. The maturity adjustment discount factor is computed by using the formula (1-exp (-0.05* Mihedge))/ (0.05* Mihedge).

If more than one CDS Contract is available for the counterparty, then this amount is summed at the counterparty level. Index hedge notional amount is computed after subtracting the notional of all single name CDS hedge created by the decomposition process from index notional. Maturity adjustment discount factor for index position is computed using the formula (1-exp (-0.05* Mind)) / (0.05* Mind). If more than one index hedge is available, then the index hedge amount is summed up. All the data required for CVA calculation is populated from mitigants data to CVA specific table. The data is summed for each counterparty and stored.

Portfolio Level CVA Calculation

As per the final rule, the time horizon is short (the square root of time scaling to 1 year is applied).

The CVA charge calculated at the portfolio level is populated in the FCT_REG_CVA_SUMMARY table. Single Name CDS Hedge component for CVA at the portfolio level is calculated and the summary table is populated using CVA_SUMMARY_POPULATION T2T.

Counterparty Level CVA Calculation

CVA Capital Charge at counterparty level is allocated using the following formula:

CVA at Counterparty = Total CVA at Portfolio *WCVAi

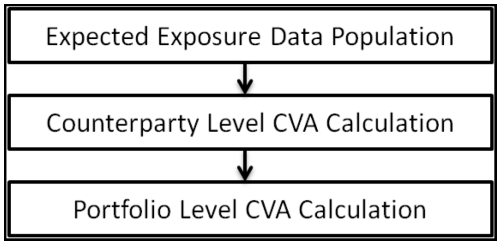
WCVAi = Absolute [0.5*Wi *(Mi * EADitotal - Mihedge * Bi) - $\sum_{indi}(W_{ind} * M_{ind} * B_{ind})$**]/**

ΣniAbsolute[0.5*Wi * (Mi * EADitotal - Mihedge * Bi) - $\sum_{indi}(W_{ind} * M_{ind} * B_{ind})$**]**

6.1.1.3.3 Advanced CVA Approach

The process flow for Advanced CVA Approach is as follows.

Figure 20: Process Flow for Advanced CVA Approach



The application calculates the CVA charge at the counterparty level and is aggregated at the portfolio level using the following formula:

K = 3* (CVAUnstressed VAR + CVAStressed VAR)

The application calculates the CVA charge at the counterparty level using this formula for each counterparty and sums the CVA charge for all counterparties to compute portfolio-level capital charge.

These aggregated data are stored in the FCT_REG_COUNTERPARTY_CVA table using the "COUNTERPARTY_EXPOSURE_POPULATION" T2T.

The CVA charge calculated at the portfolio level is populated in the FCT_REG_CVA_SUMMARY table. Single Name CDS Hedge component for CVA at the portfolio level is calculated and the summary table is populated using “CVA_SUMMARY_POPULATION" T2T.

Counterparty charge is calculated for two different scenarios:

- Expected Exposure calculated with Current Market Data.

- Expected Exposure calculated with Stressed Market Data.
- Expected Exposure Data Population

The data requirement which is required as input for calculation of CVA Charge using Advanced Approach is as follows:

Figure 21: Calculation of CVA Charge Using Advanced Approach

$$CVA = (LGD_{MKT}) \cdot \sum_{i=1}^{T} Max\left(0; exp\left(-\frac{s_{i-1} \cdot t_{i-1}}{LGD_{MKT}}\right) - exp\left(-\frac{s_i \cdot t_i}{LGD_{MKT}}\right)\right) \cdot \left(\frac{EE_{i-1} \cdot D_{i-1} + EE_i \cdot D_i}{2}\right)$$

- **LGDMKT**: This is the LGD of the counterparty based on the spread of the market instrument of the counterparty. It should be based on market assessment and not an internal estimate. LGD market should be an input for each counterparty.
- **Si**: This is the credit spread of the counterparty at each tenor Ti, which is used to calculate the CVA of the counterparty. Spread data is an input for each counterparty and tenor level.
- **Ti**: This is the tenor at which the Expected Exposure (EE) and spread are provided. Tenor is an input for each EE and spread.
- **EEi**: This is the Expected Exposure (EE) of the counterparty at revaluation time ti where exposures of different netting agreements of counterparties are added. Expected exposure is input at each counterparty and tenor level.
- **Di**: This is the default risk-free discount factor for each revaluation time bucket. Default risk-free rate is an input for each counterparty and tenor ti.

Counterparty Level CVA Calculation

CVA RWA calculation at counterparty level is computed by the following formula:

CVA RWA = 12.5 * K

Where K= CVA Capital charge calculated as per formula specified in the standardized or advanced method for each counterparty.

Portfolio Level CVA Calculation

CVA RWA calculation at the portfolio level is computed using the following formula:

CVA RWA = 12.5 * K

Where K= CVA Capital charge calculated as per formula specified in standardized or advanced method at the portfolio level.

CVA RWA is added to Credit RWA and is not multiplied by the factor 1.06.

6.1.1.3.4 Key Data Elements

A few key data elements are provided in this section for computation for Credit Valuation Adjustment (CVA). For a complete list of tables and columns to be updated, see the Download Specifications document.

- CDS index composition data requirement.

- CDS spread data for rating and tenor.
- Average index spread for all the index hedge positions.

6.1.1.3.5 Out of Scope

The following is not covered by the application in the computation of CVA:

- Treatment of specific wrong-way risk.

6.1.1.4 Capital Structure

Under Regulatory Capital Rules for Implementation of Basel III in the US, compliant with the Proposed rules, the capital calculations remain the same except for the AOCI treatment and the Non-qualifying capital instruments treatment. The regulatory capital ratios are calculated as the minimum of the standardized and the advanced capital ratios only for advanced approaches banking organizations that is, advanced banks. This does not apply to standardized approaches to banking organizations.

Under Regulatory Capital Rules for implementation of Basel III in the US (compliant with the Basel III Regulations), the Tier 1 capital has become the main constituent of the Capital Structure. The entire Capital Structure of the US has changed to be compliant with the Basel III Regulations and the Dodd-Frank Act. The total capital requirement of 8% remains the same as in the US Regulatory Capital Rule compliant with Basel II. However, the total capital increases after the addition of the capital conservation buffer and countercyclical buffer. The countercyclical capital buffer applies only to banks that are subjected to the Advanced Approach.

Under Regulatory Capital Rules for Implementation of Basel III in the US, Tier 3 is not part of the Capital Structure. Hence, remove the rule that captures T3 capital component processing in Capital Structure.

Mapping for T3 capital component is deleted from the bank Capital Group Components Reclassification

Also, the rules present in the Capital Component Calculations sub-process are deleted.

Components of Capital Structure

As per Regulatory Capital Rules for Implementation of Basel III in the US, the total capital consists of the sum of the following elements:

- Tier 1 capital
  - Common Equity Tier 1(CET1)
  - Additional Tier 1 (AT1)
- Tier 2 (T2) Capital
  - Minimum Capital Requirement

The following are the minimum capital ratios to be maintained by the bank. These values of capital are net of regulatory adjustments and deductions:

- Common Equity Tier 1 must be at least 4.5% of Risk Weight Assets (RWA).
- Tier 1 capital must be at least 6.0% of RWA.
- Total Capital (summation of Tier 1 and Tier 2 capital) must be at least 8.0% of RWA.

The Regulatory Capital Rules for Implementation of Basel III in the US does not state any limitations on the T2 capital and hence the application does not have any restrictions on the amount of T2 capital. All the

capital instruments which have become non-qualifying due to these regulations are phased out using the transitional arrangements.

The non-qualifying capital instruments identified are Cumulative Perpetual Preferred Stock and Trust Preferred Securities.

6.1.1.4.1 Assumptions

Deduction of Non-Significant Investments in the Capital of Unconsolidated Financial Institutions

As per Accord:

- The amount of a banking organization's non-significant investments in the capital of unconsolidated financial institutions that do not exceed the 10 percent threshold for non-significant investments are generally assigned the applicable risk weight under sections 32 (in the case of non-common stock instruments), 52 (in the case of common stock instruments), or 53 (in the case of indirect investments via a mutual fund) of the proposal, as appropriate.

Interpretation in the application:

- Investment below the 10% threshold is risk-weighted as per Advanced Approach for US of Banking Book products for banking book and trading book exposures. The trading book exposures are expected to be provided in the Stage Investment (STG_INVESTMENTS) table.

Treatment of REIT Subsidiary in Minority Interest calculation

As per Accord:

- REIT preferred shares issued by a REIT subsidiary that meets the proposed definition of an operating entity qualifies for inclusion in the regulatory capital of a banking organization. This is subject to the limitations outlined in section 21 of the proposed rule, only if the REIT preferred shares meet the criteria for additional tier 1 or tier 2 capital instruments outlined in section 20 of the proposed rule.

Interpretation in the application:

- REIT is treated as any other banking subsidiary and hence the value of the CET1, AT1, and T2 capital, Capital Ratio for each tier of capital, total RWA, and the percentage of shareholding in each of the components of capital is required for calculating Minority Interest. The third-party holding percentage must be 0% for the CET1.

Treatment of Investments in Hedge Funds and Private Equity Funds

As per Accord, consider the following:

- In the Accord, the investments in Hedge Funds and Private Equity Funds have to be deducted from Tier 1 capital. There is not much clarity on when these investments must be deducted – whether it is along with the other regulatory adjustments or before that. Also, it is not clear whether these are investments in the trading book or investments in capital ownership.

Interpretation in the application

- These investments in Hedge Funds and Private Equity Funds are deducted in the Tier 1 capital along with the other internal transactions.
- These investments are the ones where the Reporting Bank has ownership (that is, the Hedge Funds and Private Equity Funds are the subsidiary of the reporting bank). These investments are generally

outside the regulatory consolidation and hence are available as data in the Investments (**STG_INVESTMENTS**) table.

Calculation of Minority Interest

As per the Accord, consider the following:

- In the Accord, the example detailed for the Minority Interest computation uses the sum of its minimum CET1 capital (4.5%) and the capital conservation buffer (2.5%). However, there is a statement that discusses the assumption of countercyclical buffer to be at 0% without any details on the usage of countercyclical buffer in the computation.

Interpretation in the application

- The application uses the sum of Minimum CET1 Capital, Capital Conservation Buffer, Countercyclical Buffer, and Additional Loss Absorbency Buffer.

AOCI Transition

As per Accord:

- The AOCI Transition, as per the US Regulatory Capital Final Rule, lists the item “Amount in AOCI attributed to Defined Benefit Post-retirement plans”.

Interpretation in the application

This is the same as the “Accumulated net gain and loss on defined Pension Fund Obligations”. Hence, the application does not rename the line item and uses the existing line item of “Accumulated net gain and loss on defined Pension Fund Obligations” in the calculations about AOCI and AOCI Transition. This amount is expected to be provided as specified by the regulator.

Tier 2 Capital

As per the Accord, consider the following:

- As per the US Regulatory Capital Final Rule, " for Advanced Approach, banking organization includes tier 2 capital, the excess of its eligible credit reserves over its total expected credit loss, provided the amount does not exceed 0.6 percent of its credit risk-weighted assets. Advanced approaches banking organization that is in parallel run includes in tier 2 capital, ALLL limited up to 1.25%. To follow this you must add the below following rule in Pre Regulatory Adjustment Capital Calculation process:
- USA - US III - CS - ALL Standard Acct Head to Capital Comp Group Assignment during Parallel Run
- USA - US III - CS - Allowance of Loan and Lease Losses for STD during Parallel Run

Whereas for Standardized Approach Total RWA, the Allowance for Loan and Lease Losses (ALLL) is added to the T2 capital up to 1.25%. But in the US Regulatory Capital Final Rule, the portion of ALLL to be added to the T2 capital, the amount of ALLL should exclude the number of reserves held for residential mortgage loans sold with recourse. And in the total capital ratio, subtract the ALLL added in T2, and instead the Eligible credit reserves which are more than the expected credit loss are added up to a maximum of 0.6% of the credit RWA.

Interpretation in the application

But in the solution, since the calculations are specific to the Advanced Approach Bank, the Eligible credit reserves specific to the Advanced Approach are directly added in the Gross T2.

Non Qualifying Capital Instruments belonging to AT1 and T2 Capital

As per Accord, consider the following:

- The non-qualifying capital instruments identified are Cumulative Perpetual Preferred Stock and Trust Preferred Securities. The Trust Preferred Securities are mentioned to be non-qualifying in both the tier of capital. The Cumulative Perpetual Preferred Stock is non-qualifying in AT1, whereas it is not clear whether it is non-qualifying in T2 also.

Interpretation in the application

- We can interpret that Cumulative Perpetual Preferred Stock is non-qualifying in AT1 but qualifying in T2 capital.

Treatment of the Non-Qualifying Capital Instruments

As per the According, consider the following:

- The advanced approach banking organization has total consolidated assets of $250 billion or more or has $10 billion or more of on-balance sheet foreign exposures, or the bank has got permission to follow the advanced approach.

Interpretation in the application

- The depository institution holding companies with less than $15 billion consolidated assets are not part of the Advanced Approach. Hence, it is assumed that these companies are only Non-Advanced Approach Banks.
- The 2010 Mutual Holding companies are also part of Non-Advanced Approach Banks, and their general asset size is less than $15 billion.

Resecuritization of TRUPS CDOs

As per Accord:

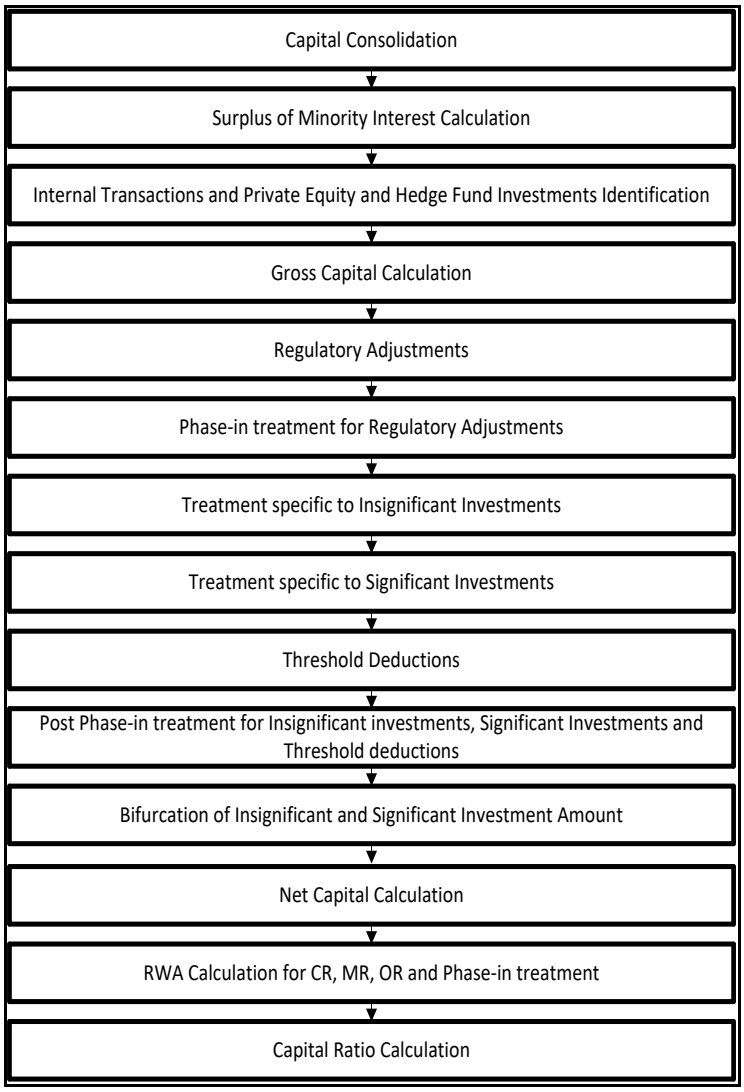
- In the global market, there are very few cases of re-securitization of TRUPS.
- TRUPS are covered bonds, and hence as per the regulation, they can be securitized only once.
- There are no re-securitization cases, when the underlying is a TRUPS CDO.

Interpretation in the application

We can interpret that we can prorate the amount columns in the final capital calculations, as it currently occurs. This does not affect the re-securitization process.

6.1.1.4.2 Process Flow for Capital Structure

Figure 22: Process Flow for Capital Structure



The Capital Structure Run that is depicted in the preceding process flow diagram is a single run that is joined together by multiple processes. Each process is a block, compiled together to form an entire Capital Adequacy Run.

Capital Consolidation Process

To process the capital for a bank, the organization level at which the capital is calculated and whether a Solo Run or Consolidation Run should be executed is defined. If Solo is selected, then only for that particular selected banking organization the capital is calculated. If consolidation is selected, then all the entities that fall under the umbrella of the selected organization are part of capital calculation. This is done in the task – 'Capital Consolidation Level Selection' in process '**CAPITAL_CONSOLIDATION**'.

Approaches Followed in Capital Consolidation

The three approaches followed by the Capital Consolidation are:

- **Consolidation Approach(CONSL)**: Under this approach, all the entities of the bank's organizational structure are considered. This includes all the entities/subsidiaries that belong to the same jurisdiction. All the exposures of the entities in the organizational structure are considered for computing risk-weighted exposures, except the intra-group exposures.
- **Aggregation Approach(AGG)**: This approach is similar to the Consolidation approach but is used in cases, where some of the entities that are part of the bank's organizational structure belong to a different jurisdiction. The capital requirement of the affiliate is computed as per the jurisdiction that it is subject to and is then aggregated with the rest of the group's capital requirement. Intra-group exposures are not excluded in this approach.
- **Deduction Approach(DED)**: This approach is used in the case where some of the subsidiaries/entities that are part of the bank's organizational structure are excluded from consolidation. In such a scenario, the regulatory investment in the excluded subsidiary attributable to the rest of the group is deducted from the consolidated capital requirements.

Surplus of Minority Interest Calculation

Minority interest (also known as non-controlling interest) refers to the portion of a subsidiary corporation's stock that is not owned by the parent corporation. For example, company A acquires 80% of the outstanding stock of Company S. Since Company A owns more than 50% of Company S, Company A consolidates Company S's financial results with its own. The 20% of Company S's equity that Company A does not own is recorded on Company A's balance sheet as Minority Interest. Consolidated net income is allocated to the parent and non-controlling interests (minority shareholders) in proportion to their percentages ownership; in this case 80% to Company A and Company 20% to the non-controlling interests.

As per the US III, the REITs is treated for Minority Interest. As per the US Regulatory Capital Final Rules, the REITs are considered for Minority Interest, only if this is an operating entity. This operating entity is an operational criterion and hence this is taken as a download.

As per US III, the minority interest calculation is calculated based on the total RWA. As per the US Regulatory Capital Final Rules, the minority interest calculation is based on the minimum of the amount in the respective tier, the subsidiary must hold and the Standardized total RWA multiplied by the respective minimum tier percentage. This is interpreted as the comparison between the Standardized Approach total RWA and the Advanced Approach total RWA.

This minimum RWA is expected to be provided as an input to the solution.

Surplus of Minority Interest is calculated and the surplus amount in each tier of capital which is attributed to third parties is deducted from the gross capital of each tier of capital.

Minority interest is calculated as the third party's interest (share holding percent) in the surplus capital (available capital – Minimum required capital). This is calculated tier-wise. The available capital is expected from the client tier-wise (CET1, AT1, and T2). The minimum required capital of the CET1, T1, and Total Capital is calculated by multiplying the total RWA by a minimum required tier-wise capital as a percentage (Total RWA * Minimum Required CET1%, Total RWA * Minimum Required T1%, Total RWA * Minimum Required Total Capital %). The surplus of the CET1, T1, and Total Capital are calculated as the difference between the available CET1, T1, and Total capital and the minimum required CET1, T1, and Total capital. The surplus of the AT1 capital is calculated as the difference between the Surplus T1 capital and Surplus CET1 capital. The surplus of T2 capital is calculated as the difference between the surplus total capital and the surplus T1 capital. The surplus in each tier attributable to the third party is calculated by multiplying the surplus in each tier by the third party minority holding percentage.

All the values required for processing are populated into Minority Interest Capital (**FSI_MINORITY_INTEREST**) table which is the processing table for minority interest calculations.

- The sub-process – Surplus of Minority Interest Calculations in **USA_BASELIII_CAPITAL_STRUCTURE** process covers this processing.

Internal Transactions, Equity Investment in Financial Subsidiaries and Private Equity and Hedge Fund Investments Identification

The private equity funds and hedge funds are identified and the number of investments in hedge funds and private equity funds is identified and deducted from the Tier 1 Capital. The instruments about CET1 are deducted from CET1 and the instruments about AT1 are deducted from AT1 capital. These deducted items are not processed further under any other process.

As per the US Regulatory Capital Final Rules, the financial subsidiaries are identified and the number of equity investments (CET1) in these financial subsidiaries are identified and deducted from the CET1 capital.

The deduction also includes internal transactions in each tier of capital among the various entities which are part of the regulatory consolidation. The internal transactions are identified in the Non-Securitization process. The internal transactions are identified as any capital-related transactions within the organization structure group, which is part of the regulatory consolidation.

These deducted items are not processed further under any other process.

The equity investment in financial subsidiaries, which are in the banking book and trading book provided as download data in the product processor tables, should not be consolidated and processed.

The financial subsidiary is identified with the help of the flag. "**F_FINANCIAL_SUBSIDIARY_INDICATOR**" available in the **DIM_ORG_STRUCTURE** table.

Gross Capital Calculation

For Gross Capital calculation all the components are classified into their respective tiers (CET1, AT1, and T2) based on their purpose. This reclassification is achieved in the **FSI_STD_ACCT_HEAD_COMP_GRP_MAP** table so that reclassification happens at a single instance. The total gross capital for each tier of capital (CET1, AT1, and T2) is calculated as per the definition of CET1, AT1, and T2 by adding the relevant financial instrument in each tier of capital. In the case of CET1 capital, the application initially calculates the AOCI amount. This AOCI amount is calculated as the sum of the following elements:

- Unrealized gain and loss on Available for sale equity securities (preferred stock and non-preferred stock). Unrealized gain and loss on Available-for-sale, Debt Securities.
- Unrealized gain and loss on Held-to-maturity, Debt Securities.
- Accumulated Net gain or loss on cash flow hedges Accumulated net gains and loss related to Defined Pension Benefit Fund Obligations.
- Unrealized gain and loss on Foreign Currency Translation Adjustment.

Also, the unrealized gains on AFS Equity Securities that are preferred stock are added to the CET1, as per the transition, by splitting this capital line item into two. These exposures are split in the **FSI_PHASE_IN_TREATMENT** (Phase in Treatment) table into phase-in amount and balance phase-in amount.

The AT1 and T2 instruments include the non-qualifying capital instruments. This is included as per the specified transition percentage present in the **FSI_ SETUP_CAPITAL_HEAD** table. This is populated into

the **FSI_PHASE_IN_TREATMENT** table and multiplied by the phase-in percentage, to arrive at the phase-in amount, which is part of Gross AT1 or T2.

The sub-process – Provisions and Gross Capital Calculations in USA Basel III Capital Structure process covers this processing.

Regulatory Adjustments

Goodwill, DTL associated with goodwill, other intangibles, DTL associated with other intangibles, DTA, DTL associated with DTA, cash flow hedge not fair valued (asset), cash flow hedge reserve not fair valued (liability), gain on sale of the securitization transaction, cumulative gain and losses due to change in own credit risk, defined pension fund asset, DTL associated with defined pension fund asset, and defined pension fund liabilities, Mortgage servicing rights and DTL related to Mortgage servicing rights are expected to be direct download values in Stage General Ledger Data (STG_GL_DATA) table. The application computes the regulatory adjustment line items which are net of DTL, that is, goodwill net of DTL, other intangibles net of DTL, DTA net of DTL, defined pension fund asset net of DTL, and net cash flow hedge reserve, and 'Mortgage Servicing Rights net of DTL and Transition AOCI use these in the deduction of regulatory adjustments and threshold deduction treatment.

While in other jurisdictions, banks recognized a gain on sale in the P&L and deduct from CET1.

A shortfall of stock of provision to expected loss is applicable only for the advanced approaches portfolio. The allowance for loan and lease losses for Advanced Approach for the US is obtained by prorating the allowance for loan and lease losses (download in STG_GL_DATA table) between the percentage of exposures using the standardized approach and the percentage of exposures using the advanced approach. The allowance for loan and lease losses for the Advanced Approach for the US is the applicable allowance for exposures using the advanced approach.

The sub-process **Provisions and Gross Capital Calculations** in USA Basel III Capital Structure process cover the above processing.

The Investment in own shares is calculated as the sum of the pre-mitigation EAD (EAD Pre-mitigation Measure Value (**N_EAD_PRE_MITIGATION**) in the Fact Non-Sec Exposures (**FCT_NON_SEC_EXPOSURES**) table) of the exposures which have the flag of treasury stock indicator (**F_TREASURY_STOCK_INDICATOR**) as “Y”.

The Investment in reciprocal cross-holdings Is calculated as the sum of the pre-mitigation EAD (EAD Pre-mitigation Measure Value (**N_EAD_PRE_MITIGATION**) in the Fact Non Sec Exposures (**FCT_NON_SEC_EXPOSURES**) table of the exposures which have the flag of reciprocal cross holding indicator (**F_RECIPROCAL_CROSS_HLDG_IND**) as “Y”.

All the regulatory adjustment line items are deducted from their respective tier of capital post minority and internal transaction deduction.

AOCI Opt-Out Calculation

As per USA Basel III Final Rule, the bank that is not subject to the advanced approaches risk-based capital rules (that is, following the Standardized Approach) and who have opted for AOCI opt-out election must adjust common equity tier 1 capital elements with the following line items:

- Subtract net unrealized gains and add net unrealized losses on Available-for-sale and Debt Securities.
- Subtract net unrealized losses on AFS preferred stock classified as equity security and net unrealized losses on AFS equity exposures.

- Subtract Accumulated net gains and add back any accumulated net losses on cash-flow hedges.
- Subtract amounts attributed to defined benefit postretirement plans.
- "Subtract any net unrealized gains and add any net unrealized losses on held-to-maturity securities.

Also, the banks must incorporate 45 % of any pre-tax net unrealized gains on AFS preferred stock classified as equity security and any net unrealized gains on AFS equity exposures in their Tier 2 capital.

The above line items are adjusted using the AOCI opt-out option flag.

The banks that have selected opt-out for AOCI calculation must use the above line items to adjust the CET 1. Whereas, the banks that are not subject to the advanced approaches risk-based capital rules but opted not to go for AOCI opt-out must treat AOCI as defined in the Capital Structure of Advanced Approach. In this, the bank is allowed to include AOCI in their CET1 and this can be identified through an option provided at the organization level through a flag called AOCI opt-out option flag.

The treatment of pre-tax values of AFS equity securities (This is added to Tier 2 capital with a limit of 45%) and AFS preferred stock/non-preferred stock classified as equity (part of AOCI) is not currently configured. See question 45 under Annexure C: Frequently Asked Questions section. This is required only if the organization is on the US Basel III standardized approach and elected for AOCI opt-out option. Otherwise, no changes are required.

Impact of Solo/ Consolidation

If going for solo only, the AOCI line item about that bank is adjusted to CET1. If you are going for consolidation, the parent bank and its associated entity/subsidiary line item are adjusted against CET1.

Similarly, if going for a solo run, 45% pre-tax of net unrealized gains on AFS preferred stock classified as equity security and AFS equity exposures for the bank for which run is executed are added to Gross Tier2. If going for consolidation, 45% pre-tax of net unrealized gains on AFS preferred stock classified as equity security and AFS equity exposures of the parent bank and its associated entity/subsidiary line item are added to Gross Tier2.

Phase-in Treatment for Regulatory Adjustments

The regulatory adjustment line items that include Goodwill net of DTL, Other Intangibles net of DTL, DTA net of DTL, Net Cash Flow Hedge Reserves, Gain on Sale related to Securitization transaction, Defined Pension Fund Asset net of DTL, Transition AOCI Amount Cumulative gains and losses due to changes in own credit risk, Investment in Treasury Stock, and Reciprocal Cross Holding follows phase-in arrangement as per the timelines mentioned by the US Basel III Accord. The phase-in deduction percent for each year is available in a setup table - Setup Capital Heads (FSI_SETUP_CAPITAL_HEAD) table.

Treatment Specific to Insignificant Investments

Investment in all financial entities, which are outside the scope of regulatory consolidation, is identified as significant and insignificant investments.

The shareholding percent for these parties is expected as a download in **STG_PARTY_SHR_HLD_PERCENT.** The parties are identified as significant when the shareholding percentage is greater than or equal to 10%. Others are identified as insignificant investments. The parties are identified as significant when the shareholding percentage is greater than or equal to 10%. And the others are identified as insignificant investments. This processing happens in the **USA_US_III_CAPITAL_CONSOLIDATION** process.

The total investment amount in insignificant entities is computed by summing up the Pre Mitigation EAD (EAD Pre-mitigation Measure Value (**N_EAD_PRE_MITIGATION**)) from the Fact Non-Sec Exposures

(**FCT_NON_SEC_EXPOSURES**) table. Also, the tier-wise computation of investment amount happens. The total amount is compared with the 10% of the CET1 amount of the parent bank amount post regulatory adjustments. The amount above the 10% limit is processed for the deduction. This summing up includes direct, indirect, and synthetic investments. Indirect investments are investments in Investment funds, and which are invested in capital instruments. Synthetic investments are the investments in synthetic transactions on capital instruments. For all these exposures, the net long position amount, updated in **N_EAD_PRE_MITIGATION** is considered.

The total deduction amount is pro-rated among each tier of capital based on the percentage of investment in each tier of capital. The amount arrived is deducted from each tier of Capital.

The investment amount below the 10% limit is treated as per the banking book rule for the instrument.

The application computes as follows:

- Parties are marked as insignificant investment parties by updating the flag: **F_SIGNIFICANT_INVESTMENT_IND** in Fact Party Shareholding Percent (**FCT_PARTY_SHR_HLD_PCT**) with value N.
- The exposure amount of banking book and trading book exposures to these entities are summed by grouping their component of capital and compared against 10% of the parent bank's CET1 capital. The portion of the amount which exceeds the 10% limit is deducted.
- This is computed by calculating tier-wise deduction percentage and multiplying this percentage with the exposure amount to arrive at the amount to be deducted from each tier of capital.
- The total investment values are populated into the Non-Regulatory Consolidation Entity Investment (**FSI_NON_REG_CONSL_ENTITY_INVST**) table which is the processing table for insignificant and significant investment deductions.
- The sub-process **Insignificant Investment in entities outside Regulatory Consolidation Processing** in USA Basel III Capital Structure process covers the above processing.

After the application of this treatment, the Insignificant Investments line item also follows a phase-in arrangement which is similar to the phase-in arrangement for Regulatory Adjustments.

Treatment Specific to Significant Investments

The total investment amount is checked against the set limit of 10% of the CET1 amount of the parent bank, post insignificant investment amount adjustment. The CET1 amount above 10% is deducted from the CET1 post insignificant investment amount deduction. The CET1 amount below 10% follows the threshold deduction. The investment amount in AT1 and T2 is fully deducted from its respective AT1 and T2 tiers of capital. The application computes as follows:

Entities are marked as significant investment entities by updating the flag – Significant Entity Indicator (**F_SIGNIFICANT_INVESTMENT_IND**) in Fact Entity Information (**FCT_ENTITY_INFO**) with value 'Y'.

The exposure amount of banking book and trading book exposures to these entities are summed by grouping their component of capital and compared against 10% of the parent bank's CET1 capital. The portion of the amount which exceeds the 10% limit is deducted from CET1. The exposures of AT1 and T2 are fully deducted from the respective tier of capital. This is done by calculating the deduction percentage for CET1 and by multiplying this percentage with the CET1 exposure's exposure amount to arrive at the amount to be deducted from CET1 capital.

The sub-process – Significant Investment in Entities outside Regulatory Consolidation Processing in USA Basel III Capital Structure process covers the above processing.

After the application of this treatment, the Significant Investments line item also follows a phase-in arrangement which is similar to the phase-in arrangement for Regulatory Adjustments.

Treatment of Synthetic and Indirect Investments

In the case of Indirect Investments, the solution provides an option to either follow the Simple Calculation else apply the Insignificant Investment treatment. The solution captures the fund investment percentage in the Capital instrument (Fund Capital Instrument Investment Limit), in the Stage Fund Equity Investments table (**STG_FUND_EQUITY_INVESTMENTS**). The solution subtracts the Carrying value of the capital instrument from CET1, along with the Insignificant Investment calculation for the Simple Calculation.

The solution processes these investments as per the treatment for exposures related to Insignificant and Significant Investment if the option of Insignificant Investment treatment is selected. The deduction as applicable per phase-in is from CET1.

Threshold Deduction

The three line items (Significant Investment in the Common Shares of Accounting entities from the **FSI_NON_REG_CONSL_ENTITY_INVST**, Mortgage Servicing Rights net of DTL from the **FCT_STANDARD_ACCT_HEAD** table, and DTAs that arises from temporary differences that comes from the FCT_CAPITAL_ACCT_HEAD) are populated in the **FSI_THRESHOLD_TREATMENT** table and the threshold calculations are processed in this table.

Threshold Treatment

The three line items are individually compared with the 10% of CET1 calculated post Regulatory Adjustments, Insignificant Investments, and Indirect Investments. The amounts that are above the 10% CET1 limit are deducted from CET1 following the phase-in arrangements. During the transition period, any amount of these three line items, which is not deducted as per the 10% mentioned earlier, goes for risk-weighting at 100%. During the transition period, the check of 15% is against the CET1 post all regulatory adjustments and adjustments to insignificant investments and significant investments. In the post-transition period, instead of 15%, the aggregate check is 17.65% of CET1, post all regulatory adjustments and adjustments to insignificant investments, less 100% of the sum of the line items which goes for threshold deduction. The amount which is not deducted due to this 10% and 15% check is risk-weighted 100% during the transition period and is risk-weighted 250% post the transition period.

The same phase-in treatment is followed by the aggregate 15% limit for Significant Investment in the Common Shares of Accounting entities, Mortgage Servicing Rights, and DTAs that arises from temporary differences.

If the amount of Mortgage Servicing Assets (MSA) deducted after the application of the threshold is less than 10% of the fair value of the MSAs, then there is an additional deduction of MSA. The additional amount of MSAs is deducted from CET1 so that the deducted MSA is at least 10% of the fair value of the MSA. For example, assume that in the year 2013 the fair value of MSA is 20 and after applying the threshold deduction percentage (which is 0%), the amount to be deducted is 0. Then, the minimum amount of deduction of MSA is 10% of the fair value of MSA which is 2. Hence, 2 is deducted from MSA due to this provision.

The sub-process **Threshold Treatment Calculations** in the USA Basel III Capital Structure process covers the above processing.

Post Phase-in Treatment for Insignificant Investments, Significant Investments, and Threshold Deductions

In this step, the balance phase-in deduction amount for Insignificant, Significant, and Threshold deductions are calculated and they are assigned the applicable risk weight. The RWA of these amounts is also computed. The sub-process **Threshold Treatment Calculations** in the USA Basel III Capital Structure process covers the above processing.

Bifurcation of Insignificant and Significant Investment Amount

All the investment transactions in Insignificant Entity and Significant Entity go for bifurcation. Insignificant investment amounts below 10% are stamped as 'INSIG_RWA' and any amount above 10% are stamped as 'INSIG_DED'. The same logic is applied to the Significant Investment amount in CET1. The CET1 amount in Significant Investment entity that is below 10% and 15% limit is stamped as 'SIG_RWA' and the amount above 15% limit is stamped as 'SIG_DED'. The original transactions are deleted and new transactions are created with stamping as described above. The new transaction thus created can be traced by looking into the parent exposure ID.

The exposure to be deducted is marked with a standard account head surrogate key based on whether the deduction is an Insignificant or Significant investment and based on the capital component group.

This splitting of exposures is achieved in Fact Non-Sec Exposures (**FCT_NON_SEC_EXPOSURES**) and Fact Sec Exposures (**FCT_SEC_EXPOSURES**). This splitting logic is carried to Equity Exposures (**FCT_EQUITY_EXPOSURES**) and Fact Sub Exposures (**FCT_SUB_EXPOSURES**) as well.

The entire processing is achieved in the following sub-processes:

- Sec Insignificant Investment Exposure Processing
- Non-Sec Insignificant Investment Exposure Processing
- Non-Sec Significant Investment Exposure Processing,
- Non-Regulatory Investment Sub Exposures Population,
- Non-Regulatory Investment Nettable Pool Population, and
- Equity Non-Regulatory Investment Processing in the process – USA Basel III Capital Structure.

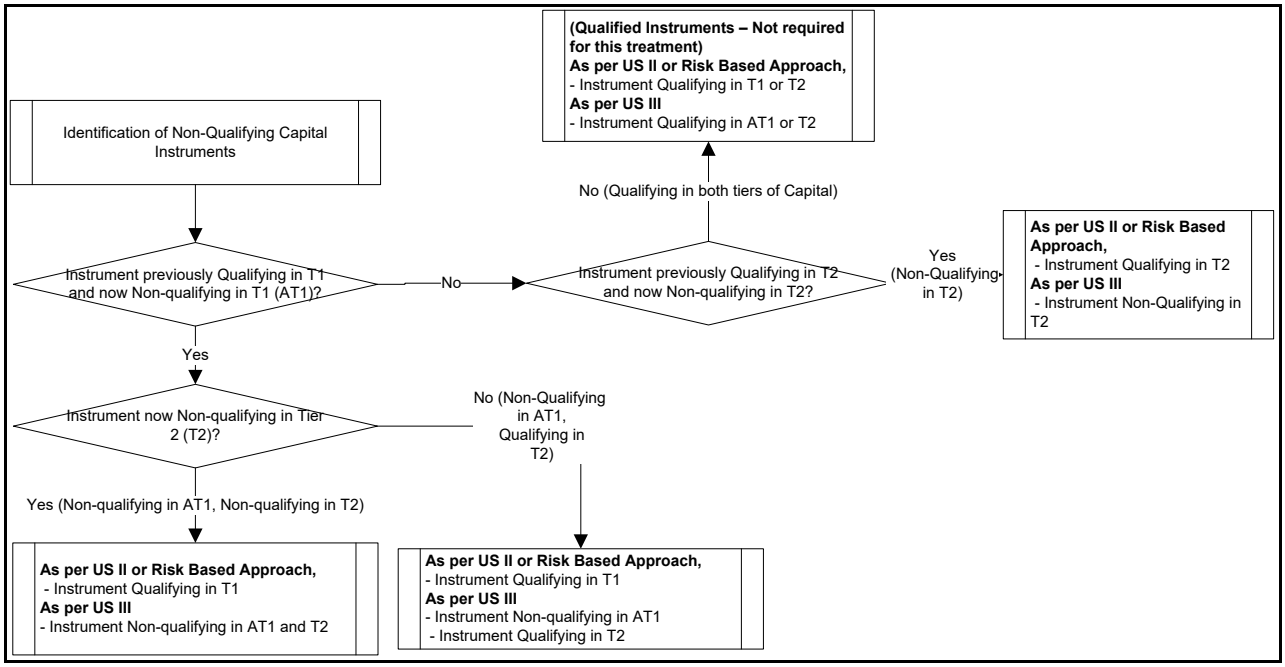
Non-Qualifying Capital Instruments

The non-qualifying capital instruments are instruments that were qualifying as per US Basel II Guidelines or by US General Risk-Based Guidelines, and currently do not meet the eligibility criteria for qualification in the respective tiers of capital. These instruments are expected to be issued before May 19, 2010. The Non-qualifying data in PP is provided before the issue date.

These non-qualifying instruments belong to any of the following criteria (at a broad level), for any bank:

- Instruments that were previously qualifying in T1 Capital, but now non-qualifying in AT1 Capital.
- Currently qualifying in T2 Capital
- Currently non-qualifying in T2 Capital
- Instruments that were previously qualifying in T2 Capital, but now non-qualifying in T2 Capital.

Figure 23: Process Flow for Non-Qualifying Capital Instruments



The treatment for the identified non-qualifying capital instruments depends on the bank type. The applicable bank types are as follows:

- Depository Institution Holding Company
- 2010 Mutual Holding Company
- Depository Institutions

In the case of banks that are adopting advanced approaches, the transition percentages are applicable starting from the year 2014. In the case of banks which are adopting of non-advanced approach, the transition percentages start from the year 2015.

Identification of the Non-Qualifying Capital Instruments

The non-qualifying capital instruments are identified with the help of a flag. The non-qualifying instruments are identified as to which is the core group from which they are non-qualified. Also, they are identified as to which is the group to which they are non-qualifying. Hence, they are identified to belong to one of the following:

- Qualified as per existing treatment under Tier 1 but currently non-qualifying in AT1 and T2.
- Qualified as per existing treatment under Tier 1 but currently non-qualifying in AT1 but Qualifying in T2.
- Qualified as per existing treatment under Tier 2 but currently non-qualifying in T2.

Also, the accord specifies the treatment for non-qualifying capital instruments at an aggregate level across each tier and not individually. Hence the solution must aggregate these instruments and use them for further calculation.

Also, there is an operational requirement for the non-qualifying instruments to be issued prior to May 19, 2010. This is a data expectancy from the client to validate and provide the data only for those non-qualifying instruments which satisfy these criteria.

The following are the instruments that are identified as non-qualifying:

- TRUPS
- CPPS

Identification of the Treatment Specific to the Non-Qualifying Capital Instruments

The treatment of the Non-qualifying capital instruments depends if the bank belongs to any of the following criteria:

- Depository Institution Holding Company with consolidated group assets of more than $15 billion.
- Depository Institution Holding Company with consolidated group assets less than $15 billion or Mutual Holding Companies as of 2010.
- Depository Institutions.

The identification of the parent entity type is essential for the identification of the treatment to apply to the bank. The identification of the entity type is as follows:

- Depository Institution Holding Company
  In this case, the reporting bank is the ultimate parent. This is identified with the help of the ultimate parent flag.
- 2010 MHCs
  This is identified as institutions which were MHCs before May 19, 2010. Since it is an operational criterion, this is identified with the help of a flag.
- Depository Institutions:
  In this case, the reporting bank is not an ultimate parent and is also not a 2010 MHC.

The identification of the entities for the treatment can be summarized as follows.

Table 28: Summary of Identification of the Entities for Treatment

Reporting Bank	Ultimate Parent Flag	Mutual Holding Companies Flag	Group Consolidated Assets	Treatment Identification for Non-Qualifying Capital Instruments
Reporting Bank	Y	N or Null	>= $15 billion	Depository Institution Holding Company with consolidated group assets more than $15 billion
Reporting Bank	Y	N or Null	< $15 billion	Depository Institution Holding Company with consolidated group assets less than $15 billon or Mutual Holding Companies as of 2010
Reporting Bank	Y	Y	Any	Depository Institution Holding Company with consolidated group assets less than $15 billon or Mutual Holding Companies as of 2010
Reporting Bank	N	Y	Any	Depository Institution Holding Company with consolidated group assets less than $15 billon or Mutual Holding Companies as of 2010
Reporting Bank	N	N or Null	Any	Depository Institutions

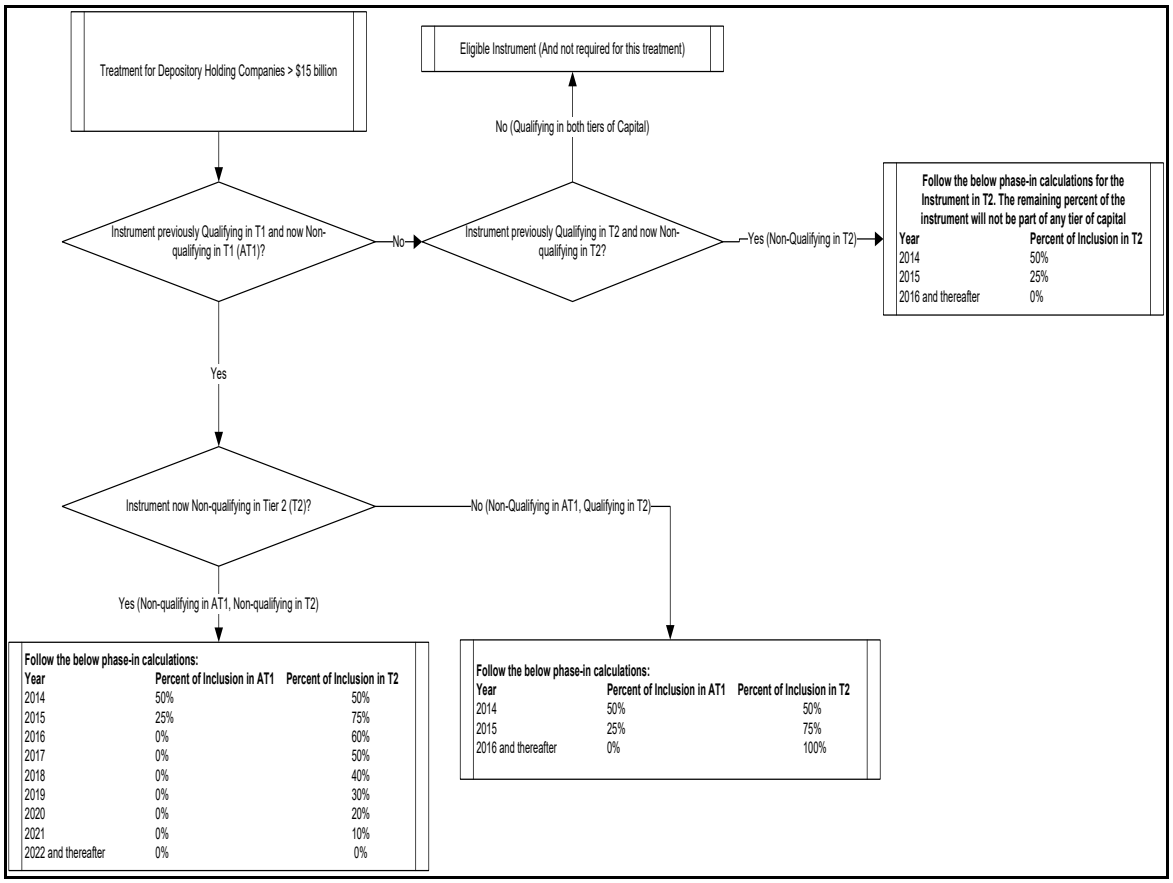
Treatment Specific for Advanced Approaches Bank

- The Advanced Approaches Bank is a bank that satisfies any of the following three criteria:
- They have a consolidated group asset size of more than or equal to $250 billion.
- They have a consolidated group on-balance sheet foreign exposures of more than or equal to $10 billion.
- They have obtained permission from the regulator to calculate RWAs using the Advanced Approach.

Depending upon the identification of the parent entity, the treatment for the non-qualifying capital instruments are as follows:

Depository Institution Holding Company with consolidated group assets of more than $15 billion.

Figure 24: Process Flow for Depository Institution Holding Company with Consolidated Group Assets More Than $15 billion



Depository Institution Holding Company with consolidated group assets less than $15 billion or Mutual Holding Companies as of 2010.

This is not applicable for the Advanced Approaches Bank, since they have consolidated assets of $250 billion or more.

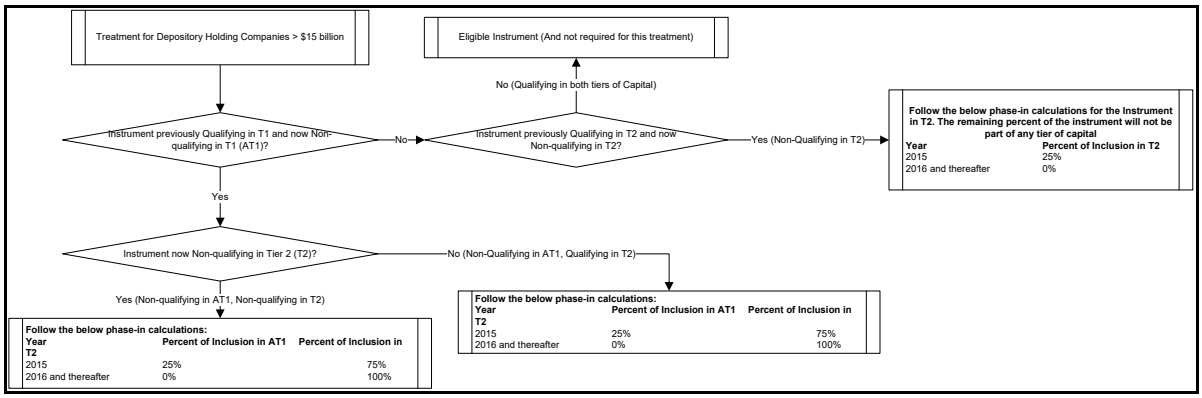
Treatment Specific for Non-Advanced Approaches Bank

This is the detailing of the treatment specific for Non-Advanced Approaches Bank. In the case of the Non-Advanced Approaches Bank, the transition is applicable only from the year 2015. Apart from that, the other difference is that the treatment specific to Depository Institution Holding Companies with less than $15 billion consolidated assets or the 2010 MHCs is applicable only for the Non-Advanced Approaches Bank.

Depending upon the identification of the parent entity, the treatment for the non-qualifying capital instruments is as follows:

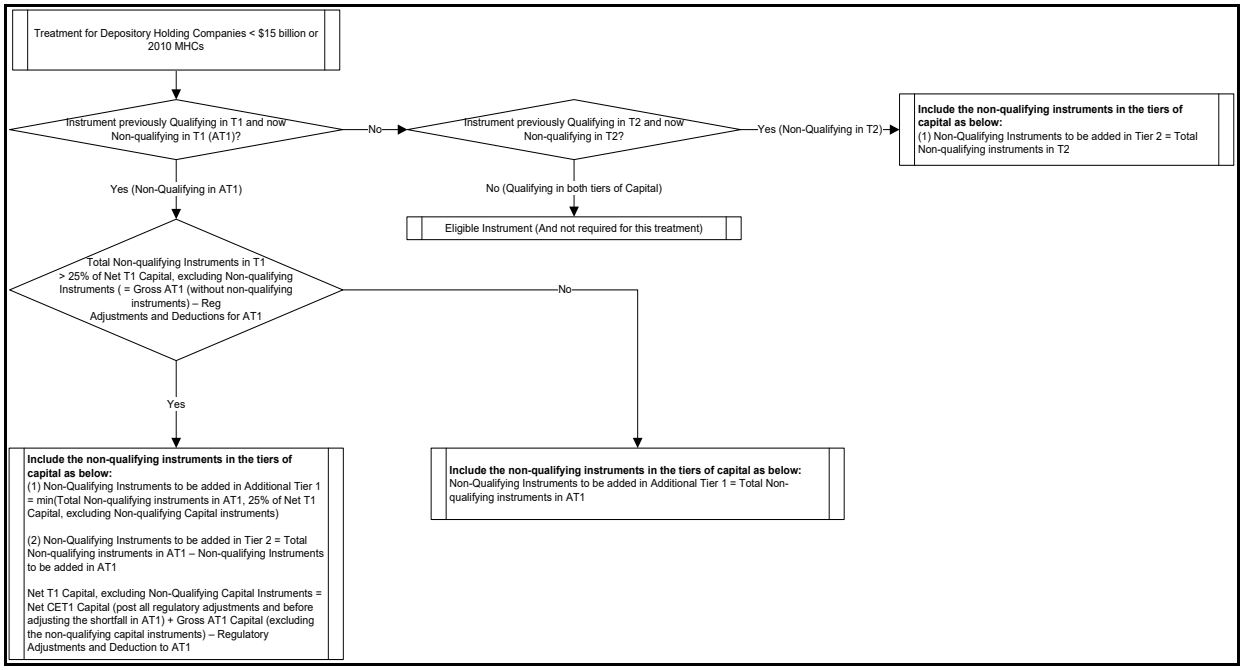
- Depository Institution Holding Company with consolidated group assets of more than $15 billion.

Figure 25: Process Flow for Depository Institution Holding Company with Consolidated Group Assets More Than $15 billion



- Depository Institution Holding Company with consolidated group assets less than $15 billion or Mutual Holding Companies as of 2010.

Figure 26: Depository Institution Holding Company with Consolidated Group Assets less than $15 billion or Mutual Holding Companies



This treatment is different from the other two entity types. In this, the application calculates the Net T1 Capital considering post all adjustments, excluding the Non-qualifying instruments. The total non-qualifying capital instruments are included in the AT1 which are non-qualifying in T2, are based on the Net T1 Capital.

- Total Non-qualifying capital instruments, which were previously qualifying in T1 = Total Non-qualifying capital instruments, which were previously qualifying in T1, but currently Non-qualifying in AT1 and T2 + Total Non-qualifying capital instruments, which were previously qualifying in T1, but currently Non-qualifying in AT1 and qualifying in T2.

- Total Non-qualifying capital instruments, which were previously qualifying in T2 = Total Non-qualifying capital instruments, which were previously qualifying in T2, but currently Non-qualifying in T2.
- Total Non-qualifying capital instruments, which were previously qualifying in T1.
  The amount of Non-qualifying capital instruments, which were previously qualifying in T1 is based on the Net T1 Capital.

The calculations are as follows:

- Net T1 Capital = Net CET1 capital post Insignificant Investments and Indirect Exposures – Significant Investment amount above individual threshold amount post phase-in – DTA related to temporary differences above individual threshold post phase-in – MSA net of DTL above individual threshold post phase-in – Aggregate threshold phase-in Deduction Amount + Gross AT1 excluding non-qualified instruments – Regulatory Adjustments related to AT1.

Regulatory Adjustments Related to AT1

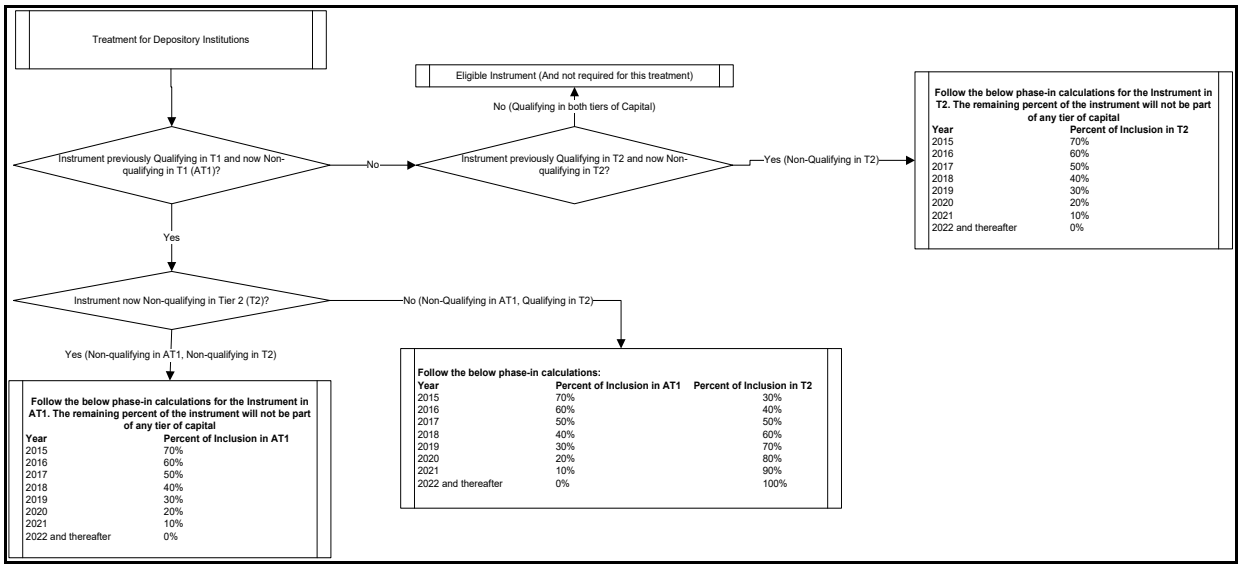
Balance Phase-in applicable Regulatory Adjustments from CET1 + Investments in Own shares in AT1 + Reciprocal Cross Holdings in AT1 + Insignificant Investments related to AT1 + Indirect Exposures related to AT1 + Significant Investments related to AT1.

Total Non-Qualifying Instruments of AT1 is based on 25% of Net T1 Capital. If the total is less than or equal to 25% of Net T1 Capital, then, the total non-qualifying instruments of AT1 are added to the AT1 Capital.

If the total is more than 25% of Net T1 Capital, then, minimum of 25% of Net T1 Capital and the total non-qualifying instruments in AT1 is added to the AT1 capital. The remaining is added to the T2 Capital.

- Total Non-qualifying capital instruments, which were previously qualifying in T2. The amount of Non-qualifying capital instruments, which were previously qualifying in T2 is added to the T2 Capital. There is no cap on the amount added to the T2 Capital.
- Depository Institutions

Figure 27: Treatment for Depository Institutions



Net Capital Calculation

- The Net CET1, Net AT1, and Net T2 capital amounts are calculated post all regulatory adjustments including the insignificant, significant, and threshold treatments. Any shortfall in T2 capital amount is adjusted against Net AT1 amount and any shortfall of AT1 capital amount is adjusted against Net CET1 amount.
- This is done in the sub-process **Net Capital Calculations** in the process **USA Basel III Capital Structure**.

RWA Calculation for Credit Risk, Market Risk, Operational Risk and Phase–in Arrangement

- The following data is collated and RWA is computed:

Non-securitized exposures data and the associated mitigants data to compute as Risk-Weighted Asset amount for Advanced Approach for US portfolio.

CVA Exposures Data to compute CVA RWA.

Securitized exposures data and the associated mitigants data to compute Sec RWA.

- The Market Risk RWA for Market Risk and Operational RWA for Operational Risk is expected as a download. The Regulatory Adjustment RWA is the sum of RWA calculated for all the exposures which undergo the processing of Regulatory Deductions, Insignificant Investments, Significant Investments, and the Threshold deduction line items which are risk-weighted.
- The Total RWA amount is the summation of Non-Securitization, Securitization, Market Risk, Operational Risk, and Regulatory Adjustment RWA.
- The above processing is done in sub-process – **RWA Populations in process – USA Basel III Capital Structure Capital Ratio**.
- The DTAs arising due to the temporary difference are at a risk weight of 100% and after the RWA is calculated as a part of Credit RWA.

Net Long Position and Total RWA

- The investment in own shares, insignificant and significant investments consider the direct, indirect, and synthetic investments. Direct investments are the capital instruments that are directly held by the bank. Indirect investments are the capital instruments that are held by the bank through an investment fund that is, the bank invests in the investment fund, and the investment fund has invested in a capital instrument. The synthetic capital instruments are the capital instruments on which the bank has a synthetic transaction in the form of guarantees, credit derivatives, or options.
- For all these transactions, the capital considered is the net long position, which is the gross long position net of any qualified short position in the same exposure. You must provide value ("Y" or "N") against the flag "**F_CAPITAL_NETTING_QUALIFICATION_FLAG**" whether the gross long position is allowed to be deducted from the net of short positions in the same underlying instrument. This is done only if the short positions involve no counterparty risk and both long and short positions have the same maturity.
- The total RWA is the sum of the RWA of all the exposures, for which the bank has an exposure, summed up based on the risk types. It is the sum of the following:

Total RWA for Credit Risk Exposures, calculated using the Standardized Approach. This includes the following:

- Total RWA for Credit Risk Exposures, apart from the ones listed below, calculated using the Standardized Approach.

- Total RWA for Cleared Transactions, and Default Fund Contributions, calculated using the Standardized Approach.
- Total RWA for Unsettled Transactions, calculated using the Standardized Approach.
- Total RWA for Securitization Exposures, calculated using the Standardized Approach.
- Total RWA for Equity Exposures, calculated using the Standardized Approach.
- Total CVA RWA, calculated using the same approach as applied in the Advanced Approach (this is applicable only in the case of Advanced Approach Banks for comparison purposes).
- Total RWA for Market Risk Exposures, calculated using the Standardized Approach.
- Total RWA for Operational Risk (this is applicable only in the case of Advanced Approach Banks for comparison purposes).

And the following is subtracted from this summation to arrive at the Total RWA applicable for the Standardized Approach:

- Amount of ALLL that is not included in tier 2 capital and
- Amount of allocated transfer risk reserves.

Capital Ratio Calculation

- CET1 ratio, T1 ratio, T2 ratio, and Capital Adequacy ratio are calculated using the Total RWA amount and Net CET1 Capital, Net T1 Capital, Net T2 capital, and Total Capital (sum of Net T1 Capital amount and Net T2 capital amount) amount.

Starting from the year 2015, the solution calculates the ratios as a minimum of the Standardized approach Ratios and the Advanced Approach Ratios. The standardized approach ratios are expected as download values in the stage standard accounting head table (**STG_STANDARD_ACCT_HEAD**).

For the year 2014, the solution calculates the Total Ratios as the Advanced Approach Ratios.

This is done in the sub-process **Capital Ratio Calculations** in the process in **USA Basel III Capital Structure Capital Ratio**.

6.1.1.4.3 Key Data Elements

The key data elements are listed in this section. For more information on the tables and columns to be updated, see the Download Specifications document.

- The data for third-party investment and the investment percentage in each tier of capital along with the total amount available in each tier of capital is expected as a download value for the surplus of Minority Interest computation.
- The entity-level Market Risk RWA is expected as a download value in the Standard Account (**DIM_STANDARD_ACCT_HEAD**) table. This is required for calculating the Total RWA.
- The Market Risk data for significant and insignificant investment exposures are expected as download value in the Stage Investments (**STG_INVESTMENTS**) table (for equity and non-equity trading book exposures except the mutual fund trading book exposures) along with the other investment data. This data is also expected in the Fund Equity Investments (**STG_FUND_EQUITY_INVESTMENTS**) table (for mutual fund investments in the trading book) along with other mutual fund investment data.

- The data for indirect capital instruments are expected in the Stage Fund Equity Investments (**STG_FUND_EQUITY_INVESTMENTS**) table and the underlying of these investments are expected in the Stage Investments (**STG_INVESTMENTS**) table.
  The synthetic capital instruments are expected in the Credit derivatives (**STG_CREDIT_DERIVATIIVES**), guarantee (**STG_GUARANTEES**), Options Contracts (**STG_OPTION_CONTRACTS**), Futures (STG_FUTURES), and Swap Contracts (**STG_SWAP_CONTRACTS**). The underlying information for these exposures is expected in the Underlying Exposures (**STG_UNDERLYING_EXPOSURES**) table.
- The synthetic capital investment for the securitization framework is expected in the Stage Investments (**STG_INVESTMENTS**) table and the underlying of the exposures available in the Stage Investments (**STG_INVESTMENTS**) table or the Stage Underlying Exposures (**STG_UNDERLYING_EXPOSURES**) table.

The short position amount to be netted against a long position is expected as a download.

The flag to identify whether the netting is applicable is expected as 'Y' to calculate the net long position amount.

- The Operational Risk RWA is expected as a download value in the Standard Account (**DIM_STANDARD_ACCT_HEAD**) table. This is required for calculating the total RWA.
- All the amounts are converted into the same currency for ease of processing and reporting.
- The application expects the GL IDs and the description to be unique across an entity and the data is expected at a solo level. The application ignores consolidated data and calculates the data for consolidation.
- ESOP common shares, which are included in Paid up common shares have a value of 0 or greater than 0. This cannot be a negative number. This is a component of Gross CET1 and included in the Paid-up common shares.
- ESOP Debt Other capital instruments, which are included in other AT1 capital instruments have a value of 0 or greater than 0. This cannot be a negative number. This is a component of Gross AT1 and included in other AT1 capital instruments.

AOCI Amount Data Expectation

The Accumulated Other Comprehensive Income (AOCI) is expected as individual various components. This data expectation is uniform for all the values across the organizational structure of the parent entity.

The individual components, which constitute the AOCI Transition Amount, are summed up and undergo transitional arrangements.

The total AOCI amount is provided as a download line item, the Transition AOCI is expected as a download.

There are unrealized gains and losses on Held-to-maturity, Debt Securities. This can be either a positive or negative number and is a component of the AOCI element. This is expected to be an amount net of any associated deferred tax component (DTA/ DTL).

There are unrealized gains and losses on Foreign Currency Translation Adjustment. This can be either a positive or negative number and it is a component of the AOCI element. This is expected to be an amount net of any associated deferred tax component (DTA/ DTL).

There is an unrealized gain on Available-for-sale Equity Securities that are not preferred stock classified as equity security under GAAP or equity exposures. This can be either a positive or negative number and it is a component of the AOCI element. This is expected to be an amount net of any associated deferred tax component (DTA/ DTL).

There is an unrealized gain on Available-for-sale Equity Securities that are preferred stock classified as an equity security. This can be either a positive or negative number. A portion of this is a component of the AOCI element (as per the transition percentage) and the remaining is a component of Gross T2. This is expected to be an amount net of any associated deferred tax component (DTA/ DTL).

There are accumulated Net Gain (Loss) on Cash Flow Hedges that are realized in the balance sheet on fair value. This can be either a positive or negative number and it is a component of the AOCI element. This is expected to be an amount net of any associated deferred tax component (DTA/ DTL).

The unrealized gain and loss on Defined Pension Fund Obligations are expected to be provided as input after excluding (at the Bank's option) the portion related to defined pension fund assets which are deducted according to the applicable regulatory deductions.

All the line items related to AOCI calculation (except the line items related to Net Cash flow hedge Reserve) are expected to be provided as a download net of any associated deferred tax component.

If the AOCI is provided a download line item, then the Transition AOCI is also expected as a download. Otherwise, this is a calculated line item.

Minority Interest Calculations Data Expectation

The application expects the capital ratios, tier-wise capital amount, third party investment percentage, and the total RWA of the subsidiary as a download for the Minority Interest calculation.

The entities which are processed for Minority interest computation are provided with the **F_THIRDPARTY_MINORITY_HOLD_IND** flag in the **STG_ENTITY_SHR_HLD_PERCENT** table as "Y".

The application expects only the preferred shares data for the REIT subsidiary. Hence for the Minority Interest computation to happen correctly, the REIT subsidiaries should enter the CET1, AT1, T2, and Total RWA amount. The stage data expectation for minority interest calculation in REIT is the third party holding percentage that is 0% for CET1 and must have the applicable percentage only for the portion of preferred shares data in the REIT subsidiary.

The application processes the REIT subsidiaries available as part of the **DIM_ORG_STRUCTURE** table, wherein the operating entity flag is "Y", regardless of the third party minority holding indicator flag as "Y" or "N". The REIT subsidiaries should have the regulatory entity indicator flag as "Y" in the **DIM_ORG_STRUCTURE** table.

Regulatory Adjustments Data Expectation

The application expects the goodwill value to be provided, which is net of the goodwill for the entity and any goodwill used in the valuation of the significant investments

The application expects the deferred tax liabilities value associated with the various regulatory adjustments to be populated wherever the entity expects the value to be netted, satisfying the criteria for netting

The application expects the 'Other Intangible Assets' as a single line item, which includes all the intangible assets other than goodwill.

The defined pension fund net asset is not required to be deducted for the insured depository institution. Since the insured depository institutions are not part of regulatory consolidation, this data is not expected

for those institutions in the **STG_GL_DATA** table. It is instead expected to be provided in the Product processor tables, and the capital charge is calculated as per the applicable rules.

The defined pension fund asset reported is the defined pension fund asset net of the unrestricted access and unfettered access to the assets in the fund, based on supervisory approval. The applicable amount which corresponds to the unrestricted and unfettered access to the assets in the fund is expected as a download in the Product Processor tables. Hence the capital charge is calculated on this.

Internal Transactions Data Expectation

The Customer Reference code of the exposures should be of any entity's party id, which is part of the Organization Structure Dimension (**DIM_ORG_STRUCTURE**), to be identified as internal transactions.

Investment in Own Shares Data Expectation

The Customer Reference code of the exposures should be of the parent entity's party id, which is to be identified as an investment in own shares

Reciprocal Cross Holdings Data Expectation

The reciprocal cross-holdings flag should be 'Y'.

Investment in Private Equity and Hedge Funds Data Expectation

The issuer type or the customer type of the exposures should be 'HEDFND' or 'PVTEQ'

Threshold Treatment Data Expectation

The Deferred Tax Assets (DTA) related to temporary differences which are processed for the threshold treatment is expected as the download value net of deferred tax liabilities associated with that.

Non-qualifying Capital Instruments Treatment

The instruments issued before September 12, 2010, and which were previously qualifying in the tiers of capital are provided as input, in the case of Depository Institutions.

The instruments issued before May 19, 2010, and which were previously qualifying in the tiers of capital are provided as input, in the case of Depository Holding Institutions.

Capital Ratios

In the year 2014, the ratios are expected as a minimum of Advanced Approach and General Risk Ratios. The solution does not handle the General Risk-based Ratios. The comparison is expected to be done outside the system.

Starting from the year 2015, the standardized capital ratios are expected to be provided as input.

6.1.1.5 Capital Buffers

There are three types of Capital Buffers prescribed in the US III Rules, which are as follows:

- Capital Conservation Buffer
- Countercyclical Buffer
- Additional Loss Absorbency Capital (for G-SIB)

A detailed description of each of these buffers is provided in the following sections.

Capital Conservation Buffer

The US III requires banks to maintain Capital Conservation Buffer (CCB) out of Common Equity Tier 1 Capital (CET1). This requirement is as per the transitional arrangement as stated in the US Regulatory Capital Final Rules.

Countercyclical Buffer

The US III Rules require banks to maintain a Countercyclical Buffer (applicable for Advance Approach Bank only) that is prescribed by the respective jurisdiction's regulator through an extension of CCB. Banks determine their countercyclical capital buffer amount by calculating the weighted average of the countercyclical capital buffer amounts established for the national jurisdictions where the banking organization has private sector credit exposures. For more information on private sector credit exposures, see the **Error! Reference source not found.**.

If the guarantor and credit default swap are present for exposure, then as per the US Regulatory Capital Final Rules, the application considers the domicile country of these mitigants for the covered portion and country of the exposure counterparty for the uncovered portion.

The location of a securitization exposure is the location of the borrowers of the underlying exposures. If the borrowers on the underlying exposures are located in multiple jurisdictions, the location of a securitization exposure is the location of the borrowers having the largest proportion of the aggregate End of Period (EOP) principal balance of the underlying exposures. If the sum of the amount of EOP principal balance is equal across jurisdictions, then this EOP principal balance is split between these two countries equally. Similarly, it is split among three countries if EOP principal balance is same across three countries.

While calculating the weighted average countercyclical buffer, the non-securitized covered positions under market risk and securitized exposures are considered. For re-securitized, retail pool, and SCP transactions and the country where the transaction is originated is considered. After calculating the weighted average, the application then computes a single value for the Countercyclical Buffer benchmark which is applicable on all exposures of all jurisdictions.

Additional Loss Absorbency Capital (for G-SIB)

If a banking organization is categorized as a Globally–Systematically Important Banks (G-SIB), then the application identifies all subsidiaries in various jurisdictions as G-SIB. This is based on our interpretation of the US III that is applicable for a specific group. Based on this assessment, banks are assigned a GSIB score and the applicable bucket is decided. Identification of this bucket is based on the score as per US III Rules. Loss absorbency is required to be met as an extension of CCB for computational purposes.

Calculation of Capital Conservation Buffer or Available Buffer from CET1 Capital

The value that the application calculates for an available buffer from CET1 capital meets the buffer requirements for all three buffers - Capital Conservation Buffer (CCB), Countercyclical Buffer, and Additional Loss Absorbency Capital Requirement. No priority is given to any buffer over another. Hence, the shortfall or excess, if any, is calculated and reported at an aggregate level. The required total buffer is calculated as the sum of the required values of three individual buffers.

The application also computes CET1 and Buffer Lookup Ratio that is further required for calculating the Minimum Capital Conservation Ratio. To calculate the available buffer, the remainder of the following is taken:

> Excess of CET1 Capital Ratio over the benchmark (4.5%), after catering to the shortfall (if any), in the Additional Tier 1 and Tier 2 capital to their respective benchmark levels (1.5% and 2% respectively).

Hence, CCB excludes any additional CET1 needed to maintain 6% of Tier 1 Capital Ratio and 8% of Total Capital Ratio.

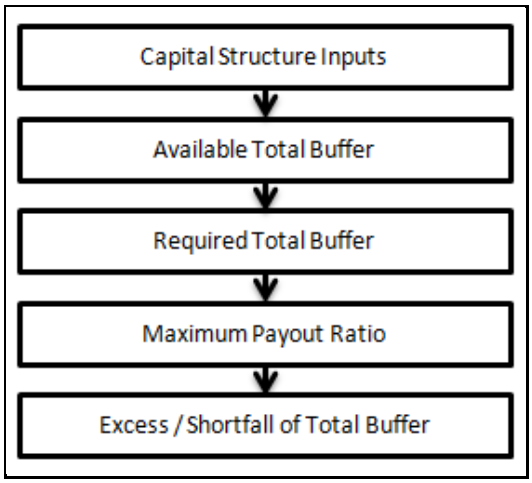
Maximum Payout Ratio

The required buffer from CET1 capital (sum of three required buffers) is compared with the Available Buffer from CET1 capital. If the banks are unable to meet their total buffer requirements for all three buffers, then they are subject to constraints on the discretionary payments of earnings. In this case, the Maximum Payout Ratio is calculated and represents the percentage of net earnings after tax (positive) not distributed by the bank and held back as retained earnings. The maximum Payout Ratio of the current year is applied after 12 months from the time of calculation.

The application calculates Capital Buffers at the consolidated level for the reporting bank. However, at the discretion of national supervisors, this can be applied at a solo level as well. In such cases, the calculation of solo level for the respective jurisdictions is included in the application.

6.1.1.5.1 Process Flow for Capital Buffers

Figure 28: Process Flow for Capital Buffers



The tasks related to capital buffer calculations are present in the process named **CAPITAL_BUFFER**. The processings are as follows:

Capital Structure Inputs

The Capital Structure Rules are executed before the calculation of buffers. These Rules calculate the available capital ratios and required capital ratios of the three capital components which are Common Equity Tier 1 Capital Ratio, Tier 1 Capital Ratio, and Capital Ratio. These line items are populated in the Fact Standard Accounting Head (**FCT_STANDARD_ACCT_HEAD**) table.

Available Total Buffer

Calculation of Available Buffer from CET1 Capital is performed using inputs taken from the preceding step.

Required Total Buffer

- Calculation of Required Total Buffer is the sum of three required buffers:
  - **Calculation of Required Additional Loss Absorbency**: A Rule in the application contains an additional source hierarchy to identify whether a bank is a G-SIB bank or not. The value is checked in the Loss Absorbency Capital Bank Override (**N_LOSS_ABS_OVERRIDE**) column of

the table Fact Entity Information (**FCT_ENTITY_INFO**) and populated to Fact Standard Accounting Head (**FCT_STANDARD_ACCT_HEAD**). This value has precedence over the bucket specified. If the value is not present in the Loss Absorbency Capital Bank Override (**N_LOSS_ABS_OVERRIDE**) column, then the loss absorbency percent is taken from the column Bucket Loss Absorbency Capital (**N_MIN_ADD_LOSS_ABS_CAP**) of the Benchmark Loss Absorbency Ratio (**FSI_SETUP_BENCHMARK_LOSS_ABS**) table based on the loss absorbency bucket the bank belongs to.

- **Required Countercyclical Buffer**: Required Countercyclical Buffer Ratio (**FSI_REQUIRED_CNTR_CYC_BUFFER**) table is updated with values. The values are taken from Benchmark Counter-Cyclical Buffer Ratio (**FSI_BENCHMARK_CNTR_CYC_BUFFER**) table. The Regulator Code (**V_CAPITAL_ADEQUACY_REGULATOR**) column in Benchmark Counter-Cyclical Buffer Ratio is compared to the jurisdiction code column in Run Dimension. If no Countercyclical Buffer is available, the required weighted average is 0 as the benchmarks are assumed to be 0. (If there is no countercyclical requirement, the regulator must provide 0 as the benchmark.)

  After the T2T loading, based on each country's requirement for the countercyclical buffer, the weighted average Countercyclical Buffer is calculated.

- **Calculation of Required Buffer from CET1 Capital, Tier1, and Capital Adequacy Ratio:** For the calculation of these required buffers, based on Updated Capital Component Group Skey (**N_UPD_CAP_COMP_GROUP_SKEY**, which corresponds to BFCET1 - Buffers from CET1 for Required Buffer from CET1 Capital, BFT1 - Buffers from T1 for Required Buffer from T1 Capital and BFCAR - Buffers from CAR for Required Capital Adequacy Ratio), the standard account head amount is summed up and populated against the corresponding Cap ID in the Fact Standard Accounting Head (**FCT_STANDARD_ACCT_HEAD**) table.

Maximum Payout Ratio

Maximum Payout Ratio is calculated based on required CET1, buffers, and the setup or semi-static tables as per the year when the Run is executed.

The application assigns the Maximum Payout Ratio range for a given CET1 and Buffer Lookup Ratio in the table (**FCT_CAPITAL_CONSERVATION_RATIO**). This table is dynamic and formula-driven and is constructed by the application using the values of the three required buffers as per the Basel guidelines. The application constructs the range of CET1 and Buffer Look-up ratio (Lower Limit and Upper Limit) for the Maximum Payout Ratio in four quartiles.

Lower Limit = 0.000001 + Upper Limit of (n-1)th quartile

Lower Limit of first quartile = 0.045

Upper Limit = 0.045 + (Total Required Buffer from CET1 capital * 0.25 * n)

Where n is the quartile number.

Excess/Shortfall of Total Buffer

The calculated values (only positive values are considered) are stored against the corresponding Cap IDs as two separate line items of which one is 0.

6.1.1.5.2 Key Data Elements

A few key data elements are elaborated in this section. For a complete list of tables to be updated, see the Download Specifications document.

Countercyclical Buffer requirement for each country should be provided by the client or the bank as the percentage applicable for each country and this is dependent on the home regulator's jurisdiction as it can prescribe a Countercyclical Buffer percentage that is higher than the percentage prescribed by the regulator of the exposure country. Hence, the required Countercyclical Buffer percentage for each exposure country provided as input should be the one that the home regulator agrees to.

G-SIB status and the applicable bucket information for each entity should be provided by the client or the bank. For a consolidated Run, loss absorbency charges applicable to the parent as required by the regulator of the parent is applicable for a complete run. This Run output is supposed to be reported to the jurisdictional regulator of the parent. For a solo Run, loss absorbency charges as required by the regulator for a subsidiary entity are applicable. Hence, for solo and consolidated Runs, the G-SIB status of the reporting bank and the applicable bucket is provided by the bank itself.

As the required Capital Conservation Buffer (CCB) must be met as per the transitional arrangement, set up the required buffer value in Setup Capital Heads (**FSI_SETUP_CAPITAL_HEAD**) for different periods against the standard account head ID CAP823. Different CCB requirements specified by the different regulators can be set up by specifying the regulator codes against the same standard account head ID. This regulator code must be the same as the jurisdiction code assigned by the Rule Jurisdiction Code Assignment.

The required benchmark of Countercyclical Buffer for different countries as set by different regulators is expected as download in Stage Benchmark Counter Cyclical Buffer (**STG_BENCHMARK_CNTR_CYC_BUFFER**). This data is populated to Benchmark Counter Cyclical Buffer Ratio (**FSI_BENCHMARK_CNTR_CYC_BUFFER**) using a Slowly Changing Dimension (SCD) process. Buffer requirement given on a date is valid till the next buffer is specified. For a solo Run, the regulator of subsidiary specified buffer requirements are considered and for a consolidation Run, the consolidating entity's regulator specified buffer requirements are considered.

The additional loss absorbency requirement specified by different regulators for different buckets should be set up in the table Benchmark Loss Absorbency Ratio (**FSI_SETUP_BENCHMARK_LOSS_ABS**). For the solo Run, the loss absorbency requirement set by the local regulator is considered. For consolidation Run, the consolidating entity's regulator specified loss absorbency requirement is considered.

There is an option of direct input of applicable loss absorbency percentage. This is also useful when the percentage applied is different from the corresponding bucket percentage. This should be given in the column (**N_LOSS_ABS_OVERRIDE**) of the table Stage Legal Entity Details (**STG_LEGAL_ENTITY_DETAILS**). If this column has value, it is given priority over the loss absorbency percentage corresponding to the bucket.

The minimum Payout Ratio requirement for different quartiles specified by different regulators is expected as a download in Stage Benchmark Capital Conservation Ratio (**STG_BENCHMARK_CAP_CONS_RATIO**). This data is populated to the semi-static table Benchmark Capital Conservation Ratio (**FSI_BENCHMARK_CAP_CONS_RATIO**) using an SCD process. Payout ratios specified once are valid till the next revision.

In the Required Counter Cyclical Buffer Ratio (**FSI_REQUIRED_CNTR_CYC_BUFFER**) table, the Risk Weight Amount column is updated against each country code. This is applicable for Credit Risk (for Non-Securitization and Securitization exposures).

6.1.1.6 Single Counterparty Exposure Limit

The Single Counterparty Credit Limits calculation is designed to identify the counterparties whose net aggregate credit exposure to the bank breaches the maximum limit as described by the Federal Reserve

guidelines. The Exposure Limit proposal is mitigating the threat to financial stability posed by systemically important financial companies.

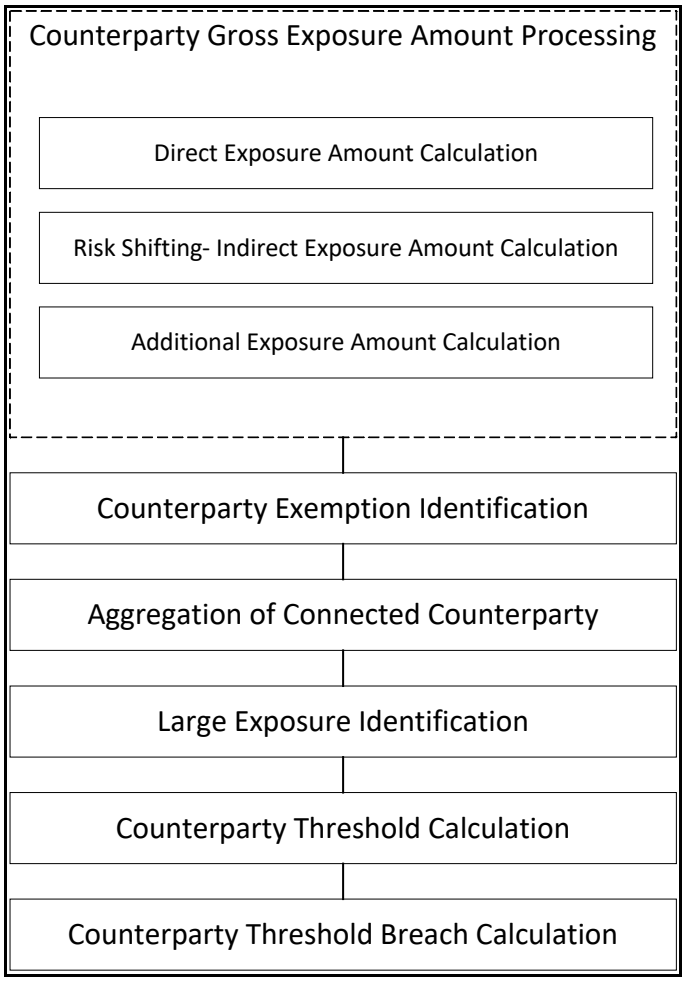
The Single Counter Party Exposure Limit is an effort to reduce the concentration risk of a particular bank to a single client or a group of interconnected clients

The final rule applies to all U.S. global systemically important banks (GSIBs), U.S. bank holding companies (BHCs) and Foreign Banking Organizations (FBOs) with total consolidated assets of $250 billion or more and U.S. Intermediate Holding Companies (IHCs) with total consolidated assets of $50 billion or more.

The final rule requires U.S. GSIBs, major FBOs, and major IHCs must comply with the final rule by January 1, 2020; all other covered entities must comply by July 1, 2020.

SINGLE COUNTERPARTY CREDIT LIMITS PROCESS FLOW

Figure 29: Process Flow for Single Counterparty Credit Limits



Non-Securitization Data Population

Data should be loaded in the application for all the product types and is the same as BASEL III data expectation. Main categories of CR non-sec exposures, along with their respective table names that are used for data input are as follows.

Table 29: CR Non-Sec Exposures and Tables

Higher Level Product Type	Table name for data input (Also known as Product Processor)
Bills	STG_BILLS_CONTRACTS
Credit Cards	STG_CARDS
Swaps	STG_SWAPS_CONTRACTS
Futures	STG_FUTURES
Forwards	STG_FORWARDS
Guarantees	STG_GUARANTEES
Investments	STG_INVESTMENTS
Lease Contracts	STG_LEASE_CONTRACTS
Letters of Credit	STG_LC_CONTRACTS
Line of Credit	STG_CREDIT_LINE_DETAILS
Commitment Contracts	STG_COMMITMENT_CONTRACTS
Loans	STG_LOAN_CONTRACTS
Money market instruments	STG_MM_CONTRACTS
Overdraft	STG_OD_ACCOUNTS
Options	STG_OPTION_CONTRACTS
Re purchase contracts	STG_REPO_CONTRACTS
Equity Exposures	STG_INVESTMENTS
Underlying Exposures for Derivatives and Securitization	STG_UNDERLYING_EXPOSURES
Underlying Exposures for Repo contracts	STG_PLACED_COLLATERAL / STG_MITIGANTS
Credit Derivatives	STG_CREDIT_DERIVATIVES
Placed Collaterals	STG_PLACED_COLLATERAL

Stage data from the product processors or other stage tables is populated in the required tables, where data is further processed. For more information on the list of columns to be populated within each table, see the Download Specifications document.

Currency Conversion

The amount data columns that are provided as input (in stage tables) are in the natural currency. In this step, the application converts them to reporting currency columns which are used for further calculations. The column names suffixed as '_ncy' are in the natural currency and they are multiplied by the currency conversion factor to populate values in the reporting currency.

Mitigant Data Population

The data relating to the mitigants that are associated with the exposures are captured in this process. The application does the following in this task:

- Mitigant data population to their corresponding Mitigant table, STG_MITIGANTS
- Currency conversion from natural currency to reporting currency for the required columns
- Mitigant to Non-Sec Exposure mapping population

Non-Securitization Data Processing

The Non Securitization related data is processed here and consist of the following broad functional areas:

- Credit Risk for Banking Book Products
- Counterparty Credit Risk for Banking and Trading book exposures
- Over-the-Counter Derivative Products
- Securities Financing Transactions
- Credit Risk Mitigation for the Credit Risk

The application processes the Non-Securitised exposures in the same way as it is done in BASEL III and there are no specific changes for Single counterparty credit limits. The corresponding gross exposure amounts required for credit limit calculations are identified in the process **USA_US_III_LARGE_EXP_PROCESSING_DATA_POPULATION**.

6.1.1.6.1 Securitization Data Population and Processing

The application is capable of handling both securitized exposures and re-securitized exposures and the processing is the same as that of the the current BASELIII calcualtions. It also handles the calculation for the originator and the investor bank roles. At a broad level, there are two categories of Investors:

- An Investing Bank that has invested heavily in securitization.
- An Investing Bank that has invested minimally in securitization.

For both the investors, the data is expected in the Stage Underlying Exposures (**STG_UNDERLYING_EXPOSURES**) for the underlying of the pool, Total Pool Level attributes in the Stage Pool table (**STG_SECURITIZATION_POOL)**, Tranche Level attributes in the Stage Tranche table (**STG_SECURITIZATION_TRANCHE**), and the Exposure Level Attributes in the respective product processor (PP) tables.

If the exposure is credit protection in the form of guarantee, it is expected in the Stage Guarantees table (**STG_GUARANTEES**), and if it is a credit derivative, it is expected in the Stage Credit Derivatives table (**STG_CREDIT_DERIVATIVES**). If it is a regular investment in the Tranches by an investing bank, or it is part of the mandate for retention in the pool or tranche for an originating bank, then the data is expected in the Stage Investments table (**STG_INVESTMENTS**).

For exposures being a facility like liquidity facility, or servicer cash advance, the exposures are expected in the Stage Commitment Contracts table (**STG_COMMITMENT_CONTRACTS**), along with any respective entry in Stage Credit Line Details table (**STG_CREDIT_LINE_DETAILS**), if there is a credit line involved.

6.1.1.6.2 Mitigant Data Processing

The application handles multiple mitigants for credit risk mitigation like cash, debt securities, Guarantees, Credit derivatives, and so on. The mitigant types are reclassified as standard mitigant types. These are then identified as eligible or not based on the eligibility rules. The application has pre-configured Rules to carry out the mitigant eligibility checks. There are separate eligibility Rules for different standard

mitigants types. All cash and debt securities are marked as eligible. Equity is classified as eligible mitigant based on whether it is publicly traded equity or not. All Credit derivatives and guarantees are treated as eligible based on their standard issuer types.

6.1.1.6.3 Entity Identification and Applicable Single Counterparty Limits

The percentage for the credit limit and the eligible capital base against which the credit limit is measured vary depending on the size and regulatory status of the covered firm and also on the counterparty type being major or non-major.

A "major counterparty" is defined as a global systemically important banking organization or a nonbank financial company supervised by the Board.

The entity identification happens based on the holding company type and consolidated assets of the holding company. The identification is detailed in the following table:

Table 30: Entity Identification

Category of U.S. BHC	Applicable Credit Exposure Limit
U.S. BHCs with total consolidated global assets less than $250 billion	None; Not a Covered Company
Covered U.S. BHCs that are not Major Covered Companies	25 percent of the Covered Company's tier 1 capital
U.S. BHCs that are GSIBs using the global methodology (Major Covered Companies)	15 percent of the Major Covered Company's tier 1 capital for exposures to Major Counterparties 25 percent of the Major Covered Company's tier 1 capital for all other counterparty exposures

Table 31: Entity Identification

Category of FBO	Applicable Credit Exposure Limit
U.S. FBO with total consolidated global assets less than $250 billion	None; Not a Covered Company
Combined U.S. operations of FBOs with total consolidated global assets that equal or exceed $250 billion but are not Major FBOs	25 percent of the FBO's tier 1 capital
Top tier FBOs that are GSIBs using a global methodology (Major FBOs)	15 percent of the Major FBO's tier 1 capital for exposures to Major Counterparties 25 percent of the Major FBO's tier 1 capital for all other exposures

Table 32: Entity Identification

Category of U.S. IHC	Applicable Credit Exposure Limit
U.S. IHCs that have total consolidated assets less than $50 billion	None; Not a Covered Company
U.S. IHCs that have total consolidated assets of at least $50 billion but less than $250 billion	25 percent of the IHC's total regulatory capital plus the balance of its allowance for loan and leases losses (ALLL) not included in tier 2 capital under the capital adequacy guidelines
U.S. IHCs that have $250 billion or more in total consolidated assets but are not Major U.S. IHCs	25 percent of the IHC's tier 1 capital
U.S. IHCs that have $500 billion or more in total consolidated assets (Major U.S. IHCs)	15 percent of the IHC's tier 1 capital for exposures to Major Counterparties 25 percent of the IHC's tier 1 capital for all other exposures

Single Counterparty Exposure Limit calculations are done only at a consolidated level of the ultimate parent. However, there are no restrictions by the application on this. The Run is executed at any level of the hierarchy of the legal entity structure.

6.1.1.6.4 Counterparty Gross Exposure Amount Calculation

Products covered under credit limits are as follows:

Calculation of gross credit exposure depends on the specific product category of the on-balance sheet, off-balance sheet exposure, derivative products, secured lending and borrowings, exposures arising from CIU, exposures arising from SPVs along with the exposures to third parties of the SPVs, and trade exposures.

The calculation also covers indirect exposures of the counterparty arising out of the mitigant exposures of the bank.

The calculation also takes the amount of initial margin and variation margin above what is needed to secure the mark-to-market value of a derivative. This derivative is posted to a bilateral or central counterparty that would be treated as credit exposure to the counterparty unless the margin is held in a segregated account at a third-party custodian account concerning both cleared and uncleared derivatives.

The solution populates all the exposures related to each of the counterparties without considering their relationship with other counterparties into the Counterparty Exposure processing table (**FCT_COUNTERPARTY_EXPOSURES**). The pre mitigation and post-mitigation exposure amount and the exempted amount are considered in this data population.

The data population considers even the indirect exposures, wherein the bank holds a mitigant that is issued by a counterparty. The eligible net mitigant amount, post haircut adjustment is considered as an indirect exposure of the Bank towards the issuer of the mitigant and is capped at the original exposure amount for which the mitigant has been placed to take the over-collateralization value into consideration

The data population also considers the logic for additional exposures, wherein the bank is a counterparty (customer or issuer, depending on the product code), for the underlying exposures of Securitization or CIU.

6.1.1.6.5 Exempted Exposures

The guidelines provide mainly six types of exclusions from the calculation which is as below:

- Direct claims on and portions of claims that are directly and fully guaranteed as to principal and interest by the Federal National Mortgage Association and the Federal Home Loan Mortgage Corporation, while these entities are operating under the conservatorship or receivership of the Federal Housing Finance Agency;
- Any intraday credit exposure to a counterparty is exempted from single counterparty limits guidelines. The application currently does not expect any intraday credit exposure to a counterparty as data input and this exemption gets handled automatically through the data expectation.
- Trade exposures to a central counterparty that meets the definition of a qualifying central counterparty
- Any credit transaction with the Bank for International Settlements, the International Monetary Fund, or institutions that are members of the World Bank Group (namely, the International Bank for Reconstruction and Development, the International Finance Corporation, the International Development Association, the Multilateral Investment Guarantee Agency, and the International Centre for Settlement of Investment Disputes)
- Any credit transaction with the European Commission or European Central Bank exempts any transaction which the Board determines to be in the public interest and consistent with the purposes of section 165(e) of the Dodd-Frank Act. This is expected to be a customized input from the customer side as this exemption criterion is not explicitly mentioned in the guidelines.
- Each of the exemptions is identified and stamped with specific exemption criteria codes that will identify the exempted counterparties. The application also calculates the exempted gross and net exposures of a counterparty.

6.1.1.6.6 Risk Shifting

A covered company must also take into account the adjusted market value of any eligible collateral when calculating its gross credit exposure to a counterparty. The eligible mitigant value post haircut is considered as an indirect exposure of the holding company towards the collateral issuer. The solution also takes into account the collateral eligibility check, haircut value adjusted net mitigant value, and also capping the net mitigant value to the original exposure amount in case of over-collateralization.

6.1.1.6.7 Aggregation of Connected Counterparties

The core aim of a large exposure regime is to act as an overlay “to prevent a financial institution from incurring large losses as a result of the failure of an individual client or group of connected clients due to the occurrence of unforeseen events”. The large exposures framework requires aggregation of exposures to counterparties, where the counterparties are connected through various relationships like economic interdependence, Business control relationship, and so on.

While aggregating the counterparties the following validations must be performed:

- All the counterparty exposure must be aggregated based on the party relationship defined and is aggregated against the ultimate parent. This aggregation logic is used for every party type except for the retail party type for which the aggregation logic is different.

- For retail party type aggregation and population, the logic is based on the cumulative amount of all the related parties, that is, if the ultimate party is retail and if all the related party exposure sum crosses 5% of the corresponding limits set as per the entity types then the aggregation needs to be done.
- A connected group is identified as a large exposure if the net exposure amount crossed 5% of the eligible capital base. The regulatory thresholds are assigned based on the ultimate parent party type and are used to identify the threshold breach.

Data Expectation

Banks must provide an exhaustive list of Party-Party relationships in the table Stage Party To Party Relationship (**STG_PARTY_PARTY_RELATIONSHIP**). This gets reclassified into the Regulatory Party Relationship type as part of the process **Party Relationship Population and Reclassification**.

The relationship list must include direct and indirect relationships between the parties. The solution sums up the exposures for all the counterparties belonging to the same parent along with the parent and populates the Fact Party Group Exposure table (**FCT_PARTY_GROUP_LARGE_EXPOSURE**). The expectation is that all the parties that are related to each other have the Parent ID in the Party table as the same. On the party group, the threshold limit check is applied, and a large exposure is also found.

Assumption

As per the guidelines the Federal Reserve can determine certain relationships between the counterparties to be relevant or irrelevant, which will influence the aggregation of the exposures of connected counterparties. Such discretionary relationships are expected to be handled while the Bank provides the relationship data in **STG_PARTY_PARTY_RELATIONSHIP**.

6.1.1.6.8 Process Flow for Single Counterparty Exposure Limit

Key Data Elements

Data for identification of an entity's holding company type is expected as a download in organizational structure data and expectation is to define the holding company type as Bank Holding Company (BHC), Foreign Banking Organization (FBO), or Intermediate Holding Company(IHC). This holding type of the entity along with the consolidated asset value; which is expected as part of download in Stage party financials (**STG_PARTY_FINANCIALS**) is used to identify the entity as a Major or Non- Major entity and ultimately the regulatory threshold limits applicable to counterparties.

There are certain mandatory details about the product that are provided as a download that cannot be calculated in the product processor table without which the exposure value cannot be computed. For a complete list of tables and columns, see the Download Specifications document.

The mandatory data that is provided for the different products are as follows:

- Lending Instruments - Current Exposure Value
- Equities – Equity Market value
- Debt Securities – EOP Balance
- REPO - Underlying exposure value
- Guarantees and Letter of Credit - the exposure value, maximum potential loss
- OTC Derivatives - MTM value, Notional principal of the derivative

- Credit or Equity Derivatives - Exposure value, maximum potential loss

All the product types mentioned in the preceding list are included in the Gross Exposure calculation. While populating data, the application also takes care of the currency conversion from natural currency to the reporting currency.

The solution is expecting the Market risk exposure post offset amount of the holding company in **FSI_SETUP_LE_MKT_RISK_DETAIL** as a download. As part of processing, new FSI tables are introduced specifically for counterparty limits processing- all the direct exposures and market risk exposures are moved to **FSI_LARGE_EXPOSURE_ACCT_DETAILS**, Mitigant data is moved to **FSI_LARGE_EXPOSURE_MITIGANTS** and underlying data is moved to **FSI_UNDERLYING_LARGE_EXPOSURE**. The capital-related inputs that will be used for checking the threshold limit amounts are expected as a download in **FSI_STANDARD_ACCT_HEAD** which will be provided at the GL codes level (GL entries in **DIM_CAPITAL_ACCT_HEAD**). The customer rule reclassifies the capital account head ID to standard account head ID and reclassified data gets populated **FCT_CAPITAL_ACCT_HEAD**. The reclassified capital data moves to **FSI_ENTITY_INFO_DETAILS** and the capital structure-specific inputs for SCCL computation are moved to FSI_CAPITAL_INFO.

To capture the third party SPV exposure of the holding company new FSI table - **FSI_SETUP_SPV_THIRD_PARTY_DTLS** has been introduced and the data is expected as download, which moves into **FSI_SPV_THIRD_PARTY_DTLS**. This will be part of the setup table population batch.

In large exposures processing, the market risk details are captured in the FSI setup table **FSI_SETUP_LE_MKT_RISK_DETAIL**. The data in this table has to be provided at the instrument level. The data from this setup table is then populated into **FSI_LARGE_EXP_MKT_RISK_DETAIL** through a T2T.
As our large exposure processing starts at the exposure level, the application creates dummy exposures for these market risk instruments in DIM_EXPOSURE and then inserts these dummy exposures into the **FSI_LARGE_EXPOSURE_ACCT_DETAIL** table.
The dummy exposure are created with exposure id as 'MR_LE_'|| **DIM_INSTRUMENT_CONTRACT.N_INSTRUMENT_SKEY || '_' || DIM_PARTY.N_PARTY_SKEY** for any record present in **FSI_LARGE_EXP_MKT_RISK_DETAIL**.
You can identify the dummy market risk exposures created in DIM_EXPOSURE by using the exposure id mentioned above.

6.1.1.7 Leverage Ratio

US Regulatory Capital Final Rules have identified two types of leverage ratios which are as follows:

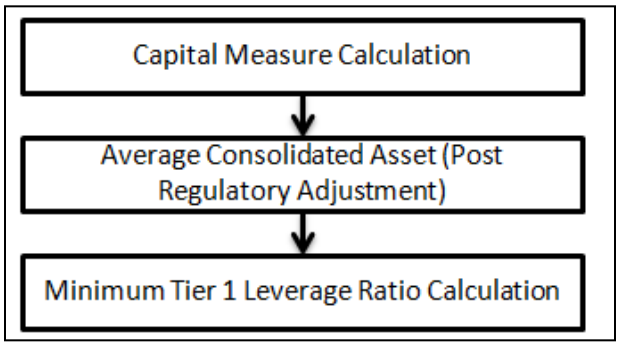
- Minimum Tier 1 Leverage Ratio: As per US Regulatory Capital Final Rules Minimum Tier 1 Leverage Ratio should be 4 percent. Minimum Tier 1 Leverage Ratio is calculated by dividing the organization's net tier 1 capital (post regulatory adjustment) by its average consolidated assets subtracted by the regulatory adjustment amount that is deducted from the tier 1 capital. A separate Run USA - Basel III - Minimum Tier 1 Leverage Ratio Calculation is incorporated in the application to compute Minimum Tier 1 Leverage Ratio.

- Supplementary Leverage Ratio: As per US Regulatory Capital Final Rules Supplementary Leverage Ratio is set to a minimum of 6% to qualify under the 'Well-Capitalized' category while it remains the same as 3% for the 'Adequately Capitalized' category. The application does not capture these benchmarks and is captured in the system for US jurisdiction.

- Supplementary Leverage Ratio is defined as tier 1 capital / total leverage exposure. A separate Run USA - Basel III - Supplementary Leverage Ratio Calculation is incorporated in the application to compute Supplementary Leverage Ratio.

6.1.1.7.1 Process Flow for Minimum Tier 1 Leverage Ratio

Figure 30: Process Flow for Minimum Tier 1 Leverage Ratio



Capital Measure Calculation

The Net Tier 1 Capital amount is calculated in the Capital Structure process (as per US III). For more information on the Calculation of Net Tier 1 Capital, see the US Capital Structure process.

Average Consolidated Asset (Post Regulatory Adjustment)

The average consolidated asset value is at the consolidated Bank Holding Company level. The average consolidated asset value is at the consolidated Bank Holding Company level. The average consolidated asset value used in the Minimum Tier 1 Leverage Ratio should be provided by the bank. The value should be provided in the stage legal entity detail (**STG_LEGAL_ENTITY_DETAILS**) table. The line items that are deducted from Average Consolidated Assets are as follows:

- Goodwill
- Other Intangible Asset
- DTA
- Accumulated Other Comprehensive Income – AOCI
- Cash Flow Hedge Reserve
- Gain on Sale associated with Securitized Exposures
- Defined Pension Fund Asset

Cumulative gains and losses due to changes in own credit risk

Threshold deduction line item above 10% which is arrived at during the processing of Capital Structure and should be provided by the bank

Threshold deduction line item in aggregate that is above 15% which is arrived at during the processing of Capital Structure and should be provided by the bank

The deduction line items are marked as "Deduction from Leverage Ratio" in **FCT_STANDARD_ACCT_HEAD** and these are deducted from the average consolidated asset.

The above line items deducted from the average consolidated asset follow a phase-in arrangement as defined in Capital Structure. Hence, for DTA a deduction line item, 20% of the amount is deducted from CET1 in the year 2016 and the remaining 80% is deducted from AT1. The same deduction amount is deducted from the average consolidated asset. Therefore, 20% of the amount and 80% of the amount are deducted from the average consolidated asset.

Similarly, for Other Intangible Assets in which 20% is deducted from CET1 and the remaining 80% is risk-weighted, then only the part that is deducted (that is 20%) is reduced from the average consolidated asset. The risk-weighted portion is not deducted.

Hence, the following line items (where the entire amount is being deducted as per phase-in arrangement from CET1 and AT1) is reduced from Average Consolidated Asset:

- DTA
- Cash Flow Hedge Reserve
- Gain on Sale associated with Securitized Exposures
- Defined Pension Fund Asset
- Changes in Banking Organization Creditworthiness

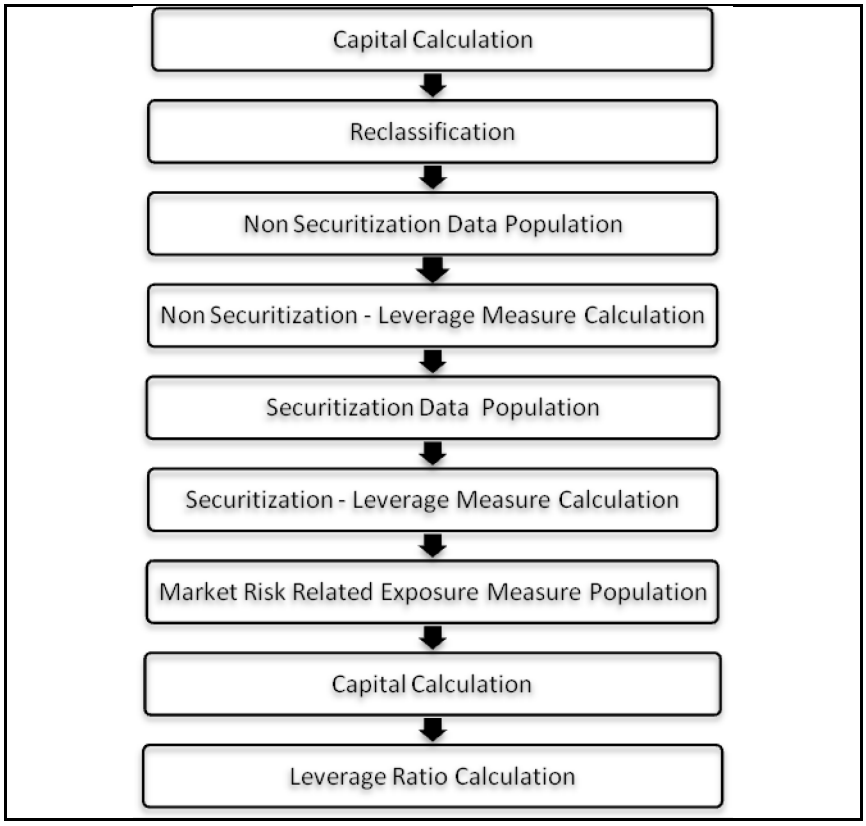
Whereas, for other intangible assets (threshold deduction amount above 10% and 15%) where only a certain portion, as per the phase-in arrangement, is being deducted from CET1, the same amount is reduced from the average consolidated asset. The remaining amount being risk-weighted is not deducted.

Minimum Tier 1 Leverage Ratio

Minimum Tier 1 Leverage Ratio is calculated by dividing the organization's tier 1 capital by its average consolidated assets subtracted by the amount deducted from tier 1 capital. The tier 1 capital is considered as the net tier 1 capital. Net tier 1 capital is the summation of net common equity tier 1 (CET1) capital and net additional tier 1 capital and regulatory adjustment applied on its respective tier of capital. The Minimum Tier1 Leverage ratio, thus calculated, is stored in the **FCT_STANDARD_ACCT_HEAD** table under the "USA: Leverage ratio" standard accounting head description.

6.1.1.7.2 Process Flow for Supplementary Leverage Ratio

Figure 31: Process Flow for Supplementary Leverage Ratio



During the financial crisis, banking institutions built up excessive on-balance sheet and off-balance sheet leverage which forced the banking sector to reduce its leverage. To prevent the building of excessive leverage on the institutions' balance sheet, the EBA has introduced a non-risk-based leverage ratio which is a new regulatory tool supplementing risk-based capital requirements. The leverage ratio guidelines were revised and published on 10th October 2014. The guidelines are mostly in sync with the revised leverage ratio guidelines issued in 2014 by BIS.

The solution supports this revised approach in the calculation. The application calculates the leverage ratio for a reporting bank. The minimum required leverage ratio is 3%.

The leverage ratio is calculated by dividing an institution's Tier 1 capital measure by the total leverage exposure measure.

$$\textbf{Leverage Ratio} = \frac{\textbf{Tier 1 Capital}}{\textbf{Leverage Exposure Measure}}$$

The Run USA - US III - Revised Supplementary Leverage Ratio Calculation is used for computing the leverage ratio, as per the revised guidelines.

Net Tier 1 capital is the summation of Net CET1 and Net AT1 capital amount post regulatory adjustment. Exposure measure is the summation of on-balance sheet items, off-balance sheet items, Derivative Exposures, and Structured Financial Transactions (SFT). The on-balance sheet items include the Non-Securitization exposures' amount and the Securitization exposures' amount.

The off-balance sheet items include the Non-Securitization exposures' amount and the Securitization exposures' amount. Mitigation is not considered when calculating exposure amount.

The leverage calculation happens at the consolidated parent entity level. The market risk data are not captured for the EU Jurisdiction, and hence that is expected as a download. This is expected in Stage Standard Account Head (**STG_STANDARD_ACCT_HEAD**) for the CAP843 (Leverage Ratio).

The leverage ratio calculations are a separate run and are not part of the regular capital calculation run. This is because of the changes in the Credit conversion factor assigned to the exposures, and also the exemption of few exposures from the calculation which are part of the capital charge calculations. Also, mitigations are not required for these exposures, and the exposure measure calculations are different from the regular EAD calculations.

The details of the process flow for leverage ratio are as follows:

Capital Consolidation process

The capital consolidation process remains the same as is existing in the capital calculation run.

Reclassification

The reclassification process remains the same as is existing in the capital calculation run.

Non-Securitization Exposure Data Population

- Data from the Product Processors are populated to **FCT_NON_SEC_EXPOSURES** table in the process USA - US III - Non-securitized Exposure Data Population - STD. This data population also remains the same as existing in the capital calculation run.

Non-Securitization Exposure Measure Calculation

After data is populated in non sec processing table, the exposure measure is calculated in the process **USIII_LEV_RATIO_EXPOSURE_MEASURE_CALCULATION**.

The Exposure measure is the sum of the Pre Mitigation EAD amount of the following exposure types:

- On-Balance Sheet Exposures
- Off-Balance Sheet Exposures
- SFT Exposures
- Derivative Exposures
- Details on the calculation of these exposure measures are mentioned in the following sections. All the exposure measures are computed and populated into the Leverage Exposure amount (**N_LEVERAGE_EXPOSURE_AMOUNT**) column. And any exempted exposures are identified by the solution in the Regulatory Capital Exemption Criteria in the Non-Sec Exposures processing table. These exempted criteria are part of the dimension table of Regulatory Capital Exemption Criteria Dimension (**DIM_REG_CAP_EXEMPTION_CRITERIA**).

On-Balance Sheet Exposures

The accounting value of the on-balance sheet exposures net of specific provisions and valuation adjustments are considered for the exposure measure. The valuation adjustments are captured at an instrument level, in the FSI setup table for Instrument Valuation Details (**FSI_INSTR_VALUATION_DETAILS**).

The exposure measure considered is the Pre-Mitigation amount and does not consider the benefit of the mitigation.

Some of the exempted exposures are detailed as follows:

Fiduciary Assets

- If the bank considers the assets of the fiduciary assets as the bank's assets, then these assets are exempted from the calculation. The fiduciary assets are identified based on the exposures having the Parent Fiduciary Account Number (**V_PARENT_FIDUCIARY_ACCT_NUMBER**) in the product processor (PP) staging tables.
- The bank has to select the run management option to select whether the exposures are derecognized in the balance sheet or not. If the run management option of Y is selected, all the fiduciary assets with the parent fiduciary account are exempted from the Leverage Exposure Measure calculations. If the run management option of N is selected, specific fiduciary assets can be exempted from the Leverage Exposure Measure calculations. These specific fiduciary assets are expected to be provided in the FSI Fiduciary Assets setup table (**FSI_SETUP_DEREC_FIDUCIARY_ASST**).
- This is handled in the Fiduciary Assets Exemption subprocess of the **USIII_LEV_RATIO_EXPOSURE_MEASURE_CALCULATION** process.

Off-Balance Sheet Exposures

- The exposure amount for off-balance sheet exposures is the undrawn amount of the exposure multiplied by the CCF. The CCF of the exposures remain the same as in the Capital Calculation Run except that the CCF is floored at 10%. The flooring of the CCF to 10% is handled by the rule **Non Sec Off Balance Sheet Exposures CCF Percent Flooring** in the **Non Sec CCF Assignment** sub-process.

This exposure measure does not consider the mitigation effect.

SFT Exposures

The exposure amount of the SFT Exposures to be considered for the leverage measure is post the effect of the collateral. The SFT Exposures data provided in the staging must not consider the accounting netting.

The data capture for the SFT exposures remains the same as in the Capital calculation run. The bank role in the SFT transaction is also captured in the staging table.

The Gross amount and the Add-on amount, as expected in the accord are computed by the application. The Gross amount is the actual transaction amount of the SFT exposures, as provided in the Repo contracts staging table. And the Add-on amount is the difference between the fair value of the repo exposures and the fair value of the collateral placed or received.

- The fair value of the exposures, including the placed collateral are captured at an instrument level, in the FSI setup table for Exposure Fair Value Details (**FSI_SETUP_INSTR_VALUATION_DTLS**), and the fair value of the mitigants are captured in the FSI setup table for Mitigant Fair Value (**FSI_SETUP_MTGNT_VALUATION_DTLS**).

The mitigants which are used to offset the fair value of the repo exposures, are stamped accounting heads, to ensure that they can be tracked.

The exposure amount calculations are different for the bank acting as a principal in the SFT transactions, and an agent in the SFT transactions. The solution supports both treatments.

For bank acting as an agent, the solution handles all the treatment mentioned in the accord. The data expectation for them are as follows:

- **Case 1:** Bank is an agent, and does not get involved in any other role with the SFT Exposure

  In this case, the data is not expected in the Repo contracts staging table.

- **Case 2**: Bank is an agent, and provides a guarantee equal to the difference between the SFT Exposure and the collateral amount

  In this case, the data is expected in the Repo contracts staging table, with the bank role as an agent, and the indemnity indicator (F_INDEMNITY_IND) as 'Y'.

  The application computes only the Add-on amount for this SFT transaction in line with the guidelines. This add-on amount is populated into the Add-on column of the processing table.

  This Add-on amount is calculated in the data transformation Lev_Ratio_SFT_Addon_amt.

  This is handled in the sub-process **Leverage Ratio Computations** of the process (**USIII_LEV_RATIO_EXPOSURE_MEASURE_CALCULATION**).

- **Case 3**: Bank is an agent, and provides a guarantee more than the difference between the SFT Exposure and the collateral amount

  In this case, the data is expected in the Repo contracts staging table, with the bank role as an agent, and the indemnity indicator (**F_INDEMNITY_IND**) as Y. And a separate guarantee transaction is expected to be recorded in the guarantee staging table. This guarantee transaction is also provided as a mitigant with the mitigant table also storing the guarantee contract ID (**V_GUARANTEE_CONTRACT_ID**). The exposure and the mitigant must be mapped to each other in the exposure mitigant mapping table (**STG_EXP_MITIGANT_MAPPING**).

  This guarantee is not for a mitigant treatment, and hence, this is expected with the mitigant eligibility flag as 'N'. This identified guarantee is populated in FNSE.n_repo_contract_skey.

  The application computes both the gross exposure amount and the addon amount for this SFT transaction, in line with the guidelines.

  This Add-on amount is calculated in the data transformation Lev_Ratio_SFT_Addon_amt.

  This is handled in the sub-process **Leverage Ratio Computations** of the process (**USIII_LEV_RATIO_EXPOSURE_MEASURE_CALCULATION**).

Derivative Exposures

Derivative transactions (OTC Derivatives) exposure measures are calculated using the Mark to Market Method. The add-on assignment is the same as what is mentioned in the Capital Calculation Run. The exposure measure is the sum of market value, and the notional amount multiplied by the add-on percent.

The derivative exposure measure has few specific treatments in terms of the Leverage Exposure Measure calculations. They are as detailed as follows.

Collateral of Derivative

The collateral received regarding the derivatives cannot be used in netting and reducing the exposure amount of the derivatives. Based on whether the operative accounting framework allows for the netting of the collateral or not, the solution updates the exposure measure. The solution expects a run management selection to identify whether the bank considers netting of the collateral outside the application, and provides the netted amount as input to the product processor staging tables.

The collateral of the derivative is given in the mitigant table. There is a run management option to capture whether the operative accounting framework allows for the netting of the collateral as per the master netting agreement or not.

If 'Yes' is selected, assuming that the bank has provided the MTM value based on already considering the collateral amount, the collateral amount is added to the MTM of the exposure. If 'No' is selected, there is no change to the MTM value.

Data Expectations

Collateral for the derivatives, which is already considered in the MTM calculation, are provided in the STG_MITIGANTS table with the eligibility flag as 'N' and the corresponding entry is added into the STG_EXP_MITIGANT_MAPPINGS table.

The MTM provided for the derivatives' instruments, must be after following the corresponding operational accounting framework.

Cash Variation Margin

As per the guideline, the Replacement cost of the derivatives can be reduced by cash variation margin if certain conditions are satisfied. This is handled in the solution by using the above run management option, wherein it mentions whether the exposure is being offset with the collateral or not.

In the run management, if the option of 'No' is selected, the cash variation margin is used to offset the exposure measure. If all the conditions are satisfied, the flag to indicate that the Variation Margin has satisfied the conditions is updated. And if this flag is 'Y', then, the cash variation margin is used to reduce the replacement cost of the derivative.

This is handled in the sub-process **Cash Variation Margin Exemptions** of the process (**USIII_LEV_RATIO_EXPOSURE_MEASURE_CALCULATION**).

Clearing Member of a QCCP

For clearing members of a QCCP, the exposures where Bank acts as a clearing member, and the trade exposures wherein the bank is not obligated to reimburse the losses suffered by the client for CCP default are exempted from the leverage ratio calculation.

This is handled in the sub-process **QCCP Related Exemptions** of the process (**USIII_LEV_RATIO_EXPOSURE_MEASURE_CALCULATION**).

Written Credit Derivatives or Sold Credit Derivatives

The effective notional amount of the credit derivative transactions are reduced by any change in the fair value of derivative liabilities. The fair value of the exposures is captured in the FSI setup table for Fair Value (**FSI_SETUP_INSTR_VALUATION_DTLS**), at an instrument level. And the difference between the Fair value and the MTM value of these exposures results in the unrealized gain and loss of the derivative exposures.

This is subtracted from the notional principal of these derivatives to arrive at the effect notional principal before offsetting.

The sold credit protection is offset against the bought credit protection based on the conditions mentioned in the guidelines. This offset happens in the data transformation (SCP_BCP_Offset_Mapping) which is in the sub-process (Written Credit Derivatives SCP BCP Offset Mapping).

All the other written credit derivative treatment is handled in the sub-process **Written Credit Derivative Related Exemptions** of the process (**USIII_LEV_RATIO_EXPOSURE_MEASURE_CALCULATION**).

Securitization Data Population

Securitization exposure data is populated to securitization processing table in the process **USA - US III - Securitized Exposure Data Population - STD**. The population remains the same as in the capital calculation run.

Securitization Exposure – Leverage Measure Calculation

After securitization exposure data is populated, exposure measure is calculated in the process USA - Exposure - Mitigant Mapping Data Population.

The exposure measure calculation remains the same as in the capital calculation run, except that the CCF for the off-balance sheet exposures are floored at 10%. And the mitigation is not considered for the leverage measure calculations.

Market Risk – Leverage Measure Calculation

Leverage Measure for Market Risk is directly expected as a download in the Stage Standard Accounting Head (**STG_STANDARD_ACCOUNT_HEAD**) with the CAP1809 (On Balance and Off-Balance Total Leverage Exposure Measure for Securitized Exposures). This is expected as a download, as the EU jurisdiction does not support the MR calculations.

Capital Calculation

The Capital Measure is calculated in the **EU_CAPITAL_STRUCTURE** process. Capital Measure used in the leverage ratio is equal to Net Tier 1 which is post all regulatory adjustments. The Capital Structure is the same as the capital calculation run.

Leverage Ratio Calculation

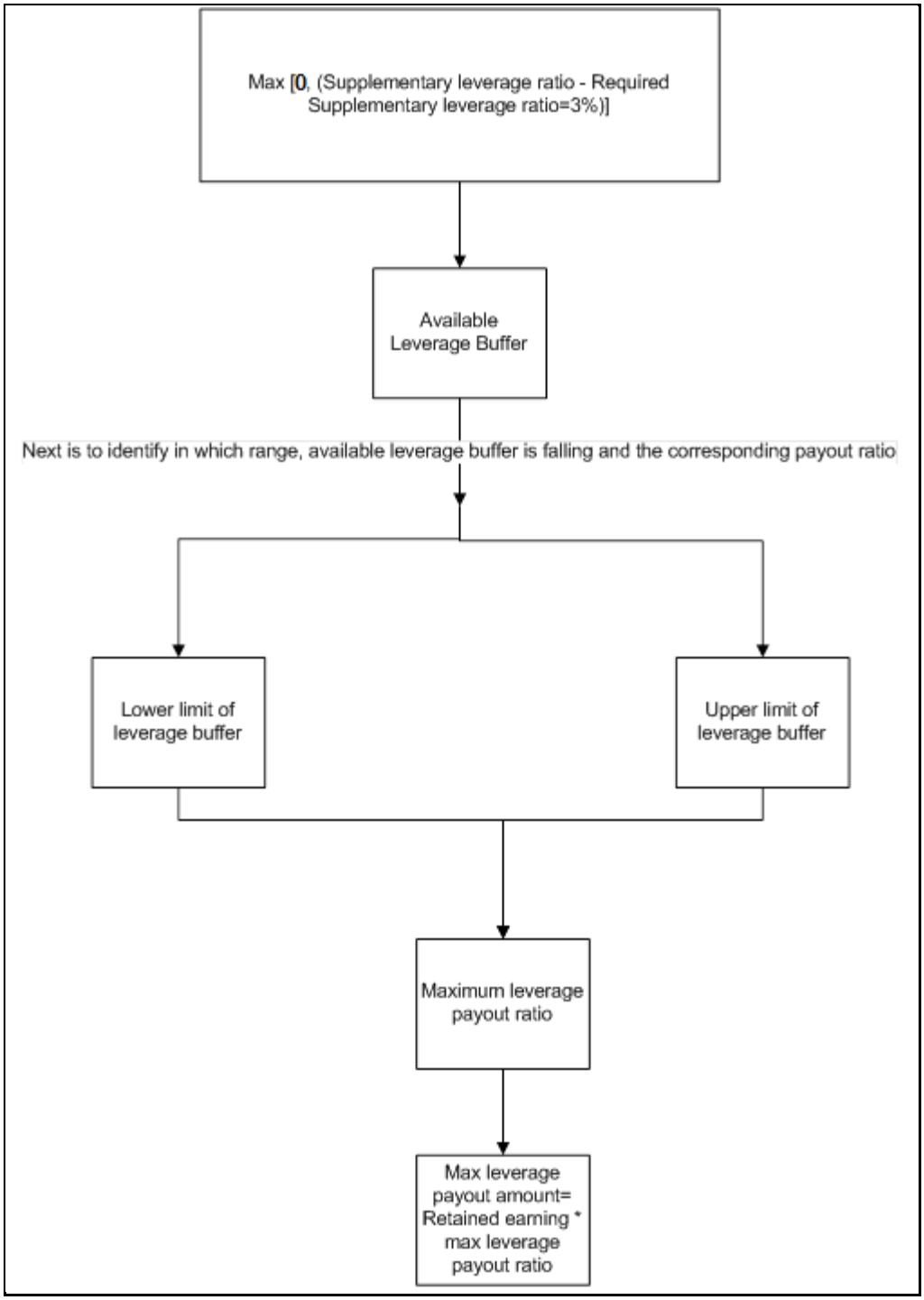
The leverage ratio is calculated as follows.

Leverage Ratio = Tier 1 Capital / Total Leverage Exposure Measure

This is computed in the process – USIII_LEV_RATIO_LEVERAGE_RATIO_CALCULATION.

6.1.1.7.3 Process Flow for Enhanced Supplementary Leverage Ratio

Figure 32: Process Flow for Enhanced Supplementary Leverage Ratio



The Enhanced Supplementary Leverage Ratio (SLR) standards apply to any U.S. top-tier BHCs, that have more than $700 billion in total consolidated assets or more than $10 trillion in assets under custody (covered BHC) and any advanced approaches insured depository institution (IDI) subsidiary of these BHC.

The effective date of this rule is January 1st, 2018. An IDI that is a subsidiary of a covered BHC must maintain a supplementary leverage ratio of at least 6 percent to be well capitalized.

The final rule is adopting a supplementary leverage ratio buffer (leverage buffer) of two percent, above the minimum supplementary leverage ratio requirement of three percent for covered BHCs.

Leverage buffer imposes constraints on making discretionary payments. A covered BHC that maintains a leverage buffer of tier 1 capital in an amount greater than two percent of its total leverage exposure is not subject to limitations on distributions and discretionary bonus payments. If a covered BHC maintains a leverage buffer (in amount) of two percent or less of its total leverage exposure, it is subject to limitations on distributions and discretionary bonus payments.

Calculation of Leverage Buffer

The leverage buffer is composed of tier 1 capital. A covered BHC's leverage buffer can be formulated as follows:

Leverage Buffer = SLR (calculated as of the last day of the previous quarter) - Minimum SLR (3 %)

If the covered BHC's supplementary leverage ratio is less than or equal to 3 percent, then the covered BHC's leverage buffer becomes zero.

After calculating the leverage buffer ratio, covered BHC calculates the Maximum leverage payout ratio, to calculate the maximum leverage payout amount. Covered BHC's maximum leverage payout amount for the current quarter can be formulated as follows:

Leverage Payout Amount = Eligible Retained Income * Applicable Maximum Leverage Payout Ratio

Where, Maximum Leverage Payout Ratio is the percentage of eligible retained income that a covered BHC can pay out in the form of distributions and discretionary bonus payments, during the current quarter.

Eligible retained income is the net income (as reported in the banking organization's quarterly regulatory reports) for the four calendar quarters preceding the current calendar quarter, net of any capital distributions and associated tax effects not already reflected in net income.

The following table indicates the relationship between the leverage buffer and the maximum leverage payout ratio:

Table 33: Relationship Between Leverage Buffer and Maximum Leverage Payout Ratio

Leverage Buffer	Maximum Leverage Payout Ratio (As a percentage of eligible retained income.)
Greater than 2.0 percent	No payout ratio limitation applies
Less than or equal to 2.0 percent and greater than 1.5 percent	60 percent
Less than or equal to 1.5 percent and greater than 1.0 percent	40 percent
Less than or equal to 1.0 percent and greater than 0.5 percent	20 percent
Less than or equal to 0.5 percent	0 percent

A covered BHC is subject to the lower of the maximum payout amount as determined under capital conservation buffer and the maximum leverage payout amount as determined under leverage buffer.

SLR in OFS Basel Application

The leverage buffer is calculated by adding the required minimum supplementary leverage ratio, required leverage buffer, and required leverage buffer amount in the **DIM_STANDARD_ACCT_HEAD** table. For this purpose, new CAPIDs are created in the **DIM_STANDARD_ACCT_HEAD** table. Required leverage buffer amount is calculated as Tier 1 capital * required leverage buffer. Tier 1 capital is the sum of Gross CET1 capital (CAP947) and Gross ATI capital (CAP953). Required leverage buffer amount is stored in the **FCT_STANDARD_ACCT_HEAD** table.

Based on the Standard account head code, the required SLR is added to the **FSI_SETUP_CAPITAL_HEAD** table from **DIM_STANDARD_ACCT_HEAD**. In the **FSI_SETUP_CAPITAL_HEAD** table, the component value for the preceding items is included.

To calculate the leverage buffer, the SLR and the required SLR are compared via a consolidation run. The final value of the leverage buffer gets stored in the **DIM_STANDARD_ACCT_HEAD** table. This is stored using a new CAPID. After calculating leverage buffer, the leverage buffer (lower/upper limit and maximum leverage payout ratio) is populated in the **FSI_BENCHMARK_LEVERAGE_BUFFER_RATIO** table.

After populating the upper and lower limit of the leverage buffer and maximum leverage payout ratio, the range at which the leverage buffer falls is checked. Based on this check, the maximum leverage payout ratio and maximum leverage payout amount are calculated. These amounts are directly populated to the **FCT_STANDARD_ACCT_HEAD** table.

Maximum leverage payout amount = N_MAX_LEVERAGE_PAYOUT_RATIO * Retained Earnings (FCT_STANDARD_ACCT_HEAD).

This amount is stored in the **FCT_STANDARD_ACCT_HEAD** table. A new CAPID is created in the **DIM_STANDARD_ACCT_HEAD** table to store the value of the Maximum leverage payout amount. After this, a new CAPID is updated in the **DIM_STANDARD_ACCT_HEAD** table to capture the available distributions and discretionary bonus payments, that is the Maximum leverage payout amount and Maximum payout amounts.

6.1.1.7.4 Key Data Elements

Key data elements are elaborated in this section. For a complete list of tables and columns to be populated, see the Download Specifications document.

- To calculate the leverage ratio, the exposure amount for all product types and the total capital is required.
- The key data elements for exposure measure calculation of the various product types are as follows:
- On-Balance Sheet Exposures: For on-balance sheet items, End of Period (EOP) balance amount, write-off, and accrued interest amount are required.
- SFT Exposures: For repo products, exposure amount, and instrument rating are required.
- Derivative Exposures: For derivative products, exposure mark to market value, notional principal amount, and underlying instrument types are required.
- Off-Balance Sheet Exposures: For off-balance sheet items, an undrawn amount is required.
- Securitization Transaction: For securitization transactions, an exposure amount is required.
- Capital Calculation: See the Capital Structure for more details.

- Cash Variation Margin: The collateral segregated flag, exchange-traded flag, and netting agreement code are required.
- Netting Agreement: The margin threshold and the minimum transfer amount are required, which are captured in the Stage Net Exposures table (STG_NET_EXPOSURES).

6.1.1.8 Total Loss-Absorbing Capacity (TLAC)

On December 15th, 2016, the Federal Reserve (Fed) finalized its long-discussed Total Loss-Absorbing Capacity (TLAC) requirements. The Fed's TLAC requirements apply to US bank holding companies (BHCs) of global systemically important banks (GSIBs) and US intermediate holding companies (IHCs) of foreign GSIBs. It requires them to have enough capital and debt to reduce the likelihood of failure and to minimize the risk for government support.

TLAC is comprised of a bank's Tier 1 capital and a minimum amount of "plain vanilla" Long Term Debt (LTD). The Fed included the minimum LTD requirement because LTD is designed to become equity following a bank failure, and this would enable a newly capitalized bank to continue operations even if its equity has been depleted before the failure and the whole requirement is to maintain sufficient TLAC and LTD.

In addition, the guidelines also prescribe certain buffers, the breach of which would result in limitations on the capital distributions and discretionary bonus payments of the firm. The proposal also included a separate requirement that these companies maintain a minimum amount of LTD. The TLAC and LTD requirements proposal have two overall objectives: 1) improving the resiliency of these companies and 2) improving their resolvability in the event of their failure or material financial distress (both objectives help to reduce risks to financial stability).

The final rule of TLAC and LTD requirements is built and complemented to the regulatory capital requirements (common equity tier 1 capital ratio, tier 1 capital ratio, leverage ratio, and so on.). While regulatory capital requirements are intended to ensure that a banking organization has sufficient capital to remain a going concern, the objective of the TLAC and LTD requirements in the final rule is to reduce the financial stability impact of a failure by requiring companies to have sufficient loss-absorbing capacity on both a going concern and a gone-concern basis.

As part of compliance, the effective date is from January 1, 2019, and all the Covered BHCs and Covered IHCs must follow the minimum TLAC requirements.

6.1.1.8.1 Entity Identification and Applicable Single Counterparty Limits

TLAC guidelines are only applicable to Top-tier U.S. bank holding companies identified by the Federal Reserve in the U.S, global systemically important banking organizations (G-SIBs), covered BHCs, and U.S. intermediate holding companies (covered IHCs) of foreign G-SIBs with at least $50 billion in the U.S with no branch assets. The inputs for the total risk-weighted asset of the bank and the total leverage exposure amount of the bank come from the Capital Adequacy Requirements (CAR) guideline and the Leverage Requirements guideline respectively. The following are the ways we identify the entities as Covered BHCs and Covered IHCs:

- To identify SIBs, in the column **F_SIB_TYPE_IND in DIM_PARTY**, for TLAC purpose the GSIB type value 'G' will be considered as a global systemically important banking.
- Since the calculations differ depending on whether the entity is a Covered BHC or a Covered IHC, identification of entity as a Covered BHCs or a Covered IHCs is the initial step. The user is expected

to provide the holding company type as IHC(Intermediate Holding company) or BHC (Bank Holding Company) in the organization structure table **DIM_ORG_STRUCTURE**.

- For covered IHCs, the amount of eligible TLAC and TLD amounts required to be maintained depends on whether the Covered IHC is a resolution covered IHC or non-resolution covered IHC. This differentiation of IHCs as a resolution or a non- resolution entity, will depend on the resolution strategy of the entity i.e. MPOE (multiple-point-of entry) strategy will be a resolution covered IHC and SPOE (single-point-of-entry) strategy will be a non-resolution covered IHC, which is expected to be a download value in the organization structure table **DIM_ORG_STRUCTURE**

As per the guidelines, only Covered BHCs and Covered IHCs are expected to comply with the TLAC regulations. Also, the calculation for covered IHCs depends on if the entity is Resolution IHC or non-Resolution entity.

Data expectancy

The holding company type of the entity is expected as a download in the organization structure table.

An entity's resolution strategy - MPOE (multiple-point-of entry) and SPOE (single-point-of-entry), is expected as a download in the organization structure table DIM_ORG_STRUCTURE.

6.1.1.8.2 Total Loss Absorbing Capacity and Long Term Debt Calculations

Calculations for Covered Bank Holding company(BHC)

TLAC guideline establishes two minimum standards:

- The risk-based TLAC ratio, which builds on the risk-based capital ratios described in the CAR guideline.
- The TLAC leverage ratio, which builds on the leverage ratio described Leverage Requirements guideline.

The Calculation of Total Loss Absorbing Capacity (TLAC):

Risk-based TLAC Ratio: The risk-based TLAC ratio is defined as the TLAC Measure (the numerator) divided by Risk-Weighted Assets (the denominator), with this ratio expressed as a percentage:

Figure 33: Calculation of TLAC Ratio

$$\text{TLAC ratio} = \frac{\text{TLAC Measure}}{\text{Risk-weighted Assets}}$$

TLAC Leverage Ratio: The TLAC leverage ratio is defined as the TLAC Measure (the numerator) divided by the Exposure Measure (the denominator) with this ratio also expressed as a percentage. The following image displays the calculation:

Figure 34: TLAC Leverage Ratio

$$\text{TLAC leverage ratio} = \frac{\text{TLAC Measure}}{\text{Exposure Measure}}$$

Like the minimum TLAC requirements as noted above, the minimum LTD requirements also include both risk-based and leverage-based measures.

The eligible external LTD is defined as a debt that is issued directly by the covered BHC which is unsecured, is "plain vanilla", and is governed by U.S. law. While considering the eligibility of LTD towards the calculation of Total eligible external TLAC, a 50% haircut should be applied to the Long term debt with the principal due to be paid on external LTD in one year or more but less than two years.

Even though we consider only 50 % of the amount of eligible external LTD that is due to be paid between one and two years for purposes of the external LTD requirement, this haircut reduction is not applicable for external TLAC and such debt would count in full for purposes of the external TLAC requirement. The amount of eligible external LTD due to be paid in less than one year will not count toward the external TLAC requirement or the external LTD requirement.

For a covered BHC, eligible LTD includes debt that has the following:

- Paid in and issued directly by the covered BHC;
- Unsecured;
- Maturity of more than one year from the date of issuance;
- Plain vanilla
- Governed by U.S. law

Also, Eligible external LTD instruments are prohibited from the following:

- Being structured notes
- Having a credit-sensitive feature
- Including a contractual provision for conversion into or exchange for equity in the covered BHC
- Including a provision that gives the holder a contractual right to accelerate payment (including automatic acceleration), other than a right that is exercisable on one or more dates specified in the instrument, in the event of the insolvency of the covered BHC, or the covered BHC's failure to make a payment on the instrument when due that continues for 30 days or more.

Calculation of eligible long term debt:

Total eligible external LTD of covered BHC (with the 50% haircut for eligible LTD that is due to be paid between one and two years) = 50%* (Total eligible external LTD of covered BHC that is due to be paid between one and two years) + Total eligible external LTD of covered BHC that is due to be paid after two years

Calculation of total eligible total loss-absorbing capital:

Total Eligible total loss-absorbing capital (TLAC) amount of the Bank = (Net Tier 1 Capital)- Net Tier 1 Minority Interest + Total eligible long term debt which will be part of total eligible TLAC (without 50% haircut for eligible LTD that is due to be paid between one and two years and which will also include the eligible Tier 2 instruments as well)

Calculations for Covered Intermediate Holding Company (IHC)

Unlike a covered BHC, the amount of outstanding eligible TLAC depends on whether the IHC's top-tier FBO's planned resolution has the following:

- Involves the covered IHC or its subsidiaries entering into resolution, receivership, insolvency, or similar proceeding (an MPOE strategy referred to as a resolution covered IHC)
- Does not involve the covered IHC or its subsidiaries entering into resolution, receivership, insolvency, or similar proceedings in the United States (an SPOE strategy referred to as a non-resolution covered IHC).

A resolution covered IHCs have the option to issue capital and long-term debt externally (eligible external debt security) to third parties under the final rule. Additionally, a resolution covered IHCs also have the option to issue debt internally to a foreign parent or foreign wholly-owned subsidiary of a global systemically important foreign banking organization that directly or indirectly controls the covered IHC. The "eligible external debt security" is the same as the eligible debt securities issued by covered BHCs.

Additionally, a resolution covered IHC can issue debt internally (eligible internal debt security) to a foreign parent or foreign wholly-owned subsidiary of a global systemically important foreign banking organization that directly or indirectly controls the covered IHC.

Non-resolution covered IHCs are required under the final rule to issue debt internally ("eligible internal debt security") to a foreign parent or foreign wholly-owned subsidiary of a global systemically important foreign banking organization that directly or indirectly controls the covered IHC.

So covered IHCs (irrespective of resolution or non-resolution) may issue internal TLAC and LTD to any foreign affiliate of the covered IHC that is wholly owned, directly or indirectly, by the top-tier parent foreign banking organization, in addition to foreign parent entities of the covered IHC.

Table 34: Table for Covered Intermediate Holding Company (IHC)

Requirement	Covered BHCs	Resolution Covered IHCs	Non Resolution Covered IHCs
Minimum external TLACand external LTD, plus covered BHCor covered IHC external TLAC buffer	✓	✓ (Can issue any combination of external and internal TLAC and LTD to satisfy requirements)	Cannot issue external TLACand LTD to satisfy requirements
Minimum internal TLAC and internal LTD, plus covered IHCinternal TLAC buffer	N/A		✓

The "eligible external debt security" is the same as the eligible debt securities issued by the Covered BHCs.

The requirements for an "eligible internal debt security" are generally the same as the terms for an "eligible external debt security" for a resolution covered IHC and "eligible debt security" for a covered BHC with a few key differences explained below:

- Applies to both resolution and non-resolution covered IHCs

- Grand fathering condition for instruments issued before 31 December 2016 is not applicable which means that for a non-resolution covered IHC the debt instruments do not have a grandfathering provision.
- Issued directly by the covered IHC to a foreign parent or foreign wholly-owned subsidiary of a global systemically important foreign banking organization that directly or indirectly controls the covered IHC.
- Irrespective of the entity being resolution or non-resolution covered IHC the issued debt instruments must have a Contractual trigger provision clause that allows the Federal Reserve to require non-resolution IHC to convert debt instruments to CET1 capital

Additionally, the eligible internal debt requires to be a contractually or structurally subordinated instrument to qualify as an eligible instrument for TLAC calculation

Calculation Summary

The calculation summary of Resolution Covered IHC is as follows:

- Total Eligible external debt security of resolution covered IHC which will be part of total eligible TLAC =
- Total Eligible external debt security of resolution covered IHC which has maturity between one and two years +
- Total Eligible external debt security of resolution covered IHC which has maturity more than two years +
- Total Eligible internal debt security of resolution covered IHC which has maturity between one and two years +
- Total Eligible internal debt security of resolution covered IHC which has a maturity of more than two years
- Total Eligible Long term debt of resolution covered IHC =
- 50 % * (Total Eligible external debt security of resolution covered IHC which has maturity between one and two years) +
- Total Eligible external debt security of resolution covered IHC which has maturity more than two years +
- 50 % * (Total Eligible internal debt security of resolution covered IHC which has maturity between one and two years) +
- Total Eligible internal debt security of resolution covered IHC which has a maturity of more than two years
- Total Eligible total loss-absorbing capital (TLAC) amount of the Bank = CAP058 (Net Tier 1 Capital)- Net Tier 1 Minority Interest + Total Eligible external debt security of resolution covered IHC which will be part of total eligible TLAC

Non-Resolution Covered IHC :

- Total Eligible internal debt security of non-resolution covered IHC which will be part of total eligible TLAC =

- Total Eligible internal debt security of resolution covered IHC which has maturity between one and two years +
- Total Eligible internal debt security of resolution covered IHC which has a maturity of more than two years
- Total Eligible Long term debt of non-resolution covered IHC =

  50 % * (Total Eligible internal debt security of non-resolution covered IHC which has maturity between one and two years) +
- Total Eligible internal debt security of non-resolution covered IHC which has a maturity of more than two years
- Total Eligible total loss-absorbing capital (TLAC) amount of the Bank = (Net Tier 1 Capital) - Net Tier 1 Minority Interest + Total Eligible internal debt security of non-resolution covered IHC which will be part of total eligible TLAC

Data Expectation

An entity's issued instruments are expected as a download with the All the instrument attributes are expected in **DIM_INSTRUMENT_CONTRACT** and the details of the issued instruments of the entity is expected as a download in the **STG_ISSUED_INSTR_POSITIONS** and the corresponding outstanding issue amounts of the issued instruments are expected in **STG_INSTRUMENT_CONTRACT_DTL** which is moved to **FSI_ISSUED_INSTR_POSITIONS**. The Long term debt identification as internal and external, as well as the eligiblilty of Long term debt is performed in **FSI_ISSUED_INSTR_POSITIONS**.

The **FSI_SETUP_CAPITAL_HEAD** data is seeded by the application and is not expected from the bank.

The Payout Ratio is seeded in **FSI_BENCHMARK_CAP_CONS_RATIO** by the application and is not expected from the bank.

The download CAP IDs are expected to be reclassified into the appropriate Standard Account head in the rule USA - US III - Capital - Standard Acct Head Reclassification.

The run Option for GSIB Surcharge Method has to be set up by the Bank in **USR_DEFINED_RUN_PARAMETERS** against the Run Parameter Setup Code (**V_RUN_PARAMETER_SETUP_CODE**) that is assigned to the Run in the rule **USA - Run Exe Parameter Value Code Assignment**.

6.1.1.8.3 TLAC Buffer Amounts

As per the final guidelines, both covered BHCs and covered IHCs are expected to maintain certain TLAC buffers for the RWAs component as well as the leverage component, above the minimum capital requirements to avoid restrictions on capital distributions and discretionary bonus payments.

A covered BHC's external TLAC buffer for the risk-weighted asset component (TLAC risk-weighted assets buffer) is equal to the sum of 2.5 percent plus the GSIB surcharge applicable to the covered BHC under method 1 of the GSIB surcharge rule plus any applicable countercyclical capital buffer.

A covered BHC's external TLAC buffer for the total leverage exposure component of the external TLAC requirement (TLAC leverage buffer) is equal to 2 percent of total leverage exposure and the TLAC leverage buffer must be filled solely with tier 1 capital.

A covered IHCs has to maintain a buffer similar to the buffer applied to Covered BHCs, except that the internal TLAC buffer would not have included a GSIB surcharge component because covered IHCs are not

subject to the Board's GSIB surcharge rule and also is subject solely to an RWA related TLAC buffer. A covered IHC's internal TLAC buffer would thus be equal to the sum of 2.5 percent plus any applicable countercyclical capital buffer.

Data expectancy

For calculation of buffer amounts, the G-SIB surcharge is considered only if the bank is following Method I for calculating the surcharge and this will be a run management option expected to be provided by the user.

The data for the countercyclical buffer is expected as a download from the user and the expectation is as below:

Table 35: Data Expectancy for Countercyclical Buffer

Standard Account Head ID	Standard Account Head Description	Input table
CAP819	Required Weighted Average Countercyclical Buffer	FSI_BENCHMARK_CNTR_CYC_BUFFER

The F_SALE_RESTRICTED column needs to be added in **STG_INSTRUMENT_CONTRACT_MASTER**. The **F_SALE_RESTRICTED** column is present in **DIM_INSTRUMENT_CONTRACT.** Once this column is added in **STG_INSTRUMENT_CONTRACT_MASTER** it needs to be mapped to **DIM_INSTRUMENT_CONTRACT**.

6.1.1.8.4 Minimum TLAC Requirements

As proposed, covered BHCs would be required to comply with the external LTD and TLAC requirements by January 1, 2019. The Covered IHCs would be subject to similar effective dates and the regulatory capital deduction would become effective as of January 1, 2019.

Minimum Required level of TLAC to be maintained by BHCs:

Under the external TLAC requirement of the final rule, a covered BHC is required to maintain outstanding eligible external total loss-absorbing capacity in an amount not less than the greater of; 18% of the total risk-weighted assets of the BHC and 7.5% of the total leverage exposure of the BHC.

Summary

Minimum Required level of Eligible TLAC for BHCs = Greatest (18% of Total RWA, 7.5% of Total Leverage Exposure)

Minimum Required level of LTD to be maintained by BHCs

Under the external LTD requirement of the final rule, a covered BHC is required to maintain outstanding eligible external long-term debt instruments (eligible external LTD) in an amount not less than the greater of; 6 percent plus the surcharge applicable under the GSIB surcharge rule (expressed as a percentage) of total risk-weighted assets and 4.5 percent of total leverage exposure.

Summary: Minimum Required level of Eligible LTD for BHCs = Greatest (6%+ G-SIB Surcharge of Total RWA, 4.5% of Total Leverage Exposure)

The above G-SIB surcharge will be applicable only if the bank follows the Method I score to calculate the G-SIB surcharge.

Minimum Required level of TLAC to be maintained by IHCs

For a Resolution IHC, the following are the minimum TLAC requirements:

- Must maintain the amount greatest of:
- 18% of the covered IHC's total RWAs;
- 6.75% of the covered IHC's total leverage exposure (if applicable) and;
- 9% of the covered IHC's average total consolidated assets.
- For a Non-Resolution IHC, below is the TLAC requirement:
- Must maintain the amount greatest of:
- 16% of the covered IHC's total RWAs;
- 6% of the covered IHC's total leverage exposure (if applicable); and
- 8% of the covered IHC's average total consolidated assets.
- Minimum Required level of LTD to be maintained by IHCs:
- Irrespective of IHC being Resolution IHC or Non-resolution IHC, the below minimum requirement must be met by the IHCs:
  - The amount Greatest of
  - 6% of total RWAs
  - 2.5% of the total leverage exposure (if applicable)
  - 3.5% of average total consolidated assets.

Data expectancy

The corresponding regulatory defined percentages used for calculation of the minimum required level of TLAC and LTD is expected in the setup table **FSI_SETUP_CAPITAL_HEAD** against the corresponding CAPIDs detailed in the following table:

Table 36: Data Expectation for FSI_SETUP_CAPITAL_HEAD

Standard Account Head ID	Standard Account Head Description	Input table
CAP1262	Leverage exposure-based required percentage for Eligible minimum TLAC applicable to Non-Resolution Covered IHC	FSI_SETUP_CAPITAL_HEAD
CAP1251	Risk weight-based required percentage for Eligible minimum LTD applicable to Covered BHC	FSI_SETUP_CAPITAL_HEAD
CAP1265	Leverage exposure-based required percentage for Eligible minimum LTD applicable to Non-Resolution Covered IHC	FSI_SETUP_CAPITAL_HEAD
CAP1256	Leverage exposure-based required percentage for Eligible minimum TLAC applicable to Resolution Covered IHC	FSI_SETUP_CAPITAL_HEAD

CAP1260	Average total consolidated assets based required percentage for Eligible minimum LTD applicable to Resolution Covered IHC	FSI_SETUP_CAPITAL_HEAD
CAP1250	Leverage exposure-based required percentage for Eligible minimum TLAC to Covered BHC	FSI_SETUP_CAPITAL_HEAD
CAP1264	Risk weight-based required percentage for Eligible minimum LTD applicable to Non-Resolution Covered IHC	FSI_SETUP_CAPITAL_HEAD
CAP1259	Leverage exposure-based required percentage for Eligible minimum LTD applicable to Resolution Covered IHC	FSI_SETUP_CAPITAL_HEAD
CAP1261	Risk weight-based required percentage for Eligible minimum TLAC applicable to Non-Resolution Covered IHC	FSI_SETUP_CAPITAL_HEAD
CAP1263	Average total consolidated assets based required percentage for Eligible minimum TLAC applicable to Non-Resolution Covered IHC	FSI_SETUP_CAPITAL_HEAD
CAP1255	Risk weight-based required percentage for Eligible minimum TLAC applicable to Resolution Covered IHC	FSI_SETUP_CAPITAL_HEAD
CAP1278	Risk-Based TLAC Buffer Level of non-resolution covered IHC	FSI_SETUP_CAPITAL_HEAD
CAP1249	Risk weight-based required percentage for Eligible minimum TLAC applicable to Covered BHC	FSI_SETUP_CAPITAL_HEAD
CAP1254	Leverage exposure-based buffer percentage required for TLAC Buffer applicable to Covered BHC	FSI_SETUP_CAPITAL_HEAD
CAP1253	Risk weight-based buffer percentage required for TLAC Buffer applicable to Covered BHC	FSI_SETUP_CAPITAL_HEAD
CAP1258	Risk weight-based required percentage for Eligible minimum LTD applicable to Resolution Covered IHC	FSI_SETUP_CAPITAL_HEAD
CAP1252	Leverage exposure-based required percentage for Eligible minimum LTD to Covered BHC	FSI_SETUP_CAPITAL_HEAD
CAP1257	Average total consolidated assets based required percentage for Eligible minimum TLAC applicable to Resolution Covered IHC	FSI_SETUP_CAPITAL_HEAD
CAP1277	Risk-Based TLAC Buffer Level of resolution covered IHC	FSI_SETUP_CAPITAL_HEAD
CAP1268	Maximum allowed Cap percentage on Unrelated Third-Party Liability as per TLAC regulation	FSI_SETUP_CAPITAL_HEAD

Capital related amounts including GSIB Surcharge which are required for calculation are expected as a download in **FSI_STANDARD_ACCT_HEAD** and the expected download values are detailed in the following table:

Table 37: Data Expectation for FSI_STANDARD_ACCT_HEAD

Standard Account Head ID	Standard Account Head Description
CAP505	Minority Interest - Capital attributable to Third Party included in Common Equity Tier 1 Capital
CAP966	Average consolidated asset
CAP902	Net AT1 Capital post Regulatory Adjustment
CAP962	Supplementary Leverage Ratio
CAP019	Operating Expenses
CAP1286	GSIB Surcharge
CAP1270	Total Amount of Non-contingent liability arising out of any means other than through a contract
CAP210	Total eligible capital
CAP901	Net AT1 Capital post-Minority Interest Adjustment
CAP003	Retained earnings
CAP058	Net Tier 1 Capital
CAP586	Allowance for Loans and Lease Losses not included in Tier 2 Capital
CAP838	Total RWA
CAP853	Minority Interest - CET1 Capital Surplus attributable to Third Party
CAP854	Minority Interest - AT1 Capital Surplus attributable to Third Party
CAP841	Net Common Equity Tier 1 Capital
CAP848	Total Exposure Amount

6.1.1.8.5 Third-party Liability Amount Capping

The final rule imposes a cap on the aggregate amount, measured on an unconsolidated basis, of certain unrelated liabilities equal to 5% of the particular covered BHC's or covered IHC's eligible TLAC.

Unrelated liabilities means any non-contingent liability, owed to a third party in case of a covered BHC or a non-resolution covered IHC and, in the case of a resolution covered IHC, owed to any person (including an affiliate;) other than a subsidiary, except for the following:

- Eligible TLAC
- Any dividend or other liability arising from eligible TLAC
- An instrument that is an eligible debt security with a remaining maturity of less than one year that does not provide the holder of the instrument with a currently exercisable put right; and

- A secured liability, to the extent that it is secured, or a liability that otherwise represents a claim that would be senior to eligible debt securities under Title II of the Dodd-Frank Act or the Bankruptcy Code.

Figure 35: Secured Liability

Additionally, the final rule adds a new provision to make clear that in the event the covered bank holding company chooses to contractually subordinate all of its long-term debt, there is no capping on the amount. Therefore irrespective of the entity type of the holding entity the Cap amount mentioned above will be applicable only if the holding company has issued any instrument which is not contractually subordinated.

6.1.1.8.6 Restriction on Payouts and Payout Ratio

The maximum TLAC payout ratio is the percentage of eligible retained income that a Covered IHC can pay out in the form of distributions and discretionary bonus payments during the current calendar quarter. A maximum TLAC payout amount for the current calendar quarter is equal to the Covered IHC's eligible retained income, multiplied by the applicable maximum TLAC payout ratio.

For Covered BHCs:

A covered BHC's external TLAC risk-weighted asset buffer level will be equal to its common equity tier 1 capital ratio minus that portion (if any) of its common equity tier 1 capital ratio (expressed as a percentage) that could be used to meet the risk-weighted assets component of the external TLAC requirement.

To calculate its external TLAC risk-weighted assets buffer level, a covered BHC will subtract from its common equity tier 1 capital ratio the greater of 0 percent and the following figure:

the risk-weighted assets component of the covered BHC's external TLAC requirement minus the ratio of its additional tier 1 capital (excluding tier 1 minority interest) to its risk-weighted assets and minus the ratio of its outstanding eligible external LTD to its risk-weighted assets.

Summary

Risk-Based TLAC Buffer Level of covered BHC* = CET1 risk-based ratio - greater of (0, (18% – AT1 (less Tier 1 minority interests) risk-based ratio – eligible LTD risk-based ratio))

*All the values will be expressed as a ratio/percentage

After the Risk-Based TLAC Buffer Level is calculated the payout ratio will be based on the below table:

Table 38: Calculation of Risk-Based TLAC Buffer Level

Calculation of Maximum External TLAC Risk- Weighted Asset Payout Amount of Covered BHC	
External TLAC risk-weighted buffer level	Maximum External TLAC risk-weighted payout ratio (as a percentage of eligible retained income)

Calculation of Maximum External TLAC Risk- Weighted Asset Payout Amount of Covered BHC	
Greater than the external TLAC risk-weighted buffer	No payout ratio limitation applies
Less than or equal to the external TLAC risk-weighted buffer and greater than 75 percent of the external TLAC risk-weighted buffer	60 percent
Less than or equal to 75 percent of the external TLAC risk-weighted buffer, and greater than 50 percent of the external TLAC risk-weighted buffer	40 percent
Less than or equal to 50 percent of the external TLAC risk-weighted buffer, and greater than 25 percent of the external TLAC risk-weighted buffer	20 percent
Less than or equal to 25 percent of the external TLAC risk- weighted buffer	0 percent

The covered BHC's external TLAC leverage buffer level would be equal to its supplementary leverage ratio minus that portion (if any) of its supplementary leverage ratio (expressed as a percentage) that is used to meet the leverage component of the external TLAC requirement.

To calculate its external TLAC leverage buffer level, a covered BHC would subtract from its supplementary leverage ratio the greater of 0 percent and the following figure:

7.5 percent (the leverage component of the covered BHC's external TLAC requirement) minus the ratio of its outstanding eligible external LTD amount to its total leverage exposure.

Summary:

TLAC leverage buffer level of covered BHC = supplementary leverage ratio - greater of (7.5% - Eligible leverage exposure based LTD)

After the Risk-Based TLAC Buffer Level is calculated the payout ratio will be based on the below table:

Table 39: Calculation of Maximum External TLAC Leverage Payout Amount

Calculation of Maximum External TLAC Leverage Payout Amount	
External TLAC leverage buffer level	Maximum External TLAC leverage payout ratio (as a percentage of eligible retained income)
Greater than 20 percent	No payout ratio limitation applies
Less than or equal 20 percent and greater than 1.5 percent	60 percent
Less than or equal 1.5 percent and greater than 1.0 percent	40 percent
Less than or equal 1.0 percent and greater than 0.5 percent	20 percent
Less than or equal to 0.5 percent	0 percent

Even if a single BHC's both TLAC risk-weighted assets buffer level and TLAC leverage buffer level are available then the BHC would be bound by the TLAC risk-weighted assets buffer because it would be more restrictive.

Covered IHCs

A Covered IHC's maximum Covered IHC TLAC payout amount for the current calendar quarter is equal to the Covered IHC's eligible retained income, multiplied by the applicable maximum Covered IHC TLAC payout ratio. The maximum Covered IHC TLAC payout ratio is the percentage of eligible retained income that a Covered IHC can pay out in the form of distributions and discretionary bonus payments during the current calendar quarter.

A Covered IHC's Covered IHC TLAC buffer level is equal to the Covered IHC's common equity tier 1 capital ratio (expressed as a percentage) minus the greater of zero and the following amount:

- 16 percent for a non-resolution Covered IHC, and 18 percent for a resolution Covered IHC; minus
- For a non-resolution Covered IHC, the ratio (expressed as a percentage) of the Covered IHC's additional tier 1 capital (excluding any tier 1 minority interest) to the Covered IHC's total risk-weighted assets;
  - (For a resolution Covered IHC, the ratio (expressed as a percentage of the Covered IHC's additional tier 1 capital (excluding any tier 1 minority interest) to the Covered IHC's total-risk weighted assets; and minus
- The ratio (expressed as a percentage) of the Covered IHC's outstanding eligible Covered IHC long-term debt amounts to total risk-weighted assets.

Summary

Risk-Based TLAC Buffer Level of non-resolution Covered IHC * = CET1 risk-based ratio - greater of (0, (16% – AT1 (less Tier 1 minority interests) risk-based ratio – eligible LTD risk-based ratio non-resolution Covered IHC))

Risk-Based TLAC Buffer Level of resolution Covered IHC * = CET1 risk-based ratio - greater of (0, (18% – AT1 (less Tier 1 minority interests) risk-based ratio – eligible LTD risk-based ratio non-resolution Covered IHC))

*All the values will be expressed as a ratio/percentage

After the Risk-Based TLAC Buffer Level is calculated the payout ratio will be based on the following table:

Table 40: Calculation of Maximum Covered IHC TLAC Payout Amount Item

Calculation of Maximum Covered IHC TLAC Payout Amount Item	
Covered IHC TLAC buffer level	Maximum Covered IHC TLAC payout ratio (as a percentage of eligible retained income)
Greater than the covered IHC TLAC buffer	No payout ratio limitation applies
Less than or equal to the covered IHC TLAC buffer, and greater than 75 percent of the covered IHC TLAC buffer	60 percent

Calculation of Maximum Covered IHC TLAC Payout Amount Item	
Less than or equal to 75 percent of the covered IHC TLAC buffer, and greater than 50 percent of the covered IHC TLAC buffer	40 percent
Less than or equal to 50 percent of the covered IHC TLAC buffer, and greater than 25 percent of the covered IHC TLAC buffer	20 percent
Less than or equal to 25 percent of the covered IHC TLAC buffer	0 percent

6.1.2 US II Regulatory Capital Rules – Internal Ratings Based Approach

6.1.2.1 US II - High-Level Process Flow for Internal Ratings Based Approach

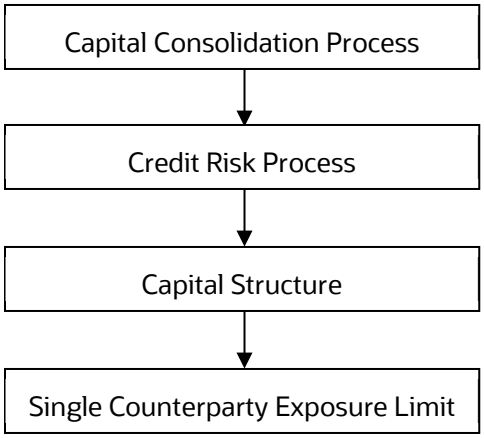
The application supports capital computations for Credit Risk along with Capital Structure and Capital Consolidation process, as per the guidelines laid down by Federal Reserve Board.

For more information on the pre-defined Runs available with the application, see OFS Basel Regulatory Capital Run Charts.

The flow of the processes in the order in which it is executed the application is as follows:

6.1.2.1.1 Process Flow for Capital Adequacy Ratio Calculation

Figure 36: Process Flow for Capital Adequacy Ratio Calculation



The Capital Calculation Run depicted in the preceding process flow is a single run that is joined together by multiple processes. Each process is a block, compiled together to form an entire Capital Adequacy run. The individual blocks like the Credit Risk process, and so on, also exist as individual runs that are described in the following sections.

6.1.2.1.2 Capital Consolidation Process

Capital Consolidation is a process common to each of the individual blocks when they are triggered separately as an individual run. For example, the standard out-of-box Market Risk run has Capital Consolidation and Market Risk process bundled together as a single Market Risk run. This is applicable for

a Credit Risk run and Operational Risk run as well. The Capital Consolidation is explained in the following section and is not repeated under the Non-Securitization process and Securitization process section of this document.

In Capital Consolidation, the application processes the following:

- **Capital Consolidation Level Selection**

  The reporting bank can be a part of a financial group that has multiple legal entities like parent or child entities (subsidiaries) under its name. The entity on which you are required to process should be selected by you. Subsequently, level at which a Run is to be executed (solo or consolidated) should also be selected. You can select these options in the Run Management UI. However, if the Run is executed in the Run Rule Framework (RRF), then these options have to be set using the Rule 'Capital Consolidation Level Selection' in the process 'CAPITAL_CONSOLIDATION'.

  CAPITAL_CONSOLIDATION is the first process to be added in all the Runs defined in the RRF except for the Staging Data Population Run. The Run Management UI selects this process by default.

- **Run Parameters Assignment**

  The US regulations states different approaches for calculating RWA. The Run Management UI in the application allows the reporting bank to define and execute a Run by selecting a combination of different Basel II approaches for RWA computation.

  Run Parameter Assignment is also part of Capital Consolidation process. The Rule 'Run Definition User Defined Run Param Assignment' is used to assign the Run parameters if a Run is executed in the RRF. If the Run is executed from the Run Management UI, then the parameters are populated based on the Run defined in the Run Definition window.

- **Currency Conversion**

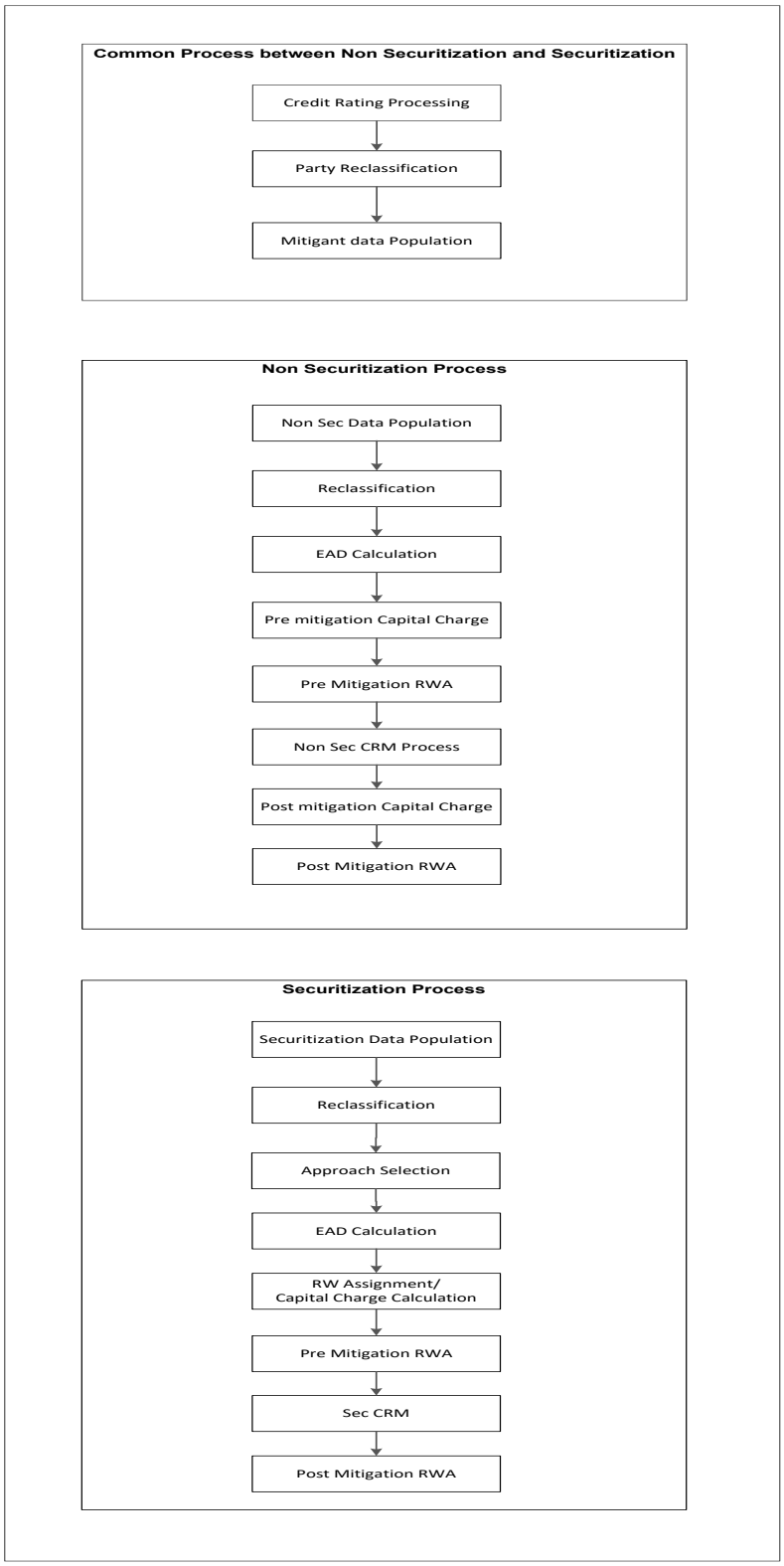
  The Rules pre-defined in the application performs currency conversion of all General Ledger amount attributes to be used for Capital Consolidation from the Natural currency to the Reporting currency, based on the exchange rate provided.

- **Shareholding Percent Multiplication**

  For all entities in the Capital Consolidation process, the application updates the shareholding percentage against each entity data in the fact capital accounting head from the fact entity shareholding percent table. The parent data in the processing table of fact capital accounting head is updated with the value 1 and for each child entity the data is based on the parent's holding percentage specified for each child in the fact entity share holding percent table.

6.1.2.1.3 Process Flow for Credit RWA

Figure 37: Process Flow for Credit RWA



Credit RWA Run is a combination of the Non-Securitization RWA process and Securitization RWA process. For Credit Risk of Non-Securitized exposures and Securitization positions, the application follows Internal Ratings Based Approach.

A few processes like Credit Rating, Party Type Reclassification, and so on are common between Non-Securitization and Securitization processes. Though these sub-processes are explained separately under the Non-Securitization and Securitization section of this document, it is executed only once under the Credit RWA run.

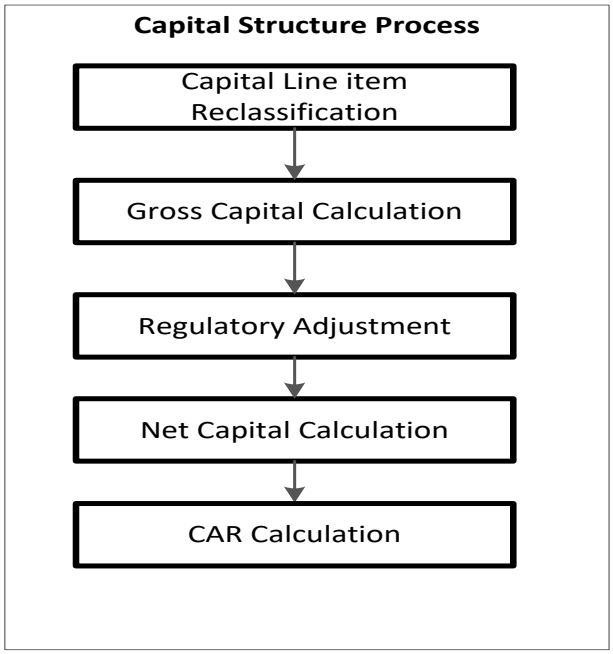
Certain sub-processes under the Non-Securitization process like Reclassification are common across Non-Securitization exposures such as Over the Counter derivative transactions and Securities Financing Transactions. These are executed only once in the Run. The details of these sub-processes are explained under the 'Reclassification' sub-process of the Non-Securitization section of this document.

For more information on the sub-processes as detailed in the preceding process flow for the Non-Securitization process and Securitization process, see Credit RWA.

For example, Non-Sec Data Population is detailed in the section under Data Population and Currency Conversion of Non-Securitization process in the Credit RWA section of this document. Likewise, details of Credit Risk Mitigation for Non-Securitization process are detailed under the US Non-Securitization section of this document, and details of Credit Risk Mitigation for Securitization process are detailed under the US Securitization section of this document.

6.1.2.1.4 Process Flow for Capital Structure

Figure 38: Process Flow for Capital Structure



Capital Structure is executed along with Capital Consolidation and Credit RWA process.

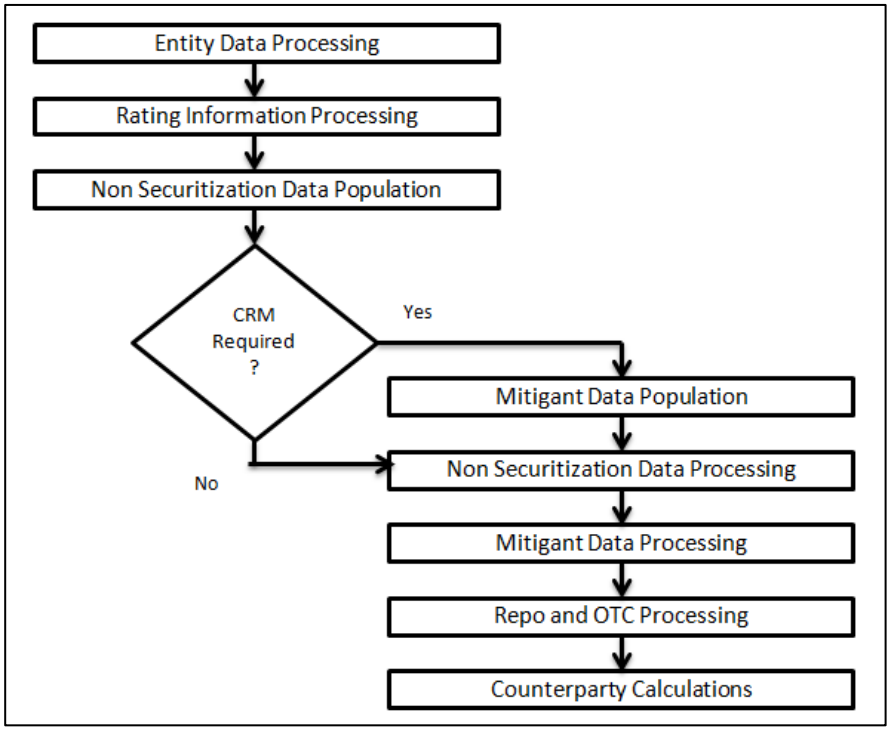
For more information on the sub-processes of Capital Structure, see Capital Structure.

For example: 'Gross Capital Calculation' mentioned in the preceding process flow is explained in detail under the 'Gross Capital Calculation for T1, T2, and T3' sub-process section of Capital Structure. This is

applicable for 'Regulatory Adjustment' and 'Net Capital Calculation' which is detailed under 'Regulatory Adjustment to Tier 1 and Tier 2' and 'Calculation of Net Capital' sub-process section of Capital Structure.

6.1.2.1.5 Process Flow for Single Counterparty Exposure Limit

Figure 39: Process Flow for Single Counterparty Exposure Limit



The Single Counterparty Exposure Limit calculation is designed to identify the counterparties whose aggregate credit exposure to the bank breaches the maximum limit as described by the Dodd-Frank Single Counterparty Limit proposal. The Exposure Limit proposal is mitigating the threat to financial stability posed by systemically important financial companies.

For more information, see Single Counterparty Exposure Limit.

6.1.2.2 Credit RWA

The application supports the computation of Credit RWA as per the guidelines laid out in the US Final Rules. Credit RWA is computed for Non-Securitized Exposures and Securitized Exposures.

6.1.2.2.1 Non Securitization – Internal Ratings Based Approach

For Credit RWA computation of Non-Securitized exposures, the application follows the Internal Ratings Based Approaches.

The Internal Ratings Based Approach processes the following broad functional areas:

- Banking Book Products
- Securities Financing Transactions
- Over the Counter Derivative Products

- Credit Risk Mitigation

Banking Book Products

All exposures are rated by different agencies. However, the naming convention of these ratings might not be the same as mentioned in the US Final Rules. Hence, the application re-classifies the rating information shared in the bank's data to standard ratings. The exposure amount and other amount attributes that are provided as input (in the staging tables) are in the natural currency (exposure currency) and this is usually different for exposures across different countries. The application converts them to reporting currency so that processing for all exposures occurs in a single currency.

The credit risk exposures are identified by their product types, counterparty types, and their corresponding asset classes by the application. A sample list of products types, party types, mitigant types, credit ratings is pre-defined in the application. However, this list and naming convention differ from one bank to another. Hence, the application re-classifies the bank's data into standard data as per the US Final Rule. The application reclassifies the bank's product types and party types to standard product and party types. Based on the standard product and standard party types, it forms an asset class for each exposure.

For equity exposures, the asset class is formed based on standard issuer type and standard Basel product type. The application does further data processing based on these standard reclassifications. Some exposures can be hedged against credit risk through various mitigants like guarantors, collaterals, credit derivatives, and so on. These provide mitigation to credit risk and should be considered while computing Credit RWA. Hence, the application calculates pre-mitigation RWA amount and post-mitigation RWA amount.

The application calculates the correlation factor using the formula specified for each asset class. Further, using the Correlation factor, Probability of Default (PD), and Loss Given Default (LGD), the application calculates the pre-mitigation capital charge for each exposure. This value signifies the capital charge the bank has to maintain for each exposure before considering any mitigation effects.

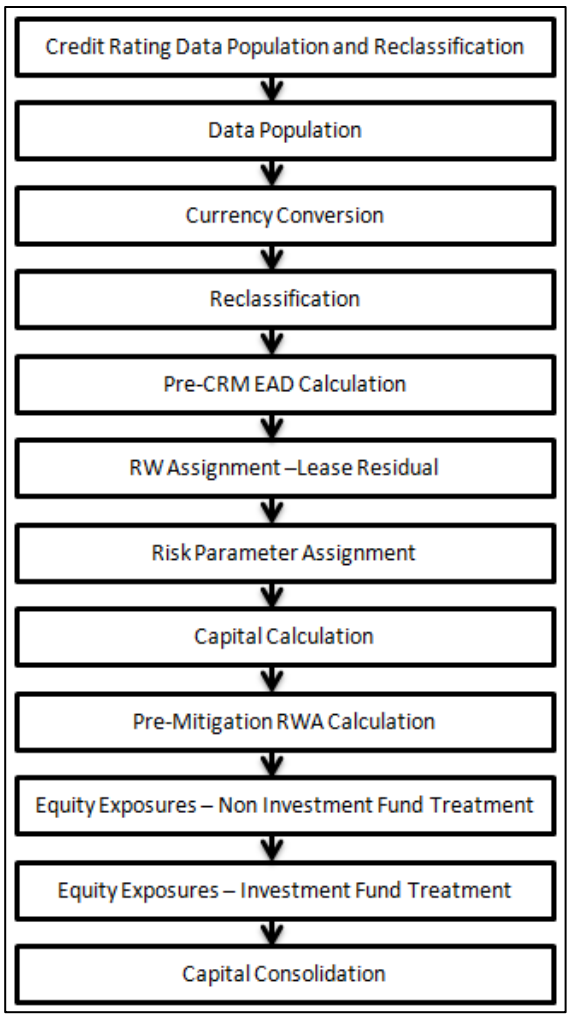
The application calculates pre-mitigation exposure at default amount and risk weight for each exposure. Later, it computes the pre-mitigation RWA (Pre CRM RWA) by multiplying the EAD with the risk weight. The risk weight arrived at by multiplying the pre-mitigation capital charge by 12.5.

Through the Credit Risk Mitigation (CRM) process, the bank takes into account the effects of mitigation. The application checks for mitigant eligibility based on the Final Rule specifications. It assigns a haircut to each mitigant based on their currency, residual maturity, and expected volatility in their market value. FOREX and Maturity haircuts consider any currency and maturity mismatches the mitigants hold with the exposures that they are covering. Volatility haircut considers the change in the mitigation effect that arises due to future fluctuations in the mitigant's value. The application allocates mitigants to exposures based on the optimizer function and then the capital charge for each mitigant is calculated by the application.

The application then calculates the post-mitigation RWA Unexpected Loss (Post CRM RWA UL) and post-mitigation RWA Expected Loss (Post CRM RWA EL). Some credit risk exposures that fall under the category of internal transactions like holding own subsidiaries shares, investment in its capital, and reciprocal cross-holding, and so on are treated separately under the capital structure process.

Process Flow for Banking Book Products

Figure 40: Process Flow for Banking Book Products



6.1.2.2.2 Credit Rating Data Population and Reclassification

Pre-processing Steps

Data for credit ratings should be provided as an input in the following tables:

- **Accounts Rating Table (STG_ACCOUNT_RATING_DETAILS)**

  Ratings of all Credit Risk Non Securitized Exposures, Securitized Exposures and Securitized Positions are captured in this table.

  The value in the **F_CAPITAL_CHARGE_EXCLUSION** column of **STG_INVESTMENTS** table is expected as a download value. When the value of **F_CAPITAL_CHARGE_EXCLUSION** is 'Y', it indicates that the exposures are not processed further in **FCT_NON_SEC_EXPOSURES** table. Also, these exposures are excluded from capital charge calculation.

- **Instrument Rating Table (STG_INSTRUMENT_RATING_DETAILS)**

  Ratings for all market risk exposures, investment exposures subject to credit risk (one that is in STG_INVESTMENTS), and mitigants, are captured in this table.

- **Party Rating Table (STG_PARTY_RATING_DETAILS)**

  Credit Ratings for all customers and issuers are captured in this table.

- **Sovereign Rating Table (STG_SOVEREIGN_RATING_DETAILS)**

  Credit Rating for all countries are captured in this table.

Processing Steps

The application re-classifies the rating information to Standard Basel ratings.

The rating reclassification lookup table (FSI_RATING_CLASSIFICATION) is used to lookup reclassified Basel ratings, so that the reclassification rule is not repeated for each of the rating processing tables. Ratings are populated from the stage tables (STG_PARTY_RATINGS_DETAILS) to FSI tables (FSI_PARTY_RATING_DETAILS) using the lookup table (FSI_RATING_RECLSSIFICATION) to obtain reclassified rating.

> **NOTE:**
>
> In the **STG_PARTY_RATINGS_DETAILS** table ensure that the following columns are mandatorily populated with data:
>
> - Rating source code (V_RATING_SRC_CODE)
> - Party Code (V_PARTY_CD)
> - Purpose (V_PURPOSE): In this field whether the rating is a domestic rating or foreign rating
> should be indicated. If any other rating is provided, then the exposure is considered unrated.
> - Rating Code (V_RATING_CODE)

After rating reclassification, the risk weight is updated in the risk weight to the rating mapping table (**FSI_RW_MAP_MASTER**). The multiple assessments data transformation logic updates the rating and the risk weights to the exposures. For each exposure, the application checks the risk weight generated by each of its ratings. It then assigns the higher of the two lowest risk weights and the rating corresponding to this risk weight, to the exposure.

For unrated Non-Securitized exposures, the application does an issue-issuer assessment to infer a rating of the unrated exposures, based on the rating of a similar instrument (referred as reference issue hereafter) issued by the same issuer. The reference issue is used only when it is of the same currency as the exposure and the exposure is senior or equivalent to the same.

Data Population

Pre-processing Steps

Credit Risk exposures are updated in the application for all the product types through their respective input tables known as Product Processors. Main categories of Credit Risk Non Securitization exposures, along with their respective table names that are used as an input, are as follows:

Table 41: Data Population Credit Risk Non Securitization Exposures

Product	Source Product Processor
Bills	STG_BILLS_CONTRACTS

Product	Source Product Processor
Credit Cards	STG_CARDS
Swaps	STG_SWAPS_CONTRACTS
Futures	STG_FUTURES
Guarantees	STG_GUARANTEES
Investments	STG_INVESTMENTS
Lease Contracts	STG_LEASE_CONTRACTS
Letters of Credit	STG_LC_CONTRACTS
Line of Credit	STG_CREDIT_LINE_DETAILS
Commitment Contracts	STG_COMMITMENT_CONTRACTS
Loans	STG_LOAN_CONTRACTS
Money market instruments	STG_MM_CONTRACTS
Overdraft	STG_OD_ACCOUNTS
Options	STG_OPTION_CONTRACTS
Re purchase contracts	STG_REPO_CONTRACTS
Equity Exposures	STG_INVESTMENTS
Underlying Exposures for Derivatives, Securitization and Covered Bonds	STG_UNDERLYING_EXPOSURES
Underlying Exposures for Derivatives (if Derivative is either a cleared transaction or an instrument, and the underlying reference asset is an instrument)	STG_UNDERLYING_MASTER/ STG_UNDERLYiNG_DTL
Underlying Exposures for Derivatives (if Derivative is not a cleared transaction or an instrument, or the underlying reference asset is not an instrument)	STG_UNDERLYING_EXPOSURES

Product	Source Product Processor
Underlying Exposure for Mutual Fund / CIU	STG_FUND_CIS_COMPOSITION
Underlying Exposures for Repo contracts	STG_PLACED_COLLATERAL / STG_MITIGANTS
Credit Derivatives	STG_CREDIT_DERIVATIVES
Fixed Assets	STG_FIXED_ASSETS_DETAILS

Processing Steps

Stage data from the Product Processors or other stage tables are populated in the respective processing tables. Information from all Product Processors data is populated in a common Fact table for all non-sec exposures (FCT_NON_SEC_EXPOSURES) except equity data.

Data related to equity and investment fund are stored in their respective Stage Equity Exposures (STG_EQUITY_EXPOSURES) and Stage Fund Equity Investments (STG_FUND_EQUITY_INVESTMENTS). It is then populated in the respective Equity Exposures (FCT_EQUITY_EXPOSURES) and Equity Investment Fund (FCT_FUND_EQUITY_INVESTMENTS) table and data subsequently flow to the common fact table for all Non-Securitization exposures. For more information on the list of columns to be populated within each table, see the Download Specifications document.

Shareholding Percent Multiplication

The exposure amount which is a part of the input data (Product Processors) is the exposure amount for a solo entity. However, for a consolidated Run, the parent exposure is considered only by the shareholding percentage, based on the following calculation:

Exposure Amount X Share Holding Percent = Updated Exposure Amount

Where:

Share holding percent is allotted a value by the Rule Cap Consl Effective Shareholding Percent for an Entity in the process - Capital Consolidation

This is assigned in the Rules '<Attribute> Shareholding Percent Multiplication'. The following attributes undergo shareholding percent multiplication:

- Outstanding Principal
- Current Exposure Amount
- Undrawn Amount
- Exposure Market Value
- Exposure Accrued Interest
- Provision Amount
- Write Off Amount
- Original Book Balance Amount
- Lease Residual Value

- Notional Principal and Contract Amount for OTC products

Currency Conversion

The application converts the amount attributes, which are in natural currency, to reporting currency which is used for further calculations. The column names suffixed with '_ncy' are in the natural currency and are multiplied by the currency conversion factor to populate values in the reporting currency. The Rule Reporting Currency Code Assignment assigns the reporting currency. For more information on Currency Conversion, see Exhibit 4 in **Error! Reference source not found.**.

> **NOTE**: Rule Reporting Currency Code Assignment is set to 'USD' out-of-box; however you can modify this currency. If the Run is executed from the Run Management window, then you can select this reporting currency in the Run Management window.

Reclassification

The application reclassifies the bank's product types and party types to standard product and party types. Based on the standard product and party type, it forms an asset class for each exposure. Equity is reclassified by the application in a separate Rule. Similarly, the application does reclassification for mitigant based on its mitigant types and reclassifies it to standard mitigant types.

Product Type Reclassification

Product types used by the reporting bank as input data are reclassified to standard product types as defined in the US Final Rules. The product types, after reclassification, are stored as Basel product types. For example, a Housing Loan is reclassified as Residential Mortgage Exposure.

Party Type Reclassification

Similar to the product type, the customer type and issuer type (which are stored as counterparty type) are also reclassified as standard counterparty types. The application is designed to include customer type, issuer type, and legal entity type in a single table (STG_PARTY_MASTER) and these are reclassified together as well. Party type reclassification Rules handle reclassification for customer types, issuer types, and entity types. For example, an Individual is reclassified as Retail.

Asset Class Reclassification

Based on Basel product type and standard counterparty type, an asset class is formed by the application. For example: If the standard counterparty is Bank, the asset class is Wholesale Exposure - Bank. For Basel product type gold, the asset class is Gold, except if the standard counterparty type is Central Counter Party, the asset class is Central Counter Party. For standard counterparty type Corporate Non-SME and Basel product type as Loan, the asset class is Wholesale Exposures- Corporate. Similarly, QRRE is reclassified into Other Retail if EAD is greater than 100000 dollars. This check happens post pre-CRM EAD calculation.

Asset class for all equity products is reclassified based on equity-type and Basel product type. Asset class for all mitigants is reclassified based on their standard mitigant types and standard issuer type.

Basel CRM methodology is assigned for OTC, SFT, On-Balance Sheet, and Off-Balance Sheet Items. OTC and SFT are assigned the Comprehensive CRM Method. On-Balance Sheet and Off-Balance Sheet are assigned the LGD Adjustment Method.

Mitigant Reclassification

For mitigants, the application reclassifies the mitigant type to the standard mitigant type like the debt securities, credit derivative, cash, and so on. It also reclassifies the mitigant issuer type to the standard

mitigant issuer type like Banks, Corporate, and so on. The reclassification tasks are present in the Mitigant Reclassification sub-process.

Pre-CRM EAD Computation

EAD is calculated for all asset classes based on the 'Available for Sale' indicator. If the 'Available for Sale' indicator is 'Yes', then based on the current exposure amount, accrued interest, unrealized gains or losses, and undrawn amount EAD is calculated. If the reporting bank has exposure to one of its subsidiaries, then that exposure is classified as internal exposure.

EAD for equity exposures is calculated based on the following components:

- Equity adjusted carrying value of on-balance sheet component
- Equity unrealized gains reflected in carrying value
- Equity unrealized gain included in Regulatory Capital

The calculation of Equity OTC Derivatives EAD is similar to the calculation of Equity EAD. However, the calculation of Equity OTC Derivatives EAD is based on the indicator of conditional unfunded equity commitment flag. Lease Residual transaction EAD is calculated by considering the lease residual amount.

Risk-Weight Assignment for Lease Residual

Basel asset class which has an indicator for lease residual as 'Yes' is assigned a risk weight of 100%. Before risk weight assignment, and create the residual portion of the lease transaction. The creation of the lease residual transaction is achieved through the Data Transformation - Residual_Exp_Creation.

The details of the Data Transformation are as follows:

Table 42: Data Transformation for Risk-Weight Assignment for Lease Residual

Data Transformation Name	Objective	Processing Logic
Residual_Exp_Creation	The objective of this Data Transformation is to create an exposure in dim exposure for lease transaction which has residual value.	Create a record in dim exposure table with the same acct skey as that of parent exposure acct skey but postfix with '_RESIDUAL' for lease transaction which have residual value.

Risk Parameters Assignment

The application assigns risk weight parameters of PD, LGD, and maturity to all exposures. LGD and PD assignments for purchase receivables occur through a rule. For exposures falling under retail asset class, irrespective of the seniority, the LGD has a floor value of 0.1. PD has a floor value of 0.0003 for all asset classes, except for defaulted exposures for which the value is 1.

Capital Calculation

Capital is calculated for all asset classes using the correlation factor, PD, and LGD. The correlation factor is calculated for each asset class based on PD and LGD. While calculating the capital charge, if the method assignment is a Comprehensive approach, then pre-CRM LGD is used in the capital formula. If the LGD Adjustment method is used, then the adjusted LGD value is used in the capital formula. Capital for defaulted exposures and failed trades is calculated through separate Rules.

For exposures that have defaulted, the application uses two inputs - LGD and Best Estimated Expected Loss of a Bank. For failed trade transactions, the capital requirement is assigned by the application based on the number of failed business days.

Table 43: Data Transformation for Capital Calculation

Data Transformation Name	Objective	Processing Logic
Mult_Assessment_SCP	The objective of this Data Transformation is to perform multiple assessments of the ratings and assign a normalized rating and risk weight to the sold credit protection exposures.	For each exposure, the various standard ratings associated with that exposure and the respective risk weights are identified. If the number of ratings is 1, then the same rating gets assigned as the standard rating for the exposure and the risk weight associated with that standard rating gets assigned as the Pre-mitigation risk weight. If the number of ratings is greater than or equal to 2, then the exposure is assigned a risk weight which is the worst of the best two risk weight. And the corresponding rating is assigned to the exposure.

For more information on setting up this Rule, see **Error! Reference source not found.**.

Pre-Mitigation RWA Calculation

RWA is calculated for the asset class by multiplying the pre-mitigation EAD amount and the capital charge with 12.5.

Equity Non-Investment Fund Risk Weight Assignment

Two approaches are used to assign the risk weight for Non-Investment Fund: Simple Risk Weight method and Internal Model method. You can select either of the two approaches to assign the risk weight and thereby calculate the RWA. Based on the approach selected, the public traded equity and private traded equity exposure is assigned a risk weight. RWA amount is calculated by multiplying the RW, Equity EAD, and Equity Banks Proportional Ownership Share of the Fund.

Equity Investment Fund RW Assignment

Risk weight assignment for investment fund equity is calculated using the Simple Modified Look through Approach, Alternate Modified Look through Approach, Money Market Fund Approach, or Full Look through Approach. You can select any of these approaches to assign a risk weight to Equity Investment Fund exposures. Risk Weight is assigned based on the Equity Asset class and Equity Investment Class type. Post risk weight assignment, the selected RWA amount is calculated by multiplying the risk weight with the adjusted carrying value of equity.

Post-processing of Equity Investment Fund and Equity Non-Investment fund, and the processed data in the Equity Exposures (FCT_EQUITY_EXPOSURES) table is populated to Fact Non Sec Exposures (FCT_NON_SEC_EXPSOURES) table.

Bank Owned Life Insurance (BOLI) and Stable Value Wrap

BOLI is classified into two accounts, “General Account” and “Separate Account”. You can consider the following points:

- The general account is carried by the insurance carrier and this carrier makes all the investment decisions.
- Where Separate account provides several asset class choices to the banks, and also this allows diversifying their assets within the same product.
- BOLI's separate account is frequently structured with Stable Value Protection (SVP), in the form of Special Value Wrap (SVW) that helps the smooth returns of the underlying portfolio.
- Generally, SVW invests in a variety of investment like short-to- intermediate-term and fixed – income investment including government, corporate and mortgage-backed bonds.
- Under the US Regulatory Capital Final Rules, Banking organization that owns general account BOLI applies 100 percent risk weight to its claim on the insurance company for risk-based capital purposes.
- A BOLI investment in general account exposure value is Cash Surrender Value (CSV) - Surrender charge.
- The banking organization which is having investment in the BOLI in a separate account is treated as an equity exposure to an investment fund. The banking organization uses one of the following look through approaches:
  - Simplified Modified Look-Through Approach
  - Alternative Modified Look-Through Approach
  - Full Look-Through Approach

Calculating Risk Weight Asset (RWA)

BOLI in a separate account consisting of several funds, where each fund has an underlying. BOLI account exposure amount is carrying value net of portion attributable to DAC and Mortality Reserves. Against BOLI one of the above-mentioned look through approaches is applied. The approach selected is applied to all of the funds that are part of that particular BOLI. BOLI account RWA exposure value is multiplied with the weighted average risk weight.

The weighted average risk weight is calculated as:

$$\textbf{Weighted average risk weight} = \frac{\textbf{Sum of each fund risk-weight * Exposure amount of the particular fund}}{\textbf{Total exposure amount across all the funds}}$$

A banking organization purchases SVP on its investment in BOLI which is a separate account.

The SVP contract protects the policy owner from declines in the value of the assets in the separate account arising from changes in interest rates.

The SVW exposure value is carrying a value attributable to SVP. The downloaded value and BOLI exposure amount is the adjusted value post deducting the amount which belongs to SVP. This can be a downloaded value.

A portion of the carrying value attributable to an SVP is at risk-weighted as exposure to the provider of the protection. The remaining portion that belongs to BOLI is treated as an equity exposure to an investment fund.

The transaction of SVW is related to the BOLI account. A relation in the staging table is provided to identify which SVW is purchased for which BOLI account.

A banking organization that provides SVP through SVW is treated as exposures as if it was equity derivative on an investment fund. SVW underlying is the BOLI account for which the SVP is provided.

RWA for the SVW (where the bank is a provider) is calculated by applying one of the three look-through approaches.

Assumption

Detailing on the treatment for the amount belonging to SVP, where the bank purchasing the SVW is not provided in the US Regulatory Capital Final Rule but a reference is provided in the footnote of the accord.

The following is the link for the treatment for the amount belonging to SVP:

http://www.federalreserve.gov/boarddocs/srletters/2004/SR0419a1.pdf

Capital Consolidation

If the reporting bank has exposure to one of its subsidiaries, then that exposure is classified as internal exposure. Each of the internal transactions, that is, the transaction between a parent and its subsidiary are marked as a deduction line item. The deduction is processed as part of the Basel II capital structure in the capital structure processing and all the internal transactions are eliminated from any RWA calculation.

Approaches Followed in Capital Consolidation

The three approaches followed by the Capital Consolidation are:

- **Consolidation Approach (CONSL)**: Under this approach, all the entities of the bank's organizational structure are considered. This includes all the entities/subsidiaries that belong to the same jurisdiction. All the exposures of the entities in the organizational structure are considered for computing risk-weighted exposures, except the intra-group exposures.
- **Aggregation Approach (AGG)**: This approach is similar to the Consolidation approach but is used in cases where some of the entities that are part of the bank's organizational structure belong to a different jurisdiction. The capital requirement of the affiliate is computed as per the jurisdiction that it is subject to and is then aggregated with the rest of the group's capital requirement. Intra-group exposures are not excluded in this approach.
- **Deduction Approach (DED)**: This approach is used in the case where some of the subsidiaries/entities that are part of the bank's organizational structure are excluded from consolidation. In such a scenario, the regulatory investment in the excluded subsidiary attributable to the rest of the group is deducted from the consolidated capital requirements.

Credit Risk Securities Financing Transactions (SFT)

Securities Financing Transactions include repo-style transactions, margin lending, security financing borrowing, and so on. The SFT portfolio of a bank should be included for capital charge calculations as per the Foundation IRB approach (FIRB).

The SFT EAD calculation follows three methodologies:

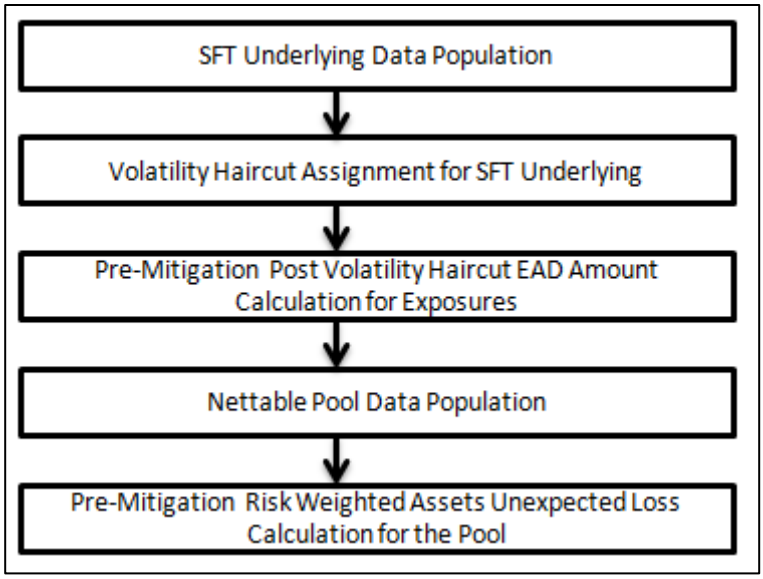
- Collateral Haircut Approach
- Internal Model method
- Simple VaR Approach

Currently, the application supports the Collateral Haircut Approach only. The application computes CRM based on the RWA approach undertaken by the bank. For the FIRB approach, the mitigation is based on the IRB capital calculation as provided in the US Final Rules for Credit Risk.

Process Flow for Securities Financing Transactions

SFT EAD calculation is computed in the sub-process SFT Exposures RWA - Comprehensive Approach.

Figure 41: Process Flow for Securities Financing Transactions



SFT Underlying Data Population

The two data elements present in the SFT transactions are captured as follows:

Firstly, the parent transaction is captured in the Repo Contracts Staging table (STG_REPO_CONTRACTS) and secondly the underlying information, on which the parent transaction is built, is captured separately in the mitigant table (STG_MITIGANTS) or Placed collateral staging table (STG_PLACED_COLLATERAL), depending on the product type.

The underlying data is identified by using the Exposure Mitigant Mapping Staging table (STG_EXP_MITIGANT_MAPPING), wherein this is linked to the data in the repo contracts staging table, for any collateral which is provided to the repo contracts.

The underlying data for any collateral placed with the counterparty is identified by using the Account Placed Collateral Mapping Staging table (STG_ACCT_PLACED_COLL_MAP) where this is linked to the data in the repo contracts staging table.

Volatility Haircut Assignment for SFT Underlying

This is computed by the following Rules:

- Exposure Volatility Haircut Assignment for Supervisory Haircut
- CRM Exposure Volatility Haircut for Equity and Mutual Fund
- Exposure Volatility Haircut Assignment - Scaling Up for "Capital Market Driven" or "Repo Style" transaction types
- Exposure Volatility Haircut Assignment - Own Estimate, FOREX Haircut.

Pre-Mitigation Post Volatility Haircut EAD Amount Calculation for Exposures

For SFT transactions, the application calculates EAD for the parent exposure, based on the underlying information. The underlying exposures are moved to the FCT_SFT_UNDERLYING table from FCT_NON_SEC_EXPOSURES. Each underlying exposure is assigned a volatility haircut if the underlying exposures are financial instruments.

FOREX haircut is applied if the underlying currency and the parent exposure currency are different. Each SFT underlying exposure adjusted for a haircut (EAD + haircut value) is added as EAD to the parent contract.

Nettable Pool Data Population

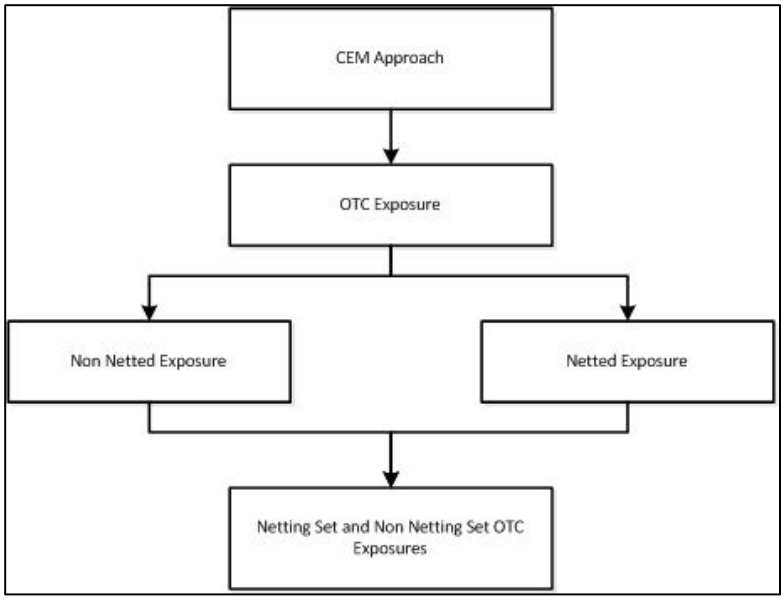
The application nets SFT contracts based on the same customer, common netting agreement identifier, transaction of repo, re-repo or margin lending, trading or banking book, and so on. Margin lending transaction being SFT also follows the same EAD calculation methodology, however, repo or reverse repo and margin lending are not netted together.

Pre-Mitigation Risk Weighted Assets Unexpected Loss Calculation for the Pool

Pre-Mitigation Risk-Weighted Assets Unexpected Loss is calculated for the pool as EAD multiplied by risk weight or capital * 12.5.

Over the Counter Derivative Products

Process Flow for Over the Counter Derivatives – Exposure at Default (EAD) Approach



Exposure amount subject to CCR is estimated with the Current Exposure Method.

- Current Exposure Method (CEM)

  The application calculates the exposure at default for two different sets of the records with a different methodology for Netting Agreement Records and Non-Netting Agreement Records.

- OTC Exposure

For the calculation of EAD, the exposure amounts from the exposure table are moved to a different table for OTC and REPO transactions. The application also creates a new record for each netting Agreement in the data.

- Non-Netted Exposure

  To compute EAD for non-netting records the application reads the following inputs:

  Total replacement cost which is greater than mark to market or Zero for all the contracts.

  An amount for potential future credit exposure is calculated based on the notional and multiplied by the add-on factor based on the underlying type of the contracts. Add-on is assigned based on the following as represented in a tabular format:

Table 44: Add-on Assignment

	Interest Rates	FX and Gold	Equities	Precious Metals Except Gold	Other Commodities
One year or less	0.00%	1.00%	6.00%	7.00%	10.00%
Over one year to five years	0.50%	5.00%	8.00%	7.00%	12.00%
Over five years	1.50%	7.50%	10.00%	8.00%	15.00%

The application assigns the add-on percent in the processing Non Securitization table by using the rule Non Sec Add - on Estimation. Data is populated to the Nettable Pool **FCT_NETTABLE_POOL** table by the T2T: NETTABLE_POOL_OTC_POPULATION_OTHERS.

Netted Exposure

To compute EAD for the netting agreement records the application reads the following inputs:

Total replacement cost which is greater than mark to market for all the contracts.

An amount for potential future credit exposure is calculated based on the notional and multiplied by the add-on factor based on the following formula:

Anet = 0.4 * AGross + 0.6 * NGR * AGross

The application creates new records for netting agreement and then populates into the OTC Exposure table. It selects all the records with the following attributes which are similar to computing the netting agreement exposure:

- Trades with Entity
- Customer
- Product Level – All OTC trades
- Netting Agreement
- Book Code: Trading or Banking
- Long Settlement transaction Flag

- GAAP Code

The following T2Ts are used to create and populate the OTC exposure table:

- NETTABLE_POOL_OTC_POPULATION
- NET_POOL_EXPOSURE_CREATION

The add-on percent netting agreement is achieved by using the following calculations:

- Gross Current Exposure Calculation for OTC Derivatives
- Gross Potential Exposure Calculation for OTC Derivatives
- Net Current Exposure Calculation for OTC Derivatives
- Net Gross Ratio Calculation for OTC Derivatives
- Net Potential Exposure Calculation for OTC Derivatives

Exposure at default for all instruments with CCR risk is calculated using the following calculations:

Exposure Calculation for OTC Derivatives

Risk Weighted Asset (RWA)

RWA calculation for the instruments which are subject to CCR risk is similar to the RWA calculation of other instruments. Any specific treatment is not applied in the application.

Credit Risk Mitigation (CRM)

CRM calculation for the instruments which are subject to CCR risk is similar to CRM calculation for other instruments. Any specific treatment is not applied in the application.

Key Data Elements

Key data elements are noted while computing Counterparty Credit Risk. To view the complete list of tables used for CCR computation, see the Download Specification document.

For instruments participating in netting agreement, the Nettability flag should be set as 'Y'.

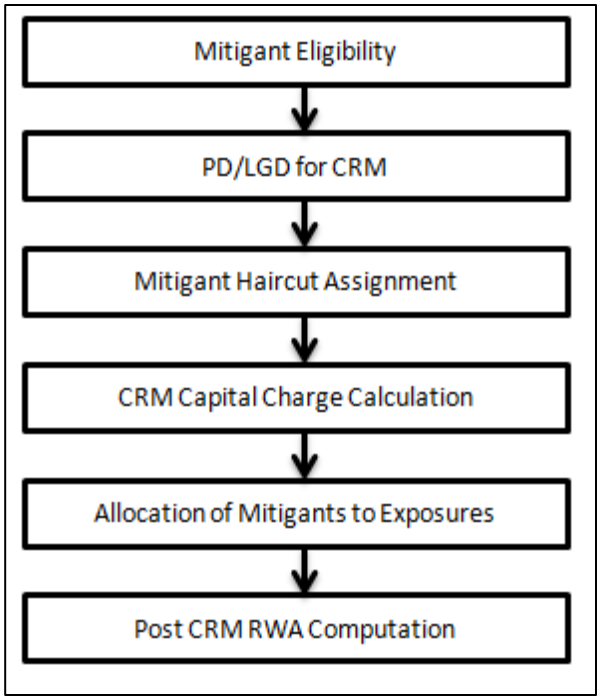
Instruments with the same agreement code are netted in the same netting agreement. The application handles cross-product and product netting concerning netting agreements.

Credit Risk Mitigation

The application handles multiple mitigants for credit risk mitigation like financial collateral, on-balance sheet netting, guarantees, credit derivatives, and so on. CRM reclassification is computed by reclassifying collateral and issuer to standard collateral and issuer type. The mitigant is identified as eligible or not based on the eligibility rules for CRM.

Process Flow for Credit Risk Mitigation

Figure 42: Process Flow for Credit Risk Mitigation



Mitigant Eligibility

In the Comprehensive Approach, the credit rating of the mitigant of the collateral is considered for all mitigant types issued by all party types while deciding whether the mitigant is eligible for a particular exposure or not. Separate eligibility Rules exist for mitigants types like equity, mutual funds, or debt security, to perform these checks. For the remaining, a mitigant is marked as eligible only if its credit rating is better than the exposure to which it is providing protection and also if it is classified as senior in position. This is handled in the sub-process- Mitigant Collateral Eligibility - Comprehensive Approach.

Mitigant eligibility is also checked based on the original and residual maturity of the collateral. Collateral is classified as eligible only if its original maturity is more than 1 year and residual maturity is more than 3 months.

PD/LGD for CRM

The application assigns the PD and LGD to the mitigants as follows:

As per the US Final Rule, if guarantee and credit derivatives are used as an eligible mitigant, then you can select either the LGD Adjustment Approach or PD Substitution Approach for the two mitigants against an exposure.

If the LGD Adjustment Approach is selected, then the covered portion of the exposures is assigned the LGD of the mitigant and the uncovered portion is assigned the LGD of the exposures. The PD assigned is of the obligor for the covered and uncovered portion.

If PD Substitution Approach is used, then LGD assigned to the covered and uncovered portion is the adjusted LGD. PD assigned to the covered portion is of the mitigant and to the uncovered portion is that of the obligor.

While for other collateral where comprehensive approach is used, LGD used for the covered is that of mitigant and for uncovered the LGD is that of exposures.

For LGD assignment the application also takes care of minimum collateralization effect as stated in Basel II guidelines. Additionally, if there is any over-collateralization amount, the application does the mitigant value adjustment based on over-collateralization percentages as stated in Basel II guidelines.

Mitigant Haircut Assignment

The application does computations for three kinds of mitigant haircuts which are, volatility haircut, FOREX haircut, and maturity mismatch haircuts. Volatility haircuts are calculated and the amount of the exposure to the counterparty and the value of collateral or mitigant is adjusted to account for any future fluctuations in the market value. After the adjustment, the application provides the volatility-adjusted amounts for the exposure (higher than the original exposure amount) and the collateral (lower than the original amount).

When the exposure and collateral are in different currencies, the application adjusts by applying FOREX haircut. If the residual maturity of CRM is less than the underlying credit exposure, then a maturity mismatch is applied. If there is a maturity mismatch and CRM has an original maturity of more than a year, the maturity mismatch haircut is applied to adjust the value.

There are two methods for assigning volatility haircut:

- Supervisory Haircut: the application assigns volatility haircuts based on issuers, issuer's ratings, mitigants residual maturity, and type of mitigants.
- Scaling Up: the haircut is scaled up based on the minimum holding period for the transaction type.

The FOREX haircut is also assigned based on these transaction types as per Basel accord. Only eligible mitigants are considered for haircut assignment. The eligible mitigants data flows from the mitigants table to the sub-exposures table. Haircuts mentioned in the Basel accord assume a holding period of 10 days. However, if the mitigants holding period is more than 10 days, then the application scales up the haircut value to reflect the correct value as per the holding period.

CRM Capital Charge Calculation

Mitigant Correlation Factor

Similar to Non-Securitization exposures, correlation factors for collaterals or mitigants are also calculated for mitigants belonging to all asset classes based on their PD.

Capital Charge Calculation

The capital charge is calculated for all mitigants using their effective maturity, correlation factor, PD, LGD, and maturity adjustment value. Similarly, for failed trade and defaulted exposures capital charge is calculated.

Allocation of Mitigants to Exposures

This process loads the mitigant mapping data from the stage table to its corresponding processing table. Mitigants are allocated to the respective exposures it covers and the application defines the amount of the bank's exposure the mitigant is covering. Shareholding percent is also applied to the mitigant amounts. The application has a pre-built optimizer for optimum allocation of mitigants to the exposures for CRM purposes. One-to-One, Many-to-One, and Many-to-Many mapping of mitigants are handled in an efficient manner involving storage of intermediate computations for traceability.

All mitigants which are eligible and mapped to exposures are then populated to a new table where each exposure is broken down into mitigant types. It includes an additional row that treats the exposure as having a covered and uncovered portion. The covered factor and uncovered factor are also populated in this table.

The application uses linear programming logic to allocate the mitigants to the exposures. Pooling identifies the exposure and mitigant data from the sub-exposures (**FCT_SUB_EXPOSURES**) table. Exposure identifier and mitigant identifier are the attributes on which pooling is performed. It assigns a pool ID for each exposure to the mitigant combination. Based on these pool Ids, the optimizer allocates a covered factor to exposures. Optimizer allocates mitigants to exposures to attain the most favorable EAD output

For more information on pooling and optimizer, see Exhibit 1 and Exhibit 3 in **Error! Reference source not found.**.

Post-CRM RWA Computation

Pre - mitigation EAD is split into post-mitigation EAD for the covered portion (mitigant's EAD - portion of exposure that is covered by mitigant) and uncovered portion (the portion of the exposure that is not covered by mitigant). For multiple mitigants covering one exposure, there is more than one record for the covered portion of that exposure. Post mitigation RWA UL (Post CRM RWA UL) is calculated by multiplying post-mitigation EAD and its Capital Required UL with 12.5. Post mitigation RWA Expected Loss is calculated by multiplying the PD, LGD, and post-mitigation EAD amount with 12.5.

6.1.2.2.3 Securitization – Internal Ratings Based Approach

US Final Rules differentiate the Credit Risk computation of the Securitized exposures from Non-Securitized exposures. As securitized exposures are part of off-balance-sheet transactions, it follows a waterfall cash flow mechanism, unlike the other exposures. Hence these exposures are treated differently. Due to the economic crisis of 2008, the Basel Rule has categorized securitized exposures into securitized and re-securitized exposures.

Securitized exposures are exposures that are issued out of a pool of underlying exposures for the transfer of risk. Re-securitized exposures are the exposures that are issued out of a pool of underlying exposures which constitutes non-securitized exposures and some portion of securitized exposures. The application is capable of handling both securitized exposures and re-securitized exposures. It also handles the calculation for the originator and the investor bank roles. At a broad level, there are two categories of Investors:

- An Investing Bank that has invested heavily in securitization.
- An Investing Bank that has invested minimally in securitization.

For both the investors, the data is expected in the Stage Underlying Exposures (STG_UNDERLYING_EXPOSURES) for the underlying of the pool, Total Pool Level attributes in the Stage Pool table (STG_SECURITIZATION_POOL), Tranche Level attributes in the Stage Tranche table (STG_SECURITIZATION_TRANCHE), and the Exposure Level Attributes in the respective product processor (PP) tables.

For an originator, the data is expected in the same manner as the Investor, except for the Underlying Exposures. The underlying exposures of the pool are expected in the respective PP tables, depending on the product type of the underlying exposures.

If the exposure is credit protection in the form of a guarantee, it is expected in the Stage Guarantees table (STG_GUARANTEES). If it is a credit derivative, it is expected in the Stage Credit Derivatives table (STG_CREDIT_DERIVATIVES). If it is regular investment in the Tranches by an investing bank, or it is part of the mandate for retention in the pool or tranche for an originating bank, the data is expected in the Stage Investments table (**STG_INVESTMENTS**).

For exposures being a facility like liquidity facility, or servicer cash advance, the exposures are expected in the Stage Commitment Contracts table (STG_COMMITMENT_CONTRACTS).

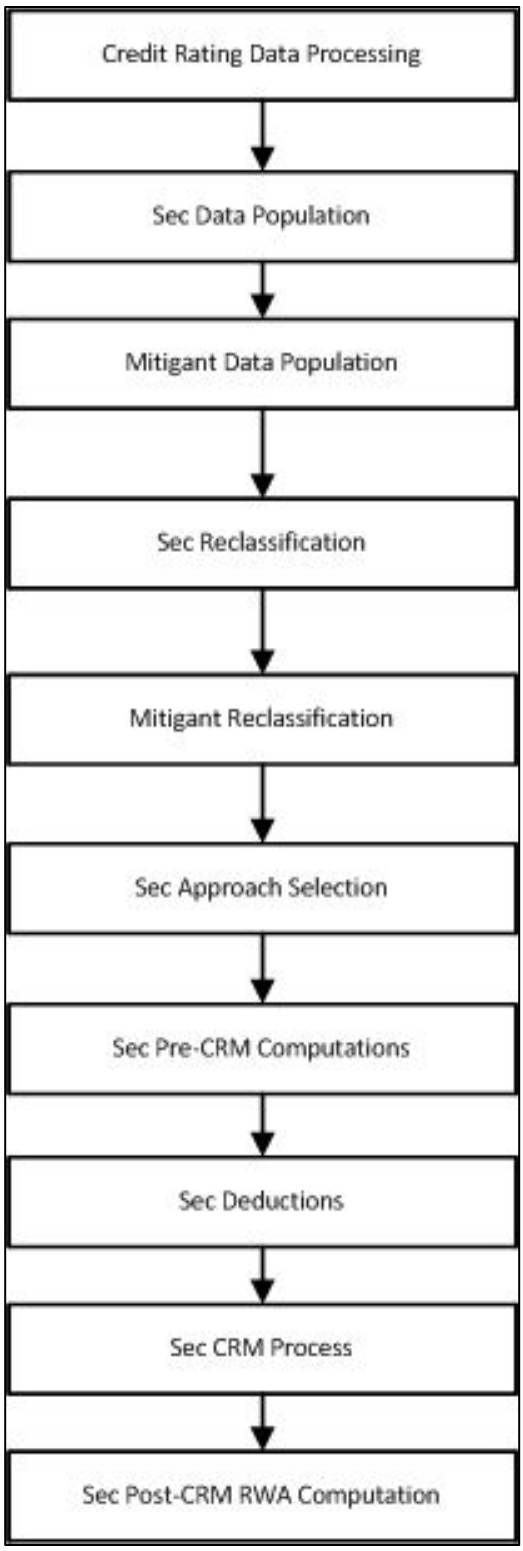
US guidelines specify two broad approaches for the calculation of the capital charge of Securitization exposures:

- Standardized Approach
- IRB Approach
  - Ratings Based Approach
  - Internal Assessment Approach
  - Supervisory Formula approach

For the US Jurisdiction, the IRB approach is the only approach supported by the application. For a few procedures, the calculations related to the underlying exposures of the Securitization transaction are required before processing the Securitization exposures.

Process Flow for Securitization – Internal Ratings Based (IRB) Approach

Figure 43: Process Flow for Securitization – Internal Ratings Based (IRB) Approach



The application handles the IRB Approach of the Securitization Exposures as follows:

Credit Rating Data Processing

All the rating information of the exposures and the mitigants are populated from the staging tables to the processing tables. The exposure and the tranche rating information are captured in the account rating tables and the mitigants rating information is captured in the instrument rating details.

Sec Data Population

The data for pool, tranche, and exposures are populated from the staging tables to the processing tables. The underlying exposures data are captured in the respective Product Processor tables (for these the process related to the non-securitization exposures is followed).

Mitigant Data Population

The mitigants data are populated from the staging table to the processing table. The exposures which are mapped to the mitigants are captured and populated from the staging table to the processing table. This is handled in the Securitization Data Population process.

Sec Reclassification

The application uses standardized data for all kinds of calculations (product type like eligible liquidity facility, bank role like originator, and pool type like mortgage-backed securities). Before any calculation, the application reclassifies the bank-specific data to standard data, similar to the terms used in US Final Rules. It reclassifies the bank role to the standard bank role of an originator or investor. Any other bank roles like sponsor, credit protection provider, and so on, are reclassified into originator, investor, and so on, respectively. The application also reclassifies the pool type to the standard pool type like credit cards receivable pool, auto loans, and so on. It also reclassifies the product type to the standard product type like Mortgage-Backed Securities (MBS), eligible liquidity facility, and so on.

Mitigant Reclassification

For mitigants, the application reclassifies the mitigant types to the standard mitigant types like debt securities, credit derivatives, cash, and so on. It also reclassifies the mitigant issuer type to the standard mitigant issuer type like banks, corporates, and so on.

Sec Approach Selection

The application assigns the appropriate approach to the exposures, based on the criteria specified in the US Final Rules. The application assigns any of the three approaches under the IRB process:

Sec-Internal Assessment Approach

For ABCP exposures having internal ratings, the application assigns the Sec-Internal Assessment Approach.

Sec-Ratings Based Approach

It assigns the Sec-Ratings Based Approach when there is at least one rating assigned to the exposures. For exposures qualified for the SFA approach (SFA Qualified flag is ‘Y’) and having more than one rating, the application assigns the Sec-Ratings Based Approach to that exposure.

Sec Supervisory Formulae Approach

It assigns the Sec-Supervisory formula approach to originator exposures where the exposure is qualified for the SFA approach (SFA Qualified flag is ‘Y’) and there are one or no external ratings assigned for that exposure.

In case of exposures are not qualified for any of these approaches, then the application assigns the Sec-Internal Ratings Based Approach. This approach selection is handled in the Sec Approach Selection sub-process.

Sec Pre CRM Computations

The application calculates the Pre-CRM RWA for the exposures by multiplying the Pre-CRM EAD with the Risk Weight of the exposures. This is handled in the Pre-CRM Computations sub-process.

Pre-CRM EAD Computation

The application assigns the Credit Conversion Factor (CCF) to the off-balance sheet items as specified by the US Final Rules. The CCF percentages are assigned based on the product type (like the eligible liquidity facility). The CCF percentages are also assigned to the exposures based on whether there is any early amortization provision applicable to the transaction. In such cases, the CCF assignment is based on the early amortization type (controlled or uncontrolled), the pool type, and the ratio of three-month average excess spread to the trapping point. Later, the application computes the Pre-Mitigation EAD. This is computed based on the bank role and the product type. The application calculates the EAD for the investor's interest separately. Pre-mitigation EAD for on-balance sheet and off-balance sheet exposures are calculated separately based on the calculations given in the US guidelines. This is handled in the Pre-CRM Computations sub-process.

Risk Weight Assignment

Ratings Based Approach

For exposures that follow the ratings-based approach, the risk weight assignment is similar to the standardized approach, except for the difference in the criteria used for risk weighting. The application uses the granularity of the pool, seniority position of the exposure, and the credit rating of the exposure for the risk weighting the exposures which follow the ratings-based approach.

In the case of unrated exposures, the application checks the criteria required for inferring the rating. This is based on the presence of the subordinate tranche information (based on seniority) for the same pool, regardless of whether the bank has an exposure in that tranche or not, residual maturity of the subordinate tranche being more than the unrated tranche’s residual maturity, the credit enhancement level of the unrated tranche being equal to or more than the subordinate tranche’s credit enhancement level.

The ratings of the tranches also undergo multiple assessments and the application assigns a single rating for all the rated tranches. These multiple assessments of ratings happen in the Data Transformation “Mult_Assessment_Tranche”. The details of the Data Transformation are as follows:

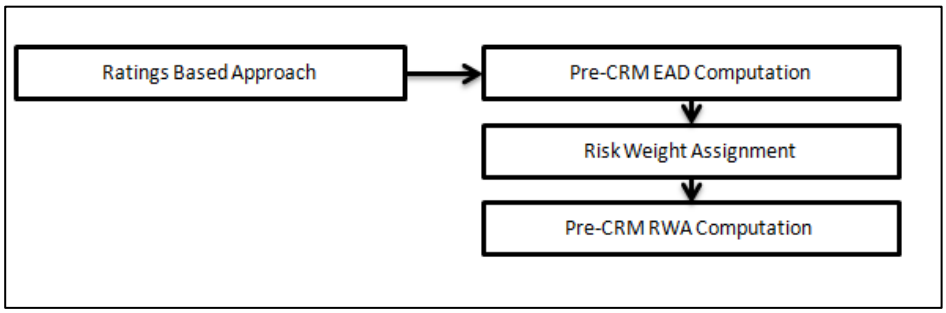
Table 45: Data Transformation for Ratings Based Approach

Data Transformation Name	Objective	Processing Logic
Mult_Assessment_Tranche	The objective of this Data Transformation is to perform multiple assessments of the ratings and assign a normalized rating and risk weight to the securitization tranche. This is required for processing the inferred rating treatment.	For each securitization tranche, the various standard ratings associated with that exposure and the respective risk weights are identified. If the number of ratings is 1, then the same rating gets assigned as the standard rating for the tranche. If the number of ratings is greater than or equal to 2, then the tranche is assigned a standard rating which corresponds to the worst of the best two risk weights associated with the various tranche ratings.

Based on all the previous criteria, the rating for the unrated exposure is considered to be equal to the identified subordinate tranche. Due to the seniority of the exposure in the cash flow and the securitization structure, a subordinate tranche does not have ratings more than that of the immediate senior tranche.

This is handled in the Pre-CRM Computations sub-process.

Figure 44: Process Flow for Pre-CRM Computations Sub-Process for Ratings Based Approach

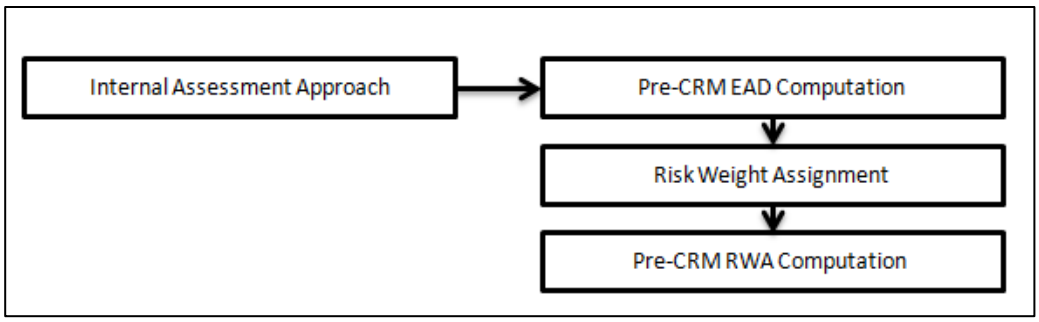


Internal Assessment Approach

For exposures that follow the internal assessment approach, the risk weight assignment is similar to the standardized approach, except for the difference on the criteria used for risk weighting. The application uses the granularity of the pool, seniority position of the exposure, and the credit rating of the exposure for the risk weighting the exposures that follow the internal assessment approach. The internal rating of the exposures is reclassified by the application into standard ratings, for applying the internal assessment approach consistent with the US guidelines.

This is handled in the Pre-CRM Computations sub-process.

Figure 45: Pre-CRM Computations Sub-Process for Ratings Based Approach



Supervisory Formula Approach

For exposures that follow the supervisory formula approach, the application calculates the underlying capital of the securitization pool (KIRB), using the Non-Securitization IRB process. Further, the application calculates the SFA parameters based on the pool and tranche details. The application calculates these, using the calculation logic specified in US guidelines. It also checks the exposure to identify whether the exposure should be straddled or not. This check is based on the credit enhancement level of the tranche to which the exposure belongs, the thickness of the tranche to which the exposure belongs, and the underlying capital of the securitization pool.

The exposures for which the sum of the credit enhancement level and the tranche thickness are less than that of the KIRB, the exposures are deducted from the capital. The exposures for which the credit enhancement level is more than that of the KIRB, the exposures have the SFA Parameters computed. The exposures for which the credit enhancement level is less than that of the KIRB but the sum of the credit enhancement level and the tranche thickness are more than the KIRB, the exposures are straddled, that is, the tranche to which the exposure belongs is split into a position below KIRB and a position above KIRB. All the exposures mapped to that tranche are split in the same manner.

The application populates straddled tranche information into Securitization Straddled Tranche (FSI_SEC_STRADDLED_TRANCHE) table. The application splits each of the exposures of the identified straddled tranche, into two. The account skey of the parent exposure, which is undergoing the split, is added as the parent account skey for the new exposures formed. The straddled tranche deduction amount (the KIRB amount less the tranche amount) is calculated and populated from the FSI_SEC_STRADDLED_TRANCHE in a pro-rated manner to all the exposures of the straddled tranche which are identified for deductions. The remaining amount (which is the tranche amount above the KIRB) is the exposure amount of the senior exposure belonging to the category of split exposures. After the original exposures are split into two and their amounts are populated, the original exposure is deleted from the Exposure table. The splitting of the identified straddled exposures are done with the help of the Data Transformation “Sec_Straddling_Sfa” for securitized exposures and with the help of the Data Transformation “Resec_Straddling_Sfa” for resecuritized exposures. The details of the Data Transformation are as follows:

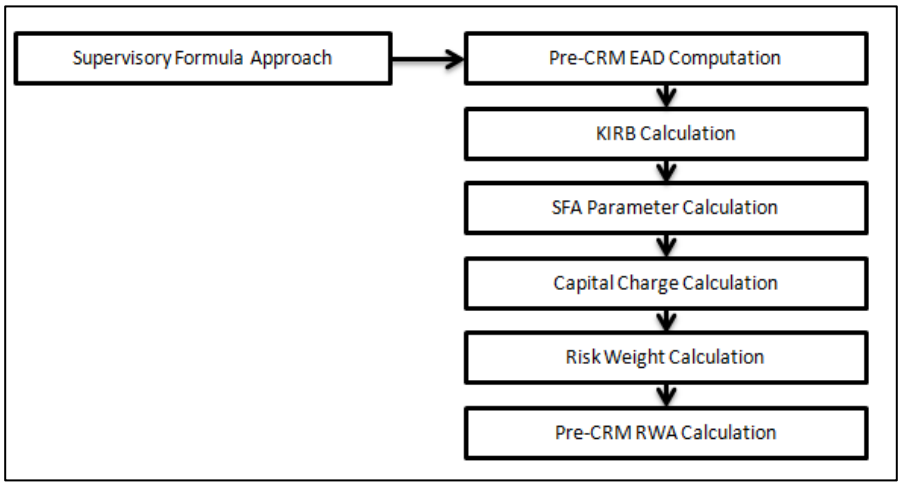
Table 46: Data Transformation for Supervisory Formula Approach

Data Transformation Name	Objective	Processing Logic
Sec_Straddling_Sfa	The objective of this Data Transformation is to split the sec position (excluding resec position) belonging to straddling qualifying tranche into two positions (senior and junior) and treat them as per regulator guidelines.	In cases where L < KIRB < (L+T), the position is split into two positions where the junior position is calculated as pool capital in amount terms minus the sum of the amount of all tranches junior to the one to which the bank has exposure to. The remaining amount is assigned to the senior position, which gets assigned risk weight calculated as per Supervisory Formula. The junior position is assigned a 1250% risk weight.
Resec_Straddling_Sfa	The objective of this Data Transformation is to split the re-sec position belonging to straddling qualifying tranche into two positions (senior and junior) and treat them as per regulator guidelines.	In cases where L < KIRB < (L+T), the position is split into two positions, where the junior position is calculated as pool capital in amount terms minus the sum of the amount of all tranches junior to the one to which the bank has exposure to. The remaining amount is assigned to the senior position, which gets assigned risk weight calculated as per Supervisory Formula. The junior position is assigned a 1250% risk weight. The Data Transformation inserts record corresponding to the straddled tranche into DIM_EXPOSURE and FCT_SEC_EXPOSURES. The Data Transformation updates N_SEC_EXP_RW_UL & N_PRE_CRM_SEC_EXP_CAPITAL_UL. of FCT_SEC_EXPOSURES.

Once all the SFA Parameters are computed, the capital charge is calculated using the SFA Parameters. This capital charge is subsequently converted into the risk weight.

This is handled in the Pre-CRM Computations sub-process.

Figure 46: Pre-CRM Computations Sub-Process for Supervisory Formula Approach



Sec Deductions

Exposures under Ratings Based Approach that is unrated, rated BB-, or below are marked as deduction exposure. For exposures falling under Supervisory Formula Approach, the exposures risk-weighted at 1250% (including exposure going for straddling), are marked as deduction exposure. All unrated ABCP exposures (irrespective of their SFA qualification indicator) and originator records are deducted. The process also handles deduction related to synthetic securitization transactions. All unrated credit protections that are not Nth to Default or SFA qualified are also marked for a deduction.

Sec CRM Process

Mitigant Risk Weight, Mitigant Eligibility, Haircut Assignment, and Allocation of Mitigants to Exposures are handled in Sec CRM sub-process.

Mitigant Risk Weight

The application calculates the mitigant risk weight similar to the exposure risk weight of Non-Securitized exposures. This is based on the standard issuer type and the credit rating which includes the unrated issuers as well. The application performs multiple assessments for the mitigants, similar to the process followed for Non-Securitized exposures, and arrives at a single rating for the mitigant. Further, the application assigns the final risk weight to the mitigant. For financial collateral mitigants like cash and gold, zero risk weight is assigned.

Mitigant Eligibility

The application identifies the eligible mitigants based on the criteria as mentioned in the US guidelines. The application identifies the following mitigants in the case of Securitized exposures: collateral, guarantees, and credit derivatives. The application is capable of using the Comprehensive Approach for the mitigants which are part of the collateral. This is similar to the mitigant eligibility of the Non-Securitization process. The application processes multiple assessments of ratings for the mitigants and some of the mitigant eligibility criteria are based on the ratings and risk weight of the mitigants.

The eligibility of the collateral mitigants are based on the party type of the mitigant, mitigant types, the credit rating assigned to the mitigant or the party (as applicable), and whether the collateral is classified as a senior or not. For equity, the eligibility is based on the main index equity and the equity trading status. For mutual funds, the eligibility is based on the eligible mutual fund indicator. The application identifies the eligibility of the guarantees and credit derivatives based on the party type of the mitigant and the credit rating assigned to the issuer of the mitigant.

For Nth to default credit derivatives, the application further identifies the eligible credit derivative, based on the number of defaults in the exposures and the defaulted position covered by the mitigant. The application identifies the number of defaults in the tranches based on the attachment point of the tranche to which the exposure belongs, the initial pool exposure amount, and the cumulative default amount. Further, it computes the number of tranches in default and compares it with the defaulted position covered by the mitigant.

Based on the criteria of eligibility mentioned in the Basel accord, the application identifies whether the mitigant is eligible or not. If eligible, the application considers the least risk-weighted exposure as the eligible mapping for the least eligible nth to default mitigant for the exposure.

This identification of the eligible nth to default credit derivative and the eligible exposure-mitigant mapping is performed with the help of the Data Transformation “CD_Sec_Mitigant_Elig_STD”. The details of the Data Transformation are as follows:

Table 47: Data Transformation for Mitigant Eligibility

Data Transformation Name	Objective	Processing Logic
CD_Sec_Mitigant_Elig_STD	The objective of this Data Transformation is to identify an eligible sec exposure mitigant mapping wherein the mitigant is an Nth to default credit derivative, in the case of the IRB Approach.	The eligible nth to default credit derivative mitigant is identified and processed based on the exposures mapped to the same pool id. All the exposures mapped to the same pool ID are identified and the corresponding mitigants mapped to them are also identified. In the sec pool id, the cumulative pool default amount is compared with the tranche attachment point as a number (obtained by multiplying the tranche attachment percentage by the initial pool exposure amount). The number of tranches for which the tranche attachment point is less than the cumulative pool default amount is calculated. This number is compared with the minimum defaulted position of the credit derivative mitigant. For a basket of exposures covered by multiple credit derivatives, eligible mitigant is the minimum defaulted position in the basket minus 1. Also, other credit derivatives in the basket of exposures which are having the defaulted position consecutively are not eligible. For each eligible mitigant, the exposure mitigant mapping wherein the exposure has the least risk weight or capital charge is not eligible. All other exposure mitigant mapping for that mitigant is marked ineligible.

The application also identifies the eligibility of the mitigants based on the comparison of the risk weight of the exposures and the mitigants. If the mitigant's risk weight is lesser than that of the exposures, then the mitigants become eligible, or else the application makes them ineligible.

Haircut Assignment

The application assigns various haircuts as applicable to the mitigants. The haircut is assigned to mitigants in the FCT_SUB_EXPOSURES table For collateral following the Comprehensive Approach, the application is flexible to use the supervisory haircuts and scale up, if required, based on the minimum holding period. Alternatively, the application can use the bank's estimate of haircuts. The application applies the volatility haircut, FOREX haircut, and the maturity mismatch haircut to the mitigants as appropriate. Only eligible mitigants are considered for haircut assignment. The eligible mitigants data flows from Mitigants (FCT_MITIGANTS) table to Sub Exposures (FCT_SUB_EXPOSURES) table.

The application populates an uncovered mitigant for each exposure in the FCT_SEC_EXPOSURES table. This uncovered mitigant has the same feature as that of the exposure and is created in the FCT_MITIGANTS table.

Allocation of Mitigants to Exposures

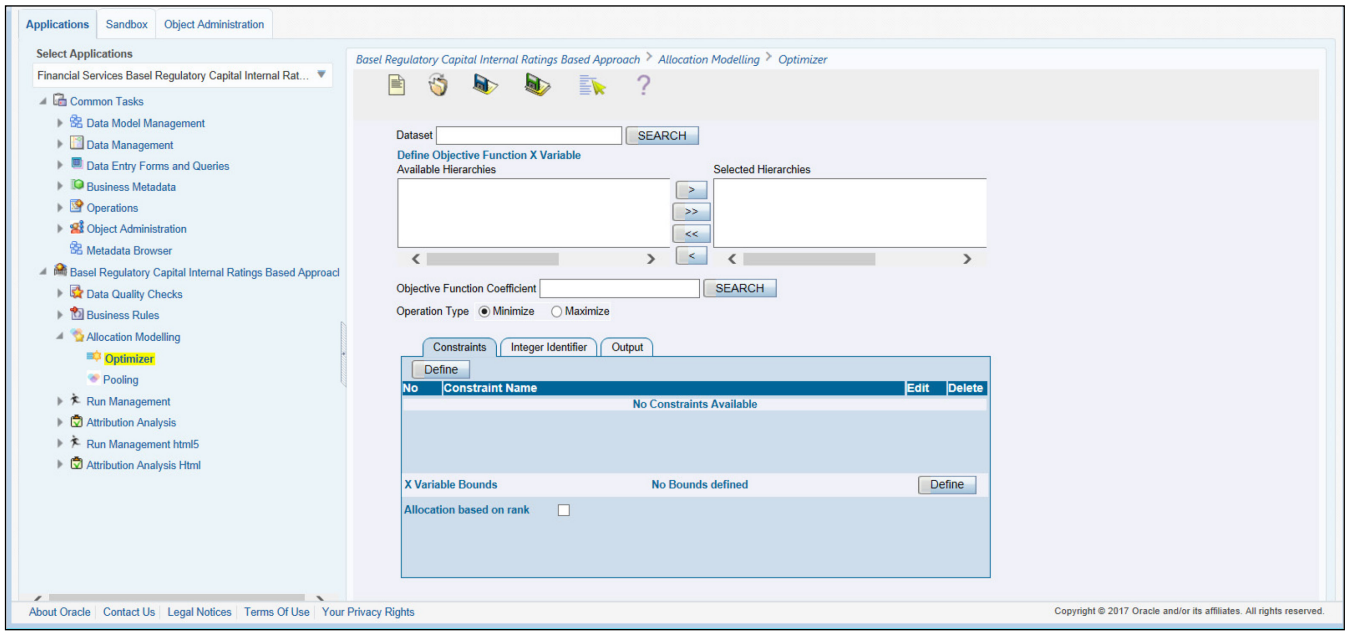
The application computes the mitigant value after all haircuts. The application uses the pooling and optimizer logic to allocate the exposures to the mitigants. This is a bit different from the optimizer logic of Non-Securitization exposures as the Securitized exposures have priority in the cash flow and get the

maximum protection by the mitigants. The senior-most exposure (or tranche) is denoted with seniority 1 and the second senior exposure is denoted with seniority 2 and so on.

In the case of securitization exposures, the mitigants are always given preference over the senior-most exposure and subsequently to the other exposures based on the seniority. The other parameters which are considered in the allocation logic are the risk weight and the mitigant value post haircut. The application uses linear programming logic to allocate the mitigants to the exposures. The optimizer logic for the Securitization exposures is as follows:

Based on the seniority of the exposures, the risk weight of the exposures, mitigant, and the mitigant value, the ordering of ranking in which the mitigants are allocated to the exposures. The order of allocation can be modified by updating the operation type and the optimizer constraints of the objective function. You have to select the allocation rank measure in the Optimizer Definition window while defining the optimizer logic.

Figure 47: Optimizer Logic in Optimizer Definition Window



The optimizer functions on the minimization constraint logic.

If there is one or more than one exposure mapped to a single mitigant, then the mitigant is allocated to the exposure with the highest seniority. If there is more than one exposure with the same highest seniority, then the mitigant is allocated to the exposure which yields the highest mitigant value post haircut.

Single Exposure Mapped to Single or Multiple Mitigants

If there is one or more than one mitigant mapped to a single exposure, then the least risk-weighted mitigant is allocated to the exposure. If there is more than one mitigant with the same least risk weight, then the mitigant which has the highest mitigant value post haircut is allocated to the exposure.

Multiple Exposures Mapped to Multiple Mitigants

The treatment is similar to a single mitigant mapped to single or multiple exposures, for the identification of the mitigant which is assigned to the exposures. Later, the treatment for a single exposure mapped to multiple mitigants is followed to yield the credit Risk weighted exposure amount.

Using the logic mentioned in the preceding list, the application calculates the factor of exposure covered by the mitigant and the factor of the exposure uncovered (without any protection).

Sec Post CRM RWA Computation

The application computes the covered amount and the uncovered amount for the exposures. The covered amount is computed by multiplying the covered factor with the exposure amount. To this covered amount, the application assigns the mitigant risk weight. The product of the covered amount and the mitigant risk weight is the covered RWA. The uncovered amount is computed by multiplying the uncovered factor (which is 1 – sum of all covered factors for that exposure) with the exposure amount. This uncovered amount is multiplied by the exposure risk weight to get the uncovered RWA. The sum of the covered RWA and the uncovered RWA is the Post CRM RWA of the Exposure.

Figure 48: Calculation for Sec Post CRM RWA Computation

```
Post-CRM RWA = Covered Amount  * Risk Weight of the Mitigant
               + Uncovered Amount * Risk Weight of the Exposure
```

This logic is handled in the **Sec Post-CRM RWA Computation** sub-process.

Key Data Elements

For a complete list of tables and columns, see the Download Specifications document.

Key data elements for Securitization computation are as follows:

Securitization Exposures (IRB Approach)

The key attributes required in the case of an investor or third party that does not provide the complete pool and tranche details are as follows:

- Credit Enhancement Level
- Pool Exposure Amount
- Sec Second Loss Position of the Tranche
- The granularity of the Pool
- Largest Exposure of the Pool
- The seniority of the Tranche
- Sec Trading Book Approach

For an investing bank, the data is expected in the Stage Underlying Exposures (STG_UNDERLYING_EXPOSURES) for the underlying of the pool, Total Pool Level attributes in the Stage Pool table (STG_SECURITIZATION_POOL), Tranche Level attributes in the Stage Tranche table (STG_SECURITIZATION_TRANCHE), and the Exposure Level Attributes in the respective PP tables.

For an originator, the data is expected in the same manner as the Investor, except for the Underlying Exposures. The underlying exposures of the pool are expected in the respective PP tables, depending on the product type of the underlying exposures.

For a credit protection exposure in the form of guarantee, it is expected in the Stage Guarantees table (STG_GUARANTEES); and if it is a credit derivative, it is expected in the Stage Credit Derivatives table (STG_CREDIT_DERIVATIVES). If it is regular investment in the Tranches by an investing bank, or it is part

of the mandate for retention in the pool or tranche for an originating bank, the data is expected in the Stage Investments table (STG_INVESTMENTS).

For a liquidity facility exposure, or servicer cash advance, the exposures are expected in the Stage Commitment Contracts table (STG_COMMITMENT_CONTRACTS).

Mitigant Eligibility (IRB Approach)

Eligible Mutual Fund Indicator, Main Index Equity Indicator, and Equity Traded Indicator.

Miscellaneous

All tranche information, regardless of whether the bank has exposure or not is required for inferring the ratings, credit enhancement level computation, eligibility of nth to default credit derivative mitigant.

Mitigant Value is to be assigned at an Exposure level (not to the tranche).

Mitigant Pool ID in the Exposure Mitigant Mapping table for nth to default mitigants is required for eligibility of 'Nth to Default' credit derivative mitigant.

6.1.2.3 Capital Structure

The capital structure of US Jurisdiction calculates the total capital of the Bank Holding Company. The total capital consists of the following components:

- Tier 1 (T1) capital
- Tier 2 (T2) capital

Tier 1 capital consists of core equity capital, retained earnings and disclosed reserves. Tier 2 capital consists of cumulative perpetual preferred stock and hybrid debt capital. These are used in the capital calculation, and for reporting purposes.

The total capital amount arrived for each tier of capital is followed by a deduction of various regulatory adjustments. Some Securitization Exposures, failed market transactions, investment in the subsidiary engaged in BFSI, and reciprocal cross-holding is deducted 50% from Tier 1 capital and 50% from Tier 2 capital. Goodwill and other intangibles, gain on sale related to Securitization transaction, expected loss greater than total provision amount, and DTA are deducted from Tier 1 capital.

Tier 2 capital is limited to 100% of Tier1 capital. The total capital ratio must not be lower than 8%.

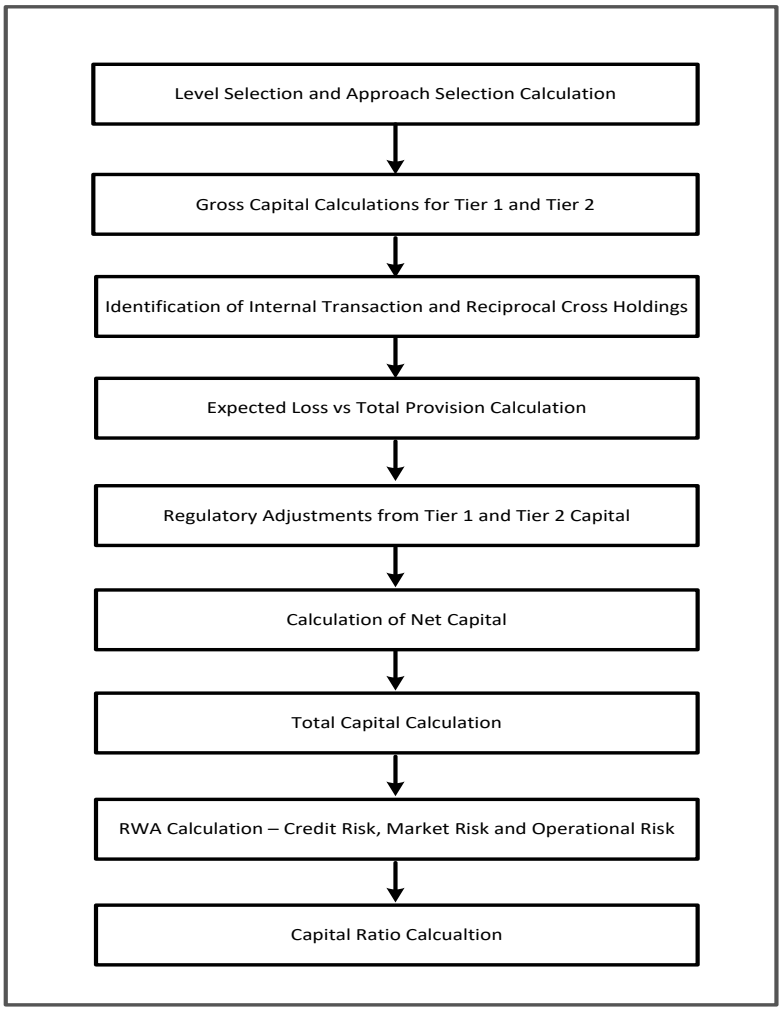
> **NOTE:**
>
> While executing Solo Run the parent entity data is processed. Investment into the subsidiary data undergoes RWA calculation as per the Credit Risk and Market Risk rule. The capital line item for parent entity is only processed. For the consolidation approach, the parent entity and the subsidiary data are considered. All the GL line items are expected at a solo level for each entity. The consolidated data is discarded.

6.1.2.3.1 Assumption

The GL codes are expected to be unique across entities in STG_GL_DATA and DIM_CAPITAL_ACCT_HEAD.

6.1.2.3.2 Process Flow for Capital Structure

Figure 49: Process Flow for Capital Structure



Level Selection and Approach Selection Calculation

To process the capital for a bank, a solo or consolidated entity selection should be made, based on which the capital is calculated at an organization level. If solo is selected, then only for that particular selected banking organization the capital is calculated. If consolidation is selected, then all the entities that fall under the umbrella of the selected organization are part of capital calculation. This is done in the task – 'Capital Consolidation Level Selection' in process 'CAPITAL_CONSOLIDATION'

Based on the share-holding percentage of the parent bank in the subsidiary and the consolidation approach to be followed (consolidation approach and deduction approach) for each of the entities, the Basel approach is selected.

For example: if the share-holding for an entity is 35% and is part of the consolidation process, then the approach selected for this entity is pro-rata consolidation. The reclassification is performed in the task – 'Cap Consl Basel Approach Type Reclassification for an Entity' in the process 'CAPITAL_CONSOLIDATION'.

Gross Capital Calculation for T1and T2

The total gross capital for each tier of capital that is, T1and T2 are calculated as per the definition of T1and, T2 by adding the relevant financial instrument in each tier of capital. The calculation is done in sub-process – 'Capital Components Calculations' in process 'USA_CAP_STRUCT'.

Identification of Internal Transaction and Reciprocal cross-holdings

All inter-group and reciprocal-cross holding capital investments are marked as internal customer transaction and reciprocal cross-holding, respectively. The marking is done by populating the appropriate standard account head surrogate key for the exposures which qualifies as an internal transaction or reciprocal cross-holding.

Expected Loss Vs Total Provision Calculation

If the total provision amount is greater than the expected loss, then the difference is added into Tier 2 capital up to a maximum of 0.6% of CR RWA under the IRB approach. The processing is done in Rule – CS Total Provision for IRB in sub-process – Capital Components Calculations under the process 'CAP_STRUCT'. If the expected loss is greater than the total provision amount, the difference is deducted, where 50% is deducted from Tier 1 capital and the remaining 50% is deducted from Tier 2 capital. The processing is done in the Rules – 'CS General Provisions for IRB' and 'CS Total Provision for IRB' in the sub-process – 'Capital Components Calculations' under the process 'USA_CAP_STRUCT'.

Regulatory Adjustment from Tier 1 and Tier 2

All the regulatory adjustment line items are identified and 50% of the total amount is deducted from Tier 1 capital and 50% from Tier 2 capital. To handle this 50-50 deduction, all the regulatory adjustment line items are moved to table FCT_CALC_ACCT_HEAD where each of the regulatory adjustment line items is equally split into 2 records. The capital component group of one record is marked as 'T1-50' and the other record is marked as 'T2-50'. The processing is computed in the sub-processes – Calc Acct Head Population and Std Acct Head Population in the process USA_CAP_STRUCT.

Calculation of Net Capital

Net Tier 1 capital is calculated by deducting the Securitization transaction, DTA, and 50% of the regulatory adjustment line item. Similarly, net Tier 2 capital is calculated by deducting 50% of the regulatory adjustment line item. If net tier 2 is greater than net tier 1 capital, then the net tier 2 capital is limited to net tier 1 capital.

Total Capital Calculation

The total Net Tier 1 capital, and Net Tier 2 capital is summed up to obtain the Total Eligible capital.

Risk Weighted Asset (RWA) Amount – Credit Risk, Market Risk, and Operational Risk.

The RWA amount for Non-Securitization, Securitization, Market Risk, and Operational Risk is calculated by summing up the RWA amount as reported under different headings as 'Risk Weighted Asset amount for Standardized Portfolios' for Non Securitization, "Sec Std RWA" for Securitization portfolio, "Market RWA" for Market Risk and "Operational RWA" for Operational Risk. The Market RWA and the Operational RWA are expected to be provided as an input.

Capital Ratio Calculation

Tier 1 ratio and capital adequacy ratio is calculated using the Total RWA amount and Net T1 capital, and Total capital amount. This is processes in the sub-process – Capital Components Calculations in the process USA_CAP_STRUCT.

6.1.2.3.3 Key Data Elements

Key data elements to process the capital structure for the consolidated entity are as follows. For a complete list of tables and columns to be updated, see the Download Specifications document:

Entity details that are part of regulatory consolidation and parent entity share holding percent are required. This data is captured in Stage Entity Shareholding Details (STG_ENTITY_SHR_HLD_PERCENT) table.

The capital structure component for each tier of capital for all entities involved in regulatory consolidation is required.

The General Ledger line items are captured as a download in Stage General Ledger Data (STG_GL_DATA).

If a capital line item like 'MR RWA' or 'OR RWA' is available as a download, then the non-GL line items are expected as a download in Stage Standard Accounting Head (STG_STANDARD_ACCT_HEAD).

The standard account head ID of line items like 'Net Tier 1 capital', 'capital ratio', and so on, which are computed by application, are expected to be mapped to Capital Account Identifier –'OTHERS', as the application populates these line items into Fact Standard Accounting Head (FCT_STANDARD_ACCT_HEAD) table with initial value as 0. Later, this value is overwritten by the application.

Information stored in Capital Standard Mapping (FSI_CAPITAL_STANDARD_MAPPING) table is a mapping of GL capital line items with seeded data in DIM_STD_ACCT_HEAD. For all jurisdictions, this mapping should be present. For more information on the mapping of all jurisdictions in **FSI_CAPITAL_STANDARD_MAPPING** table, see Exhibit 5 in **Error! Reference source not found.**.

6.1.2.4 Single Counterparty Exposure Limit

The Single Counterparty Exposure Limit calculation is designed to identify the counterparties whose aggregate credit exposure to the bank breaches the maximum limit as described by the Dodd-Frank Single Counterparty Limit proposal. The Exposure Limit proposal is mitigating the threat to financial stability posed by systemically important financial companies.

The Single Counter Party Exposure Limit is an effort to reduce the concentration risk of a particular bank against any particular counterparty (customer and counterparty). The Dodd-Frank proposal for US documents suggests stringent benchmarks to be followed by any bank for credit exposures. The application applies two limits for the reporting banks to follow in the US which are as follows:

Any covered company together with its subsidiaries, should not have aggregate net credit exposure to any affiliated counterparty more than 25 percent of the consolidated capital stock and surplus of the covered company.

Any major covered company together with its subsidiaries, cannot have aggregate net credit exposure to any counterparty more than 10 percent of the consolidated capital stock and surplus of the major covered company.

A covered company, including its subsidiaries is a company whose assets are equal to $50 billion or more. Any company which has a lesser asset size of less than $50 billion is not eligible for a single counterparty credit calculation. Any covered company with a total asset size of more than $500 billion is considered to be a major covered company.

The application is designed to be flexible enough so that you can decide on the product types and customer types to be considered for the calculations. You can also decide on whether or not to compute the Credit Risk Mitigation process to reduce its credit risk toward counterparty during the calculations.

Single Counterparty Exposure Limit calculations are done only at a consolidated level of the ultimate parent. However, there are no restrictions by the application on this. The Run is executed at any level of the hierarchy of the legal entity structure.

6.1.2.4.1 Assumptions

Our interpretation of a few sections related to Single Counterparty Exposure Limit from the US Regulatory Capital Rules is as follows:

The Dodd-Frank proposal is silent on features like calculation of the exposure for OTC Derivatives products. In such cases, the existing mode of calculation is as per the US Regulatory Capital Final Rules which is considered standard and replicated in the calculation process.

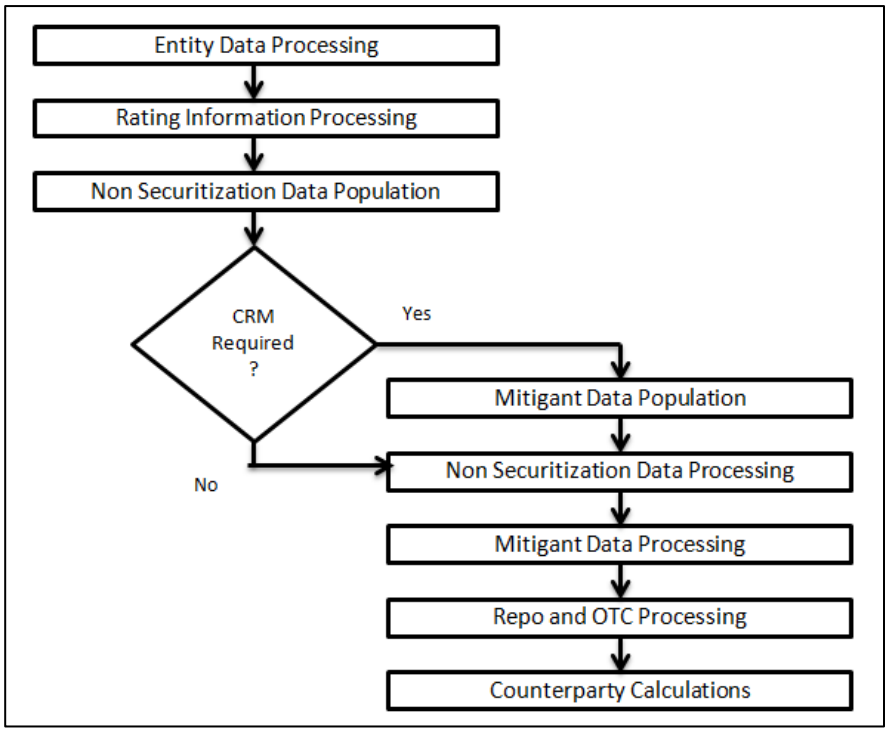
The add-ons for the OTC are the same as that in the US jurisdiction.

There is no CCF % for converting the off-balance sheet items to on-balance sheet items and as a result, the full exposure amount for credit exposure calculation is not considered.

The application does not consider failed trades and DVP and non-DVP trades as a part of the credit exposure as these are not explicitly mentioned in the guidelines.

6.1.2.4.2 Process Flow for Single Counterparty Exposure Limit

Figure 50: Process Flow for Single Counterparty Exposure Limit



Entity Data Processing

The entities for which the concentration ratio is calculated, are processed and identified here. Single Counterparty processing is always done at a consolidated level based on the group asset size (asset size here includes consolidated asset size of parent and all its subsidiaries). Hence, the application identifies the legal entities for which Single Counterparty Run is being executed, sorts them, and the ultimate parent of the legal entities are figured out and marked. This data is required in the other tasks during processing.

User-defined Run parameters are set in this process. This sets the parameters that controls how the Single Counterparty Exposure Limit Run is to be performed. The main parameter set in Single Counterparty Run during this process is the 'CRM required' indicator, which controls whether the risk mitigation process is required or not. While running the user-defined Run for Single Counterparty Exposure Calculation, Run Definition User Defined Run Param Assignment Rule is modified to set the user-defined Run parameter to the following values depending on whether CRM is required or not:

Table 48: Setup Codes and CRM

Setup Code	CRM
USASCP-MIT-NO	No
USASCP-MIT-YES	Yes

From the Run Management screen, the required CRM can be set using the option icons.

Rating Information Processing

The application does the following in this process:

- Rating data population
- Rating reclassification into the standard ratings
- Sovereign rating population

In a single counterparty Run, ratings are required during the assignment of haircuts. Dodd-Frank act proposes the use of only ECA scores (to be referred like sovereign ratings) in the Single counterparty Run. Therefore, all the credit ratings by the external agencies are disregarded. The application re-classifies the rating information (ECA score) shared in the bank's data to standard rating, according to which risk treatment is done.

Non-Securitization Data Population

This process takes care of all the data population for all the eligible product types from the available product processors. The valid credit exposures as per Dodd - Frank's proposal are as follows:

- Loans, deposits, lines of credit, leases
- Debt securities (held till maturity and held for trading)
- Equity securities
- Repo and Reverse Repo Transactions
- Securities lending and borrowing Transactions
- Guarantees, acceptances, or letters of credit
- Derivative transactions – Qualifying and Non-Qualifying for master netting agreement
- Credit or equity derivative

Data should be loaded in the application for all the product types. Main categories of CR non-sec exposures, along with their respective table names that are used for data input are as follows:

Table 49: CR Non-Sec Exposures Tables

Higher Level Product Type	Table name for data input (also known as Product Processor)
Bills	STG_BILLS_CONTRACTS
Credit Cards	STG_CARDS
Swaps	STG_SWAPS_CONTRACTS
Futures	STG_FUTURES
Guarantees	STG_GUARANTEES
Investments	STG_INVESTMENTS
Lease Contracts	STG_LEASE_CONTRACTS
Letters of Credit	STG_LC_CONTRACTS
Line of Credit	STG_CREDIT_LINE_DETAILS
Commitment Contracts	STG_COMMITMENT_CONTRACTS
Loans	STG_LOAN_CONTRACTS
Money market instruments	STG_MM_CONTRACTS
Overdraft	STG_OD_ACCOUNTS
Options	STG_OPTION_CONTRACTS
Re purchase contracts	STG_REPO_CONTRACTS
Equity Exposures	STG_INVESTMENTS
Underlying Exposures for Derivatives and Securitization	STG_UNDERLYING_EXPOSURES
Underlying Exposures for Repo contracts	STG_PLACED_COLLATERAL / STG_MITIGANTS
Credit Derivatives	STG_CREDIT_DERIVATIVES
Leases	STG_LEASES_CONTRACTS
Fixed Assets	STG_FIXED_ASSETS_DETAILS

Stage data from the product processors or other stage tables are populated in the required tables, where data is further processed. For more information on the list of columns to be populated within each table, see the Download Specifications document. The application identifies counterparties that are eligible to be processed under single counterparty Run are marked as eligible through rule RLBL0147: Single Counterparty - Concentration Treatment Eligibility.

The eligibility Rule is based on the counterparty type. This is a reconfigurable Rule that can be modified to include or exclude the counterparty type as per the customer's requirement. Currently, the following counterparty types are marked as eligible for Single Counterparty calculations:

- Banks
- Corporate – Large

- Corporate – Medium
- Corporate – Small
- PSE - sovereign status
- Securities Firm treated as Bank
- Securities firm treated as Corporate Non -SME

Currency Conversion

The amount data columns that are provided as input (in stage tables) are in the natural currency. In this step, the application converts them to reporting currency columns which are used for further calculations. The column names suffixed as '_ncy' are in the natural currency and they are multiplied by a currency conversion factor to populate values in the reporting currency.

Shareholding Percent Multiplication

The exposure amount, that is, a part of input data (product processors) is the exposure amount for a solo entity. However, for a consolidated Run, the parent exposure is considered only based on shareholding percentage, based on the following calculation:

Exposure Amount × Share Holding Percent = Updated Exposure Amount

Where share holding percent is allotted a value by the application during the process-Capital Consolidation.

Mitigant Data Population

The data relating to the mitigants associated with the exposures are captured in this process. The application does the following in this task:

- Mitigant data population to their corresponding tables is done.
- Currency conversion from natural currency to reporting currency for the required columns
- Shareholding percent multiplication for the required mitigant data
- Mitigant to Non-Sec Exposure mapping population

Non Securitization Data Processing

The Non Securitization related data is processed here. The application processes in the following way:

Reclassification: Product types used by reporting bank in the input data are reclassified to standard product types recommended by Basel Committee in the accord. The product types after reclassification are stored as Basel product types. The reclassification is based on simple logic.

For example, unsecured Bonds are reclassified as Debt Securities. Exposure at Default – EAD of the exposures is calculated for each product. The EAD calculation for all the exposures is done based on standard product types as per the recommendations of US III.

If a new standard product type is added to the single counterparty Run, then it is mapped to one of the EAD calculation Rules if the EAD calculations are similar. If it is not similar, a new Rule is created for this purpose.

Mitigant Data Processing

The application handles multiple mitigants for credit risk mitigation like cash, debt securities, Guarantees, Credit derivatives, and so on. The mitigant types are reclassified as standard mitigant types. These are

then identified as eligible or not based on the eligibility Rules. The application has pre-configured Rules to carry out the mitigant eligibility checks. There are separate eligibility Rules for different standard mitigants types. All cash and debt securities are marked as eligible. Equity is classified as eligible mitigant based on whether it is publicly traded equity or not. All Credit derivatives and guarantees are treated as eligible based on their standard issuer types.

Repo and OTC Processing

The processing of OTC and SFT products is done in the process. For SFT calculations the application does the following:

- The exposure volatility haircut for the underlying instruments of SFT is calculated. Haircut for debt securities issued by sovereign and non-sovereign issuers is calculated in two separate Rules based on the US III recommendations. The input to haircut calculation for debt securities with non-sovereign issuers is the residual maturity. The inputs to haircut calculation for debt securities with non-sovereign issuers are the residual maturity, ECA score of the country. A haircut of 0.25 is applied to all equity collaterals through a separate Rule.
- Forex haircut for the underlying instruments of SFT is calculated via the FOREX haircut rule. 8% FOREX haircut is applied for any currency mismatches between the collateral and the exposure that is being covered by that collateral.
- Pre mitigation and post haircut exposure amount (exposure at default) is calculated for SFT.
- The Gross current exposure amount for OTC products represents the current exposure that the bank is subjected to through these instruments. It is calculated for all OTC products based on their current market value.
- The gross potential exposure amount for OTC products is the potential exposure that the bank can be subjected to for credit events. This is calculated based on the notional amount. The gross potential exposure amount of all credit derivatives (where reporting bank has sold credit protection) is calculated based on unpaid premium, notional principal, and Non-Sec Add on Percent.
- Net Current exposure amount is calculated based on the market value.
- Net Gross Ratio Calculation for OTC Derivatives is done by dividing Net Current Exposure Amount by Gross Current Exposure Amount.

  Net potential exposure value is calculated as:

  0.4 * Gross Potential Exposure Amount + 0.6 * Net Gross Ratio * Gross Potential Exposure Amount

  Net current and potential exposure values for OTC and its derivatives are calculated.

  Total exposure values are calculated by summing Net Potential Exposure Amount and Net Current Exposure Amount.

Counterparty Calculations

All the credit risk mitigation processes and the final Single counterparty calculations are done in this process. The major tasks that are performed in this process are:

- CRM volatility haircut is applied for all mitigants and FOREX haircut is applied for currency mismatches.

- The mitigation allocation process is handled through the optimizer. The process to allocate Mitigants are as follows:
  - The group of all the exposures which are mapped to a mitigant and all the mitigants which are mapped to exposure is grouped under a pool and a pool ID is given.

    For example, consider the mapping between a few exposures and mitigants as follows:

    Exposure 1 → Mitigant 1

    Exposure 2 → Mitigant 1

    Exposure 2 → Mitigant 2

    Exposure 3 → Mitigant 2

    Exposures 1, 2, and 3 and Mitigants 1 and 2 form a pool, and a pool ID is provided for it. The mitigants within the same pool are allocated to the exposures in the following order:

    - Pre mitigation EAD in descending order
    - Residual maturity of the exposure in ascending order
    - Probability of default in ascending order
    - Loss given default in ascending order
    - If the mitigant is Cash or Gold, then it gets the top priority
    - Mitigant value in descending order
    - Residual maturity of the mitigant in ascending order
    - Probability of default of the mitigant in ascending order
    - Loss given default of the mitigant in ascending order

The exposure mitigant mapping is given a rank within the pool before they are fed into the optimizer for mitigant allocation. This rank is again modified for the cases where N exposures are mapped to 1 mitigant (N – 1 referred to as 'N to 1' case).
For an N – 1 pool, the mitigant allocation rank is reversed.
For a non-N – 1 pool, if the exposure is mapped to an Uncovered mitigant, then the rank is modified to MAX(rank) within the pool + 1 so that the uncovered mitigant is allocated in the last.

This rank ordering of the mitigants related to exposure is handled using the Data Transformation "Counterparty_Miti_Rank". The details of the Data Transformation are as follows:

Table 50: Data Transformations for Counterparty Calculations

Data Transformation Name	Objective	Processing Logic
Counterparty_Miti_Rank	The objective of this Data Transformation is to allocate the ranks to the exposures and the mitigants in the case of N-1, 1-N, and N-N mappings, for a single counterparty.	For each exposure and mitigants within a pool, the solution first identifies whether the exposure-mitigant mapping belongs to N-1 or other mappings. Then, for the N-1 mapping, the solution rank orders the exposures and the mitigants based on the least residual maturity of the mitigant, least PD percent, and least LGD percent.

Post CRM covered amount is calculated as the product of Pre-Mitigation EAD Amount and Covered Factor. Single Counterparty Threshold Limit is calculated for covered companies and major covered companies as 25% and 10% of accounting capital and surplus. The application compares the Net Credit exposure with the Single Counterparty Threshold Limit. If Counterparty Net Credit Exposure > Counterparty Threshold Amount, the application updates the Counterparty Threshold Limit Breach column as Y, else it is updated as N.

6.1.2.4.3 Key Data Elements

There are certain mandatory details about the product that are provided as download which cannot be calculated in the product processor table without which the exposure value cannot be computed. For a complete list of tables and columns, see the Download Specifications document.

The mandatory data that is provided for the different products are as follows:

- Lending Instruments - Current Exposure Value
- Equities – Equity Market value, Carrying cost
- Debt Securities – EOP Balance
- REPO - Underlying exposure value
- Guarantees and Letter of Credit - the exposure value, maximum potential loss
- OTC Derivatives - MTM value, Notional principal of the derivative
- Credit or Equity Derivatives - Exposure value, maximum potential loss

All the product types are included in the Gross Exposure calculation. While populating data the application also takes care of the currency conversion from natural currency to the reporting currency. The capital and surplus for the consolidating entity are expected as a download in Stage Legal Entity Details (**STG_LEGAL_ENTITY_DETAILS)** table as a single line item. Asset size of the entity is expected to be a download in Stage Party Financials (**STG_PARTY_FINANCIALS**).

7 Account Clustering

For more information, refer to the Account Clustering section, in the Oracle Financial Services Basel Regulatory Compliance User Guide.

8 User Interface For Reclassification and Regulatory Predefined Values

For more information, refer to the User Interface for Reclassification section, in the Oracle Financial Services Basel Regulatory Compliance User Guide.

9 Annexure A: Key Concepts

9.1 Slow Changing Dimensions

This component details how to load data from the stage tables into the slowly changing dimension tables. SCD batches are run usually at fixed intervals, for example at the end of each month. There are certain SCDs which have to be run whenever any new data is required to be added for the bank.

When the SCD batch is executed for the first time it loads all the data in the stage tables for that extraction date and it also inserts two records – Missing and Others.

When the batch is run for the next extraction date, then the new records are inserted. The end dates of the modified records are updated with the extraction date and new records with start date as the extraction records are inserted. The records that are the same for both extraction dates are left untouched.

The SCD component is delivered through an executable.

Type 1 SCD Methodology

The Type 1 methodology overwrites old data with new data, and therefore does not track changes to the data across time. For Example, consider a dimension table, DIM_PRODUCT.

Table 51: Values in the DIM_Product table

N_Product_Skey	V_Product_Name	D_Start_Date	D_End_Date	F_Latest_Record_Indicator
1	PL	5/31/2010	12/31/9999	Y

The following is a description of the column names in this table:

- N_Product_Skey is the surrogate key column which is a unique key for each record in the dimension table.
- V_Product_Name is the product name.
- D_Start_Date indicates the date from which this product record is valid.
- D_End_Date indicates the date to which this product record is valid.
- F_Latest_Record_Indicator: A value Y indicates this is the latest record in the dimension table for this product and N indicates it is not.

If the V_Product_Name column is set as a Type 1 and if there is a change in the product name from PL to Personal Loan in the earlier example in the next processing period then, when SCD is executed then the record in the earlier example is changed to:

Table 52: Values in the DIM_Product table

N_Product_Skey	V_Product_Name	D_Start_Date	D_End_Date	D_End_Date F_Latest_Record_Indicator
1	Personal Loan	6/30/2010	12/31/9999	Y

Type 2 SCD Methodology

The Type 2 method tracks historical data by creating multiple records for a given natural key in the dimensional tables with separate surrogate keys. With Type 2, the historical changes in dimensional data are preserved. In the earlier example, for the change in product name from 'PL' to 'Personal Loan' if history is preserved, then the V_Product_Name column is set as Type 2, that is, when SCD is processed for the processing period, it inserts a new record as shown in the following example.

Table 53: Values in the DIM_Product table

N_Product_Skey	V_Product_Name	D_Start_Date	D_End_Date	F_Latest_Record_Indicator
1	PL	5/31/2010	12/31/9999	Y
1	Personal Loan	6/30/2010	12/31/9999	Y

A new record is inserted to the product dimension table with the new product name and the latest record indicator for this is set as 'Y' indicating this is the latest record for the personal loan product and the same flag for the earlier record is set to 'N'.

Prerequisites

The setup tables accessed by the SCD component, including **SYS_TBL_MASTER**, **SYS_STG_JOIN_MASTER** have the required entries. The tables **SYS_TBL_MASTER** and **SYS_STG_JOIN_MASTER** are seeded. You must only add entries in these tables if you add user defined dimensions.

Tables used by SCD Component

The Basel_8.1_Seeded_Tables Excel lists out the Stage tables and the corresponding Dimension tables that are used in the BASEL application.

No changes are needed in this table if the standard key dimensions are being used within the Basel Application. If any new dimensions are added, the related column details are to be inserted to this table manually.

STG_<dimensionname>_MASTER - is the database table which SCD uses as the source. This table comes as a part of the Data model.

DIM_<dimensionname> – is the output table to which SCD writes the dimension data.

A sequence is added for every user-defined dimension.

Example:

create sequence SEQ_DIM_<DIM> minvalue 1

max value 999999999999999999999999999

increment by 1

Executing SCD Components

For information on the configuration and execution of SCD components, see the Operations section in the Oracle Financial Services Analytical Applications Infrastructure 8.1.2 User Guide.

The Basel batch created for SCDs is the <infodom>_SCD. Infodom refers to the Information Domain name.

When the file is being executed you have the choice to either wait till the execution is complete or proceed with the next task. Click the list box of the field provided for Wait in the Value field and select Yes or No.

Clicking Yes confirms that you wish to wait for the execution to be completed. Clicking No indicates that you wish to proceed.

Stage Data

In this section, the stage data can be populated in either the Product Processors or Other Stage tables:

- Product Processor: An entity in the Basel Regulatory Capital application that stores data from the Operational Systems of the Bank. This entity is created based on the various financial products that the bank caters to. Stage tables for Product Processors are categorized as exposures data of Product Processors. The Product Processors of all the jurisdictions are the same, except for the Islamic Banking Jurisdiction.
- Others: Data can be populated into Stage tables, besides using Product Processors, as per the respective jurisdiction.

For more information on the list of columns to be populated within each table, see the Download Specifications document.

The set of sample data to be to be populated for the following tables are listed in the worksheet available in the following location: Sample Data.

- STG_PRODUCT_MASTER
- STG_LOB_MASTER
- STG_MITIGANT_TYPE_MASTER
- STG_PARTY_TYPE_MASTER

Seeded Data

The tables are seeded in the installation as per worksheet available in the following location: Seeded Data.

9.2 Exhibit 1 - Mitigant Allocation Optimizer

The application calculates the RWA based on the allocation of Credit Risk Mitigants (CRM) mapped to each exposure using a linear programming technique to arrive at the least capital. The optimizer engine, also known as the allocation engine, built within the application allocates Credit Risk Mitigants (CRM) to each exposure. The optimizer engine takes into consideration the following functionalities while allocating Credit Risk Mitigants (CRM) to each exposure:

There are certain checks which are specific to IRB, and the others are applicable for both Standardized approach and IRB approach.

9.2.1 FIRB Minimum Collateralization Check (IRB Approach)

As per the Basel Accord, Para 296: To apply LGD, bank has to perform Minimum Collateralization check, which includes sum of the value of CRE/RRE and Other Collaterals, to the reduced exposure (after recognizing the effect of eligible financial collateral and receivables collateral). The calculated ratio must be checked for a threshold level. If it falls below the threshold level, then the collateral becomes ineligible and the entire exposure is assigned the unsecured LGD.

The following tasks are performed as part of Minimum Collateralization Check:

- Identification of mitigants for Minimum Collateralization Check

- Mitigant Minimum Collateralization Level assignment
- Identification of mitigants for EAD deduction for Minimum Collateralization Check

After these tasks are computed, the allocation engine allocates the CRM to each exposure. If any CRM mapped to an exposure is below the minimum threshold, allocation does not take place for that particular CRM to that exposure.

9.2.2 FIRB Over Collateralization Amount Adjustment (IRB Approach)

As per the Basel Accord, Para 296: Mitigants forming part of Receivables, CRE/RRE and Other Collateral are adjusted for the overcollateralization level, for the LGD assignment. For Over Collateralization amount adjustment, the following information is required:

Over Collateralization Adjustment Percentage

For each of the CRMs, forming a part of Receivables CRE/RRE and Other IRB Collateral, the CRM Value is adjusted by dividing the CRM Value by the Over Collateralization Adjustment percentage. The adjusted amount of collateral then participates in the allocation for computation of RWA.

9.2.3 Double Default Treatment (IRB Approach)

As per paragraph 284(i) & 284(ii): For hedged exposures to be treated within the scope of the double default framework, capital requirements can be calculated for a hedged exposure subject to the double default treatment (KDD).

Double default information is expected as an input from the institution at an Exposure Mitigants Mapping level. Generally, the identifier is at a mapping level for a mitigant types, for a Credit Derivative or a Guarantee mapped to an Exposure.

The Basel application calculates the double default capital based on the requirement specified in paragraph 284(i) & 284(ii).

The allocation engine allocates based on the double default capital as input.

9.2.4 Double Mitigant Treatment (Standardized Approach and IRB Approach)

You also have a choice to perform a Double Mitigant treatment where an exposure is covered by Collateral, a Guarantee, or a Credit derivative. The requirement in the form of a pre-configured rule at a Basel asset class level is to be specified by the institution. If you choose to perform a Double Mitigant treatment, then for a common portion of the exposure covered by both the mitigants, LGD of the Collateral, and PD of the Guarantee or Credit derivative is used. For the remainder, either the exposure is uncovered or any other mitigant if mapped to that exposure gets allocated. For Basel calculations, if use of Double Mitigant treatment results in a lesser RWA for an exposure, than use of a single mitigant, the allocation logic allocates the mitigant based on Double Mitigant treatment or else the allocation continues as a case for normal mitigants.

9.2.5 Allocation of Mitigants (IRB Approach and Standardized Approach)

The following are the steps for credit risk mitigation irrespective of the approach prescribed in the Basel Accord.

- The mitigant is identified as eligible or not based on the eligibility rules for CRM under simple and comprehensive approach mentioned in Basel accord. This mitigant eligibility is handled in the FCT_MITIGANTS, and EXP_MITIGANT_MAPPING table.
- All mitigants which are eligible and mapped to an exposure are then populated to the processing table where each exposure is broken down by mitigant types, which includes an additional row treating the exposure as uncovered. This is handled in the FCT_SUB_EXPOSURES table.
- Further, RW assignment or Capital computation is performed for each Collateral or Mitigant. For financial collateral, under the BIS Standardized Approach, the RW used is 0. For FIRB approach the LGD used is the LGD* computed as per the Basel guideline. For any other mitigants in the form of Guarantees or Credit Derivative, the RW or PD corresponding to Basel rating or the modeling, as applicable, is used. For Advanced Approach, institutions must give the PD or LGD data either at a mitigant level or at an exposure level, if they are able to model the PD or LGD of the exposure.
- The Pooling is performed to identify the below cases.
  - One or Many Exposure to One Mitigant
  - One Exposures to Many Mitigants
  - Many Exposures to Many Mitigants
  - One Exposure with No Mitigant

The pooling of the exposures and the mitigants are based on the exposures mapped to the mitigants, and the same mitigant mapped to other exposures. For example, in the below exposure ID and the mitigant ID mapped to each other, all of them belong to the same pool ID, as they have the mitigants shared.

Exposure ID	Mitigant ID
EXP01	MIT01
EXP01	MIT02
EXP01	MIT03
EXP02	MIT01
EXP03	MIT04
EXO04	MIT04
EXP05	MIT05

The treatment of each of the pooled cases in the optimizer engine is detailed in the following section.

One or Many Exposure to One Mitigant

The case, one or many exposures to one mitigant is treated as follows by the optimizer engine:

- First, the exposures are sorted from highest risk weight to lowest. For advanced approach the sorting is based on the capital.

- EAD amount of each exposure (post credit conversion) is determined.
- The credit risk mitigant is allocated to the exposure with the highest risk weight.
- If there is more than one exposure with the same risk weight, then the exposure with the lowest currency mismatch haircut or maturity mismatch haircut is selected for allocation. In the case of Simple Approach, these haircuts will not be applicable, and hence, the volatility haircut and the currency mismatch haircut will be considered as 0, and the maturity mismatch haircut will be considered as 1.
- Currency haircut (Hfx) is applied to the collateral if there is a currency mismatch between the exposure and collateral. Likewise, for mitigants residual maturity falling short of exposure residual maturity a maturity mismatch haircut (Hm) is applied. These haircuts are assigned based on the Basel guideline.
- The post-haircut mitigant amount is applied to the exposure based on the previous logic. The allocation engine updates the covered factor against each row for all the exposures in a pool. For any exposure the sum of covered factor across rows is equal to 1.
- Finally, the pre-mitigation EAD is broken into post-mitigation EAD net of all haircuts
- Basel rules then calculate the RWA for each row by multiplying the post-mitigation EAD by the RW or capital * 12.5 (in case of advanced approach).

Any remaining collateral amount is applied to the next transaction with the next highest risk weight and so on.

One Exposure to Many Mitigants

The case, one exposure to many mitigants is treated as follows by the optimizer engine:

- First, the EAD amount of each exposure (post credit conversion) is determined.
- The mitigant is sorted from lowest to the highest risk weight for each exposure mapped to it.
- Each mitigant forming a part of Receivables, CRE/RRE, and Other IRB Collateral is adjusted for over collateralization amount while executing foundation IRB.
- In the Foundation IRB approach, Minimum collateralization check is performed for mitigants in the form of CRE/RRE and other eligible IRB Collateral by grouping the mitigant data in the numerator divided by the available EAD amount, minus any allocated mitigant amount.
  - Financial collaterals are allocated first, and then the minimum collateralization check is performed for the other type of mitigants.
  - The result checks whether it is greater than the percentages specified in the Basel Accord.
  - If the result value is less than the check value, none of the CRE or RRE or Other eligible IRB Collaterals mapped to the exposure is eligible for allocation.
  - This check is done only once for the mitigant mapped to each exposure.
- After all the checks are done then the computation starts by calculating the covered factor for the first row which is as follows:

  f1 = (Mitigant_value * Haircut)/ EAD

  Where:

Haircut = (1 – volatilityHaircut – FOREXHaircut)*MaturityMismatchHaircut.

The haircut related to volatility, currency mismatch and maturity mismatch are as mentioned in the One or Many Exposure to One Mitigant section.

- Then, the allocation logic works out the covered factor for the subsequent rows as follows:

  f(n)= Min ((1- Already allocated covered factor), Max (fn-1,0))

- Total covered factor for an exposure = Covered Factor for the 1st Row + Covered Factor for all the subsequent rows.
- Covered Factor is Sum of all Covered amount + Uncovered amount of the mitigant upon its total EAD. For any exposure the sum of covered factor across rows is equal to 1.

Many Exposures to Many Mitigants

In the case, many exposures to many mitigants the Optimizer uses a linear programming technique for which you must define the objective functions and a set of constraints for the variables. The objective function and the constraints in the Optimizer are defined as follows:

- Objective Function: Objective Function for CRM is to Minimize RWA
- Bounds for the output:
  - Lower Bound of Covered factor is 0
  - Upper Bound of Covered factor is 1
- Exposure Constraint: Exposure Constraint checks the sum of all the allocated exposure amounts must be equal to the total exposure amount available for allocation:

  (E1*x1) + (E1*x2) + (E1*x3) + (E1*x4) = E1

  Where,

  E1= Exposure amount

  X(n)=Allocation percentages (sum of x1……xn = 1, meaning 100%)

- Mitigant Constraint: Mitigant constraint has two objectives as follows:
  - This Constraint checks whether the total amount of mitigant is used is less than or equal to the total amount of mitigant available
  - All the mitigant haircuts are applied in this Constraint.

The formula is as follows:

[{ E1 * x1 } / { (1-V-Fx1)*(Mm1) }] + [{ E2 * x2 } / { (1-V-Fx2)*(Mm2) }] + [{ E3 * x3 } / { (1-V-Fx3)*(Mm3) }] <= M1

The Mitigant Constraint Formula table is provided below:

Exposure Amount	E1	E2	E3
Mitigant Amount	M1	M1	M1
Volatility Haircut	V	V	V

FOREX Haircut	Fx1	Fx2	Fx3
Maturity Mismatch	Mm1	Mm2	Mm3
Covered Factor	x1	x2	x3

- Minimum Collateralization Constraints are as follows:
  - Mitigants grouped for Deduction for Minimum Collateralization Check > 0
  - Mitigants grouped for Minimum Collateralization Check < 0
- Double Mitigant Constraint: Double Mitigant Constraint is similar to Mitigant Constraint the only difference being that, Mitigant Constraint is performed across one Mitigant ID however Double Mitigant Constraint is performed across the second Mitigant ID that of the Guarantee.
- Allocation engine updates the covered factor for each exposure based on the previous objective function and the constraints defined by you.
- Total covered factor for an exposure = Covered Factor for all the exposure mitigant combination pertaining to that exposure.
- Covered Factor is Sum of all Covered amount + Uncovered amount of the mitigant upon its total EAD. For any exposure the sum of covered factor across rows is equal to 1.

In case of exposure and mitigant having the same risk weight, the covered factor might get allocated to either the uncovered standard mitigant type, or the eligible mitigant, based on the highest mitigant value post haircut.

9.3 Exhibit 3: Currency Conversion

S`ETUP_MASTER table is a setup table, used to provide the setup information of a Run. It can be used to set the default values of Rate Data Source Code or Standard Currency Code. For currency conversion the rate data source and standard currency are important values. If the rate data source value is missing, then BLOOMBERG is by default considered to determine the Rate Data Source Code from DIM_ORG_STRUCTURE table during currency conversion. If the Standard Currency code values are not provided or are missing, then USD is used as the destination currency code from DIM_ORG_STRUCTURE table during currency conversion. This is column under DIM_ORG_STRUCTURE table mapped to these default values are as follows:

V_COMPONENT_CODE	V_COMPONENT_DESC	V_COMPONENT_VALUE
DEFAULT_FX_RATE_SRC	Default Rate Data Source Code	BLOOMBERG
STD_CCY_CD	Standard Currency Code	USD

Rule Reporting Currency Code Assignment is set to 'USD' out of box, but can be modified to any other currency. The reporting currency selection can be done in the Run execution windows, if the Run is executed from the Run Execution Window.

Currency conversion is performed on multiple tables to convert the values from its natural currency to reporting currency. The steps which are performed for the currency conversion are as follows:

- The table Stage Forward Exchange Rates (STG_FORWARD_EXCHG_RATES) stores the details about the pair of currencies and the corresponding exchange rate to perform the same with the extraction date for which the forward exchange rate is provided. This table also contains the information about the data source from which the exchange rates are quoted and the tenor which is used to identify the period for which the forward exchange rate is applicable for.
- The data from this table is populated to Exchange Rates fact table through the common batch which is executed in the beginning. The initial data populated hereby contains the default run Skey which is set to minus 1. Only the records with tenor 0 are used for the purpose of currency conversion for which the spot exchange rate is required.
- After populating the data in the table, in each Run, all the exchange rates are updated based on the conditions at the time of execution to account for the increase or decrease in the exchange rates. A Rule is used which updates the exchange rates and populates the corresponding run Skey which is then used for currency conversion in that particular Run. The exchange rates are then moved into the table wherever currency conversion is required. This is performed in the Product Processor data population step.
- Different legal entities can use the exchange rates quoted by different data sources. Hence, the column which contains the information about the data source in the table Exchange Rates is compared with the required data source for a legal entity stored in the Org Structure Dimension (DIM_ORG_STRUCTURE) table.
- After the exchange rate population into the required fact tables, the currency conversion rules are executed which take the values stored in amount columns in natural currency, multiply them with the exchange rate and populate to the reporting currency amount columns.

For mitigants table, the exchange rate that is used for currency conversion is the exchange rate for the entity of the exposure which the mitigant belongs to. The list of tables and corresponding columns where currency conversion is carried out is available in the following OTN Documentation Library location:

Currency Conversion Tables and Columns

9.4 Exhibit 4: FSI_CAPITAL_STANDARD_MAPPING Table Mapping

As a part of Basel Capital Structure, information stored in Capital Standard Mapping (FSI_CAPITAL_STANDARD_MAPPING) table is a mapping of GL capital line items with seeded data in Standard Accounting Head Dimension table (DIM_STD_ACCT_HEAD). This is also required for all the computed fields, so that the computation happens in the application for those standard accounting heads.

For all jurisdictions this mapping must be present which is elaborated in the following worksheet, available in the following OTN Documentation Library location:

FSI CAPITAL STANDARD MAPPING

9.5 Exhibit 5: Data Expectations for few of the Basel Products

9.5.1 Equity Exposures Data Expectations

Any exposure which must be treated under Equity Asset Class is expected to be provided in Stage Investments (STG_INVESTMENTS).

For mandate-based approach in equity Investment in funds when there are no entries in STG_FUND_UNDERLYING_COMPOSITION, application assigns Fall Back Approach to the remaining exposures.

All the required attributes pertaining to Equity Exposures are expected to be provided in Stage Investments (STG_INVESTMENTS) and any Instrument Specific attributes in Instrument Contract Dimension table (DIM_INSTRUMENT_CONTRACT).

9.5.2 Securitization Exposures Data Expectations

Any exposure which must be treated under Securitization Framework is expected to be provided in different product processors depending on the product type.

- If the exposure is to a securitization tranche, retained tranche or retained portion of the pool, it is expected in Stage Investments (STG_INVESTMENTS), with details of the pool ID and the tranche ID to which the exposure belongs to.
- If the exposure is a facility like liquidity facility or servicer cash advance facility, it is expected in Stage Commitment Contracts (STG_COMMITMENT_CONTRACTS), with the pool ID to which the facility is provided to. For any particular tranche level calculations required for SFA/ SSFA process, this must be created as a dummy tranche, and provided with details based on the seniority in the cash flows. In case of the commitment contract, which is issued under a credit line facility, the corresponding entry in Credit Line Dimension table (DIM_CREDIT_LINE) is required, with the mapping of the commitment contract to the credit line.
- If the exposure is a credit protection in the form of guarantee, it is expected in Stage Guarantees (STG_GUARANTEES), with the pool ID and the tranche ID to which the credit protection is provided to.
- If the exposure is a credit protection in the form of credit derivatives, it is expected in Stage Credit Derivatives (STG_CREDIT_DERIVATIVES), with the pool ID to which the credit protection is being provided to. For any particular tranche level calculations required for SFA/ SSFA process, this must be created as a dummy tranche, and provided with details based on the seniority in the cash flows.

The pool level aggregate information data capture (Securitization Pool table - STG_SECURITIZATION_POOL)) and the tranche level information data capture (Securitization Tranche table – STG_SECURITIZATION_TRANCHE)) remain the same as in previous releases. The pool's detailed underlying information are captured in the Stage Underlying Exposures table (STG_UNDERLYING_EXPOSURES) for an investor.

In the case of underlying exposures data capture (STG_UNDERLYING_EXPOSURES), it is currently expected that for each exposure, the pool underlying has to be provided by creating a dummy exposure in the Underlying Exposures table with the Pool ID as the Exposure ID, and the Parent Account ID as the Exposure ID to which this pool detail belongs to. And further pool underlying exposures is created by having the Parent Account ID as the Dummy Pool Exposure ID.

Any Instrument Specific attributes are expected in Instrument Contract Dimension table (DIM_INSTRUMENT_CONTRACT).

9.5.3 Securities Financing Transaction Related Exposures Data Expectations

The Securities Financing Transaction (SFT) related exposures were expected in Stage Repo Contracts (STG_REPO_CONTRACTS), and all their related collateral were expected in Stage Underlying Exposures (STG_UNDERLYING_EXPOSURES) till 8.0.3 release of Basel application.

Starting from 8.0.4 release, there are changes to the capture of the collateral related to the SFT.

- The collateral which the bank has received with respect to the SFT transactions are captured in the Stage Mitigants (STG_MITIGANTS) table, with the SFT Exposure mapped to the collateral received using the Stage Account Mitigant Map (STG_ACCOUNT_MITIGANT_MAP) table.
- The collateral which the bank has placed with respect to the SFT transactions are captured in the Stage Placed collateral (STG_PLACED_COLLATERAL) with the SFT Exposure mapped to the collateral placed using the Stage Account Placed Collateral Map (STG_ACCT_PLACED_COLL_MAP) table.

Any Instrument Specific attributes are expected in Instrument Contract Dimension table (DIM_INSTRUMENT_CONTRACT)

9.5.4 Account Mitigant Mapping Data Expectations

Any account in the product processors, mapped to the various mitigants received were captured in the Stage Exposure Mitigant Mapping (STG_EXP_MITIGANT_MAPPINGS) till 8.0.4 release of Basel application.

Starting from 8.0.5 release, this is expected to be provided in the Stage Account Mitigant Map (STG_ACCOUNT_MITIGANT_MAP) table

9.5.5 Commitment Contract Data Expectations

Any commitment contracts issued by the bank were initially expected in Stage LC Contracts (STG_LC_CONTRACTS) till 8.0.4 release of Basel application.

Starting from 8.0.5 release, any exposure which a commitment contract is issued by the bank, is expected to be provided in the Stage Commitment Contracts (STG_COMMITMENT_CONTRACTS).

In the case of the commitment contracts issued under a credit line facility, then, the linkage of the credit line to the contract is required to be provided. The credit line is expected to be populated into the Dimension Credit Line (DIM_CREDIT_LINE) table.

9.5.6 Credit Line Issued Data Expectations

Any credit line, issued by the bank were initially expected in Stage LC Contracts (STG_LC_CONTRACTS) till 8.0.4 release of Basel application.

Starting from 8.0.5 release, any exposure which is a line of credit issued by the bank, is expected to be provided in the Stage Credit Line Details (STG_CREDIT_LINE_DETAILS) along with entries in the Dimension Credit Line (DIM_CREDIT_LINE) table.

The credit line table will hold information with respect to all the lines of credit issued by the bank. The lines of credit can be drawn for various products like Credit Card (corporate credit card issued to various employees under a credit line for that corporate), Loan commitments (loan issued to the customer as part of a credit line issued to that customer) and so on. This table will hold all the information related to the credit line, and any undrawn portion related to that credit line.

The drawn portion of the credit line, or the portion which has been earmarked for a specific product like credit card, will be part of the corresponding product processor (STG_CARDS, in this example), with the credit line code populated. And under that particular product, there can be both the drawn and undrawn portion, which will be captured in the same product processor (STG_CARDS, in this example).

The undrawn portion of the credit line will be the one which will be treated as line of credit, and will receive the corresponding Basel guideline specific treatment.,

9.5.7 Forward Contract Data Expectations

Any forward agreement or contract were initially expected in Stage Futures (STG_FUTURES) till 8.0.4 release of Basel application.

Starting from 8.0.5 release, any exposure which is a forward agreement, is expected to be provided in the Stage Forwards (STG_FORWARDS).

9.5.8 Asset Sold Data Expectations

Any assets sold with recourse were initially expected in Stage Loan contracts (STG_LOAN_CONTRACTS) till 8.0.4 release of Basel application.

Starting from 8.0.5 release, any exposure which is an asset sold, is expected to be provided in the Stage Assets sold (STG_ASSETS_SOLD). This will include all the assets sold by the bank. And the assets sold, for which the bank is retaining recourse will be part of the regulatory capital calculations, and that will be taken up for the Basel related processing.

9.5.9 Spot Forex Data Expectations

Any forex transaction, which is a spot were initially expected in Stage Investments (STG_INVESTMENTS) till 8.0.4 release of Basel application.

Starting from 8.0.5 release, any forex transaction which is a spot contract, is expected to be provided in the Stage Forex Contracts (STG_FX_CONTRACTS).

Note: All other forex transactions are expected to be populated in their respective derivative tables (Currency Swap in STG_SWAPS_CONTRACTS and so on).

9.5.10 Underlying Exposures for Derivatives

The underlying exposures for derivatives are now being captured through STG_UNDERLYING_MASTER.

The Data expectation for the underlying relationship for the derivatives is as follows:

- Case 1 – Both Parent derivative contract and underlying of the derivative are instruments:
  - This will involve usage of the two tables for capture of the underlying information – STG_UNDERLYING_MASTER/ DIM_UNDERLYING and STG_UNDERLYING_DTL

- The parent account will be in one of the derivative contract, and the relationship between the parent and the underlying will be captured in the derivative tables as Underlying Instrument Code or the Underlying code
- DIM_UNDERLYING will be used to store the static information about the underlying instruments, and STG_UNDERLYING_DTL will be used to store any variable information about the underlying instruments.
- Data for STG_UNDERLYING_DTL
  - The STG_UNDERLYING_DTL can support the relationship reference of 1 parent to 1 underlying or multiple underlying instruments.
  - In this, the underlying instrument code will be provided as v_instrument_code and the parent's instrument code will be provided as v_contract_instrument_code
  - Both these instrument codes will have reference in dim_instrument_contract.

- Case 2 – If Parent derivative contract or underlying of the derivative are not instruments but instead are accounts or exposure:
  - This will involve usage of a single table for capture of the underlying information – STG_UNDERLYING_EXPOSURES.
  - The parent account will be in one of the derivative contract, and the relationship between the parent and the underlying will be captured in the underlying table as the parent exposure ID.
  - Data for STG_UNDERLYING_EXPOSURES.
    - The STG_UNDERLYING_EXPOSURES can support the relationship reference of 1 parent to 1 underlying or multiple underlying instruments.
    - In this, the underlying exposure will be provided as v_exposure_id and parent's exposure ID in v_parent_exposure_ID.
    - Both these exposure ID's will have reference in dim_exposure.

9.5.11 Underlying Exposures for CIU

The underlying exposures for CIU are now being captured through STG_UNDERLYING_MASTER.

The following is the data flow of underlying exposure of CIU:

- Case of Invested Mutual Fund
  - Invested portion will be in STG_INVESTMENTS
  - Any Fund related information which do not change will be in STG_INSTRUMENT_CONTRACT_MASTER
  - Any Fund related information which changes frequently will be in STG_INTRUMENT_CONTRACT_DTL
  - The composition of the fund will be in STG_FUND_UNDERLYNG_COMPOSITION
  - The assets of the fund will be in STG_FUND_CIS_COMPOSITION

9.6 Exhibit 6: Design Changes

9.6.1 Design Changes for Handling Organization Structure

DIM ORG STRUCTURE flattening

From Release 8.1.0.0 onwards, for a selected Org Entity and the mode of execution either Solo or Consolidation, the application flattens the Org entries from DIM_ORG_STRUCTURE into a structure as follows.

Example for Dim Org Structure Data

Dim Org Account	Dim Org Parent
A1	A2
A2	A3
A3	A4

If you select, A3 as the Entity and Consolidation as execution type, the following data is populated in the flattened table:

Entity	Parent Entity	Consolidation Parent	Heir Level
A3	A3	A3	0
A3	A2	A3	1
A2	A1	A3	2

All the entities from Entity column from Consolidation Parent = A3 is picked up and populated into FCT_ENTITY_INFO table.

This step is done to avoid population of all unnecessary org structure data into FCT_ENTITY_INFO and later it is deleted once they are unused.

10 Annexure B: Technical Details

10.1 Download Specifications

For information, see Download Specifications.

10.2 Regulatory Definition Setup for Creating a Run

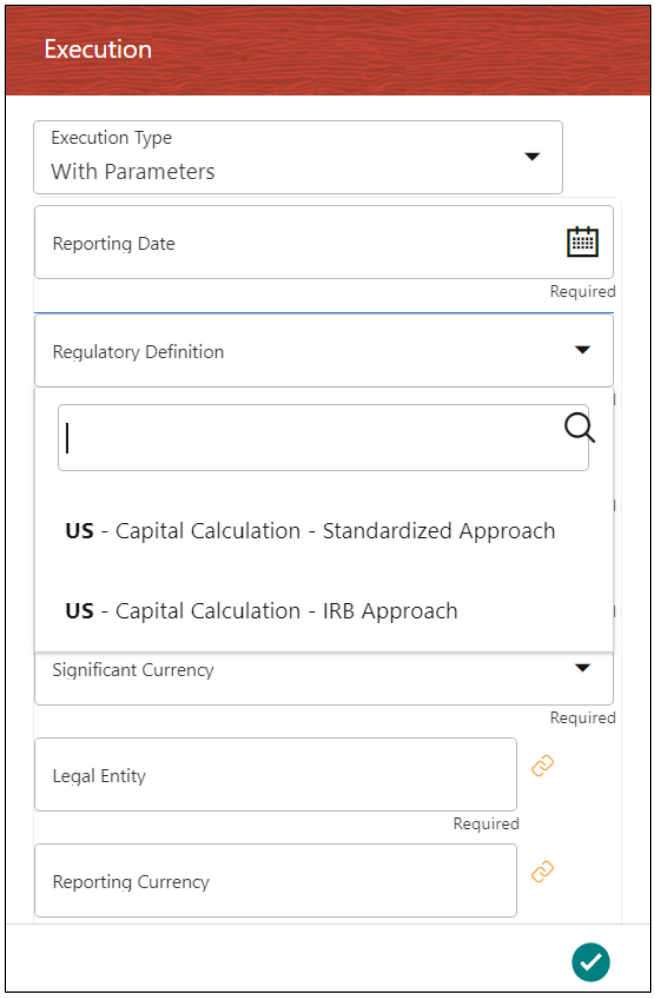
The regulatory definitions are created through Regulatory Calculation Definition UI. Approaches selected here and options chosen for Methods/parameters will be populated in FSI Run Parameter (FSI_RUN_PARAMETER) table during execution. In this table, selected options are updated against the column names. Regulatory Definition Details provides information on:

- Approach wise Methods, Parameters, and options available
- Physical column details from the Fsi Run Parameter table
- Physical code used for the RMO options.

10.2.1 Selecting Run Definition For Execution

The Run Definition can be selected by searching or scrolling in the “Regulatory Definition” field while triggering a Run Execution.

Figure 51: Run Parameters



10.2.2 Importing Run Definitions

To import the DMP file, perform the following steps:

1. Rename or delete the existing OOB definitions in the setup.
2. Navigate to the directory path `$FIC_HOME/utility/Migration/conf/`.
3. Create a copy of the file `OBJECTMIGRATION_template.xml` as `OBJECTMIGRATION.xml` and provide appropriate values for the parameters as per the following table:

Parameter	Value
$USERID$	Application User ID
$LOCALE$	Locale Information
$INFODOM$	Information Domain
$FOLDER$	Folder or Segment where you wish to import the definition
MODE	IMPORT

Parameter	Value
$FILE_NAME$	BASEL_RUN_DEFINITIONS_BIS
MIGRATION_CODE$	11

4. Place the required codes of the definitions that you want to import within the OBJECTS tag.

   Example: `<OBJECT Code="1000" Type="4003" />`

   To find the object codes, you must perform the following steps:

   a. Execute the following query in the atomic schema to check the existing `N_RUN_PARAM_DEFN_ID` that are in use:

      ```
      SELECT * FROM FSI_RUN_PARAM_DEFINITION_TL;
      ```

   b. Use the Object Code in OBJECTMIGRATION.xml which does not exist in N_RUN_PARAM_DEFN_ID column.

      > **NOTE:**
      > The type must have the value 4003 which represents Regulatory Calculation Definitions

5. Create the following folder structure in the path `$FIC_HOME/utility/Migration:`

   `metadata/restore`

6. Copy the dump file from the installer and place it in the directory path `$FIC_HOME/utility/Migration/metadata/restore`

7. Execute the following script located in the directory path `$FIC_HOME/utility/Migration/bin/:`

   `./ObjectMigration.sh`

Check the availability of definitions in the UI. Migration logs are available in the directory path `$FIC_HOME/utility/Migration/logs/migration.log`.

10.2.3 Exporting Definitions

1. Navigate to the directory path $FIC_HOME/utility/Migration/conf/.
2. Create a copy of the file OBJECTMIGRATION_template.xml as OBJECTMIGRATION.xml and provide appropriate values for the parameters as per the following table:

Table 54: Parameters and their values

Parameter	Value
$USERID$	Application User ID
$LOCALE$	Locale Information
$INFODOM$	Information Domain
$FOLDER$	Folder or Segment of the existing definition
MODE	EXPORT
$FILE_NAME$	Name of the file to be exported without the .dmp extension

Parameter	Value
MIGRATION_CODE$	11

3. Place as many unique codes as per the number of definitions you wish to export.

   For example, `<OBJECT Code="1000" Type="4003" />`

   To find the object codes, perform the following steps:

   a. Execute the following query in the atomic schema for run definitions:

   ```
   SELECT * FROM FSI_RUN_PARAM_DEFINITION_TL;
   ```

   N_RUN_PARAM_DEFN_ID is the object code and value of Type is 4003.

   b. Execute the following query in the atomic schema for portfolio definitions:

   ```
   SELECT * FROM FSI_PORTFOLIO_MASTER;
   ```

   N_PPORTFOLIO_ID is the object code and value of Type is 4002.

   c. Execute the following query in the atomic schema for optimizer definitions:

   ```
   SELECT * FROM FSI_BASEL_OPTIMIZER_MODEL_TL;
   ```

   N_MODEL_ID is the object code and the value of Type is 4001.

4. Execute the following script in the directory path `$FIC_HOME/utility/Migration/bin:`

   ```
   ./ObjectMigration.sh
   ```

   The Dump is available in the directory path `$FIC_HOME/utility/Migration/metadata/archive`.

   The migration logs are available in file `migration.log` in the directory path `$FIC_HOME/utility/Migration/logs.`

10.2.4 BackDated Execution - Run Execution Parameter

In the previous releases of the application, when you execute a Capital Calculation Run, the application considered only the dimensions that have the Latest Record Indicator (LRI) as Y.

You can use the BackDated Execution feature to provide BackDated reporting Date as a Run Execution Parameter. Then the application considers only those dimensions for execution that were active during that particular period. You can use backdated execution for Capital Calculation and Post Crisis Reforms Runs.

You must perform a set of configurations to enable the BackDated Execution feature. For more information, see Oracle Financial Services Analytical Applications Infrastructure User Guide.

You must also update the SCD Mode in the DMT Configurations window to enable backdated execution for these Runs. For more information on the SCD Mode for DMT Configurations, refer to the Oracle Financial Services Analytical Applications Infrastructure User Guide.

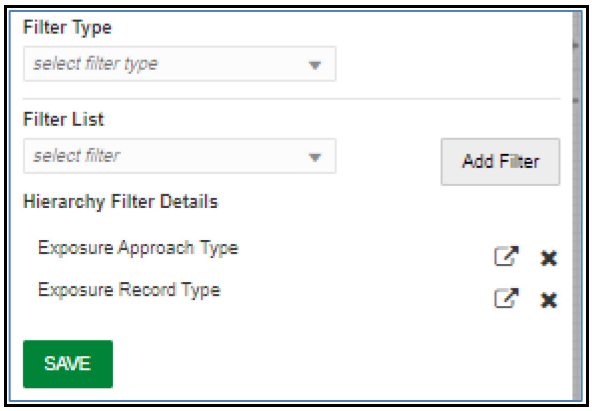
10.3 Using Process Modelling Framework

10.3.1 Basel CAP PACK Process Modelling Framework Filters and Decision Rules

PMF provides an option to apply filter hierarchies at the Run and/or Business Pipeline level. These filters are similar to the regular filter hierarchies used in rules. They get appended to each task in that business pipeline or Basel Run at run-time based on the applicability of the filter to that task.

In 8.1, CAP PACK makes use of two filter hierarchies, which apply through PMF. The filter hierarchies used are follows:

Figure 52: Filter Hierarchies



10.3.1.1 Exposure Approach Type

This hierarchy is based on the underlying seeded table FSI_CAP_APPROACH_TYPE_MASTER.

Used mainly to filter data in processing based on the approach selected by the user in the Advanced Run. Approach types are Standardized, Foundation IRB and Advanced IRB. Further, the approach is broken into the matrix provided in the following table:

Table 55: Exposure Approach Type

V_APPROACH_TYPE	V_APPROACH_TYPE_DESC
OTH	Others
NSSTD	Non Securitisation Standardized
NSFIRB	Non Securitisation FIRB
NSAIRB	Non Securitisation AIRB
SECSTD	Securitisation Standardized
SECIRB	Securitisation - Internal Rating Based Approach
MRSA	Market Risk Standardised Approach
MRIMM	Internal Models Approach

V_APPROACH_TYPE	V_APPROACH_TYPE_DESC
ORBIA	Basic Indicator Approach (BIA)
ORSA	Standardised Approach (SA)
ORASA	Alternative Standardised Approach (ASA)

For a task, if this table is part of the used tables list, then the filter chosen in the calling business pipeline or run pipeline is applicable to it. Used tables can be either part of the Dataset (for Rules) or Mapped/NonMapped column (for T2Ts).

10.3.1.2 Exposure Record Type

This hierarchy is based on the underlying seeded table FSI_CAP_RECORD_TYPE_MASTER. Used mainly to filter data of each portfolio for processing within or across portfolios. Depending upon the portfolio(s) the user picks as part of the run, the record type decides the type of data to be processed by each task in each portfolio. Record types that are supported is detailed in the following table:

Table 56: Type of Exposure Records

V_RECORD_TYPE	V_RECORD_TYPE_DESC
INV_NON_SEC_EXP	Investment Non Sec Exposure
INV_NON_SEC_ULY	Investment Non Sec Underlying
INV_SEC_ULY	Investment Sec Underlying
BNK_NON_SEC_EXP	Banking Non Sec Exposure
BNK_NON_SEC_ULY	Banking Non Sec Underlying
BNK_SEC_ULY	Banking Sec Underlying
DRV_NON_SEC_EXP	Derivatives Non Sec Exposure
DRV_NON_SEC_ULY	Derivatives Non Sec Underlying
DRV_SEC_ULY	Derivatives Sec Underlying
SFT_NON_SEC_EXP	SFT Non Sec Exposure
SFT_NON_SEC_ULY	SFT Non Sec Underlying
SFT_SEC_ULY	SFT Sec Underlying
OTH_PLACED_COLL_EXP	Other Placed Collateral Exposure
SFT_PLACED_COLL_EXP	SFT Placed Collateral Exposure
MITIGANT	Mitigant
SFT_MITIGANT	SFT Mitigant
OTH	Others

A simplified example of such a case can be Investment portfolio and Banking Portfolio for which data sources, besides other sources, are as follows:

- Securitization:

  - Product Processor Tables [main exposures]
  - From PP tables to FSI_CAP_INVESTMENT_EXPOSURES.
  - STG_UNDERLYING_EXPOSURES [Investment underlying exposures which are banking products and investment products]
  - From STG_UNDERLYING_EXPOSURES to FSI_CAP_BANKING_EXPOSURES.
- Banking Portfolio:
  - Product processor Tables [main exposures]
  - From PP tables to FSI_CAP_BANKING_EXPOSURES.

If the user chooses banking and investment portfolios together in a run, the data movement is as per the following tables:

Table 57 Data Movement for Banking in a Run

Banking				
MAIN EXPOSURE TYPE	SOURCE	ULY EXPSOURE TYPE	TARGET	V_RECORD_TYPE
BANKING	PP TABLES		FSI_CAP_BANKING_EXPOSURES	BNK_NON_SEC_EXP

Table 58 Data Movement for Investment Portfolios in a Run

Investments				
MAIN EXPOSURE TYPE	SOURCE	ULY EXPSOURE TYPE	TARGET	V_RECORD_TYPE
INVESTMENT	PP TABLES		FSI_CAP_INVESTMENT_EXPOSURES	INV_NON_SEC_EXP
INVESTMENT	STG_UNDERLYING_EXPOSURES	BANKING	FSI_CAP_BANKING_EXPOSURES	INV_NON_SEC_ULY
INVESTMENT	STG_UNDERLYING_EXPOSURES	INVESTMENT	FSI_CAP_INVESTMENT_EXPOSURES	INV_NON_SEC_ULY

When banking and investments both execute, the record type filter helps processing exposures as follows:

- Banking Portfolio:
  - Only those exposures, which have record type as BNK_NON_SEC_EXP in FSI_CAP_BANKING_EXPOSURES.
- Investment Portfolio:

- Exposures, which have record type as INV_NON_SEC_EXP and INV_NON_SEC_ULY in FSI_CAP_INVESTMENT_EXPOSURES.
- Exposures, which have record type as INV_NON_SEC_ULY in FSI_CAP_BANKING_EXPOSURES.

The steps to apply filters at Run and Business Pipeline levels are detailed in OFS Analytical Applications Infrastructure User Guide.

10.3.1.3 Execution and Decision Rules

PMF has a capability to allow the flow of execution to follow a certain path while running a batch. The decision to include/exclude components in a user-defined run is based upon the Run Management Options. This allows the user to manage and report data for only those components, which the user has opted through the Basel Configuration > Run Management screen.

Based upon the selections made in the configuration screen, a table FSI_CAP_RUN_EXE_PAREMETERS is updated with the answers to the questionnaire.

A simple example can be of which portfolios the user has opted. If the user wishes to execute banking and investments only, then a Basel configuration is created through run management with this questionnaire. This configuration is selected during run execution.

10.3.1.4 Evaluation of Execution Rule

The questionnaire data is captured and pushed into the table FSI_CAP_RUN_EXE_PAREMETERS.

The execution rule 'Basel Execution Approach Assignment' reads the data from this table and assigns the values to respective PMF variables. The following image shows the rule Basel Execution Approach Assignment:

Figure 53: Execution Rule - Basel Execution Approach Assignment

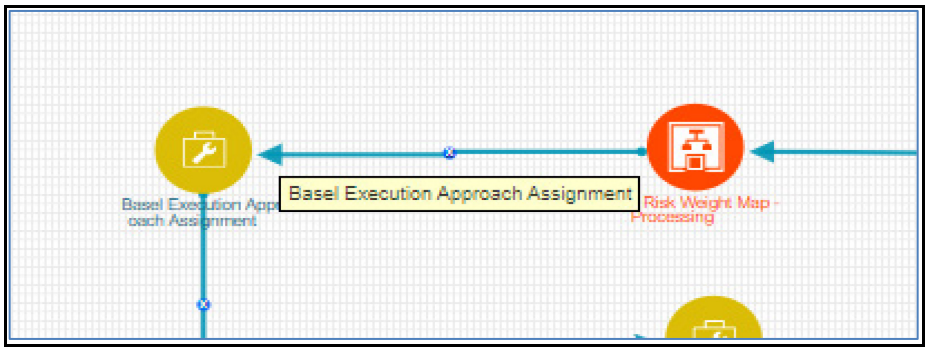
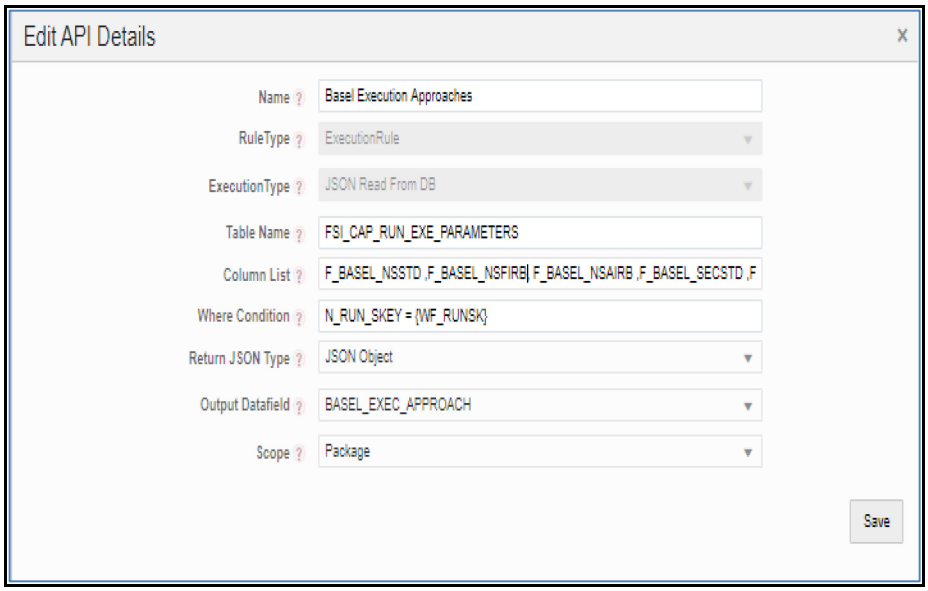


Figure 54: Edit API Details Window



10.3.1.5 Evaluation of Decision Rule

The variables which are values are assigned in the execution rule, are evaluated in the respective transition lines for each applicable component. If the value matches with expected value in the transition line, then that path is taken.

Figure 55: Evaluation of Decision Rule

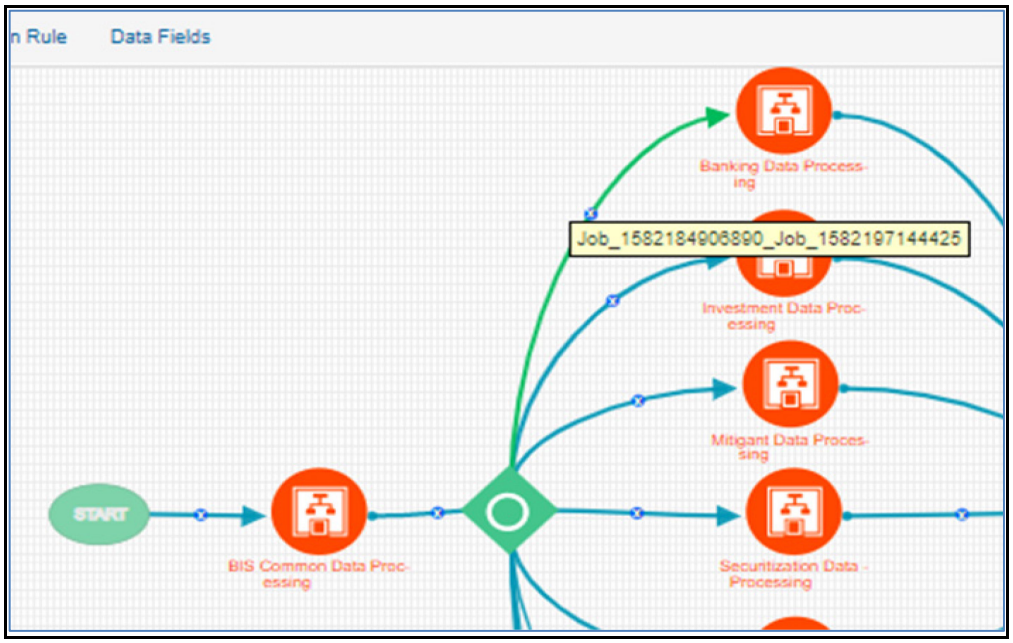


Figure 56: Edit Transition

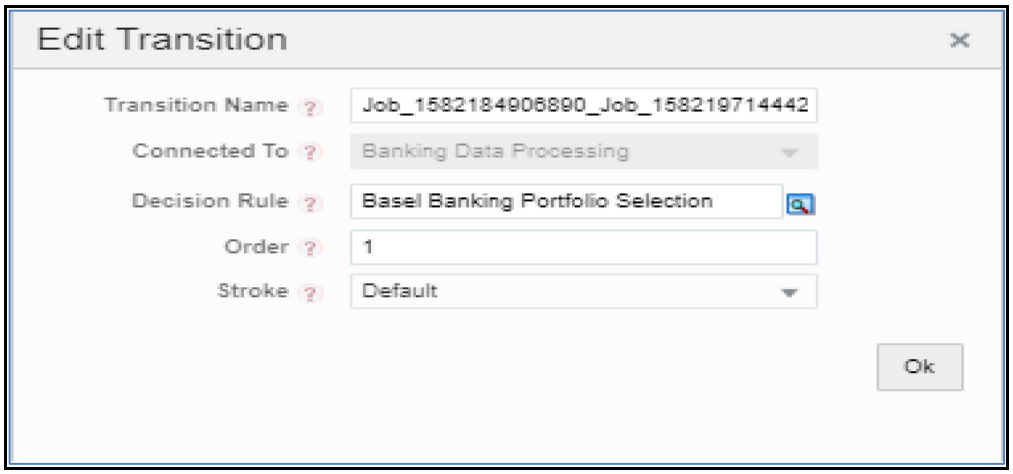
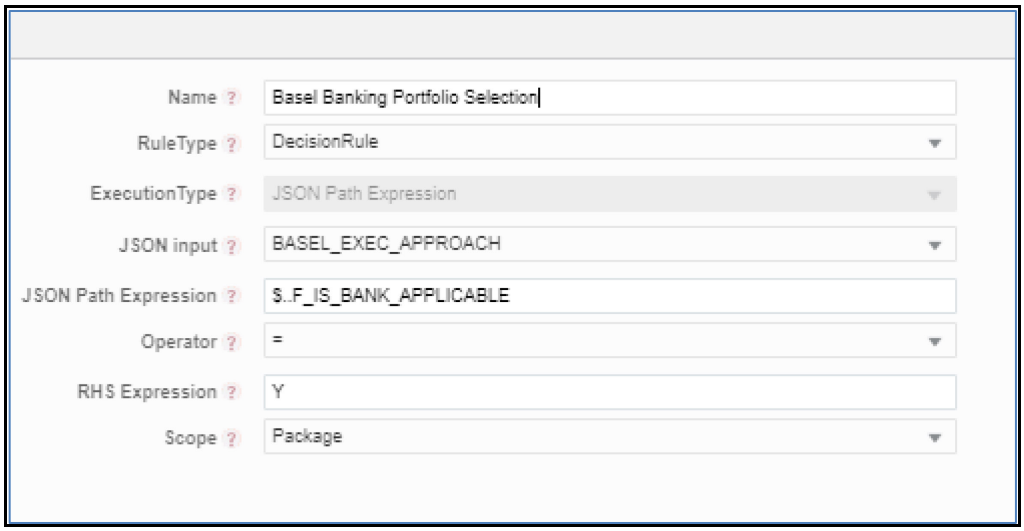


Figure 57: Edit Decision Rule



10.3.1.6 Deprecation of Uncovered Record Creation DT and New Logic

The DT, Pop_Uncovered_Mitigant that creates uncovered exposure records in FCT_SUB_EXPOSURE table is deprecated and is replaced with three T2Ts as mentioned as follows:

For the effective optimization of the mitigants, the application used to create a replica of the exposures, with the standard mitigant type as Uncovered. This used to happen with the DT POP_UNCOVERED_MITIGANT.

To handle the revised data flow of processing, this is replaced by three T2Ts as follows:

- **T2T_FSI_CAP_NET_POOL_UNCOV_SUB_EXPOSURES**

  This T2T creates and inserts one uncovered exposure in FSI_CAP_SUB_EXPOSURES for each nettable pool account from FSI_CAP_NETTABLE_POOL.

- **SUB_EXPOSURES_BANKING_UNCOV_DATA_POP**

  This T2T creates and inserts one uncovered exposure in FSI_CAP_SUB_EXPOSURES for each exposure from FSI_CAP_BANKING_EXPOSURES.

- **SUB_EXPOSURES_INVESTMENT_UNCOV_DATA_POP**

  This T2T creates and inserts one uncovered exposure in FSI_CAP_SUB_EXPOSURES for each exposure from FSI_CAP_INVESTMENT_EXPOSURES.

10.3.1.7 Reuse of PMF Process for Underlying or Placed Collateral Data Processing

Investment portfolio requires banking and derivative underlying for its processing and calculations apart from investment exposures.

The banking and derivative underlying exposures must get the respective portfolio treatment (Risk weighting, AD and so on) while being processed under investment portfolio.

To achieve the above, investment portfolio pipeline calls banking portfolio and derivative portfolio pipeline to process the respective underlying and then use the processed or calculated attributes of these underlying to complete investment processing.

Hence investment portfolio reuses the complete Banking and Derivative pipeline (PMF process).

These pipelines are called only for the respective underlying by applying proper process filter on record type for underlying. The record type values can be found in FSI_CAP_RECORD_TYPE_MASTER. The process filter will allow only underlying records to be processed when called from the investment pipeline.

The record type process filter used are as follows:

- BNK_NON_SEC_ULY in Banking pipeline.
- DRV_NON_SEC_ULY in Derivative pipeline

Securitization Portfolio calls Banking portfolio pipeline from within to process non securitized banking underlying exposures which are part of securitized pool and are required for overall processing of the securitization portfolio. The banking pipeline is called with appropriate record type process filter to process only banking underlying exposures.

The record type process filter used is BNK_SEC_ULY in Banking pipeline.

Derivative portfolio and SFT portfolio pipelines call Mitigant pipeline from within to provide mitigant treatment (eligibility, mitigant risk weight and haircut) to their placed collaterals. The mitigant pipeline is called with appropriate record type process filter to process only placed collaterals.

The record type process filter used are follows:

- OTH_PLACED_COLL_EXP in Mitigant pipeline called in Derivative portfolio pipeline.

- SFT_PLACED_COLL_EXP in Mitigant pipeline called in SFT portfolio pipeline.

10.4 Data Transformation Details for Portfolio or Module

This section lists the Data Transformation (DT) details for each Portfolio or Module.

See Oracle Financial Services Basel Data Transformation Details document for more details.

10.4.1 DT Details - Banking

Table 58: List of Data Transformations for Banking

DT TASK NAME	PROCESS CODE	PROCESS NAME
Bnk_Map_Ret_Exp	PMFBNK006	BNK_REGULATORY_RETAIL_PORTFOLIO
Bnk_Unrated_Exp_RW_Rat_Asses	PMFBNK013	BNK_ISSUE_ISSUER_ASSESSMENT
Bnk_Issue_Issuer_Assessment	PMFBNK013	BNK_ISSUE_ISSUER_ASSESSMENT

10.4.2 DT Details - Investment

Table 59: List of Data Transformations for Investments

DT TASK NAME	PROCESS CODE	PROCESS NAME
Inv_Ind_Mat_Chk_CE_CR_STD	PMFINV011	INV_PRE_CRM_EAD_COMPUTATION_STD
Inv_Unrated_Exp_RW_Rat_Asse	PMFINV017	INV_INV_ISSUE_ISSUER_ASSESSMENT
Inv_Issue_Issuer_Assessment	PMFINV017	INV_INV_ISSUE_ISSUER_ASSESSMENT

10.4.3 DT Details – Derivative

The following table details the data transformation for derivatives and its details:

Figure 60: Data Transformation Details for Derivatives

DT TASK NAME	PROCESS CODE	PROCESS NAME
Drv_Unrated_Exp_RW_Rat_Asses	PMFDRV021	DRV_ISSUE_ISSUER_ASSESSMENT
Drv_Issue_Issuer_Assessment	PMFDRV021	DRV_ISSUE_ISSUER_ASSESSMENT
Drv_Mult_Assessment_SCP	PMFDRV043	SOLD_CREDIT_PROTECTION_DATA_PROCESSIN G
Drv_Mult_Assessment_SCP	PMFDRV056	SOLD_CREDIT_PROTECTION_DATA_PROCESSIN G_IRB
SCP_BCP_Offset_Mapping_for_Deriva tives	PMFDRV105	LR Written Credit Derivatives Related Exemptions

10.4.4 DT Details - Secured Financial Transactions (SFT)

The following table lists the data transformations for SFT and its details:

Figure 61: Data transformation details for SFT

DT TASK NAME	PROCESS CODE	PROCESS NAME
Sft_Issue_Issuer_Assessment	PMFSFT013	SFT_ISSUE_ISSUER_ASSESSMENT
Sft_Unrated_Exp_RW_Rat_Asses	PMFSFT013	SFT_ISSUE_ISSUER_ASSESSMENT
LR_Add_On_Amount_Calculation_for_SFT	PMFSFT068	EU - LR SFT Exposure Measure Calculation

10.4.5 DT Details – Securitization

Table 62: DT details securitization

DT TASK NAME	PROCESS CODE	PROCESS NAME
Sec_Pool_Param_Assignmnt	PMFSEC002	SEC_POOL_PARAMETER_ASSIGNMENT
Sec_Exp_Cr_Enhs	PMFSEC005	SEC_TRANCHE_CREDIT_ENHANCEMENT_CALCULATIONS
Subrdntd_Fndd_Amt_Pop	PMFSEC005	SEC_TRANCHE_CREDIT_ENHANCEMENT_CALCULATIONS
Upd_Pool_Trnch_Param_Exp	PMFSEC008	SEC_POOL_TRANCHE_PARAMETERS_UPDATE_EXPOSURES
Mult_Assessment_Tranche	PMFSEC012	SEC_MULTIPLE_ASSESSMENT
Multiple_Assessment_Sec	PMFSEC012	SEC_MULTIPLE_ASSESSMENT
Avg_Exs_Sprd	PMFSEC014	SEC_INTERPOLATED_RISK_WEIGHT_AND_AVG_EXS_SPRD
Sec_Interpolated_RW	PMFSEC014	SEC_INTERPOLATED_RISK_WEIGHT_AND_AVG_EXS_SPRD
Get_Net_Over_Lap_Amt	PMFSEC017	SEC_PRE_CRM_EAD_CALCULATIONS
Resecuritized_Straddling_Sfa	PMFSEC020	SEC_STRADDLING_TRANCHES_PROCESSING
Upd_Pool_Trnch_Param_Exp	PMFSEC025	RESEC_POOL_AND_TRANCHE_PARAMETER_CALCULATION
Resecuritized_Straddling_Sfa	PMFSEC026	RESEC_STRADDLING_TRANCHES_PROCESSING
Securitized_Pool_Gran_Cal	PMFSEC051	SEC_POOL_GRANULAR_CALCULATION

10.4.6 DT Details - Market Risk

Table 63: DT details market risk

DT TASK NAME	PROCESS CODE	PROCESS NAME
PC_Cap_Floor	PMFMR0021	Position Conversion Exotic Options
Mkt_Risk_Exp_Creation	PMFMR0021	Position Conversion Exotic Options
Mkt_Risk_Exp_Creation	PMFMR0022	Position Conversion Options
Mkt_Risk_Exp_Creation	PMFMR0023	Position Conversion Basket Futures - Interest Rate
MR_IR_Pos_Offset	PMFMR0024	Market Risk Position Offset
Ind_Mat_Lvl_Chk_CE_MR	PMFMR0024	Market Risk Position Offset
Mkt_Risk_Exp_Creation	PMFMR0025	Position Conversion Swaps
Mkt_Risk_Exp_Creation	PMFMR0027	Position Conversion Hybrid Instruments
Upd_Sp_RW_RM_Time_Band	PMFMR0028	Mkt Risk Specific Risk IR Assignment
Mkt_Risk_CD_Hedging	PMFMR002A	Market Risk Credit Derivatives Offsetting
Mkt_Risk_Exp_Creation	PMFMR002B	Position Conversion Credit Derivatives
PC_Bskt_CDS	PMFMR002B	Position Conversion Credit Derivatives
Mkt_Risk_Exp_Creation	PMFMR0031	Market Risk Depository Receipts
Equity_NonDrv_Offsetting	PMFMR0034	Market Risk Equity Offsetting
Multiple_Assessment_MR	PMFMR0036	Market Risk Sec Specific Risk Charge Calculation
Mr_Sec_IRB_Min_SRC	PMFMR0036	Market Risk Sec Specific Risk Charge Calculation
Mkt_Risk_GenRsk_Comdty	PMFMR003D	Market Risk Generic Risk Charge Calculation Commodities Maturity Approach
Mkt_Risk_GenRsk_IR	PMFMR003E	Market Risk Generic Risk Charge Calculation - IR and Equity
Mkt_Risk_Cap_Chrge_Forex	PMFMR003K	Market Risk Capital Risk Charge Calculation
MR_Var_sVar_IRC_CRM_Avg	PMFMR0045	Market Risk Var sVar IRC CRM Avg Calculation

10.4.7 DT Details - Operational Risk

The following table lists the data transformations for Operational Risk and its details:

Table 64: Data Transformations for Operational Risk

DT TASK NAME	PROCESS CODE	PROCESS NAME
Opr_Risk_Capital_Charge	PMFBISOR002	Operational Risk-Basic Indicator Approach
OR_Capital_Std_App	PMFBISOR003	Operational Risk Alternative Std Approach

10.4.8 DT Details - Capital Structure

The following table lists the data transformations for Capital Structures and its details:

Table 65: Data Transformations for Capital Structures

DT TASK NAME	PROCESS CODE	PROCESS NAME
Deduction_RWA_Cap_Struct	PMFBISCS022	CAPITAL_STRUCTURE_DEDUCTIONS_RWA_EXPOSURES

10.5 Implementing Basel

For more information, see the OFS Basel Regulatory Compliance User Guide.

10.6 Seeded Values Used

To view the seeded values for the following Seeded tables, see Seeded Tables Data.

10.7 Basel Analytics Table Population - Reporting T2T

This section provides information on the target and the granularity of tables. See Oracle Financial Services Basel Analytics User Guide for more information

11 Annexure C: Frequently Asked Questions

This section addresses some of the frequently asked questions which are as follows:

11.1 Leverage Ratio

Does the application require a different set of input data to execute the Leverage Ratio?

No. Leverage Ratio can be executed on the same set of input data required for normal processing to execute the Basel III Run. The input for leverage ratio is the subset of the data provided for Basel III executions. However, an additional set of data is required (total consolidated asset) for accounting entity which is outside the scope of the consolidation process. As per the Basel III Accord, total consolidated asset value should add up to the Total Exposure Measure calculation for Leverage Ratio.

Can we execute Leverage Ratio if the bank has installed the application for the first time?

Yes, we can compute Leverage Ratio. The application calculates the current month Leverage Ratio and the Leverage Ratio of the previous two months, which is provided as a download by the client or the bank. This information is considered as an input to calculate Regulatory Leverage Ratio. If the previous month's data is not available, then the application considers the value as 0 and computes the Regulatory Leverage Ratio. Also, you have the flexibility to use the current month Leverage Ratio as input for previous two months' leverage ratio, if required.

Can Leverage ratio be calculated on any day during a particular month?

There is no restriction on the execution date for computing Leverage Ratio. Leverage Ratio can be calculated on any given day. However, Leverage Ratio is to be executed based on the month-end data.

As per Basel III requirement, the Leverage Ratio is to be calculated on Tier 1 capital. However, if a particular jurisdiction prescribes to calculate the Leverage Ratio based on Total capital, then can the application support such modifications?

Yes, the application has the flexibility to change the input criteria by adding or deleting the Rule related to capital. To achieve this, modify the Business Processor's BP-Leverage Ratio expression by modifying one of the used measures. Instead of measure CS Net Tier1 capital, add another measure created on Total capital by deleting the existing one. The data model is not affected by such changes.

11.2 Capital Buffers

As per the Basel III Accord, Capital Buffers are required to be maintained from 2016 only. However, if for internal purposes the bank wants to start computing it from 2013 itself, then does the application support such modifications? If yes, then will it consider the required capital ratios as per the transitional arrangement?

Yes, the application supports the calculation of capital buffers from 2013 and it considers the transitional arrangement for the calculations before 2016.

For Example: The application considers the required Tier 1 Ratio in 2013 as 4.5%. For this calculation, no changes are required in the input data as the calculation in the application begins from 2013.

Likewise, the application selects the required values for CET1, Tier 1, and CAR as per the transitional arrangements for years 2013, 2014 and 2015.

While building quartiles, how much Required CET1 is considered for computing Capital Conservation Ratio?

Required CET1 ratio is used for computing the four quartiles or intervals for Capital Conservation Ratio. Since Required CET1 is phased out through a transitional arrangement, the value used in the calculation of quartiles is a maximum of 4.5% or the CET1 required by that specific jurisdiction in that specific year.

The computed value for Available Buffer from CET1 capital is considered for all three buffers. Is there any priority of one buffer over the other?

As per the Basel III Accord, there is no priority given to one buffer over the other. Required Buffer from CET1 capital is compared against the Available Buffer from CET1 capital. Any shortfall or excess is reported at an aggregate level. It cannot be reported for one specific type of buffer. This approach in the application is built as per our interpretation of the Basel guidelines. As per the Basel III Accord, the other two buffers are met through an extension of Capital Conservation Buffer and the accord does not explicitly mention about its priority. The Capital Conservation Ratio for a shortfall is also calculated at an aggregate level and not at individual buffer level.

Can the regulator of the parent jurisdiction prescribe countercyclical buffer requirement different from the one prescribed by the home country's regulator to which the exposure relates to?

As per our interpretation of the Basel III accord, the countercyclical buffer requirements can be different. By default, the requirement that is prescribed by the parent regulator should be used as input data which in turn is used for further calculations.

If one of the exposure countries has not implemented Basel III and the country's regulator have not recommended any buffer, should countercyclical buffer requirement be taken as 0% for the exposures of that country?

No, the countercyclical buffer requirement cannot be taken as 0% as the parent company's regulator has exposure to this country. For a consolidated Run, it would depend on the buffer requirement required for all the exposure countries by the parent regulator. By default, the buffer requirement specified by the parent regulator for each exposure country is included in the input data. Therefore, data is not required to be modified.

As per Basel requirements, all three buffers are calculated from CET1. However, in the future as per guidelines of the Basel Committee on banking supervision, it may be required to be calculated from Tier 1 or CAR. Does the application have a provision for that?

Yes. The application is flexible to compute such changes. It can be modified to compute buffer from Tier 1 capital and CAR. The logic for computing this buffer is similar to the one used for buffer from CET1 capital. The application can calculate buffers form Tier 1 capital, by taking remainder of following:

Excess of Tier1 Capital Ratio over benchmark (6.0 %), after catering to the shortfall, if any, in Tier 2 capital to its respective benchmark level, which is 2%, minus Required Benchmark Buffer from CET1 capital. Hence, Capital Conservation Buffer excludes any additional CET1 needed to 8% Total Capital Ratio.

To calculate buffer form Total Capital, remainder of following is taken:

Excess of Total Capital Ratio over benchmark (8.0%), minus Required Benchmark Buffer from Tier 1 capital.

11.3 Credit Valuation Adjustment

How will the application handle Index Decomposition, if data for index is not provided and index decomposition is selected?

In this case, the application calculates CVA charge without decomposition. The Run can be successfully executed and Index Hedge position is treated without decomposition.

How does the application handle an Index Hedge position marked to the counterparty wherein multiple counterparties which are part of Index and Index decomposition are selected?

The application creates a single name CDS hedge for all the counterparties with which the bank has exposures and is a part of the index. Index position mapped to a counterparty is used only to allocate CVA charge to the counterparty while using Standardized Approach for CVA calculation.

Can IMM approach be selected for Capital Conservation Ratio calculation and standardized approach for CVA Calculation?

No, IMM approach cannot be selected for Capital Conservation Ratio. The application requires CEM method output for computing CVA Charge using Standardized approach.

Can the discount factor be changed which is currently proposed as 5% as per the Basel guideline?

Yes, risk free rate can be changed by modifying Rules. For more information on modifying Rules, refer **Error! Reference source not found.**.

How is CVA RWA used in the application?

The application calculates CVA RWA and sums it to Credit RWA. CVA RWA is not multiplied by the factor 1.06.

Will the application create a duplicate hedge record from Index Decomposition, if the Run is executed twice?

No, the application does not create a duplicate hedge record. The application checks whether the record already exists and it uses the same. If the record does not exist, then the application creates a hedge record.

11.4 Operational Risk

If the input parameter to calculate the Annual Gross Income is different for other jurisdictions, then can the input parameters be changed?

Yes, you can change the input parameters by adding or deleting the Rule related to Annual Gross Income. To achieve this, modify the BP expression - Ops Risk Annual Gross Income by adding the newly defined measure or deleting the used measure. The data model can undergo changes if the newly added parameter is not captured. The data model changes affect the staging table as well as the processing table.

Can reclassification rule for mapping of internal LOB to standard LOB be modified?

Yes, you can change Reclassification Rule as per jurisdiction requirement. You need to add the mapping in the Rule OR Internal LOB to Standard LOB Reclassification as well as make an entry into DIM_LOB and DIM_STANDARD_LOB.

11.5 Capital Structure (Basel III)

Are the list of instruments provided for each component of capital that is, CET1, AT1, and T2 fixed or can the list of instrument be extended or reduced to accommodate as per the requirement?

The list of instruments mapped to different components of capital is a bare minimum list. You can add or delete as per their definition of capital by adding or deleting a mapping in the Rule – Non Sec Standard Product type to capital Comp Group Reclassification for banking book (non securitization) exposures and in Rule – Mkt Risk Instrument type to Capital Comp Group Reclassification for trading book exposures. No data model changes are required.

The criteria to calculate the surplus capital in CET1 for Minority Interest is Minimum CET1 plus the Capital Conservation Buffer. If the criteria changes in the future to include the countercyclical buffer along with CET1 and CCB, then can the application handle such modifications?

The application has the flexibility to include any parameter or delete any parameters to calculate the Minority Interest. In such a case, the Rule can be modified to include additional parameters or delete if required.

Is there any flexibility in the Rule to add or delete any regulatory adjustment line item during the calculation of CET1?

Yes, the application has the capability to add or delete any regulatory adjustment line item. This is handled in the Rule by adding or deleting any regulatory adjustment line item.

Considering that the phase-in treatment criteria specified as per the accord changes in the future where the deduction values and risk-weighting values change, then can this scenario be handled by the application without affecting other sections?

The application is flexible to accommodate any scenario for phase-in treatment. For example: if in the future the phase-in criteria changes from 20%, 40%,60%,80% to 25%, 45%,65%, 85%, then the application has the capability to change the value as well during the phase-in. The deduction amount that is not deducted is to be risk-weighted with some different percentage.

The values in the capital component column of the Setup Capital Heads (**FSI_SETUP_CAPITAL_HEAD**) should be changed to accommodate this phase-in treatment.

What if the Bank doesn't calculate CR RWA, MR RWA, and OR RWA and directly provides a value against each of this line item?

The application supports such direct download values for RWA in table – **STG_STANDARD_ACCT_HEAD** against appropriate Standard Account Head identifiers (CAP169 for Credit RWA, CAP090 for Market RWA, and CAP170 for Operational RWA).

11.6 Securitization

The Reporting Bank wants to implement the Securitization aspect of the Credit Risk. The Bank currently does not have the Credit Risk module. How can the Reporting Bank implement only the Securitization module?

If the bank wants to implement Securitization Standardized approach, then data relevant to the exposures, tranche, pool, rating, and mitigant details are expected. If IRB approach is implemented, underlying pool capital for SFA approach is expected as a download along with exposures apart from the above mentioned details.

The reporting bank has the underlying data and has provided the pool, tranche, and exposures data. Additionally, the reporting bank has also provided the pool and tranche information in the exposures table. In this case, will the application use the data from the pool and tranche table or from the exposures table?

The application expects the data only in either of the following tables:

- Pool, tranche, and exposures table with all the pool, tranche, and exposures attribute data only in their respective tables.
- Exposures table with the entire exposures attribute and few of the attributes of the pool and tranche.

The application gives a preference to the pool and tranche attributes in the exposures table, compared to the attributes given in the pool and tranche table. In this case, all the computations are based out of the data given in the exposures table.

How does the bank select particular Securitization approach?

As per regulator's guidelines, banks are expected to follow the hierarchy of approaches while implementing IRB approach as follows:

- Supervisory Formula Approach (SFA)
- Simplified Supervisory Formula Approach (SSFA)
- Risk Weight at 1250%

The solution supports the above hierarchy of approaches. As stated in the accord, the SFA/SSFA approaches are data driven approaches and availability of data drives the approach selection. If the bank has relevant data of underlying exposures that is required for SFA calculations, it needs to follow SFA approach. Most of banks that are originators and sponsors of deal have this data and some of the investor banks may have it and hence they will naturally follow SFA. However, if the bank does not have this underlying data, it cannot follow SFA approach; such banks can follow SSFA approach by providing parameters that are applicable only to SSFA as direct input to the application.

The reporting bank, who is an investor in securitization transaction, has an unrated securitization exposure. How will this unrated exposure be treated by the application?

The application treats the unrated exposure based on the approach being followed for that exposure. The approach followed is the same for the originator as well as the investor.

- **Standardized Approach**

  In this case, the application calculates the weighted average risk weight of the underlying exposures and assigns this to the exposure.

  If the details regarding the underlying exposures are not available, then the unrated exposures are deducted.

- **Ratings Based Approach**

  In this case, the application tries to infer the rating based on the presence of the rated subordinate tranche information, belonging to the same pool.

  The application tries to identify whether there are any rated subordinate tranche belonging to the same pool, and which has the credit enhancement level less than that of the unrated exposure and which has the residual maturity more than that of the unrated exposure and which has the seniority

less than that of the unrated exposure. The seniority is a number denoting the seniority of the cash flows to that tranche and it starts from the value of 1 which is the senior most tranche.

If the ratings are inferred, then the application assigns the rating to the exposure and hence assigns the corresponding risk weight.

All other processing are the same as other rated exposures.

If the rating cannot be inferred, then the unrated exposures are deducted.

- **Supervisory Formula Approach**

In this case, there is no dependency on the ratings. Hence, it will proceed without any difference in the treatment.

The reporting bank, which is an investor in Securitization Transaction, is provided protection on its securitization exposure with the help of an Nth to Default credit derivative mitigant. How will the application recognize the benefit for this exposure?

The application identifies the nth to default credit derivative protection based on the comparison of the tranche attachment point, initial pool amount, and the cumulative loss amount of the pool. Using this, the application calculates whether the tranche is in default or not. Further, the application counts the number of tranches in default and then compares this number with the defaulted position covered by the mitigant. Hence for this, the entire tranche information of the pool is required, regardless of whether the Bank has an exposure in all those tranches or not.

For example: the exposure held by the bank belongs to tranche T1 and this belongs to the pool P1. Assume that there are a total of 10 tranches being issued out of that pool. (T1 to T10). The mitigant provided is 7th to default credit derivative. Hence, the application will recognize this mitigant only if there are 6 defaults in the basket of exposures (T1 to T10) or else there is an eligible 6th to default credit derivative for the same pool. Assume that the following are the calculations:

The application takes the tranche attachment point and multiplies this with the initial pool amount. This amount is compared by the application with the cumulative loss of the pool. If the amount is less than or equal to the cumulative loss of the pool, then that tranche is in default. Further, the application takes the count of all the tranches which are in default. In the following case, there are 6 defaults in the exposures. This is compared with the defaulted position of the mitigant. Since there are n-1 defaults (7-1 = 6) in the exposure, the mitigant is recognized for this pool. The exposure with the least risk weight and highest seniority is allocated the mitigant and all other exposure combinations mapped to this mitigant becomes ineligible.

Tranche ID	Tranche Attachment Point	Associated Pool ID	Initial Pool Amount	Attachment * Pool	Cumulative Loss of the Pool	Defaulted?
T1	0.75	P1	1,000,000.00	750,000.00	300,000.00	N
T2	0.58	P1	1,000,000.00	580,000.00	300,000.00	N
T3	0.45	P1	1,000,000.00	450,000.00	300,000.00	N
T4	0.34	P1	1,000,000.00	340,000.00	300,000.00	N
T5	0.29	P1	1,000,000.00	290,000.00	300,000.00	Y
T6	0.22	P1	1,000,000.00	220,000.00	300,000.00	Y

T7	0.18	P1	1,000,000.00	180,000.00	300,000.00	Y
T8	0.15	P1	1,000,000.00	150,000.00	300,000.00	Y
T9	0.05	P1	1,000,000.00	50,000.00	300,000.00	Y
T10	0	P1	1,000,000.00	-	300,000.00	Y

The Reporting Bank has multiple exposures mapped to multiple mitigants. How will the application allocate the mitigants to the exposures?

The application uses the optimizer to allocate the mitigants to the exposures. The optimizer constraints in the case of securitization are dependent on the seniority of the exposures, risk weight of the exposures, and the mitigant value assigned to the exposure post the haircut. Assume the following case of exposures and mitigants mapped to each other along with the seniority, risk weight, and the haircut factor.

Exposure ID	Exposure amount	Exposure Seniority	Exposure RW	Mitigant ID	Mitigant Amount	Mitigant RW	Haircut Factor
E1	5,000.00	1	0.5	M1	10,000.00	0.2	0.2
E2	3,000.00	2	0.5	M1	10,000.00	0.2	0.4
E3	2,000.00	2	0.5	M1	10,000.00	0.2	0.15
E4	1,500.00	3	1	M1	10,000.00	0.2	0.1
E1	5,000.00	1	0.5	M2	5,000.00	0	0.4
E2	3,000.00	2	0.5	M2	5,000.00	0	0.87
E3	2,000.00	2	0.5	M2	5,000.00	0	0.37
E4	1,500.00	3	1	M2	5,000.00	0	0.64
E1	5,000.00	1	0.5	M3	3,500.00	0.2	0.05
E2	3,000.00	2	0.5	M3	3,500.00	0.2	1
E3	2,000.00	2	0.5	M3	3,500.00	0.2	0.18
E4	1,500.00	3	1	M3	3,500.00	0.2	0.27

The mitigants are assigned to the exposures based on the seniority of the exposures. The mitigants with the least risk weight are assigned first to the exposures. The following is the order in which the mitigants are allocated.

Exposure ID	Mitigant ID
E1	M2
E2	M2
E3	M2
E4	M2
E1	M1
E2	M1
E3	M1

E4	M1
E1	M3
E2	M3
E3	M3
E4	M3

The application assigns the exposures to the mitigants based on the above order and computes the Post-CRM RWA of the exposures.

Does optimizer work on pool-by-pool basis? Can the user explicitly mention how many pools can be processed at a time?

Yes, the optimizer works on pool-by-pool basis. However, you can specify the number of pools to be processed at a single fetch in Optimizer_Config.xml in <PROCESSEDPOOLSIZE> tag.

Is it possible that few of the exposure-mitigant combination can have no pool ids? If so, what happens to those records?

All the records are expected to have pool IDs based on the exposure mitigant combination. If few records do not satisfy the join/filter condition present in pooling definition, then the pool IDs are not assigned. Such records are not considered for optimizer and covered factor is not calculated for those exposures.

11.7 Capital Structure (Basel II)

Are the list of instruments provided for each component of capital that is, T1, T2, and T3 fixed or can the list of instrument be extended or reduced to accommodate as per the requirement?

The list of instrument mapping to different components of capital is a bare minimum list. You can add or delete as per their definition of capital in the Rules – 'Bank capital Group Components Reclassification' and 'STD to Capital Group Components Reclassification'

Is there any flexibility in the Rule to add or delete any regulatory adjustment line item during the calculation of T1 and T2?

Yes, the application has the capability to add or delete any regulatory adjustment line item. This is handled in the rule by adding or deleting any regulatory adjustment line item.

What if the Bank does not calculate any of the CR RWA, MR RWA and OR RWA and directly provides a value against each of these line items?

The application supports and has taken into account for such direct download values for RWA in the table – STG_STANDARD_ACCT_HEAD against appropriate Standard Account Head identifiers (CAP169 for Credit RWA, CAP090 for Market RWA and CAP170 for Operational RWA) for entities for which the bank does not calculate RWA using our application.

11.8 Market Risk (Basel II)

Does the Greeks Engine calculate Greeks parameters for all kind of Options?

Currently, the Greeks Engine calculates parameters only for normal options. The exotic options are not covered by Greeks Engine.

11.9 Mitigant Eligibility (Basel III)

The Reporting Bank has a wholesale exposure and for that guarantee from an issuer is present which can be reclassified under the "Other Entities". The current rating of the guarantor is B-. How does the application handle this in Basel II and Basel III runs?

The application handles the mitigant eligibility of Basel II and Basel III using separate rules. The application using the Basel III Rule, checks for the presence of a rating for this kind of issuer type and if there is a rating available, then this mitigant becomes eligible. The application under the Basel II rule checks for the rating to be A- or better and if the rating is below A-, then this mitigant becomes ineligible.

11.10 Haircut Assignment (Basel III)

The Reporting Bank has a securitized exposure and for that two financial collaterals are present - a debt instrument from an issuer which can be reclassified under the "Non-Sovereign" issuer type and a debt instrument which is part of a securitization transaction. For the first instrument, the current ratings of the instrument by 2 agencies are AAA and A+ and its residual maturity is 4.5 years. For the second instrument which is a securitized debt exposure, the current rating of the instrument by 2 agencies are A and BBB+, and its residual maturity is 8 years. What is the volatility haircut applied for this mitigant by the application under Basel II and Basel III rules?

The application handles the volatility haircut assignment for debt securities of Basel II and Basel III using separate rules. The application requires a single rating for the debt securities. Since there are multiple ratings, the application applies multiple assessment and calculates the final current rating. In this case, the first mitigant is rated A+ and second mitigant is rated BBB+, post multiple assessment. The application under the Basel III rule checks for the current rating of the debt instrument, its residual maturity, whether the debt security is a securitized exposure or not, and the issuer of the debt security.

- For the first mitigant, the current final rating is A+ and it is a debt security issued by a non-sovereign with a residual maturity of 4.5 years. The haircut assigned is 6%.
- For the second mitigant, the current final rating is BBB+ and it is a debt security which is a securitized exposure with a residual maturity of 8 years, the haircut assigned is 24%.

The application using the Basel II Rule, checks the current rating of the debt instrument, its residual maturity, and the issuer of the debt security.

- For the first mitigant, the current final rating is A+ and it is a debt security issued by a non-sovereign with a residual maturity of 4.5 years. The haircut assigned is 6%. .
- For the second mitigant, the current final rating is BBB+ and it is a debt security issued by a non-sovereign with a residual maturity of 8 years, the haircut assigned is 12%.

11.11 Cleared Transactions

What is the treatment for the transaction between clearing member and client which arises due to clearing member acting as intermediary for the transaction and reporting bank act as clearing member?

Currently the treatment assigned in the accord is of bilateral trade and application expects user not to identify the above trades as cleared transaction.

Will the netting agreement be changed for cleared transaction?

No. Trade marked for the Netting agreement is the trading input and risk calculation will not change above logic.

Since the each collateral is treated separately is there a chance that separate risk weight is assigned to different collateral?

No. Risk Weight assigns changes only when the reporting bank is clearing member client and have not posted the collateral and due diligence is not conducted. Application expects the above condition to be uniform for all the collateral posted, that is, if collateral is cash and securities either will either cover all losses or not cover all losses. Data consistency is expected from the user. Moreover the reporting bank to get the transaction cleared from CCP, above two condition are mandatory to meet, so the application expects very less trade to go with 4% risk weight.

Will the transaction with non-qualifying CCP have CVA Charge?

No. CVA charge is excluded for the transaction with CCP. Qualifying CCP transactions are given preferential treatment for RW and non-qualifying CCP is treated as bilateral trades. Both trades don't qualify for CVA Charge.

How does the application distinguish between qualifying and non qualifying CCP?

Application expects the user to identify the CCP as qualifying and non-qualifying. Application expects this information as counterparty information. For collateral posted with non-qualifying CCP the application expects other inputs for calculating RWA like, collateral type, pd, lgd, and maturity. Also counterparty type is assumed to be Central Counterparty for the calculation.

Why do application expects the role of the reporting bank with CCP for each transaction?

As per the example in BIS, a CCP could also play a role of Clearing Member for reporting bank transaction with another CCP. The above case makes it difficult for the risk system to capture the role of reporting bank at party level and hence is required for each transaction.

11.12 AOCI Opt-Out Option (US Basel III – Standardized Approach)

How is the treatment of pre-tax values of the AFS equity securities and the AFS preferred stock/non-preferred stock classified as equity to be configured?

Perform the following steps:

- Create a new CAPID (CAP1000) for Pre-tax AFS equity securities in dim_standard_acct_head table.
- Map the CAP1000 to All Component of Tier 2 Capital in Capital Component Group mapping.
- Design a rule that will take 45% of the value of Pre-tax AFS equity securities in Gross Tier 2 capital. Define the rule name as USA US III Pre-tax value of AFS equity securities part of Gross Tier 2. AOCI opt-out option – Y Standard acct head - Pre-tax AFS equity securities BP Expression - Pre-tax AFS equity securities * 0.45
- Rule (RLBL0649) is removed from AOCI calculation process which add Preferred Stock and Non-Preferred Stock into AFS equity securities.
- Modify the rule RLBL0463 (USA US III Accumulated Other Comprehensive Income Calculation) where in BP (BPBL0432) add new measure as Net Unrealized Gain/Loss on AFS preferred Stock

classified as Equity Security and Net Unrealized Gain/Loss on AFS Non-preferred Stock classified as Equity Security add this measure in the expression.

The following are the codes:

- MBL0552 - Net Unrealized Gain/Loss on AFS Non-preferred Stock classified as Equity Security
- MBL0553 - Net Unrealized Gain/Loss on AFS preferred Stock classified as Equity Security
- Modify the rule RLBL0650. Add Net Unrealized Gain/Loss on AFS preferred Stock classified as Equity Security and Net Unrealized Gain/Loss on AFS Non-preferred Stock classified as Equity Security as a measure into BP- CS Transition AOCI (BPBL0596).

OFSAA Support

Raise a Service Request (SR) in My Oracle Support (MOS) for queries related to the OFSAA applications.

Send Us Your Comments

Oracle welcomes your comments and suggestions on the quality and usefulness of this publication. Your input is an important part of the information used for revision.

- Did you find any errors?
- Is the information clearly presented?
- Do you need more information? If so, where?
- Are the examples correct? Do you need more examples?
- What features did you like most about this manual?

If you find any errors or have any other suggestions for improvement, indicate the title and part number of the documentation along with the chapter/section/page number (if available) and contact the My Oracle Support.

Before sending us your comments, you might like to ensure that you have the latest version of the document wherein any of your concerns have already been addressed. You can access My Oracle Support site that has all the revised or recently released documents.

ORACLE