Oracle Financial Services Pricing Management, Capital Charge Component

User Guide

Release 6.0

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About the Guide

This manual provides a brief description of the purpose, the audience, the document accessibility, the references, the organization of the document and conventions followed in this document. The topics in this section are organized as follows:

- Scope of the Guide
- Audience
- How to use this User Guide
- Document Conventions

Scope of the Guide

The objective of this document is to provide a comprehensive working knowledge to the user on Oracle Financial Services Pricing Management Capital Charge Component Release 6.0. This document is intended to help the user understand the key features and functions of Oracle Financial Services Pricing Management Capital Charge Component Release 6.0 and use the application effectively.

Audience

This User Guide is intended for the following audience:

- First-time user (Customer)
- Functional Engineering Group
- Product Management Group
- Software Quality Assurance (SQA) Group
- Project Management Team
- Senior Management

How to Use this User Guide

The information in this User Guide is divided into the following chapters:

- Chapter 1:"Introduction": The main objective of this chapter is to introduce the user to the application.
- Chapter 2: "Understanding the Application": The main objective of this chapter is to introduce the user to the Oracle Financial Services Pricing Management Capital Charge Component Release 6.0, and explain its features and functionalities.
- Chapter 3: "Application Components List": The main objective of this chapter is to explain the components of the application.
- Chapter 4:"Product Use Cases": The main objective of this chapter is to explain all the possible combinations of fund transfer pricing, capital computation and risk adjusted performance measures.
- Chapter 5: "Data Model": The main objective of this chapter is to explain the data model used by the application.
- Chapter 6: "Security Considerations": The main objective of this chapter is to explain the mapping of roles to each component.

- Chapter 7: "UI Application Component Details": The main objective of this chapter is to explain the User Interface to the user.

- Chapter 8: "Technical Design Components and Assumptions": The main objective of this chapter is to state the assumptions used in designing the application.

- Chapter 9: "Reporting Application Component: Pricing Report": The main objective of this chapter is direct the user in viewing reports.

Document Conventions

Certain practices have been incorporated into this document, to help you easily navigate through the document. The table given below lists some of the document conventions incorporated into this User Guide:

Conventions	Description
Bold	User Interface Terms
Italics	- Cross References - Emphasis

Table 1: Document Conventions

The other document conventions incorporated into this User Guide are as follows:

- The Oracle Financial Services Pricing Management Capital Charge Component Release 6.0 is referred to as Pricing Manager application.

- In this document, a Note is represented as shown below:

NOTE

Important or useful information has been represented as a Note.

1. <u>Introduction</u>

Oracle Financial Services Pricing Management, Capital Charge Component, Release 6.0 enables banks to assess the cost and risk added to their portfolio by each new loan, thereby price the loan appropriately. Traditionally, banks have adopted a uniform loan pricing policy which does not take into account the incremental risk that the bank was taking on its books of account of the new loan. This results in a less than optimum loan price which is not sufficient to cover the additional risk.

Oracle Financial Services Pricing Management, Capital Charge Component, Release 6.0 addresses this need by estimating the transfer rates, capital charges and the corresponding price to be charged for the new exposure. It estimates the cash flows from each new loan and calculates the risk-adjusted performance measures, RAROC and SVA in order to measure the returns generated from a loan by considering the risk added by them. It enables banks to identify good credits and avoid bad credits.

The primary aim of this release is to have a common application which covers the online funds transfer pricing (TPOL) functionality and risk based pricing functionality. The features of the Pricing Manager application are as follows:

- Common user interface which captures the inputs required for both TPOL and Capital Charge calculations

- TPOL calculations are based on the process flow followed within the Oracle Transfer Pricing Online application

- Exposure pricing and capital calculations based on the regulatory capital approach as well as the economic capital approach and the process flow detailed in this document.

- Common pricing report and BI analytics which display both the TPOL and Capital Charge outputs

There is no modification in the cash flows and TPOL calculations currently followed in the Oracle Transfer Pricing Online application.

2. Understanding the Application

2.1. Business Process Task Flow

This section briefly explains the end-to-end process flow of Oracle Financial Services Pricing Management, Capital Charge Component Release 6.0. Oracle Financial Services Pricing Management, Capital Charge Component business process flow consists of the following components:

- Parameter Specification
- Pricing Definition
- Pricing Execution

The following diagram illustrates the **High Level Process** flow:
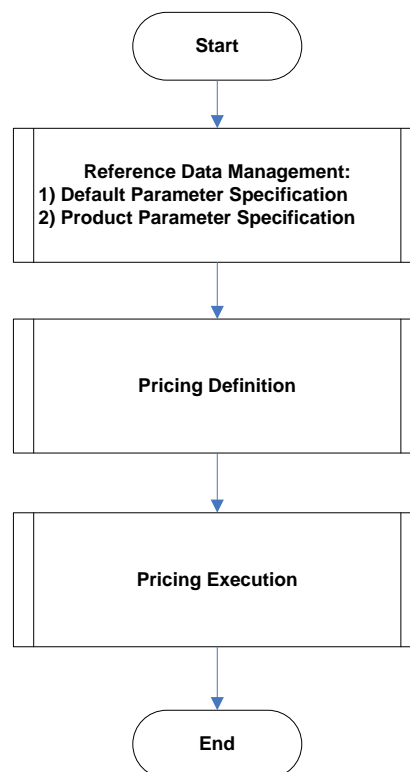
Figure 1: Business Process Task Flow Diagram

2.2. Features in Scope

2.2.1. Default Parameters

Default parameter specification involves specifying general parameters for obtaining the transfer price and exposure price, which are the outputs of the pricing process.

Specifying default parameters is a 3-step process involving the following:

- Default Parameters
- Default Adjustments

- Default Costs

2.2.2. Product Parameters

Product parameter specification involves specifying the parameters, adjustments and costs which are applicable to a given product-currency combination for the purpose of computing risk pricing.

Specifying product parameters is a 5-step process involving the following:

1. Specification of product details
2. Target RAPM specification
3. Adjustment specification
4. Cost specification
5. Conditional parameter specification

2.2.3. Pricing Definition

Pricing definition refers to defining the process of defining parameters required to carry out pricing. Pricing definition is always preceded by Reference Data Management.

Pricing definition involves specifying the following:

- Pricing Details
- Exposure Parameters
- Capital Charge Parameters
- Transfer Pricing Parameters
- Customer Details

The description of each of the following components of pricing definition is as follows:

Pricing Details:

The first step to be followed prior to specifying pricing details is the selection of one of the following options:

- Existing Customer
- New Customer

Based on this selection the pricing details are automatically populated or have to be specified. Pricing details include the following:

- Name
- Customer ID
- Customer Name
- Customer Type
- Relationship Manager
- Product Name
- Product Type
- Currency

Exposure Parameters:

Oracle Financial Services Pricing Management, Capital Charge Component computes the exposure price based on the parameters specified as part of the exposure parameters tab. In Exposure parameters the following parameters need to be specified:

- Exposure Details

- Repayment Schedule (in case of structured products)

Capital Charge Parameters:

The following capital charge parameters are specified:

- Expected Loss

- Unexpected Loss

    - Seniority

    - Senior

- Subordinated

- Fee Amount

Transfer Pricing Parameters:

Oracle Financial Services Pricing Management, Capital Charge Component computes the fund transfer rates based on the parameters specified in the FTP details tab. The following details are required to be provided:

- FTP Rate

- Main

- Terms

- Other Details

Customer Details:

The customer details refer to the financial and business details of the customer. The following customer details are required to be provided:

- Business Information

    - Static Business Information

    - Reference Issue Details

- Financial Information

    - EBDIT

    - Interest Expenses

    - Depreciation Tax

    - Earnings after Tax

    - EPS

    - Long Term Debt

    - Leverage Ratio

    - Interest Coverage Ratio

    - Debt Coverage Ratio

- Borrower Details (only for Individual Customer Type)

  - Occupation

  - Age

  - Gender

  - Monthly Income

  - Marital Status

  - Number of Children

  - Number of Dependents

  - Number of Residential Properties Owned

  - Number of Vehicles Owned

  - Number of Land Owned

2.2.4. Pricing Execution

Oracle Financial Services Pricing Management, Capital Charge Component allows the pricing definition to be executed immediately on saving it in the same screen order to obtain the pricing report.

An icon for pricing execution is provided in the **Pricing Definition** screen, which automatically creates a Run and executes it. The Run execution status is displayed in a small window which is displayed on executing a pricing definition. On successful completion of the pricing execution, an icon for launching the pricing report should be displayed along with the Run execution status.

2.2.5. Calculation of Transfer Price

Loan Cash Flows

Cash flow calculation is essential for the estimation of the funding charges and NII for a given product and is done by using the Cash Flow Engine used by the Oracle Funds Transfer Pricing Application. CFE breaks down each product into its component cash flows.

Transfer Pricing Measures

The transfer pricing measures are calculated as per the procedure currently followed in the Oracle Transfer Pricing Online Application. The following transfer pricing measures are calculated and provided as outputs:

- Funding Charges

- Minimum Required Rate

2.2.6. Estimation of Capital Requirement

The contribution of each loan to the total capital to be held by the institution is calculated using both the regulatory and economic capital approaches. The capital measures estimated by the Pricing Manager application are as follows:

- Expected Loss

- Unexpected Loss

- Risk Weighted Assets

2.2.7. Computation of Risk-Adjusted Performance Measures

Exposure pricing involves calculation of 2 key risk-adjusted performance measures which are, Risk-Adjusted Return on Capital (RAROC) and Shareholder Value Added (SVA) for each new loan. The RAROC and SVA of a loan are computed for a horizon of one year taking into consideration the expected income and costs on the loan over the horizon.

2.2.8. Scenario Analysis

Scenario analysis involves calculating the EL, UL, RWA, RAROC and SVA of the exposure based on 2 scenarios of ratings transition, that is, one notch up and one notch down. For example: if the current rating of the customer is AA then the capital and risk-adjusted performance measures are calculated assuming a rating upgrade to AAA and a rating downgrade to A.

2.2.9. Obligor RAPM

In addition to pricing the new exposure, Oracle Financial Services Pricing Management, Capital Charge component estimates the RAPM for the obligor, that is, the price of all the exposures to a particular customer. Estimating the Obligor RAPM involves calculating the EL, UL, RWA, RAROC and SVA of all the loans given to the customer both inclusive and exclusive of the new loan.

2.2.10. Pricing Report

Pricing report is available on the successful execution of the pricing definition. The components of pricing report are as follows:

- Pricing Details

- Exposure Details

- Exposure Pricing

- Transfer Pricing Analysis

- Capital Charge Analysis

  - Capital Calculations - Standalone Exposure Capital section

  - Consolidated Capital

  - RAPM Analysis section

  - Scenario Analysis

  - Obligor RAPM

3. Application Components List

The components of the Oracle Financial Services Pricing Management, Capital Charge Component Release 6.0 include the following:

Component Name	Component Type	Existing
Oracle Fund Transfer Pricing	• Cash Flow Engine • FTP engine	Yes
Oracle Financial Services Pricing Management, Capital Charge Component	• NII Component • OFSAAI Rule Run Framework • BI Dashboard	No

Table 2: Application Components

3.1. Oracle Fund Transfer Pricing

For Pricing Manager application, an option either to specify or trigger the FTP engine from the UIs is provided. If you trigger the FTP engine from the UI, the calculation process would be the same as is carried out in FTP online for each product. There exists no change in CFE or FTP engine from Pricing Management perspective.

3.2. Oracle Financial Services Pricing Management, Capital Charge Component

Exposure pricing involves the calculation of 3 key Risk Adjusted Performance Measures (RAPM) for each new loan as follows:

- Risk-Adjusted Return on Capital (%)

- Shareholder Value Added

- Rate to meet Target Raroc (%)

The RAPM elements are computed for a horizon of one year taking into consideration the expected income and costs of each new loan over the horizon. Computation of RAROC and SVA should be achieved through Rules.

3.2.1. Risk-Adjusted Return on Capital (RAROC) %

Oracle Financial Services Pricing Management, Capital Charge Component calculates the RAROC for each new loan. A loan is priced in a manner that the Risk-Adjusted Return on Capital (RAROC) of the loan is at-least equal to the hurdle rate, that is, target RAROC. RAROC should be reported in percentage terms.

Formula for RAROC is as follows:

RAROC (%) = ((Net Interest Income + Fee Income – Allocated Costs – Expected Loss) / Total Capital)*100

3.2.2. Shareholder Value Added (SVA)

Oracle Financial Services Pricing Management, Capital Charge Component calculates the SVA for each new loan. SVA is in absolute terms and it refers to a value generated to shareholders from the underlying transaction.

Formula for SVA is as follows:

SVA = Net Interest Income + Fee Income – Allocated Costs – Expected Loss – (Total Capital * Cost of Capital)

3.2.3. RAROC and SVA Elements

RAROC and SVA depend on the following elements:

- Net Interest Income
- Fee Income
- Allocated Costs
- Expected Loss
- Total Capital
- Cost of capital

3.2.4. Net Interest Income (NII)

NII is calculated for all the amortization codes mentioned in the following table, except Rule 78. A year's Interest Income and Interest Expense for computing NII is required.

The Interest Income is calculated using the CFE Engine and Interest Expense is calculated using own component.

AMORTIZATION_TYPE_CD	AMORTIZATION_TYPE
100	Conventional Fixed
500	Conventional Adjustable
600	Adjustable Negative Amortization
700	Non-Amortizing
710	Rule of 78s
820	Level Principal Payments
800	Conventional schedule
801	Level principal schedule
802	Simple interest schedule
840	Annuity
820	Lease
400	Balloon

Table 3: Net Interest Income

Net Interest Income Calculation Logic

Follow the steps below for Net Interest Income Calculation Logic:

1. Check for Tease Term logic.
2. If Tease Term is zero, compare repricing frequency with payment frequency else for Tease Term greater than zero.
3. Compare Tease Term with payment frequency.

🖝 NOTE

Tease term logic is applicable across all scenarios for payment frequency and repricing frequency.

Scenario 1: Repricing frequency < Payment frequency:

- **Interest Expense calculations**

    - For Fixed Interest Rate, Repricing frequency is equal to 0 (always), Payment frequency is greater than 0 and less than 12. Consider financial element id = 60 and cashflow date greater than as of date from **fsi_o_process_cashflows** for calculations.

    - For Fixed Interest Rate, Repricing frequency is equal to 0 (always), Payment frequency equal to 0. Consider financial element id = 60 and one year cashflow date from **fsi_o_process_cashflows** for calculations.

    - For Fixed Interest Rate, Repricing frequency is equal to 0 (Always), Payment frequency is greater than 12. Consider financial element id = 60 and one year cashflow date from **fsi_o_process_cashflows** for calculations.

    - For Floating Interest Rate, Repricing frequency is equal to 0, Payment frequency is greater than 12. Consider financial element id = 60 and one year cashflow date from **fsi_o_process_cashflows** for calculations.

    - For Floating Interest Rate, Repricing frequency equal to 0 and payment frequency is greater than 0 and less than 12. Consider financial element id = 60 and cashflow date is greater than as of date from **fsi_o_process_cashflows** for calculations.

    - For Floating Interest Rate, Repricing frequency is greater than 0 and less than 12 (*the expected output will not include opening balance (financial element ID – 60) and Net Interest Income (financial element ID – 430) and Payment Frequency is greater than Repricing Frequency. Consider financial element ID = 250 and cashflow date greater than as of date against repricing balance from fsi_o_process_cashflows for calculations.

    - For Floating Interest Rate, Repricing frequency is greater than 12 (*the expected output will not include opening balance (financial element ID – 60) and Net Interest Income (financial element ID – 430) and Payment Frequency is greater than Repricing Frequency. Consider financial element ID = 250 and one year cashflow date from **fsi_o_process_cashflows** for calculations.

- **Interest Expense Logic** - For Interest Expense logic

    1. Fetch data for accrual basis from table fsi_m_prod_characteristics and compounding frequency (in months) from **fsi_compound_basis_mls** table. For Business Day/252 as Accrual Basis, we will fetch data for holidays from **fsi_holiday_detail** and **fsi_holiday_master** for calculations.

    2. Calculate Compounding per payment frequency = Payment Frequency/ Compounding Frequency.

    3. If FTP is calculate fetch data from fsi_m_query_pricing table from funding_charge column. When FTP is specify fetch data from **fsi_m_pricing_detail** table from **funding_charge** column**.**

    4. If Accrual Basis is Actual/ Actual, Actual /360, Business Day/252, Actual /365.

       Then,

Calculate Rate per Payment = FTP Rate * Accrual Basis * (12/Payment frequency)

or

Calculate Rate per Payment = FTP Rate * Accrual Basis * (12/Repricing frequency)

Else,

For other Accrual Basis,

Calculate Rate per Payment = FTP Rate * Accrual Basis * Payment Frequency

NOTE

○When payment frequency is equal to 0 or greater than 12; pass payment frequency as 12 for calculating Rate per Payment.

○When repricing frequency is less than payment frequency and repricing frequency is greater than 0 and less than 12, pass original repricing frequency instead of payment frequency as input for calculating Rate per Payment.

○When repricing frequency is less than payment frequency and repricing frequency is greater than 12, pass repricing frequency as 12 instead of payment frequency for calculating Rate per Payment.

○When Accrual Basis is Business day/252, while calculating the actual number of days take into account the number of holidays (Referring to table **fsi_holiday_detail** and **fsi_holiday_master**) for that particular duration and will subtract the number of holidays to arrive at actual duration.

5. Calculate Compounding Rate on the basis of compounding basis.

   If Compounding Basis = At Maturity or Simple, Compounding Rate = Rate per Payment.

   If Compounding Basis = Continuous, Compounding Rate = {Exp (Rate per Payment) - 1}.

   If Compounding Basis = Daily, Monthly, Quarterly, Semi-Annual and Annual, Compare Compounding Basis with Payment Frequency.

   If Compounding Basis greater than or equal to Payment Frequency,

   Compounding Rate = Rate per Payment

   Else,

   Compounding Basis less than Payment Frequency,

   {(1+ (Rate per Payment / Compounding per Payment Frequency) ^ Compounding per payment frequency) – 1}

6. Calculate Interest Expense Cash flows for 12 Months = Compounding Rate * Balance (Depending upon the condition it falls in).

- **Interest Income calculations:**
  - For Fixed Interest Rate, Repricing frequency is equal to 0 (Always), Payment frequency is greater than 0 and less than 12. Consider financial element id = 430 from **fsi_o_process_cashflows** for calculations.
  - For Fixed Interest Rate, repricing frequency is equal to 0 (always), Payment frequency is equal to 0. Consider financial element id = 60 and one year cash flow date from **fsi_o_process_cashflows** for calculations.

- For Fixed Interest Rate, repricing frequency equal to 0 (always), Payment frequency is greater than 12. Consider financial element id = 60 and one year cash flow date from **fsi_o_process_cashflows** for calculations.

- For Floating Interest Rate, repricing frequency is equal to 0 and Payment frequency is equal to 0. Consider financial element id = 60 and one year cash flow date from **fsi_o_process_cashflows** for calculations.

- For Floating Interest Rate, repricing frequency is equal to 0 and payment frequency is greater than 0 and less than 12. Consider financial element id = 430 from **fsi_o_process_cashflows** for calculations.

- For Floating Interest Rate, repricing frequency is greater than 0 and less than 12 (*the expected output will not include opening balance (financial element ID – 60) and Net Interest Income (financial element ID – 430)*) and Payment Frequency is greater than repricing frequency. Consider financial element ID = 250 and cashflow date greater than as of date against repricing balance from **fsi_o_process_cashflows** for calculations.

- For Floating Interest Rate, repricing frequency is greater than 12 *(the expected output will not include opening balance (financial element ID – 60) and Net Interest Income (financial element ID – 430))* and payment frequency is greater than repricing Frequency. Consider financial element ID = 250 and one year cash flow date from **fsi_o_process_cashflows** for calculations.

- **Interest Income Logic**: For interest income logic follow the steps given below:

    1. For Fixed and Floating Interest Rate where repricing frequency is equal to 0 and payment frequency greater than 0 and less than 12.

       Scale Up Logic: Sum up the interest incomes for the number of rows generated by Cash Flow Engine (Where, Cash flow Date is greater than as of date, Financial element ID = 430 and Floating Value >0) and scale it up till 12 months.

       Using formulae: - $(\sum \text{Interest Income} / (\text{Count of rows} * \text{Payment Frequency})) * 12$

       Count of rows where Cash Flow Date is greater than as of date, Financial element ID = 430 and Floating Value >0.

       The above formula provides the total interest income cashflows for 12months.

    2. Fetch data for accrual basis from table **fsi_m_prod_characteristics** and compounding frequency (in months) from **fsi_compound_basis_mls** table. For Business Day/252 as accrual basis, fetch data for holidays from **fsi_holiday_detail** and **fsi_holiday_master** for calculations.

    3. Fetch Data for interest rate flag from **fsi_m_pricing_details** table. If the flag is fixed (0) then fetch fixed interest rate data from **fsi_m_pricing_details** from **fixed_rate** column. Otherwise if the flag is floating rate (1), fetch data for interest rate curve from **fsi_m_prod_characteristics** table from **interest_rate_cd column** and for interest margin from **fsi_m_prod_characteristics** table from margin column.

    4. Calculate Compounding per payment frequency = Payment Frequency/ Compounding Frequency.

    5. If Accrual Basis is Actual/ Actual, Actual /360, Business Day/252, Actual /365.

       Then,

Calculate Rate per Payment = FTP Rate * Accrual Basis * (12/Payment frequency)

or

Calculate Rate per Payment = FTP Rate * Accrual Basis * (12/Repricing frequency)

Else,

For other Accrual Basis,

Calculate Rate per Payment = FTP Rate * Accrual Basis * Payment Frequency

☞ NOTE

○When payment frequency is equal to 0 or greater than 12, pass payment frequency as 12 for calculating Rate per Payment.

○When repricing frequency is less than payment frequency and repricing frequency is greater than 0 and less than 12, pass original repricing frequency instead of payment frequency as input for calculating Rate per Payment.

○When repricing frequency is less than payment frequency and repricing frequency is greater than 12, pass repricing frequency as 12 instead of payment frequency for calculating Rate per Payment.

○When Accrual Basis is Business day/252, while calculating the actual number of days take into account the number of holidays (referring to table **fsi_holiday_detail** and **fsi_holiday_master**) for that particular duration and subtract the number of holidays to arrive at the actual duration.

6. Calculate Compounding Rate on the basis of compounding Basis.

   If Compounding Basis = At Maturity or Simple, Compounding Rate = Rate per Payment.

   If Compounding Basis = Continuous, Compounding Rate = {Exp (Rate per Payment) - 1}.

   If Compounding Basis = Daily, Monthly, Quarterly, Semi-Annual and Annual, Compare Compounding Basis with Payment Frequency.

   If Compounding Basis greater than or equal to Payment Frequency,

   Compounding Rate = Rate per Payment

   Else,

   Compounding Basis less than Payment Frequency,

   {(1+ (Rate per Payment / Compounding per Payment Frequency) ^ Compounding per payment frequency) – 1}

7. Calculate Interest Income Cash flows for 12 Months = Compounding Rate * Balance (Depending upon the condition it falls in).

Scenario 2: Repricing frequency >= Payment frequency

- **Interest Expense calculations:**
   - For Floating Interest Rate, Payment frequency greater than 0 and less than 12 and repricing frequency greater than payment frequency. Consider financial element id = 60 and cashflow date greater than as of date from **fsi_o_process_cashflows** for calculations.

- For Floating Interest Rate, payment frequency equal to 12 and repricing frequency greater than 12. Consider financial element id = 60 and one year cashflow date from **fsi_o_process_cashflows** for calculations.

- For Floating Interest Rate, payment frequency equal to 0 and repricing frequency greater than 0 and less than 12. Consider financial element id = 250 and cashflow date greater than as of date against repricing balance from **fsi_o_process_cashflows** for calculations.

- For Floating Interest Rate, payment frequency greater than 12 and repricing frequency greater than payment frequency. Consider financial element id = 60 and one year cashflow date from **fsi_o_process_cashflows** for calculations.

- **Interest Expense Logic -** For Interest Expense calculation:

1. Fetch data for accrual basis from table **fsi_m_prod_characteristics** and compounding frequency (in months) from **fsi_compound_basis_mls** table. For Business Day/252 as Accrual Basis, fetch data for holidays from **fsi_holiday_detail and fsi_holiday_master** for calculations.

2. Calculate Compounding per payment frequency = Payment Frequency/ Compounding Frequency.

3. If FTP is calculate fetch data from **fsi_m_query_pricing** table from **funding_charge** column. When FTP is specify fetch data from **fsi_m_pricing_detail** table from **funding_charge** column**.

4. If Accrual Basis is Actual/ Actual, Actual /360, Business Day/252, Actual /365.

   Then,

   Calculate Rate per Payment = FTP Rate * Accrual Basis * (12/Payment frequency)

   <div align="center">or</div>

   Calculate Rate per Payment = FTP Rate * Accrual Basis * (12/Repricing frequency)

   Else,

   For other Accrual Basis,

   Calculate Rate per Payment = FTP Rate * Accrual Basis * Payment Frequency

☞ NOTE

When payment frequency is equal to 0 or greater than 12, pass payment frequency as 12 for calculating Rate per Payment.

When payment frequency is equal to 0 and repricing frequency is greater than 0 and less than 12, pass original repricing frequency instead of payment frequency as input for calculating Rate per Payment.

When Accrual Basis is Business day/252, while calculating the actual number of days take into account the number of holidays (referring to table **fsi_holiday_detail** and **fsi_holiday_master**) for that particular duration and subtract the number of holidays to arrive at actual duration.

5. Calculate Compounding Rate on the basis of compounding basis.

   If Compounding Basis = At Maturity or Simple, Compounding Rate = Rate per Payment.

   If Compounding Basis = Continuous, Compounding Rate = {Exp (Rate per Payment) - 1}.

   If Compounding Basis = Daily, Monthly, Quarterly, Semi-Annual and Annual, Compare

Compounding Basis with Payment Frequency.

If Compounding Basis greater than or equal to Payment Frequency,

Compounding Rate = Rate per Payment

Else,

Compounding Basis less than Payment Frequency,

{(1+ (Rate per Payment / Compounding per Payment Frequency) ^ Compounding per payment frequency) − 1}

6. Calculate Interest Expense cash flows for 12 Months = Compounding Rate * Balance (Depending upon the condition it falls in).

- **Interest Income calculations:**
  - For Floating Interest Rate, payment frequency is greater than 0 and less than 12 and repricing frequency is greater than payment frequency. Consider financial element id = 430 from **fsi_o_process_cashflows** for calculations.

  - For Floating Interest Rate, payment frequency is equal to 12 and repricing frequency is greater than 12. Consider financial element id = 60 and one year cash flow date from **fsi_o_process_cashflows** for calculations.

  - For Floating Interest Rate, payment frequency is equal to 0 and repricing frequency is greater than 0 and less than 12. Consider financial element id = 250 and cash flow date is greater than as of date against repricing balance from **fsi_o_process_cashflows** for calculations.

  - For Floating Interest Rate, payment frequency is greater than 12 and repricing frequency is greater than payment frequency. Consider financial element id = 60 and one year cash flow date from **fsi_o_process_cashflows** for calculations.

- **Interest Income Logic:** For Interest Income calculations are as follows:

1. Floating Interest Rate where payment frequency is greater than to 0 and less than 12 and repricing frequency is greater than payment frequency.

   Scale Up Logic: Sum up the interest income for the number of rows generated by the Cash Flow Engine (where, cash flow Date is greater than as of date, Financial element ID = 430 and Floating Value >0) and scale it up till 12 months.

   Using formula: - ($\sum$Interest Income / (Count of rows * Payment Frequency))*12

   Count of rows where Cashflow Date is greater than as of date, Financial element ID = 430 and Floating Value >0

   The above formula provides interest income cash flows for 12 months.

2. Fetch data for accrual basis from table **fsi_m_prod_characteristics** and compounding frequency (in months) from **fsi_compound_basis_mls** table. For Business Day/252 as Accrual Basis, fetch data for holidays from **fsi_holiday_detail** and **fsi_holiday_master** for calculations.

3. Fetch Data for interest rate flag from **fsi_m_pricing_details** table. If the flag is fixed (0) then fetch fixed interest rate data from **fsi_m_pricing_details** from **fixed_rate** column. Otherwise if the flag is floating rate (1), fetch data for interest rate curve from

fsi_m_prod_characteristics table from **interest_rate_cd** column and for interest margin from **fsi_m_prod_characteristics** table from margin column.

4. Calculate Compounding per payment frequency = Payment Frequency / Compounding Frequency.

5. If Accrual Basis is Actual/ Actual, Actual /360, Business Day/252, Actual /365.

   Then,

   Calculate Rate per Payment = FTP Rate * Accrual Basis * (12/Payment frequency)

   <div align="center">or</div>

   Calculate Rate per Payment = FTP Rate * Accrual Basis * (12/Repricing frequency)

   Else,

   For other Accrual Basis,

   Calculate Rate per Payment = FTP Rate * Accrual Basis * Payment Frequency

   NOTE

   ○When payment frequency is equal to 0 or greater than 12, pass payment frequency as 12 for calculating Rate per Payment.

   ○When payment frequency is equal to 0 and repricing frequency is greater than 0 and less than 12, pass original repricing frequency instead of payment frequency as input for calculating Rate per Payment.

   ○When Accrual Basis is Business day/252, while calculating the actual number of days take into account the number of holidays (referring to table **fsi_holiday_detail** and **fsi_holiday_master**) for that particular duration and subtract the number of holidays to arrive at actual duration.

6. Calculate Compounding Rate according to compounding basis.

   If Compounding Basis = At Maturity or Simple, Compounding Rate = Rate per Payment.

   If Compounding Basis = Continuous, Compounding Rate = {Exp (Rate per Payment) - 1}.

   If Compounding Basis = Daily, Monthly, Quarterly, Semi-Annual and Annual, Compare Compounding Basis with payment frequency.

   If Compounding Basis greater than or equal to payment frequency,

   Compounding Rate = Rate per Payment

   Else,

   Compounding Basis less than Payment Frequency,

   {(1+ (Rate per Payment / Compounding per Payment Frequency) ^ Compounding per payment frequency) – 1}

7. Calculate Interest Income Cash flows for 12 Months = Compounding Rate * Balance (Depending upon the condition it falls in).

3.2.5. Fee Income

For Off Balance sheet products or fee based products, since the bank charges only a fee, consider fee income for RAROC and SVA computation. Fee income is captured as user input from front

end.

3.2.6. Allocated Cost

Allocated cost is the amount of non interest costs attributed to the loan. These non interest costs arise from operations which include employee salaries, loan servicing costs, marketing expenses and so on. This is specified as part of the Oracle Financial Services Pricing Management, Capital Charge Component User Interface as a percentage of the exposure amount. This is captured as a percentage of exposure in default and product screen of the Pricing Manager application or entered as revised information in Transfer Pricing parameters tab of pricing. For RAROC (%) and SVA calculation, allocated cost is converted to amounts by multiplying allocated cost (%) with exposure amount and processed.

3.2.7. Expected Loss

Expected Loss data is expected either as user input information or as a Pricing Manager application output. Expected loss is captured as user input from the front end. If you choose to calculate as an option in capital charge, expected loss is an output of capital charge runs selected and processed using Pricing UI.

3.2.8. Capital

Capital is a summation of credit risk unexpected loss and any other risk capital if you choose to specify. You can choose to **Specify** or **Calculate** credit risk unexpected loss in Oracle Financial Services Pricing Management, Capital Charge Component screen. If you choose to specify as option for unexpected loss then the user input for unexpected loss is captured from the front end. Whereas, if you choose to calculate as an option in capital charge, unexpected loss is an output of capital charge runs selected and processed using the Pricing Manager application UI. If you also want to add various other risk charges like Operational Risk Capital, Business Risk Capital, Non-Discretionary Risk Capital, Gap Capital, and so on, as part of Total Capital then the data for the same is expected as a user input for the current release captured as a download in the table. The mapping for the same should exist in output data population logic.

3.2.9. Capital Charge Process Details

Oracle Financial Services Pricing Management, Capital Charge Component uses a smaller version of the standard Analytical Application Infrastructure Runs which is shipped with the Pricing Manager application. You can modify the Runs and include or exclude tasks from capital calculation perspective. The successful execution of any other Run apart from the standard Runs shipped would depend on the required stage tables and relevant columns having the necessary information captured either as downloads in the relevant stage tables or from the Pricing Management application UI.

From Pricing Management perspective, a smaller version of standard Analytical Application Infrastructure Runs is embedded in the following document:

Capital Calculation-
Pricing Manager.xls.x

3.2.10.   Cost of Capital

Cost of Capital is the Weighted Average Cost of Capital (WACC) captured as a download.

NOTE

Cost of Capital is expected as a download in **reveleus_parameter_master**

3.2.11. Rate to meet Target RAROC (%)

Rate to meet Target RAROC is essentially the Interest rate which matches RAROC with Target RAROC. Whenever RAPM calculation is triggered, rate to meet target RAROC should be calculated. For Rate to meet Target RAROC, interest rate is fetched twice, once as user input and the second as 1% increase or decrease on the existing interest rate so that the target RAROC is achieved. Rate to meet Target RAROC is calculated by linearly interpolating or extrapolating two RAROC outputs with the two corresponding interest rates. The following components are involved in rate to meet target RAROC calculation:

- Net Interest Income (NII)

  - Net Interest Income is dependent on interest income cash flow calculated from interest rate captured from the pricing manager screen and an interest expense cash flow calculated based on FTP rate generated by running the TP online engine.

  - Cash Flow Engine is triggered twice. First, with the base interest rate and the second with the scenario rate of an increase or decrease in interest rate so that new cash flow gets generated for a new FTP rate and a new NII is considered for the new RAROC.

  - FTP calculation is performed twice. First, with the base interest rate and the second with the scenario rate so that a new FTP rate and a new NII is considered for the new RAROC.

- RAROC

  - RAROC is computed twice. First time RAROC is computed based on the base data. Second time RAROC is computed based on new NII calculated by a shift in interest rate or the spread for floating rate product.

  - The second RAROC along with the base RAROC is used to calculate Rate to meet Target RAROC. The two RAROC outputs are compared with the Target RAROC and the corresponding two Interest Rates are interpolated or extrapolated to achieve the Target RAROC.

3.2.12. Steps in RAPM Processing

The following steps are involved in RAPM processing:

1. Check if Capital Charge option is **Specify** or **Calculate**

   If Capital Charge option is selected as **Specify**:

   - RAPM calculation should not be triggered
   - Populate reporting table

   If Capital Charge option is selected as **Calculate**:

   - Populate Stage Tables
   - Execute Capital Charge Run
   - Populate reporting table

2. Check if option for FTP Rate is **Specify** or **Calculate**

- If FTP rate option is selected as **Specify**:

▪ Populate reporting table with FTP outputs from the UI Table

- If FTP rate option is selected as **Calculate**:

▪ Execute CFE for cash flow

▪ Persist the cash flow

▪ Execute TP online engine for FTP rate

▪ Populate reporting table

3. Calculate NII

- Call the Cash Flow generated from CFE

▪ Cash Flow Date, Principle, Interest Income

- Calculate Interest Expense in addition to the Cash Flow

▪ Interest Expense logic is the same as is carried out for Interest Income calculation by CFE

- Calculate NII

▪ Take the difference of Interest Income and Interest Expense

▪ Sum the difference for a year as NII

- Calculate Base RAROC and SVA

▪ Compute RAROC using the base RAROC rule. (Two RAROC rules are created. Formula for both should be the same. First RAROC is called the Base RAROC and the second RAROC is called the New RAROC used to calculate the Rate to meet Target RAROC. The purpose of using two rules is to avoid overwriting of base RAROC output.)

▪ Compute SVA triggering the SVA rule.

4. Compare Base RAROC with Target RAROC.

- Check if Base RAROC is equal, less than or greater than Target RAROC

▪ If Base RAROC equals Target RAROC: No further calculation should be done as rate to meet target RAROC has been achieved

▪ If Base RAROC is less than Target RAROC:

    o Increase interest rate by 1% for fixed rate product and 100bps spread for floating rate product

    o Repeat Step 3 (except calculate Base RAROC and SVA task as mentioned in Step 3) using the new interest rate. Store the new NII arrived by repeating Step 3 in a separate column.

    o Calculate new RAROC using the second RAROC rule and the new NII (formula for base RAROC and the second one used to calculate Rate to meet Target RAROC should be the same).

▪ If Base RAROC is greater than Target RAROC:

- o Decrease interest rate by 1% for fixed rate product and 100bps spread for floating rate product

- o Repeat Step3 (except Calculate RAROC and SVA as mentioned in Step 3) using the new Interest rate. Store the new NII arrived by repeating Step 3 in a separate column.

- o Calculate new RAROC using the second RAROC rule (Formula for base RAROC and the second one used to calculate Rate to meet Target RAROC should be the same).

5. Calculate Rate to meet Target RAROC

- Check if target RAROC is in between the base RAROC and the new RAROC calculated using the second RAROC rule

- If target RAROC is equal to the new RAROC calculated using the second RAROC rule:

  - o Report the Interest Rate used in the second RAROC calculation as the Rate to meet Target RAROC.

  - o For Floating Rate it is the first cash flow rate used plus the spread. In case of fixed rate product it is the new rate used.

- If target RAROC is in between the base RAROC and the new RAROC calculated using the second RAROC rule:

  - o Use Interpolation and find the interest rate which equals Target RAROC.

  - o Report the interest rate which equals the Target RAROC as the Rate to meet Target RAROC.

  - o For Floating Rate it is the first cash flow rate used plus the spread. In case of fixed rate product it is the new rate used.

- If target RAROC is in beyond the base RAROC and the new RAROC calculated using the second RAROC rule:

  - o Use Extrapolation and find the interest rate which equals Target RAROC.

  - o Report the interest rate used in the second RAROC calculation as the Rate to meet Target RAROC.

  - o For floating rate it is the first cash flow rate used plus the spread. For fixed rate product it is the new rate that is used.

3.2.13. End to End Example for Pricing Management

An end to end case for pricing management is embedded below as an example for reference:

End to End RAPM
Example.xls

4. <u>Product Use Cases</u>

The product use cases for Pricing Manager application explains all the possible combinations of fund transfer pricing, capital computation and risk adjusted performance measures. It specifies the selection criteria depending upon the cases defined.

4.1. Product Use Case for Pricing Manager

	Fund Transfer Pricing	**Capital Charge**	**RAPM**
Case 1	Specify	Calculate	Calculate
Case 2	Calculate	Calculate	Calculate
Case 3	Specify	Specify	Calculate
Case 4	Calculate	Specify	Calculate

Case 1: When Transfer Pricing is specified, Capital Computation is calculated and RAPM is calculated.

Transfer Pricing Specify: The Funding charge and Minimum Required Rate are specified as inputs.

	Transfer Pricing	**Default Value**
1	Funding Charge	0
2	Minimum Required Rate	0

Capital Charge Calculate: The capital computation for expected loss and unexpected loss under capital charge is done using the following inputs from **Capital Charge Parameter** screen.

1	**Capital Charge Parameters**	**Default Value**
1.1	**Capital Computation**	
	>> Capital Computation Method	Method 1
	>> Seniority	Senior
	>> Fee Amount	0.0000
1.2	**Facility Rating**	
	>> Exposure is Rated >> Need to specify the Rating Type - Internal or External, Rating Source and Rating.	
	>> Exposure is Unrated >> All icons specific to the rating should get disable.	
1.3	**Obligor Rating**	
	>> Obligor is Rated >> Need to specify the Rating Type - Internal or External, Rating Source and Rating.	
	>> Obligor is Unrated >> All icons specific to the rating should get disable.	
1.4	**Risk Mitigants**	
	>> Mitigant - Existing Mitigant or New Mitigant	New Mitigant
	>> Mitigant Name	
	>> Mitigant ID	

	>> Mitigant Type	
	>> Collateral type	
	>> Start Date	
	>> Maturity Date	
	>> Mitigant Issuer	
	>> Issuer Type	
	>> Issuer Rating	
	>> Mitigant Rating	
	>> Rating Source	
	>> MTM/Revaluation Frequency	Daily
	>> Mitigant Value	0.0000
	>> Currency	Indian Rupee

RAPM Calculate: The calculation for Net Interest Income (NII) computation, RAROC, SVA and Rate to meet Target RAROC for Pricing Manager are done using the following inputs from Exposure Detail Screen (Rate of Interest), Transfer Pricing Screen (Fund Transfer Pricing Rate, Target RAROC, Target SVA and Allocated Cost), Capital Computation Screen (Fee Income).

1	**Default Parameter Specification**	
1.1	**Default Parameter**	**Default Values**
	>> Product Dimension	PROD_DIM
	>> Transfer Pricing Rule	Transfer Pricing Rule 1
	>> Prepayment Rule	Prepayment Rule 1
	>> Default Transfer Pricing IRC	Monte Carlo Test
	>> Default Transfer Pricing Method	Cash Flow : Weighted Term (Discounted Cash flow)
	>> Adjustment Rule	Adjustment Rule 1
	>> Stochastic Rate Indexing Rule	Stochastic Rate Indexing Rule 1
1.2	**Default Adjustments**	
	>> Liquidity Adjustment	0
	>> Basis Risk	0
	>> Pricing Incentives	0
	>> Other Adjustments	0
	>> Breakage Charge	0

1.3	**Default Costs**	
	>> Allocated Cost	0
	>> Option Cost >> *Specify or Calculate*	0
	>> User Defined 1	0
	>> User Defined 2	0
2	**Product Parameter Specification**	**Default Value**
2.1	Product Details	
	>> Product Name	
	>> Currency	
2.2	Target RAPM Specification	
	>> Target RAROC (in %)	0
	>> Target SVA	0
2.3	Adjustment Specification	
	>> Liquidity Adjustment	0
	>> Basis Risk	0
	>> Pricing Incentives	0
	>> Other Adjustments	0
	>> Breakage Charge	0
2.4	Cost Specification	
	>> Allocated Cost	0
	>> Option Cost	0
	>> User Defined 1	0
	>> User Defined 2	0
2.5	Conditional Parameter Specification	
	Specify	
	>> Conditional RAPM - Target RAROC and Target SVA	0
	>> Conditional Adjustments- Liquidity Adjustment, Basis Risk, Pricing Incentives, Other Adjustments and Breakage Charge	0
	>> Conditional Costs - Allocated Cost, Option Cost , User Defined1 and User Defined 2	0
3	**Exposure Details**	**Default Value**
	Exposure Amount	0
	Exposure Limit	0
	Exposure Start Date	
	Exposure Maturity Date	
	Interest Rate - Fixed or Floating	Floating Rate

	If Fixed, Specify a fixed rate	0
	If Floating, Specify	
	Floating Rate Spread	0
	Floating Rate Benchmark	LIBOR
	Repricing Frequency	0
	Payment Frequency	0

Case 2: When Transfer Pricing is calculated, Capital Charge is calculated and RAPM is calculated.

Transfer Pricing Calculate: The calculation for Funding charge and Minimum Required Rate are done using transfer pricing engine (FTP Engine).

1	Default Parameter Specification	Default Value
1.1	**Default Parameter**	
	>> Product Dimension	PROD_DIM
	>> Transfer Pricing Rule	Transfer Pricing Rule 1
	>> Prepayment Rule	Prepayment Rule 1
	>> Default Transfer Pricing IRC	Monte Carlo Test
	>> Default Transfer Pricing Method	Cash Flow : Weighted Term (Discounted Cash flow)
	>> Adjustment Rule	Adjustment Rule 1
	>> Stochastic Rate Indexing Rule	Stochastic Rate Indexing Rule 1
1.2	**Default Adjustments**	
	>> Liquidity Adjustment	0.0000
	>> Basis Risk	0.0000
	>> Pricing Incentives	0.0000
	>> Other Adjustments	0.0000
	>> Breakage Charge	0.0000
1.3	**Default Costs**	
	>> Allocated Cost	0.0000
	>> Option Cost >> *Specify or Calculate*	0.0000
	>> User Defined 1	0.0000
	>> User Defined 2	0.0000
2	**Product Parameter Specification**	**Default Value**
2.1	**Product Details**	
	>> Product Name	

	>> Currency	
2.2	**Target RAPM Specification**	
	>> Target RAROC (in %)	0
	>> Target SVA	0
2.3	**Adjustment Specification**	
	>> Liquidity Adjustment	0
	>> Basis Risk	0
	>> Pricing Incentives	0
	>> Other Adjustments	0
	>> Breakage Charge	0
2.4	**Cost Specification**	
	>> Allocated Cost	0
	>> Option Cost	0
	>> User Defined 1	0
	>> User Defined 2	0
2.5	**Conditional Parameter Specification**	
	Specify	
	>> Conditional RAPM - Target RAROC and Target SVA	0
	>> Conditional Adjustments- Liquidity Adjustment, Basis Risk, Pricing Incentives, Other Adjustments and Breakage Charge	0
	>> Conditional Costs - Allocated Cost, Option Cost , User Defined1 and User Defined 2	0
3	**Main**	**Default Value**
	>> Amortization Type	Non Amortizing
	>> Adjustable Type	Fixed
	>> Accrual Basis	Actual /Actual
	>> Compounding Basis	Simple
	>> Interest Payment Timing	Arrears
	>> Rate Rounding Type	No Rounding
	>> Rate Rounding Factor	0
4	**Terms**	
	>> Original Term	0 Months
	>> Amortization Term	0 Months
	>> Rate Set Lag	0 Months
	>> Tease Period	0 Months
	>> Tease Discount	0

5	**Other Details**	
	>> Liquidity Adjustment	0
	>> Basis Risk	0
	>> Pricing Incentives	0
	>> Other Adjustments	0
	>> Breakage Charges	0
	>> Allocated Costs	0
	>> Option Cost	0
	>> User Defined 1	0
	>> User Defined 2	0

Capital Charge Calculate: The capital computation for expected loss and unexpected loss in Basel using the following inputs from **Capital Charge Parameter** Screen.

1	**Capital Charge Parameters**	**Default Value**
1.1	**Capital Computation**	
	>> Capital Computation Method	Method 1
	>> Seniority	Senior
	>> Fee Amount	0.0000
1.2	**Facility Rating**	
	>> Exposure is Rated >> Need to specify the Rating Type - Internal or External, Rating Source and Rating.	
	>> Exposure is Unrated >> All icons specific to the rating should get disable.	
1.3	**Obligor Rating**	
	>> Obligor is Rated >> Need to specify the Rating Type - Internal or External, Rating Source and Rating.	
	>> Obligor is Unrated >> All icons specific to the rating should get disable.	
1.4	**Risk Mitigants**	
	>> Mitigant - Existing Mitigant or New Mitigant	New Mitigant
	>> Mitigant Name	
	>> Mitigant ID	
	>> Mitigant Type	
	>> Collateral type	
	>> Start Date	
	>> Maturity Date	
	>> Mitigant Issuer	
	>> Issuer Type	
	>> Issuer Rating	

	>> Mitigant Rating	
	>> Rating Source	
	>> MTM/Revaluation Frequency	Daily
	>> Mitigant Value	0.0000
	>> Currency	Indian Rupee

Pricing Manager Calculate: The calculation for Net Interest Income (NII) computation, RAROC, SVA and Rate to meet Target RAROC for Pricing Manager are done using the following inputs from Exposure Detail Screen (Rate of Interest), Transfer Pricing Screen (Fund Transfer Pricing Rate, Target RAROC, Target SVA and Allocated Cost), and Capital Computation Screen (Fee Income).

1	Exposure Details	Default Value
	Exposure Amount	0
	Exposure Limit	0
	Exposure Start Date	
	Exposure Maturity Date	
	Interest Rate - Fixed or Floating	Floating Rate
	If Fixed, *Specify a fixed rate*	0
	If Floating, *Specify*	
	Floating Rate Spread	0
	Floating Rate Benchmark	LIBOR
	Repricing Frequency	0
	Payment Frequency	0

<u>Case 3:</u> When Transfer Pricing is specified, Basel is specified and Pricing Manager is calculated.

Transfer Pricing Specify: Funding Charge and Minimum Required Rate are specified as inputs.

	Transfer Pricing	Default Value
1	Funding Charge	0
2	Minimum Required Rate	0

Capital Charge: Specify: When capital charge computation is specified expected loss is obtained unexpected loss and obligors rating as inputs.

1	Capital Charge Parameters	
1.1	**Expected Loss**	0
1.2	**Unexpected Loss**	0
1.3	**Obligor Rating**	
	>> Obligor is Rated >> Need to specify the Rating Type - Internal or External, Rating Source and Rating.	
	>> Obligor is Unrated >> All icons specific to the rating should get disable.	

RAPM Calculate: The calculation for Net Interest Income (NII) computation, RAROC, SVA and

Rate to meet Target RAROC for Pricing Manager application are done using the following inputs from Exposure Detail Screen (Rate of Interest), Transfer Pricing Screen (Fund Transfer Pricing Rate, Target RAROC, Target SVA and Allocated Cost), Capital Computation Screen (Fee Income).

	Default Parameter Specification	
1	Default Parameter	Default Values
	>> Product Dimension	PROD_DIM
	>> Transfer Pricing Rule	Transfer Pricing Rule 1
	>> Prepayment Rule	Prepayment Rule 1
	>> Default Transfer Pricing IRC	Monte Carlo Test
	>> Default Transfer Pricing Method	Cash Flow : Weighted Term (Discounted Cash flow)
	>> Adjustment Rule	Adjustment Rule 1
	>> Stochastic Rate Indexing Rule	Stochastic Rate Indexing Rule 1
2	Default Costs	
	>> Allocated Cost	0
	>> Option Cost >> *Specify or Calculate*	0
	>> User Defined 1	0
	>> User Defined 2	0
	Product Parameter Specification	Default Value
1	Product Details	
	>> Product Name	
	>> Currency	
2	Target RAPM Specification	
	>> Target RAROC (in %)	0
	>> Target SVA	0
3	Cost Specification	
	>> Allocated Cost	0
	>> Option Cost	0
	>> User Defined 1	0
	>> User Defined 2	0

4	Conditional Parameter Specification	
	Specify	
	>> Conditional RAPM - Target RAROC and Target SVA	0
	>> Conditional Adjustments- Liquidity Adjustment, Basis Risk, Pricing Incentives, Other Adjustments and Breakage Charge	0
	>> Conditional Costs - Allocated Cost, Option Cost , User Defined1 and User Defined 2	0

Case 4: When Transfer Pricing is calculated, Basel is specified and Pricing Manager is calculated.

Transfer Pricing Calculate: The Pricing Manager application calculates Funding charge and Minimum Required Rate using transfer pricing engine.

1	Default Parameter Specification	Default Value
	Default Parameter	
	>> Product Dimension	PROD_DIM
	>> Transfer Pricing Rule	Transfer Pricing Rule 1
	>> Prepayment Rule	Prepayment Rule 1
	>> Default Transfer Pricing IRC	Monte Carlo Test
	>> Default Transfer Pricing Method	Cash Flow : Weighted Term (Discounted Cash flow)
	>> Adjustment Rule	Adjustment Rule 1
	>> Stochastic Rate Indexing Rule	Stochastic Rate Indexing Rule 1
	Default Adjustments	
	>> Liquidity Adjustment	0.0000
	>> Basis Risk	0.0000
	>> Pricing Incentives	0.0000
	>> Other Adjustments	0.0000
	>> Breakage Charge	0.0000
	Default Costs	
	>> Allocated Cost	0.0000
	>> Option Cost >> *Specify or Calculate*	0.0000
	>> User Defined 1	0.0000
	>> User Defined 2	0.0000

2	Product Parameter Specification	Default Value
	Product Details	
	>> Product Name	
	>> Currency	
	Target RAPM Specification	
	>> Target RAROC (in %)	0
	>> Target SVA	0
	Adjustment Specification	
	>> Liquidity Adjustment	0
	>> Basis Risk	0
	>> Pricing Incentives	0
	>> Other Adjustments	0
	>> Breakage Charge	0
	Cost Specification	
	>> Allocated Cost	0
	>> Option Cost	0
	>> User Defined 1	0
	>> User Defined 2	0
	Conditional Parameter Specification	
	Specify	
	>> Conditional RAPM - Target RAROC and Target SVA	0
	>> Conditional Adjustments- Liquidity Adjustment, Basis Risk, Pricing Incentives, Other Adjustments and Breakage Charge	0
	>> Conditional Costs - Allocated Cost, Option Cost , User Defined1 and User Defined 2	0
3	**Main**	Default Value
	>> Amortization Type	Non Amortizing
	>> Adjustable Type	Fixed
	>> Accrual Basis	Actual /Actual
	>> Compounding Basis	Simple
	>> Interest Payment Timing	Arrears
	>> Rate Rounding Type	No Rounding
	>> Rate Rounding Factor	0
4	**Terms**	
	>> Original Term	0 Months
	>> Amortization Term	0 Months

	>> Rate Set Lag	0 Months
	>> Tease Period	0 Months
	>> Tease Discount	0
5	**Other Details**	
	>> Liquidity Adjustment	0
	>> Basis Risk	0
	>> Pricing Incentives	0
	>> Other Adjustments	0
	>> Breakage Charges	0
	>> Allocated Costs	0
	>> Option Cost	0
	>> User Defined 1	0
	>> User Defined 2	0

Capital Computation Specify: When capital charge computation is specified expected loss is obtained unexpected loss and obligors rating as inputs.

	Capital Charge Parameters	
1	**Expected Loss**	0
2	**Unexpected Loss**	0
3	**Obligor Rating**	
	>> Obligor is Rated >> Need to specify the Rating Type - Internal or External, Rating Source and Rating.	
	>> Obligor is Unrated >> All icons specific to the rating should get disable.	

RAPM: Calculate: The calculation for Net Interest Income (NII) computation, RAROC, SVA and Rate to meet Target RAROC for Pricing Manager are done using the following inputs from Exposure Detail Screen (Rate of Interest), Transfer Pricing Screen (Fund Transfer Pricing Rate, Target RAROC, Target SVA and Allocated Cost), Capital Computation Screen (Fee Income).

	Exposure Details	**Default Value**
1	Exposure Amount	0
2	Exposure Limit	0
3	Exposure Start Date	
4	Exposure Maturity Date	
5	Interest Rate - Fixed or Floating	Floating Rate
	If Fixed, *Specify a fixed rate*	0
	If Floating, *Specify*	
	Floating Rate Spread	0
	Floating Rate Benchmark	LIBOR
	Repricing Frequency	0
6	Payment Frequency	0
	Capital Charge Parameters	**Default Value**
1	**Capital Computation**	

	>> Capital Computation Method	Method 1
	>> Seniority	Senior
	>> Fee Amount	0.0000

5. <u>Data Model</u>

Data model for Pricing Manager consists of Pricing Manager UI Tables, Basel Stage tables and FTP tables.

Storage for Pricing Manager is as follows:

From the screen the definition is stored in the Pricing Manager UI tables and then the data is inserted into the respective Basel Stage tables and FTP tables.

Pricing manager UI tables are provided in the following document:

Pricing Management
Data Model.xls.xlsx

6. <u>Security Considerations</u>

6.1.Privileges

6.1.1. Capital Charges

If the customer is buying only the Capital Charge application, then the Transfer Pricing parameters can only be specified.

Name	Description	Incompatibilities
System Administrator	In charge of the overall control of all screens. The screens are as follows: • Default Parameters • Pricing • Exposure Parameters • Capital Charge Parameters • Transfer Pricing Parameters • Customer Details • Price Icon	None
Relationship Manager	Authority is limited to only the following screens: • Pricing • Exposure Parameters • Capital Charge Parameters • Transfer Pricing Parameters • Customer Details • Price Icon	Default Parameters

Table 4: User Privileges (Capital Charges)

6.2.Duties

6.2.1. Pricing Manager Duties

Role	Duty	List of Privileges	Incompatibilities
System Administrator	Read All Edit All Save All Delete All	• Default Parameters • Product Parameters • Products • Daily Query • Pricing • Exposure Parameters • Capital Charge Parameters • Transfer Pricing Parameters • Customer Details	None
TP Online Analyst	Read Only Read Only Read Only Edit All Save All Delete All (These duties will be restricted to analyst who create the definition)	• Default Parameters • Product Parameters • Products • Daily Query • Pricing • Exposure Parameters • Capital Charge Parameters • Transfer Pricing Parameters • Customer Details	• Default Parameters • Product Parameters • Products
Relationship Manager	Read Only Read Only Read Only Edit All Save All Delete All (These duties will be restricted to analyst who create the definition)	• Default Parameters • Product Parameters • Products • Daily Query • Pricing • Exposure Parameters • Capital Charge Parameters • Transfer Pricing Parameters • Customer Details	• Default Parameters • Product Parameters • Products • Daily Query

Table 5: User Privileges (Pricing Manager)

7. <u>UI Application Component Details</u>

The Pricing Manager application consists of the following UI's:

- Pricing Management Maintenance
  - Application Preference

- Parameter Specifications
  - Default Parameters
  - Product Parameters

- Assumption Specifications
  - Product
  - Daily Queries
  - Pricing

7.1. Page Information

7.1.1. Application Preference

The Pricing Manager application preference page features Pricing Management Maintenance and is a part of the basic set up activity where certain types of information are defined and managed at an overall application level by the Administrator and/or at the individual user level. This set of information is known as *Application Preferences*. The Administrator would have modification rights to the full set of preferences and may also provide the same rights to users at an individual user level for certain preferences. Only those preferences which are set to **Updateable** is open to modifications by individual users

Figure 2: Pricing Management RHS Screen

7.1.2. Default Parameter Screen

The first screen for Pricing Manager is Default Parameters screen. Default parameter specification involves specifying general parameters for processing of Pricing Management.

Default Parameter specification involves specifying the following sections:

- Default Parameters

- Default Adjustments

- Default Cost

The information entered and saved acts as default information for processing of the Pricing Manager application and is to be defined irrespective of the user being only a TPOL user or a capital charge user or both. This is a onetime set up activity and is done at an administrative level.

This screen can be accessed from **Pricing Manager Tab > Parameter Specification > Default Parameters.**

Figure 3: Default Parameter Specification

In the **Default Parameters** Screen, enter the following information from the list mentioned below:

- Product Dimension

- Transfer Pricing Rule

- Prepayment Rule

- Stochastic Rate Indexing Rule

- Default Transfer Pricing Interest Rate Code (IRC)

- Adjustment Rule

- Default Transfer Pricing Method

Product Dimension – The product dimension is the chart of accounts concept followed in OFSA

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analytics that is used throughout the system. The product dimension selection controls the listing of products, and therefore controls all other data (except worksheets concept used in OFSA TP online) stored and used within the system.

The product dimension selection is listed as a dropdown list of all product dimensions. The names of the product dimensions is retrieved from the table **OFSA_CATALOG_OF_LEAVES**. A selection for the product dimension is required.

Transfer Pricing Rule - The Transfer Pricing methodologies determine how transfer rates are calculated for each product. Transfer Pricing methodologies are defined within the Transfer Pricing module as Transfer Pricing IDs. You can select a Transfer Pricing rule from a drop down list of all Transfer Pricing IDs that are available for the Transfer Pricing module. You must select a Transfer Pricing ID.

Prepayment Rule - Prepayment assumptions are defined within the Transfer pricing module as Prepayment rules. Prepayment assumptions are referenced when calculating a transfer rate using a cash flow method. The calculated cash flows are adjusted based on the prepayment assumptions contained within the selected prepayment assumption set or prepayment rules.

Default Transfer Pricing -Interest Rate Code (IRC) – The Interest Rate Code is used for discounting the cash flows in Cash Flow Engine while calculating the transfer pricing rate.

Default Transfer Pricing Method - The default transfer pricing method are employed when the user manually inputs the product characteristics. The following instrument sensitive transfer pricing methods are available:

- **Straight Term**

  - Cash Flow Weighted Term

  - Cash Flow Duration

  - Zero Coupon Discount Factor

  - The default option is Cash Flow Weighted Term.

- **Adjustment Rule** - Allows you to select an adjustment rule. The products selected for processing in TP Online refers to assumptions defined in the selected adjustment rule.

- **Stochastic Rate Indexing Rule** - Stochastic Rate Indexing assumptions are defined within the transfer pricing module as Stochastic Rate Indexing rules. Stochastic Rate Indexing rules assumptions are referenced when the option costs have to be calculated. All the Stochastic Rate Indexing rules defined in the FTP are shown in the dropdown.

Default Adjustments

The second section in the screen is default adjustment where the parameters that act as adjustment information for calculating FTP are specified.

⌃ Default Adjustments (in %)			
Liquidity Adjustment	0.3400	Basis Risk	1.3000
Pricing Incentives	0.2500	Other Adjustments	1.0000

Figure 4: Default Adjustments

Default Adjustment Specification

The following default adjustments are specified:

- Liquidity Adjustment

- Basis Risk

- Pricing Incentives

- Other Adjustments

Default Costs

The final section in the screen is the default cost where you specify the cost information which is applied to all the products by default unless further filtering is available at Product-Currency level in Product Parameter screen.

⋩ Default Costs (in %)			
Allocated Cost	10.0000	User Defined 1	10.0000
Option Cost	⊙ Specify 10.0000 ○ Calculate	User Defined 2	10.0000
	Save Cancel		

Figure 5: Default Costs

Default Cost Specification

The following default costs are specified:

- Allocated Cost - Allocated cost is the amount of non interest costs attributed to the loan.

- Option Cost - You choose either to specify or give calculate as option for Option Cost.

- User Defined 1 – You can choose some inputs specific to the business in order to do the computations.

- User Defined 2 - You can choose some inputs specific to the business in order to do the computations.

7.1.3. Product Parameter Screen

The second screen for Pricing Manager is Product Parameters screen. Product Parameter screen involves specifying the parameters, adjustments and costs at a given product - currency level.

This screen can be accessed from **Pricing Manager Tab > Parameter Specification > Product Parameters**.

In Product Parameter specification enter information for the following sections:

- Product Details

- Target RAPM Specification

- Adjustment Specification

- Cost Specification

- Conditional Parameter Specification

Product Parameter summary page has two sections:

- Search

- List of Products
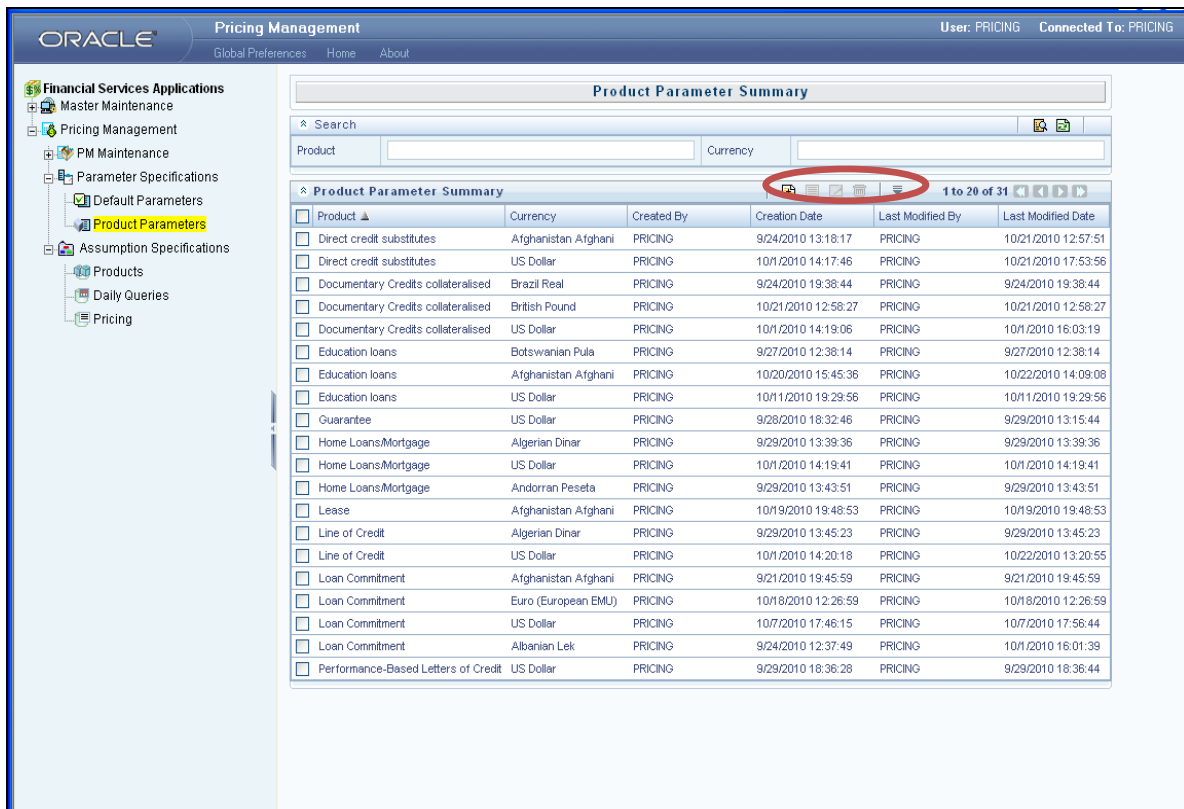
On entering Product and Currency information in the **Search** section the entire list is displayed. All the newly defined products are displayed in this screen.

The following icons are present in the summary screen:

- Add New

- View

- Edit

- Delete

- Export

- Number of records per Page

The summary screen displays the following information:

- Product

- Currency

- Created By

- Creation Date

- Last Modified By

- Last Modified Date

All the above information displayed in the main page gets fetched from the definition page

UI Index #	Icon/Option	Action Performed
1	Search	Performs Search
2	New	Allows you to define new rule
3	View	Allows you to view a defined rule. Active only when an existing rule is selected from the list
4	Edit	Allows you to edit a defined rule. Active only when an existing rule is selected from the list
5	Delete	Allows you to delete a defined rule. Active only when an existing rule is selected from the list
6	Export	Export to PDF. Active only when an existing rule is selected from the list
7	Check Box	Allows you to select a rule. Multiple rule select is not allowed. Check Box next to Name allows "Select All". All Rules selected can only be deleted or exported.
8	No. of records per Page	Allows you to define # of records to be displayed in the page. Three pre-defined options of 5, 7 and 10 are selectable. User can also define this option.

Table 6: Action Icons Product Parameter Summary Page

Product Detail

The first tab in product parameters screen captures the information about product and currency combination.

Figure 6: Product Details

The available product name can be selected from the product name browser and once the selection is made the corresponding currency needs to be selected from the currency browser.

Target RAPM Specification

The target Risk Adjusted Performance Measures tab takes the input for target RAROC and Target SVA. The RAPM is applicable to the given product and the currency selected in the product currency section.

Figure 7: Target RAPM SpecificationAdjustment Specification

Under product parameter tab, the required adjustments need to be specified. These inputs are specific to the selection made for product currency combination.

Figure 8: Adjustment Specification (in %)Cost Specification

Under product parameter tab, the required cost parameters need to be specified. These inputs are specific to the selection made for product currency combination.

Figure 9: Cost Specification (in %)

Conditional Parameter Specification

Conditional parameter specification involves specifying the parameters applicable for risk pricing based on specific conditions which can be at a single or multiple (nested conditions) levels.

Figure 10: Conditional Parameter Specification

The Parameters can be specified on Conditional RAPM, Conditional Adjustments and Conditional Cost either one or all of them. It involves the following steps:

Selection of Parameter

- Conditional Risk Adjusted Performance Measures
- Conditional Adjustments
- Conditional Costs

Specification of Conditions

When conditional RAPM is selected the following conditions are enabled:

- Target RAPM

- Target SVA

When Conditional Adjustment is selected the following conditions are enabled:

- Liquidity Adjustment

- Basis Risk

- Pricing Incentives

- Other Adjustments

- Breakage charges

When Conditional Costs is selected the following conditions are enabled:

- Allocated Cost

- Option Cost

- User Defined 1

- User Defined 2

Based on these parameters you can define additional conditions for each product currency combinations.

Specification of Parameter Values

Oracle Financial Services Pricing Management, Capital Charge Component allows conditions to be specified as single-level conditions or as nested conditions. The process of specifying conditions involves the following:

The criterion type is selected as one of the following:

- Loan Amount

- Maturity

- Credit Rating

- Credit Score

Figure 11: Conditional Parameter- Sibling Selection

If the criterion type is selected as loan amount then the following parameters are specified:

- Loan Amount 1

- Operator 1

- Loan Amount 2

- Operator 2

If the criterion type is selected as maturity then the following parameters are specified:

- Maturity 1

- Operator 1

- Maturity 2

- Operator 2 Period

Period is selected as one of the following:

- Days

- Months

- Years

If the criterion type is selected as credit rating then the Credit Rating Browser is displayed and one or multiple credit ratings are selected. The condition can be specified inclusive of or exclusive of the selected credit ratings.

If the criterion type is selected as credit score then the following parameters are specified:

- Credit Score 1

- Operator 1

- Credit Score 2

- Operator 2

The operator will be a drop down selection of the following:

- <

- <=

- =

- >

- >=

Based on the criterion type selected, the condition is specified. For example: if the criterion is selected as loan amount, then a simple condition may be specified as Loan Amount >= 1000 <= 5000. A nested condition may be specified as Loan Amount >= 1000 <= 5000 where Credit Rating includes AAA, AA and A.

Once the conditions are defined, then the values for target RAPM, adjustments and costs are provided at the most granular level of the condition. In the simple condition illustration, it will be specified at the level of the loan amount while in the nested condition it will be at the level of credit rating.

7.1.4. Pricing Parameters

Pricing Parameters refers to the process of defining parameters required to carry out risk pricing in order to obtain transfer rates, capital charges and exposure price. An existing Risk Pricing Definition is allowed to be edited as well as deleted. Editing a Risk Pricing Definition may result in the definition being saved as the same definition or a save as, as an entirely new definition.
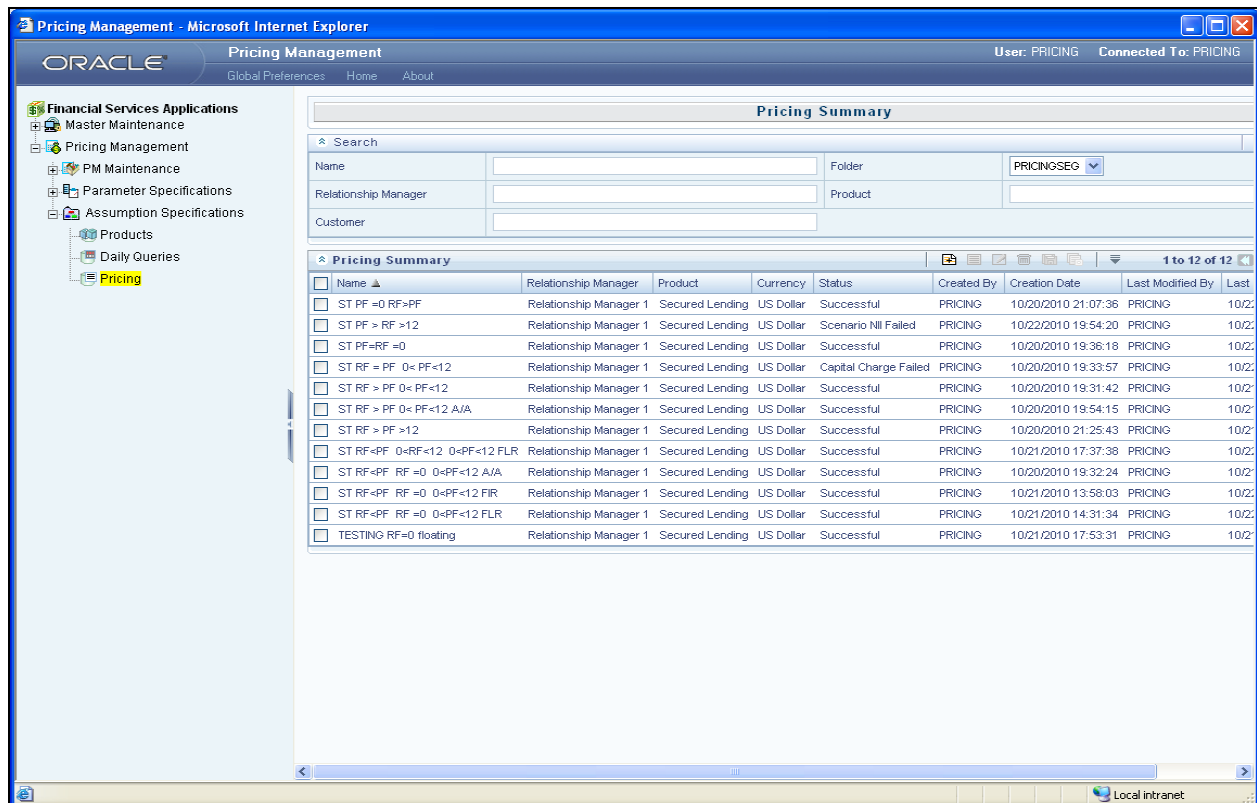
Figure 12: Pricing Summary – Main Page

The main screen displays two sections as follows:

- Search

- Pricing Summary

Search should be enabled on the following information:

- Pricing Name

- Product

- Relationship Manager

- Customer

On entering any of the above information, the entire list of products are displayed.
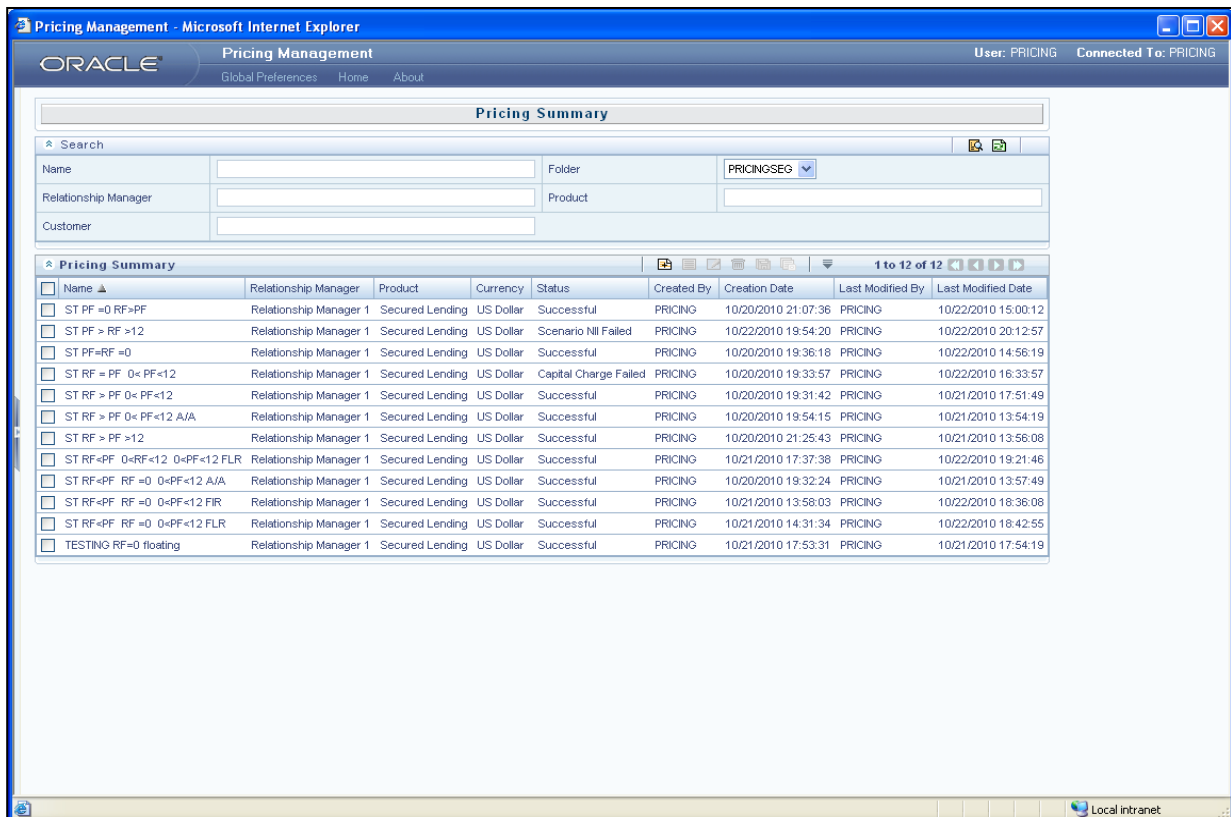
Figure 13: Pricing Summary Screen

The pricing defined is displayed in the summary page.

The following icons are present in the summary screen:

- Add New

- View

- Edit

- Delete

- Pricing report

The Pricing Summary Page displays the following information:

- Name

- Relationship Manager

- Product

- Currency

- Status

- Created By

- Creation Date

- Last Modified By

- Last Modified Date

All the above information displayed in the main page is fetched from the definition page

UI Index #	Icon/Option	Action Performed
1	Search	Performs Search
2	New	Allows user to define new rule
3	View	Allows user to view a defined rule. Active only when an existing rule is selected from the list
4	Edit	Allows user to edit a defined rule. Active only when an existing rule is selected from the list
5	Delete	Allows user to delete a defined rule. Active only when an existing rule is selected from the list
6	Export	Export to PDF. Active only when an existing rule is selected from the list
7	Check Box	Allows user to select a rule. Multiple rule select is not allowed. Check Box next to Name allows "Select All". All rules selected can only be deleted or exported.
8	No. of records per Page	Allows user to define # of records to be displayed in the page. Three pre-defined options of 5, 7 and 10 are selectable. User can also define this option.

Table 7: Action Icons Pricing Summary Screen

7.1.5. Pricing Definition

Pricing Definition involves specifying the following:

- Common Information
  - ▪ Pricing Definition
  - ▪ Pricing Details
- Specific Tabs
  - ▪ Exposure Parameters
  - ▪ Capital Charge Parameters
  - ▪ Transfer Pricing Parameters
  - ▪ Customer Details

Figure 14: Pricing Definition screen

7.1.6. Pricing Details

Pricing details – You are expected to enter all the customer related parameters in this section for an existing or a new customer.

Figure 15: Pricing Details

Two options to be provided in the section:

- Existing Customer

- New Customer

Existing customer- When you select the option of existing customer and enter in an existing customer name, Customer ID data is fetched automatically.

In this case, the following details in the customer details tab should appear automatically.

New Customer- When you select the option of new customer, you are expected to define the section.

Information expected to be entered or selected from the list of values available for each.

- Customer Name
- Customer Type
- Relationship Manager
- Product Name
- Product Type
- Currency

Customer ID is disabled on clicking New Customer as option.

List of Value display icon is there for:

- Customer Type
- Relationship Manager
- Product Name
- Product Type
- Currency

7.1.7. Exposure Parameters

Exposure Details

In Exposure Parameter section, first specify the exposure details. You are expected to provide all the information related to the exposure. All fields are mandatory to be updated for the calculations.

Figure 16: Exposure Detail

The following information is expected to be entered or selected in the main tab:

- Exposure Amount –specify the amount which is to be priced.
- Exposure Start Date - Start Date is the date on which the exposure was issued to the customer. It can be selected from the Date Browser. Start date captures the notional start date for the exposure.
- Exposure Maturity Date - Maturity Date specify the date on which the exposure will mature and full repayment is due. It can be selected from the Date Browser.

- Repricing Frequency - Repricing frequency requires input of a unit- an integer value greater than zero and selection of a multiplier (Units). The multiplier can be in:

  - Days

  - Months

  - Years

The default is 1 Month.

Payment Frequency - Payment frequency requires input of a unit, an integer value greater than zero and selection of a multiplier (Units). The multiplier can be in:

- Days

- Months

- Years

The default is 1 Month.

Interest Rate :It specifies the rate which is supposed to be used for pricing calculations. It can be of 2 types:

- **Fixed Rate** :Fixed rate is a single rate expressed in percentage (%) terms. When fixed rate option is selected, Floating rate parameters and repayment schedule details is disabled.

- **Spread (in bps)** – Floating interest rate is expressed as a spread over a benchmark. The spread value needs to be specified in 100 basis points. It is the additional spread to be added to the rate from the Interest Rate Code. The margin can be either positive or negative. It has the format +/-99.9999. The default value for the margin is 0.0000.

- **Floating Rate Benchmar**k - The Interest Rate Code determines the Interest Rate Code to be applied for definition of the floating interest rate. The selection should list all Interest Rate Codes, sorted by name and code value depending on the currency selected in the pricing details. Floating Rate Benchmark can be selected from the dropdown list. Floating Rate Benchmark are the following:

  - LIBOR

  - MIBOR

  - LIB Prime Lending Rate and so on.

The default should be the first IRC, listed alphabetically.

7.1.8. Repayment Schedule Details

Repayment schedule is applicable only when the product type is selected as Structured Loan and the interest rate option is selected as Floating Rate

Figure 17: Repayment Schedule Details screen

Under Repayment Schedule Details section, there are 2 options:

- Automatic Generation of Repayment Schedule

- Define Repayment Schedule.

You have to select between Automatic Generation of Repayment Schedule and Define Repayment Schedule, using a radio icon.

When Define Repayment option is selected, then only total number of payments field are activated. Total number of payments field requires input of a unit, an integer value greater than zero. Once you enter the data and click the arrow icon next to total number of payments, it will create the payment schedule with blank data. In define repayments you need to enter the data and the corresponding payment.

When Automatic Generation of Repayment Schedule is selected, the total number of payments field is also available. You have to enter each of the values manually. Based on the information entered in Automatic Date and Payment Generation section, the Pricing Manager application generates the defined payment dates and amounts.

Increment type: You have 2 options that can be selected from a drop down menu:

- Single

- Multiple

In case of Single, you chose any one increment method type. But in case of multiple, you can choose multiple increment method provided the sum of increment amount totals to exposure amount less start payment.

When option chosen is multiple, the following fields have to be manually filled in.

Total number of payments: requires input of a unit, an integer value greater than zero

Start Date: It has to be selected from the date browser in mm/dd/yyyy format.

Default is mm/dd/yyyy

Increment By: requires input of a unit, an integer value greater than zero and selection of a multiplier (Units). The multiplier can be in:

- Days

- Months

- Years

Default multiplier unit is days.

Start Payment: Refers to the 1st payment amount.

Increment Method: Can be any of the following types.

- By value

- By percentage

- Constant

When by percentage option is chosen, a percentage symbol (%) appears next to the increment amount field and when the option chosen is constant, increment amount field displays **constant** and cannot be edited.

Increment amount: Refers to the amount by which the amount should increase.

The number of rows in this section can be increased or decreased by clicking the **Add** icon.

All these fields are entered on the screen and do not get updated in any table but is displayed in define payment date and amounts as follows:

Figure 18: Repayment Schedule Details

The repayment schedule is shown in the above section.

- **Date:** Represents the dates on which repayment is carried out

- **Repayment amount:** The amounts that are repaid at regular intervals

If **Define Repayment Option** is selected, the dates in the schedule is selected from the **Date** browser

7.1.9. Capital Charge Parameters

Capital Charge Computation page is used to define Basel Expected Loss and Unexpected Loss which becomes an input to RAROC and SVA computation.

You can either enter the information or use Oracle Financial Services Basel II Application to work out the information. In Capital Computation section, you first select the option to specify or to calculate the capital charge.

If you select specify capital charge as the option, the capital computation method information gets disabled and no selection is possible. But expected loss, unexpected loss and fee amount information can be entered by you.

Figure 19: Capital Computation section- Capital charge specify

If you select calculate capital charge as the option, the capital computation method becomes available as drop down for you to select. You need to specify the seniority and enter data for fee amount.

If you select the option to calculate capital charge, specify the above additional information. The above information opens up dynamically on the selection of calculate capital charge.

- Exposure seniority

- Fee Amount

Exposure seniority is a drop down box with the following data:

- Senior

- Subordinated

Fee Amount is a user entry field and should appear irrespective of Capital Charge option to specify or calculate.

Facility Rating

Facility Rating section opens up only for Non-Retail Customers. If the Customer Type selected is Individual or any other Retail, Facility Rating section is displayed. The first data in the Facility Rating section is Exposure Rated or Unrated. Exposure rating details is a radio icon which allows you to select either of the following:

- Exposure is Rated

- Exposure is Unrated

If the exposure is rated the above rating details section opens up with rating source and rating information for you to select.

If the exposure is rated the reference details section in customer details page is not displayed. But if the exposure is unrated then the **Customer Details** page enables the reference details section.

Once you select, the exposure is rated, and then the Rating Type data should be updated.

Rating Type includes:

- Internal Rating

- External Rating

If you select internal rating then the entire facility rating section displays only one row for rating selection and all the add new, delete, functionalities are disabled.

Figure 20: Facility Rating

Whereas if you select external rating in rating type then add new and delete icon functionality is

---

enabled and you can enter multiple rows for selection.

For exposure rated and rating type is external, there should be only two icons available in the right corner for this section add new and delete.

Add New Icon adds a new row in Facility Rating section

Delete icon delete the rows on selection and click of delete.

If you have entered multiple facility rating details then **V_Rating_ID** used for all the ratings has to be the same for the same customer. But **V_Rating_Code** need not be the same. So for multiple ratings, the rating information appears in multiple rows in stg_rating_details with same **V_rating_id** but distinct **V_rating_code**.

Credit Score section

Credit score section opens up when the customer type selected is **Individual** or **High Net Worth Individual**. For any other customer type **Obligor Rating** and **Facility Rating** section opens up.

Figure 21: Pricing Details

Obligor Rating section

The obligor rating section opens up for all customers other than **Individual** and **High Net Worth Individual**.

Obligor Rating

The first information in the section is a radio icon which allows you to select either

- Obligor is Rated

- Obligor is Unrated

For Basel IRB approach for internal rating unrated customers cannot exist.

If the obligor is rated then the rating detail is displayed with Rating Source and Rating. If the obligor is unrated then the rating details information is not displayed.

If you select o**bligor is rated**, then an input for Rating Type information is displayed.

Rating Type includes:

- Internal Rating

- External Rating

If you select internal rating then the obligor rating section displays only one row for rating selection and all the add new, delete, functionality is disabled. You need to select the internal rating source and the corresponding internal rating.

Whereas, if you select external rating in rating type then add new and delete icon functionality is enabled and you can enter multiple rows for selection.

For a customer who is rated and wherein the Rating Type is external, there are two icons available in the right corner for rating details: **Add new** and **Delete**. Add New Icon should add a new row in Facility Rating section. Delete icon deletes a row on selection.

If you have also entered facility rating details then **V_Rating_ID** used for obligor rating has to be same as the **V_rating_ID** used in facility rating. But **V_Rating_Code** need not be the same. In case **V_Rating_Code** used in facility rating is same as the **v_rating_code** used in Obligor rating then the information should appear as a single row in **stg_rating_details**. If **V_Rating _id** is same but not the **v_rating code** then the information appears in multiple rows in stg_rating_details.

Risk Mitigant

Risk Mitigant displays the following Information Mitigant Name, Mitigant Type, Mitigant Issuer, Mitigant Rating, Issuer Rating and Mitigant Value. All the mitigants defined in the **Add New Page** and saved is displayed in the mitigant summary page with the following details:

Mitigant Name	Mitigant Type	Mitigant Issuer	Mitigant Rating	Issuer Rating	Mitigant Value
Debt Security	Collateral	Corporate A	-	AAA CAR	40000
Credit Derivative	Credit Derivative	Bank A	LAA+ ICR	-	30000
Nettable Liablilities	Nettable Liabilities	Customer A	-	-	50000.00

Risk Mitigants — *1 to 3 of 3*

Figure 22: Risk Mitigant

Figure 23: Mitigant Details

The above section is available for both Existing and New Mitigants.

On checking the existing Mitigants, enter the Mitigant name and all the other information wherever the data exists.

If you click **new mitigant** you are expected to pass a new entry and also select from the existing dimension values.

If you select Mitigant Type as **Collateral** from the list of values shown in the check box then all the information in the section gets enabled except Mitigant Rating.

If you select any other information other then **Collateral** from the list of values in the check box then the following information in the section is disabled.

- Collateral Type

- Issuer Rating

- MTM Revaluation Frequency

Mitigant ID always appears in disable mode. In case of new mitigant, mitigant id appears blank. Whereas, in case of existing mitigants, mitigant ID shows only fetched data.

7.1.10. Transfer Pricing Parameters

In Transfer Pricing section, first select the option to specify or to calculate the transfer pricing rate. It should be a radio icon.

In case, you have selected **calculate** the following screen is displayed. The following information is expected to be entered or selected in the main tab.

If you select the option to Specify FTP rate then enter the additional information as represented in the following figure:

- Funding Charge

- Minimum Required Rate

Figure 24: Transfer Pricing Parameters (Specify or Calculate Section)

If you select the option to calculate FTP rate then you are expected to enter information in:

- Main

- Terms

- Other Details

Figure 25: Transfer Pricing Parameters sectionAmortization Type - The Amortization Type can be one of the following:

- Conventional Fixed

- Conventional Adjustable

- Level Principal

- Non-Amortizing

- List of user-defined Payment Patterns

The default value is Non-Amortizing.

Adjustable Type - The Adjustable Type Code can be one of the following:

- Fixed

- Adjustable

- List of user-defined Repricing Patterns

The default value is fixed.

Accrual Basis - The accrual basis determines how interest is calculated. The options are:

- 30/360

- Actual/Actual

- Actual/360

- Actual/365

- 30/365

- 30/Actual

The default value is Actual/Actual.

Compounding Basis – The compounding basis determines how interest payments are compounded. The options are:

- Simple

- Daily

- Monthly

- Quarterly

- Semi-Annually

- Annually

The default value is Simple.

Interest Payment – The interest payment can be of 2 types:

- Arrear

- Advance

The default value is Arrears.

Rate Rounding - The Rate Rounding Type determines how the rate assigned to the product will be rounded. The following options apply:

- No Rounding

- Round Up

- Round Down

- Round Nearest

- Truncate

The default value is No Rounding.

Rate Rounding Factor - If the Rate Rounding Type is Round Up, Round Down, or Round Nearest, the rate rounding factor determines the precision of the rounding. For the other Rounding Types, this entry should be disabled. The possible range of values for this is 0.0000 – 9.9999. The default value is 0.0000.

Terms

For the above selection, the following additional data inputs are required. This tab describes the terms related inputs specific to the pricing details. The default values for every field are described below.

Original Term - The original term definition requires input of a unit, an integer value greater than zero and selection of a multiplier (Units). The multiplier can be in:

- Days

- Months

- Years

The default is 1 Month. The Original Term should be disabled if you choose to input the transfer pricing rate. In this case, the database should save a value of 0 Months.

Amortization Term - The amortization term definition requires input of a unit -- an integer value greater than zero -- and selection of a multiplier.

The multiplier can be in:

- Days

- Months

- Years

The default is 1 month. The Amortization Term is disabled if you choose to input the transfer pricing rate. In this case, the database should save a value of 0 Months.

Rate Set Lag - The Rate Set Lag defines a lag period for the interest rate lookup date. The rate set lag definition requires input of a unit, an integer value greater than or equal to zero, and selection of a multiplier. The multiplier can be in:

- Days

- Months

- Years

The default value is 0 Months.

Tease Period - If you choose to include a tease period, the tease period definition requires input of a unit, an integer value greater than or equal to zero, and selection of a multiplier. The multiplier can be in:

- Days

- Months

- Years

The default value is 0 Months (that is if Adjustable Type Code = Adjustable).

This entry should be disabled if the Adjustable Type Code is a user-defined pattern or fixed. In this case, save a value of 0 Months to the database. Since the default value for Adjustable Type Code is fixed, the Tease Period by default is disabled.

Tease Discount - If you enter a non-zero tease period, enter a tease discount value. The tease discount value has a valid range from –99.9999 to 99.9999.

The default value for tease discount is 0.0000. This entry is disabled if the Adjustable Type Code is a user-defined pattern or fixed or if the tease period is zero.

Under other details tab, the required adjustments and cost parameters need to be specified in

percentage terms. Tables and columns from where information is expected in the section:

7.1.11. Customer Details

Business Information

The section is enabled for all customer types except **Individual** or **Retail**.

Figure 26: Business Information

The following information needs to be entered in the section:

- Country of Incorporation

- Industry

- Status of Listing

- Date of Listing

Country of incorporation is a list of value selection from **Dim_Geography**. On click of icon [...] a new pop up window should open up which should display all the descriptive values existing in the dimension table.
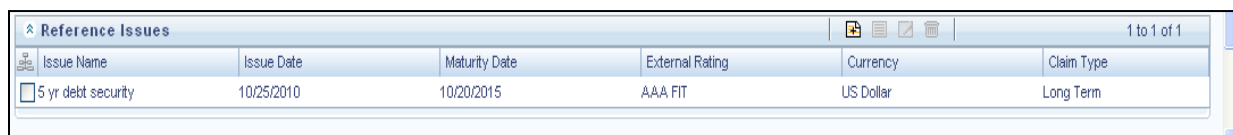
Industry is also a list of value selection from **Dim_Industry**. On click of icon [...] a new pop up window should open up which should display all the descriptive values existing in the dimension table.

Status of Listing is a drop down and displays only two information **Yes** or **No**.

Date of Listing is a date selection from the date format

Reference Issues

If the facility is unrated, then the Reference Issue page is enabled

Figure 27: Reference Issues

The main page should display the following information:

- Issue Name

- Issue Date

- Maturity Date

- External Rating

- Currency

- Claim Type

Once you define the Add New screen and save it, the main page should display the saved

information with the above details.

The Add New icon opens up the below page

Figure 28: Reference Issue DetailsFinancial Information

The financial information opens up for all the customer types other than **Individual** and **High Net Worth Individual**.

Figure 29: Financial Information

The above information is entered for a customer type other than **Individual** and **High Net Worth Individual**. Once entered it saves in a new table.

For an Individual and High Net Worth Individual customer type, the following information needs to be entered. Once entered the information saves in a new table.

Figure 30: Borrower Details

7.1.12. Scenario Analysis

The purpose of Scenario Analysis is to state that if rating migration happens then what would the impact be on the final result. In scenario analysis, the Pricing Manager application does a rating migration of 1 grade up and 1 grade down only. As of now no other change in scenario parameters or rating transition is allowed.

Customer Rating Transition

- Base Scenario: Current Rating

- Scenario 1:Upgrade by One Notch

- Scenario 2:Downgrade by One Notch

Capital measures and RAPMs are calculated for each scenario on click of Price icon:

- Capital Measures

    - Expected Loss

    - Unexpected Loss

    - Risk Weighted Assets

- Risk-adjusted Performance Measures

    - RAROC

8. <u>Technical Design Components and Assumptions</u>

8.1. *Detailed Design - Middle Layer*

The middle layer component of the Pricing Manager application works as a stitching mechanism between the UI and the backend. The purpose of the middle layer component is to invoke backend executables by passing appropriate parameters, depending on a logic determined by the choices made on the UI screens. The executables started by the middle layer are:

- Capital Charge Computation Executable

- Transfer Pricing Online Executable

- Net Interest Income Executable

The middle layer component can be started in 2 ways:

- UI screen

- Web Service

The method exposed is invokeExecutables of class execInvocation.

8.2. *Technical Design Assumptions*

The common technical design assumptions are as follows:

- A common user interface which captures the inputs are required for both the FTP and RAPM calculations

- Cash flow calculation through the common Cash Flow Engine is used by the ALM/FTP applications

- FTP calculations are based on the process flow followed within the Oracle Transfer Pricing Online application

- Exposure pricing and capital calculations are based on the process flow followed within OFSAAI Run Rule Framework.

- Pricing Management Application uses the functionalities of the OFSAAI platform.

- OFSAAI information is available through API's.

- Common objects like hierarchy browser (based on dimension), Data filter and formula builder is available from the OFSAAI platform and can be used in the Pricing Manager application.

- Computation of funding charges and minimum required rate for each product are calculated by the engine underlying the current Oracle Transfer Pricing Online application.

- Capital charges are calculated using the rules configured using OFSAAI.

- The Pricing Manager application provides pre-configured Rules or Runs as per the regulatory capital approach specified under the Basel Accord.

- NII is configured using a separate component. The component uses CFE generated cash flow for interest income and executes interest expense calculation in the same line as Interest Income computed by CFE.

- RAROC or SVA would be configured using the OFSAAI Rule Run framework. For RAROC, two rules are created, one for the base RAROC based on base interest rate

captured from front end and the other for the scenario created on base interest rate so as to calculate interest rate to meet target RAROC.

9. Reporting Application Component: Pricing Report

9.1. Report Information

The pricing report is generated based on the information defined in the Pricing Manager UI's and also processed by various application components as part of the Pricing Manager application. To access the pricing report, the **Pricing** tab on the main screen of the Pricing Manager application needs to be clicked. After selecting the exposure name for which the pricing report is required, the **Pricing Report** icon is clicked.
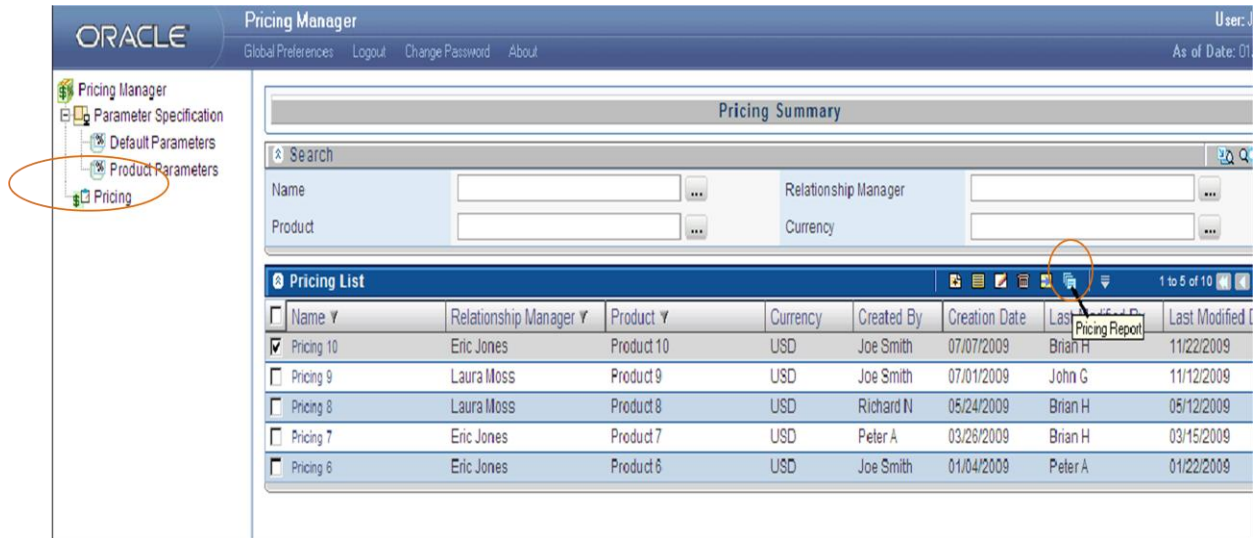
Figure 31: Pricing Report Navigation

When you click **Pricing report** the following screen is displayed:

Figure 32: Pricing Report

Pricing report consists of Pricing details, Exposure Details, Exposure Pricing and Pricing Analysis

9.1.1. Pricing Details

Figure 33: Pricing Details

In Pricing Details, the following information is displayed:

- Name

- Relationship Manager

- Customer Name

- Customer Type

- Product

- Product Type

- Currency

9.1.2. Exposure Details

| Exposure Amount | | Rate of Interest (in %) | |
| Tenure | | Fee Income | |

Figure 34: Exposure Details

The following information is expected to be generated in this screen:-

- **Exposure Amount**– It specifies the amount for which you have expected an exposure.

- **Rate of Interest (in %) Rate** – It specifies the rate which is supposed to be used for pricing calculations. It can be of 2 types

    - **Fixed Rate** - Fixed rate is a single rate expressed in percentage (%) terms.

    - **Floating Rate** – Floating interest rate is expressed as a spread over a benchmark

    - **Tenure**- Original term of the exposure

9.1.3. Exposure Pricing

Funding Charges (in %)		Minimum Required Rate (in %)	
RAROC (in %)		Target RAROC (in %)	
SVA		Target SVA	
Rate to meet Target RAROC (in %)			

Figure 35: Exposure Pricing

9.1.4. Transfer Pricing Analysis

All in Funding Charges		Minimum Required Rate (in %)
Liquidity Adjustment		Basis Risk
Pricing Incentives		Other Adjustments
Expected Loss		Allocated Costs
Capital Charges		Option Cost
User Defined 1		User Defined 2

Figure 36: Transfer Pricing Analysis

9.1.5. Capital Charge Analysis

Capital Calculations	
Capital Calculation Approach	

Figure 37: Capital Charge Analysis

Standalone Exposure Capital

Expected Loss		Unexpected Loss	
Capital Risk Weighted Assets		Cost of Capital (In %)	

Figure 38: Standalone Exposure Capital

- Account Number: Exposure ID

- Product: Product Name used in Processing

- EAD: Exposure Amount processed

- Expected loss: Amount of loss that is expected to occur on a loan over the next one year

- Unexpected loss: Losses above expected levels for which capital is calculated

- Risk Weighted Assets: Risk weighted assets is a measure of the amount of a bank's assets, adjusted for risk.

RAPM Analysis section

Net Interest Income	1,75,137.00	Allocated Costs (in Amt)	2,500.00

Figure 39: RAPM Analysis

Scenario Analysis

	Customer Rating Transition	Expected Loss	Unexpected Loss	Risk Weighted Assets	RAROC (in %)	Shareholder Value Added
☑						
☐						
☐						

Figure 40: Scenario Analysis

Scenario Analysis gives an insight into the change that results from the customer rating taking a downward or upward trend.

For example: If a customer is originally rated A, under Scenario Analysis the effect of the rating moving up from A to AA as well as moving down from A to BBB can be understood by observing the change in values in the following parameters:

- Expected loss: Amount of loss that is expected to occur on a loan over the next one year.

- Unexpected Loss: Losses above expected levels for which capital is calculated.

- Risk Weighted Assets: Risk weighted assets is a measure of the amount of a bank's assets, adjusted for risk.

- RAROC: Risk Adjusted Return on Capital

- SVA: Shareholder Value Added

Obligor RAPM

		Expected Loss	Unexpected Loss	Risk Weighted Assets	RAROC (in %)	Shareholder Value Added
☐	Exclusive of New Loan					
☐	Inclusive of New Loan					

Figure 41: Obligor RAPM

Obligor RAPM helps in finding the difference in the various parameters when a new loan is given to an existing customer

For example: a customer may have 3 loan obligations with a bank. In case the customer applies for a new loan Obligor RAPM gives information about parameters relating to the already existing combination of the 3 loans as well as what the change in parameters would be if the 4th loan would be added in this combination.

- Expected loss: Amount of loss that is expected to occur on a loan over the next one year

- Unexpected Loss: Losses above expected levels for which capital is calculated

- Risk Weighted Assets: Risk weighted assets is a measure of the amount of a bank's assets, adjusted for risk.

- RAROC: Risk Adjusted Return on Capital

Obligor RAROC = $(\Sigma_{i=1}^{n}$ Net Interest Income + $\Sigma_{i=1}^{n}$ Fee Income – $\Sigma_{i=1}^{n}$ Allocated Costs – $\Sigma_{i=1}^{n}$ Expected Loss) / $\Sigma_{i=1}^{n}$ Capital

Where,

 n: Number of exposures to a given obligor

 SVA: Shareholder Value Added

Obligor SVA = $\Sigma_{i=1}^{n}$ Net Interest Income + $\Sigma_{i=1}^{n}$ Fee Income – $\Sigma_{i=1}^{n}$ Allocated Costs – $\Sigma_{i=1}^{n}$ Expected Loss – ($\Sigma_{i=1}^{n}$ Capital * Cost of Capital)

Glossary

ALM	Asset Liability Management
Allocated Cost	Total value of direct and indirect costs like loan servicing costs, employee salaries that is allocated to a loan
CCF	Credit Conversion Factor
CFE	Cash Flow Engine
Cost of Capital	Cost of debt and equity finance for the business. This is known as the weighted average cost of capital (WACC).
EAD	Exposure at Default
EBDIT	Earnings before Depreciation, Interest and Tax
EL	Expected Loss
EPS	Earnings per Share
Economic Capital-Unexpected Loss	Amount of capital that is required to cover the unexpected losses arising on the loan in the next one year
Expected Loss	Amount of loss that is expected to occur on a loan over the next one year
FTP	Funds Transfer Pricing
Fee Income	Income generated by a loan in the next one year based on the fees charged
IRB	Internal Ratings Based Approach
LGD	Loss Given Default
NII	Net Interest Income
Net Interest Income	Income generated by a loan in the next one year based on the interest charged net of the interest cost of funds
PD	Probability of Default
RAPM	Risk Adjusted Performance Measures
RAROC	Risk Adjusted Return on Capital
RBP	Risk Based Pricing

RWA	Risk Weighted Assets
Risk Free Rate	Risk-free rate is the certain returns available in the market.
SVA	Shareholder Value Added
TPOL	Transfer Pricing Online
UCITS	Undertakings for Collective Investments in Transferable Securities
UL	Unexpected Loss
VaR	Value-at-Risk
Value-at-Risk	Worst expected loss under normal conditions over a specific time interval at a given confidence level

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ORACLE

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