

**RAKBANK**

Process Manager

Credit Scoring and Decision Engine Solution

**Technical Specification**

# Document Details

**GBG DecTech Contact**

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| 1.7 | 29/03/2021 | Tissy | Field <CB\_application\_id/> from <Utilization24months>  moved under <Month\_Utilization>  Field <CB\_application\_id/> from <History\_24months/>moved under <History>  Field <monthyear> created under <history> |
| 1.8 | 06/04/2021 | Tissy | Added <ces> under <ApplicantDetails> |
| 1.9 | 22/11/2021 | Tissy | New section <CourtCase>  added |
| 2.0 | 09/02/2022 | Tissy | Below new fields are added   * <Privilege\_type> under <ApplicantDetails> * <payment\_frequency/> under </ExternalBureauIndividualProducts> * <maximum\_overdue\_date/> under </ExternalBureauIndividualProducts>   <maximum\_overdue\_amount/> under </ExternalBureauIndividualProducts> |
| 2.1 | 18/03/2022 | Tissy | New field for CC STP process under Section 4 (Request XML response to Process Manager)   * <Request\_From/> field added under <Application>   Please see the comments added for the below existing fields under section 4.   * <product\_type/> under <ApplicationDetails> * <gross\_salary/> under <InternalBureauDBRTAICalc>   Please see the comments added for the below existing fields under section 5.1   * <Output\_Eligible\_Cards />   New section added 5.3.1 Card Eligibility for Credit Card STP |
| 2.2 | 05/04/2022 | Tissy | * Below new field added under <ApplicantDetails>   <emp\_code/>   * <ExternalBureauEmploymentDetails> under <ExternalBureauData> |
| 2.3 | 25/05/2022 | Tissy | * Below new field added under External Bureau   <esr/>,<AECB\_Enquiry\_date/> |
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| 2.5 | 07/06/2022 | Tissy | * Below New field is added under ApplicantDetails   <visa\_issue\_date/>   * New field added under response XML   <Output\_Age /> |
| 2.6 | 09/08/2022 | Tissy | * New field added under response XML   <Output\_NSTP\_Reason>   * CPF related fields are highlighted under Externalbureauindividual contracts |
| 2.7 | 15/08/2022 | Tissy | * Additional fields for perfios is added under the tag <Perfios> |
| 2.8 | 30/08/2022 | Tissy | New fields under <ApplicantDetails>   * <No\_of\_dependants/> * <Other\_household\_income/> * <No\_earning\_members/>   New fields added under <Perfios>  <FCU\_indicator/>  <UW\_reqd/> |
| 2.9 | 08/09/2022 | Tissy | Below new fields added under Response XML  <Output\_Affordable\_Ratio/>  <Output\_Stress\_Final\_DBR/> |
| 3.0 | 15/09/2022 | Tissy | New fields added in response XML  <Output\_TotalDeduction>  <Output\_Stress\_BufferAmt>  Renamed <Output\_Stress\_Final\_DBR/> as <Output\_Stress\_DBR> |

**Distribution**

| Name | Position | Company |
| --- | --- | --- |
|  |  |  |

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# Introduction

Process Manager is a scoring and decision making engine that is designed to give credit policy managers the ability to segment new customers and apply acquisition strategies that are consistent with the objectives of the business.

Process Manager is a series of ‘business objects’ used to completely parameterise credit scoring, decision making and terms of business assignment. Typical processes include:

* **Credit Scoring** – Any number of credit scorecards can be implemented within Process Manager, and the segmentation for the assignment of those scorecards is completely parameterised. Multiple scoring objectives can also be implemented – e.g. for Risk, Profit (Revolving/Transacting), Propensity, etc.
* **Decision** – The application population can be segmented so that appropriate policy rules and cut-off strategies can be applied. Again this is completely user-driven. The system can then automate the decision or refer the application to a credit officer. The Process Manager can also be used to suggest card upgrade/downgrade according to certain user-driven rules (e.g. income-based).
* **Business Strategy** – The Process Manager can be used to calculate the credit limit, and assign fees, expiry dates, cash limit percentages etc. Again, the assignment of terms of business is user-driven.
* **Action** – Process Manager is additionally used to prioritise applications within the assessment process and automate the path that they take through the assessment process. Using the business objects within the process flow, the credit management users can determine which applications should go to credit bureau, which should go through verification (e.g. high risk) and which should go straight to approval and account set-up (e.g. pre-approvals).
* **Instinct** – Call Instinct to check application fraud. Instinct is an application fraud detection solution by GBG DecTech. It can identify fraudulent applications from both professional syndicates and small-time fraudsters alike by using a combination of historical data, intelligent rules-based logic, data validation and fraud scoring to identify any suspicious applications or customers.

This specification details the technical requirements for the Process Manager implementation at RAKBANK in UAE.

# System Design Overview

The Process Manager is based on the MVP (“Model View Presenter”) design pattern and XML web services. In the MVP, the UI design which separates the concerns of an application’s data, presentation and user input into specialized components. This enables the decoupling of the UI logic without consideration of the presentation technology used.

**Process Manager**

**Windows Client**

**Process Manager**

**Database**

**Process Manager**

**Web Server**

View

Presenter

(Controller)

Database

**MVP**

Model

(Business

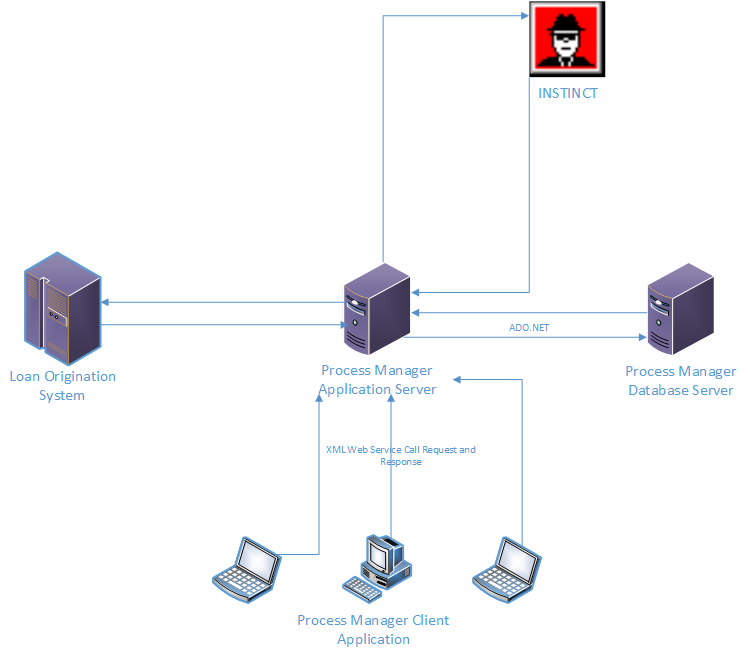
Object)

In the diagram above, the MVP is made up of three components: Windows Client, Web Server and Database.

# System Architecture

Process Manager consists of a number of software:

* Process Manager Client Application – a Microsoft Windows application which allow users interact with Process Manager user interface.
* Process Manager Web Server – a Windows Server applications which consists of Web Façade and Web Service which contain business model for applications processing.
* Process Manager Database Server – the central repository of all application data.



Process Manager client application will be installed for users in the credit risk management department.

* The application allows users to configure the scorecard, business strategy, business criteria and policy rules.
* The application allows users to maintain the Process Manager system parameters, reporting, process manager simulation, security features and many more.

## Technical Details

Application Details

Process Manage consist of two applications and a database server. The process manager applications developed in C# using .Net Framework 4.5 technology which allow modern UI for better use and feel.

Process Manager client application is a Microsoft Windows application. The client application is for users to maintain all parameters and configurations for the Web Server application. The client application will be interacting with process manager application server.

Process Manager Application Server is consisting of three web services:

1. Web façade
2. Process Manager Online Web Service
3. Process Manager Simulation Web Service

These web services developed using .Net Framework 4.5 it should be host in Internet Information Service (IIS) Version 7 or above. The application server will be interacting with database server.

Database

Process Manager Database is running under Microsoft’s SQL Server 2016.

Process Manager supports both Windows Authentication or SQL Server Authentication.

The database user id and password is currently held in the Web Service configuration file with the password being encrypted using AES with a 128bit encryption key.

Backup

It is recommended to take backup of the Process Manager Database.

## Application Processing Overview

The following steps outline the credit application processing process:

1. The applications coming into Loan Origination System. Loan Origination System will generate an XML document which either containing new or updated applications.
2. The generated XML document will be send to Process Manager Web Service for processing.
3. Once Process Manager Web Service processed the generated XML document, the Process Manager Web Service will build a response XML document base on scoring, business strategy and system decision.
4. Process Manager Web Service will send back the response XML document to Loan Origination System.
5. From the response XML document, the user can monitor the scoring, business strategy and system decision results and make the decision on the applications through the Loan Origination System.

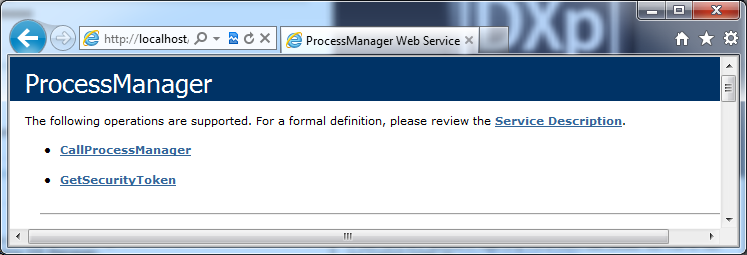
## Process Manager Web Service Call

The following step outline process manager web service been call by Loan Origination System:

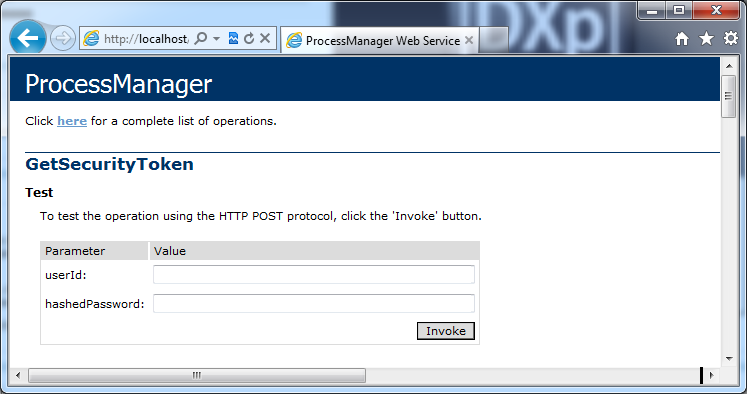
1. The process manager call will be executed via Web Service. Loan Origination System will interface the web service call to:

http://<<Web.Server.IP.Address>>/ProcessManager.WebService.Online/processmanager.asmx

1. There are two web methods available from this web service:

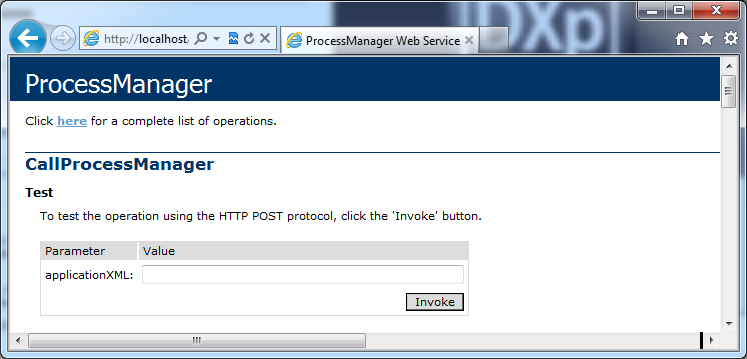


1. Loan Origination System first need to call the GetSecurityToken web method by passing the userId and hashedPassword from the Process Manager Web Service. User Id and Hashed Password can be configured in the Process Manager Web Service configuration file. Hashed Password in the configuration file is encrypted using AES128.



The method GetSecurityToken will return a SecurityToken object and then you need to assign this SecurityToken to SecurityTokenValue property under the web service object.

1. After that the Loan Origination System can invoke the CallProcessManager web method by passing the application XML String. (applicationXML String is defined in the Section 3 of this Technical Specifications).



## WSDL for Process Manager Web Service

The WSDL schema for Process Manager Web Service call will be provided separately.

*The following is a sample SOAP 1.1 Request*

POST /ProcessManager.WebService/processManager.asmx HTTP/1.1

Host: localhost

Content-Type: text/xml; charset=utf-8

Content-Length: length

SOAPAction: "http://tempuri.org/GetSecurityToken"

<?xml version="1.0" encoding="utf-8"?>

<soap:Envelope xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">

<soap:Body>

<GetSecurityToken xmlns="http://tempuri.org/">

<userId>string</userId>

<hashedPassword>string</hashedPassword>

</GetSecurityToken>

</soap:Body>

</soap:Envelope>

POST /ProcessManager.WebService/ProcessManager.asmx HTTP/1.1

Host: localhost

Content-Type: text/xml; charset=utf-8

Content-Length: length

SOAPAction: "http://tempuri.org/CallProcessManager"

<?xml version="1.0" encoding="utf-8"?>

<soap:Envelope xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">

<soap:Header>

<SecurityToken xmlns="http://tempuri.org/">

<UserId>string</UserId>

<DigestedHashedPassword>string</DigestedHashedPassword>

<Created>long</Created>

</SecurityToken>

</soap:Header>

<soap:Body>

<CallProcessManager xmlns="http://tempuri.org/">

<applicationXML>string</applicationXML>

</CallProcessManager>

</soap:Body>

</soap:Envelope>

*The following is a sample SOAP 1.1 Response*

HTTP/1.1 200 OK

Content-Type: text/xml; charset=utf-8

Content-Length: length

<?xml version="1.0" encoding="utf-8"?>

<soap:Envelope xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">

<soap:Body>

<GetSecurityTokenResponse xmlns="http://tempuri.org/">

<GetSecurityTokenResult>

<UserId>string</UserId>

<DigestedHashedPassword>string</DigestedHashedPassword>

<Created>long</Created>

</GetSecurityTokenResult>

</GetSecurityTokenResponse>

</soap:Body>

</soap:Envelope>

HTTP/1.1 200 OK

Content-Type: text/xml; charset=utf-8

Content-Length: length

<?xml version="1.0" encoding="utf-8"?>

<soap:Envelope xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">

<soap:Body>

<CallProcessManagerResponse xmlns="http://tempuri.org/">

<CallProcessManagerResult>string</CallProcessManagerResult>

</CallProcessManagerResponse>

</soap:Body>

</soap:Envelope>

## System Decision

For this phase, Process Manager will be configured to have the following System Decision:

| System Decision | Code | Decision Hierarchy |
| --- | --- | --- |
| Decline | D | 1 |
| Refer | R | 2 |
| Approve | A | 3 |

## Channels

For this phase, Process Manager will be implemented for the following channels:

| Channel | Channel Code | Monthly Volume |
| --- | --- | --- |
| Credit Card | CC | 8000 |
| Personal Loan | PL | N/A |

## Call Type

For this phase, Process Manager will be implemented for the following call types:

| Call Type | Call Type Code |
| --- | --- |
| Credit Decision | PM |
| Calculation Only | CA |

Credit Decision call will be made by all channels and product segments for TAI & DBR calculations, eligibility check, eligible amount evaluation and system decision. This call type is only applicable for the formal applications. If any details of the applications have been updated since the first Credit Decision call, CAS will resubmit the applications for re-eligibility check and re-decision.

Calculation Only call can be made by Credit Card and Personal Loan in Salaried segment or Instant Money. Process Manager will only calculate TAI, DBR on net salary and DBR on TAI. Other eligibility strategy and system decision will not apply. This is useful when the customers are still at the pre-valuation stage and the leads are yet to be converted into formal applications.

# Request XML Layout to Process Manager

The below attachment is layout of the applicationXML string in the CallProcessManager web service call:

<ProcessManagerRequest>

<Application>

<Channel/>

<CallType/>

<ApplicationNumber/>

<Request\_From/>

</Application>

<ApplicationDetails>

<product\_type/>

<app\_category/>

<requested\_product/>

<requested\_limit/>

<sub\_product/>

<requested\_card\_product/>

<application\_type/>

<scheme/>

<tenure/>

<interest\_rate/>

<customer\_type/>

<limit\_expiry\_date/>

<final\_limit/>

<emi/>

<manual\_deviation/>

<full\_eligibility\_availed/>

<max\_threshold\_exposure/>

<application\_date/>

<cc\_bundle\_limit/>

</ApplicationDetails>

<ApplicantDetails>

<applicant\_id/>

<primary\_cif>cif1,cif2</primary\_cif>

<ref\_no/>

<wi\_name/>

<cust\_name/>

<emp\_type/>

<dob/>

<age/>

<nationality/>

<resident\_flag/>

<prod\_external\_internal\_amount/>

<world\_check/>

<no\_of\_cheque\_bounce\_int\_3mon\_ind/>

<no\_of\_dds\_return\_int\_3mon\_ind/>

<no\_of\_cheque\_bounce\_int\_3mon\_com/>

<no\_of\_dds\_return\_int\_3mon\_com/>

<lob/>

<watchlist\_collection\_code/>

<external\_blacklist\_flag/>

<external\_blacklist\_date/>

<external\_blacklist\_code/>

<los/>

<confirmed\_in\_job/>

<curr\_comp\_date\_of\_joining/>

<prev\_comp\_date\_of\_leave/>

<target\_segment\_code/>

<avg\_credit\_turnover\_6/>

<avg\_credit\_turnover\_3/>

<avg\_bal\_3/>

<avg\_bal\_6/>

<aum/>

<current\_emp\_catogery/>

<year\_in\_uae/>

<ref\_phone\_no/>

<ref\_relationship/>

<emirates\_of\_residence/>

<visa\_issue\_date/>

<visa\_expiry\_date/>

<passport\_expiry\_date/>

<emirates\_visa/>

<emirates\_work/>

<gender/>

<cust\_mobile\_no/>

<salary\_with\_rakbank/>

<designation/>

<annual\_rent/>

<type\_of\_od/>

<emp\_code/>

<emp\_name/>

<prev\_loan\_dbr/>

<prev\_loan\_tai/>

<prev\_loan\_multiple/>

<prev\_loan\_amount/>

<prev\_loan\_employer/>

<prev\_loan\_no\_installment\_paid/>

<employer\_contract\_type/>

<type\_of\_company/>

<fd\_amount/>

<cust\_type/>

<bank\_no\_borrowing\_relation\_individual/>

<bank\_no\_borrowing\_relation\_company/>

<total\_clean\_fund\_exposed\_other\_bank/>

<industry\_sector/>

<industry\_macro/>

<industry\_micro/>

<no\_bank\_rak\_statement\_provided/>

<no\_bank\_other\_statement\_provided/>

<total\_outward\_cheque\_1year/>

<aggregate\_exposed/>

<bvr/>

<cc\_employer\_status/>

<pl\_employer\_status/>

<pl\_employer\_status\_expat/>

<pl\_employer\_status\_national/>

<ces/>

<included\_pl\_aloc/>

<included\_cc\_aloc/>

<los\_prev/>

<high\_delinquency/>

<marketing\_code/>

<payroll\_flag/>

<contract\_expiry\_date/>

<industry\_segment/>

<nmf\_flag/>

<visa\_sponsor/>

<owner\_name/>

<nature\_of\_business/>

<eff\_date\_estba/>

<constitution/>

<poa/>

<auth\_sig\_sole\_emp/>

<shareholding\_perc/>

<ten\_contract\_emirate/>

<eff\_lob/>

<tlc\_issue\_date/>

<late\_payment/>

<head\_offc\_emirate/>

<no\_bank\_statement/>

<no\_of\_partners/>

<standing\_instruction/>

<cac\_card\_type/>

<comp\_one\_man\_show/>

<country\_of\_residence/>

<vip\_flag/>

<title/>

<gcc\_national/>

<customer\_category/>

<sec\_nationality/>

<borrowing\_customer/>

<funding\_pattern/>

<kompass/>

<company\_type/>

<mol\_salary\_variance/>

<channel\_code/>

<freezone\_comp/>

<aecb\_consent/>

<employer\_type/>

<ins\_value/>

<prem\_amnt/>

<no\_of\_prem\_paid/>

<prem\_type/>

<regular\_payment/>

<within\_minwaiting\_period/>

<within\_term\_of\_LI>

<group\_insurance>

<Privilege\_type>

<No\_of\_dependants/>

<Other\_household\_income/>

<No\_earning\_members/>

<!-- Zero or more repetitions: -->

<RejectedDetails>

<rejected\_cust/>

<rejected\_date/>

<rejected\_reason/>

<rejected\_product/>

<rejected\_app\_id/>

</RejectedDetails>

<!-- Zero or more repetitions: -->

<!-- Zero or more repetitions: -->

<BlacklistDetails>

<blacklist\_cust\_type/> I/C

<internal\_blacklist/> Y/N

<internal\_blacklist\_date/>

<internal\_blacklist\_code/>

</BlacklistDetails/>

<!-- Zero or more repetitions: -->

<!-- Zero or more repetitions: -->

<NegateddDetails>

<negative\_cust\_type/>I/C

<internal\_negative\_flag/>Y/N

<internal\_negative\_date/>

<internal\_negative\_code/>

</NegatedDetails/>

<!-- Zero or more repetitions: -->

<AccountDetails>

<type\_of\_account/>

<role/>

<account\_number/>

<acct\_open\_date/>

<acct\_status/>

<account\_segment/>

<account\_sub\_segment/>

<credit\_grade\_code\_individual/>

<credit\_grade\_code\_company/>

</AccountDetails>

</ApplicantDetails>

<InternalBureauData>

<!-- Zero or more repetitions: -->

<InternalBureau>

<applicant\_id/>

<full\_name/>

<total\_out\_bal/>

<total\_overdue/>

<no\_default\_contract/>

<total\_exposure/>

<worst\_curr\_pay/>

<worst\_curr\_pay\_24/>

<worst\_status\_24/>

<no\_of\_rec/>

<cheque\_return\_3mon/>

<dds\_return\_3mon/>

<cheque\_return\_6mon/>

<dds\_return\_6mon/>

<internal\_charge\_off/>

<cards\_b\_score/>

<company\_flag/>

</InternalBureau>

<!-- Zero or more repetitions: -->

<InternalBouncedCheques>

<applicant\_id/>

<internal\_bounced\_cheques\_id/>

<bounced\_cheque/>

<cheque\_no/>

<amount/>

<reason/>

<return\_date/>

<provider\_no/>

<bounced\_cheque\_dds/>

<company\_flag/>

</InternalBouncedCheques>

<!-- Zero or more repetitions: -->

<InternalBureauIndividualProducts>

<applicant\_id/>

<internal\_bureau\_individual\_products\_id/>

<linked\_liability/>

<type\_product/>

<contract\_type/>

<provider\_no/>

<phase/>

<role\_of\_customer/>

<start\_date/>

<close\_date/>

<approved\_date/>

<date\_last\_updated/>

<outstanding\_balance/>

<total\_amount/>

<payments\_amount/>

<method\_of\_payment/>

<total\_no\_of\_instalments/>

<no\_of\_remaining\_instalments/>

<worst\_status/>

<worst\_status\_date/>

<credit\_limit/>

<overdue\_amount/>

<no\_of\_days\_payment\_delay/>

<mob/>

<last\_repayment\_date/>

<currently\_current/>

<dpd\_30\_last\_6\_mon/>

<dpd\_60p\_in\_last\_12\_mon/>

<card\_product/>

<property\_value/>

<disbursal\_date/>

<marketing\_code/>

<card\_expiry\_date/>

<card\_upgrade\_indicator/>

<part\_settlement\_date/>

<part\_settlement\_amount/>

<part\_settlement\_reason/>

<limit\_expiry\_date/>

<no\_of\_primary\_cards/>

<no\_of\_repayments\_done/>

<card\_segment/>

<product\_type/>

<product\_category/>

<combined\_limit\_flag/>

<secured\_card\_flag/>

<resch\_tko\_flag/>

<general\_status/>

<consider\_for\_obligation/>

<limit\_increase/>

<card\_against\_card/>

<quick\_cash\_amount/>

<quick\_cash\_emi/>

<take\_over\_indicator/>

<role/>

<limit/>

<status/>

<emi/>

<os\_amt/>

<dpd\_5\_in\_last\_12mon/>

<dpd\_5\_in\_last\_18mon/>

<dpd\_5\_in\_last\_24mon/>

<dpd\_30\_in\_last\_3mon/>

<dpd\_30\_in\_last\_6mon/>

<dpd\_30\_in\_last\_9mon/>

<dpd\_30\_in\_last\_12mon/>

<dpd\_30\_in\_last\_18mon/>

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<dpd\_60\_in\_last\_3mon/>

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<dpd\_180\_in\_last\_24mon/>

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<last\_per\_limit\_exp/>

<security\_cheque\_amt/>

<mol\_salary\_variance/>

<kompass/>

<employer\_type/>

<no\_of\_paid\_installment/>

<write\_off\_amount/>

<company\_flag/>

<type\_of\_od/>

<amt\_paid\_last6mnths/>

<topup\_indicator/>

<interest\_rate/>

</InternalBureauIndividualProducts>

<!-- Zero or more repetitions: -->

<InternalBureauPipelineProducts>

<applicant\_id/>

<internal\_bureau\_pipeline\_products\_id/>

<ppl\_provider\_no/>

<ppl\_type\_of\_contract/>

<ppl\_phase/>

<ppl\_role/>

<ppl\_date\_of\_last\_update/>

<ppl\_total\_amount/>

<ppl\_no\_of\_instalments/>

<ppl\_credit\_limit/>

<ppl\_no\_of\_days\_in\_pipeline/>

<company\_flag/>

<ppl\_consider\_for\_obligation/>

<ppl\_emi/>

</InternalBureauPipelineProducts>

<InternalBureauDBRTAICalc>

<basic/>

<housing\_allowance/>

<transport\_allowance/>

<cost\_of\_living\_allowance/>

<fixed\_overtime\_allowance/>

<other\_allowance/>

<gross\_salary/>

<overtime\_m1/>

<overtime\_m2/>

<overtime\_m3/>

<overtime\_avg/>

<commission\_m1/>

<commission\_m2/>

<commission\_m3/>

<commission\_avg/>

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<food\_allow\_m2/>

<food\_allow\_m3/>

<food\_allow\_avg/>

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<phone\_allow\_m2/>

<phone\_allow\_m3/>

<phone\_allow\_avg/>

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<service\_allow\_m2/>

<service\_allow\_m3/>

<service\_allow\_avg/>

<flying\_allowance\_mon1/>

<flying\_allowance\_mon2/>

<flying\_allowance\_mon3/>

<flying\_allowance\_3mon\_ave/>

<bonus\_m1/>

<bonus\_m2/>

<bonus\_m3/>

<bonus\_avg/>

<other\_m1/>

<other\_m2/>

<other\_m3/>

<other\_avg/>

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<education\_allowance\_m2/>

<education\_allowance\_m3/>

<education\_allowance\_avg/>

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<accomodation\_provided/>

<accomodation\_amount/>

<rental\_income/>

<net\_salary\_mon1/>

<net\_salary\_mon2/>

<net\_salary\_mon3/>

<net\_salary\_3mon\_ave/>

<salary\_flag/>

<salary\_account\_number/>

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<uw\_oth/>

</InternalBureauDBRTAICalc>

</InternalBureauData>

<ExternalBureauData>

<!-- Zero or more repetitions: -->

<ExternalBureau>

<applicant\_id/>

<bureauone\_ref\_no/>

<full\_name/>

<total\_out\_bal/>

<total\_overdue/>

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<total\_exposure/>

<worst\_curr\_pay/>

<worst\_curr\_pay\_24/>

<worst\_status\_24/>

<no\_of\_rec/>

<cheque\_return\_3mon/>

<dds\_return\_3mon/>

<cheque\_return\_6mon/>

<dds\_return\_6mon/>

<prod\_external\_writeoff\_amount/>

<no\_of\_cheque\_bounce\_ext\_3mon/>

<no\_of\_dds\_return\_ext\_3mon/>

<no\_months\_aecb\_history/>

<no\_of\_declined\_rejected\_last\_3mon/>

<aecb\_score/>

<range/>

<esr/>

<company\_flag/>

<dispute\_alert/>

<AECB\_Enquiry\_date/>

</ExternalBureau>

<!-- Zero or more repetitions: -->

<ExternalBureauEmploymentDetails>

<applicant\_id/>

<Employment\_Name/>

<Employment\_Type/>

<Gross\_Annual\_Income/>

<Date\_of\_Employment/>

<Date\_of\_termination/>

<Provider\_no/>

<Date\_of\_last\_update/>

<Actual\_Flag/>

</ExternalBureauEmploymentDetails>

<!-- Zero or more repetitions: -->

<ExternalBouncedCheques>

<applicant\_id/>

<external\_bounced\_cheques\_id/>

<bounced\_cheque/>

<cheque\_no/>

<amount/>

<reason/>

<return\_date/>

<provider\_no/>

<company\_flag/>

</ExternalBouncedCheques>

<!-- Zero or more repetitions: -->

<!-- Zero or more repetitions: -->

<Utilization24months>

~~<CB\_application\_id/>~~

<Month\_Utilization>

<CB\_application\_id/>

<Month/>

<Credit\_limit/>

<outstanding\_balance/>

</Month\_Utilization>

</Utilization24months>

<!-- Zero or more repetitions: -->

<!-- Zero or more repetitions: -->

<History\_24months/>

~~<CB\_application\_id/>~~

<History>

~~<key/>~~

<monthyear>

<Status/>

</History>

</History\_24months>

<!-- Zero or more repetitions: -->

<CourtCase>

<CodOrganization/>

<ProviderCaseNo/>

<ReferenceDate/>

<CaseCategoryCode/>

<OpenDate/>

<CloseDate/>

<CaseStatusCode/>

<InitialTotalClaimAmount/>

</CourtCase>

<!-- Zero or more repetitions: -->

<!-- CPF related labilities can be populated under this section: -->

<ExternalBureauIndividualProducts>

<applicant\_id/>

<external\_bureau\_individual\_products\_id/>

<contract\_type/> <!-- CPF related Contract types will be L1(Life style expense), SerExp(Service Expenses), AdLnTake(Additional Loans taken), AnOthExp(Any other Expenses): -->

<provider\_no/>

<phase/> <!--For CPF related Contract’s phase should always ‘A’: -->

<role\_of\_customer/>

<start\_date/>

<close\_date/>

<outstanding\_balance/>

<total\_amount/>

<payments\_amount/> <!--CPF Liability amount should populate on this tag -->

<total\_no\_of\_instalments/>

<no\_of\_remaining\_instalments/>

<worst\_status/>

<worst\_status\_date/>

<credit\_limit/>

<overdue\_amount/>

<no\_of\_days\_payment\_delay/>

<mob/>

<last\_repayment\_date/>

<currently\_current/>

<dpd\_5p\_in\_last\_12mon/>

<dpd\_30\_last\_6\_mon/>

<dpd\_60p\_in\_last\_12\_mon/>

<no\_months\_aecb\_history/>

<maximum\_overdue\_amount/>

<other\_bank\_card\_type/>

<delinquent\_in\_last\_3months/>

<clean\_funded/>

<cac\_indicator/>

<qc\_emi/>

<qc\_amount/>

<company\_flag/>

<cac\_bank\_name/>

<take\_over\_indicator/>

<consider\_for\_obligation/>

<duplicate\_flag/>

<avg\_utilization/>

<payment\_frequency/>

<maximum\_overdue\_date/>

</ExternalBureauIndividualProducts>

<!-- Zero or more repetitions: -->

<ExternalBureauPipelineProducts>

<applicant\_id/>

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<ppl\_type\_of\_product/>

<ppl\_phase/>

<ppl\_role/>

<ppl\_date\_of\_last\_update/>

<ppl\_total\_amount/>

<ppl\_no\_of\_instalments/>

<ppl\_credit\_limit/>

<ppl\_no\_of\_days\_in\_pipeline/>

<company\_flag/>

<ppl\_consider\_for\_obligation/>

<ppl\_duplicate\_flag/>

</ExternalBureauPipelineProducts>

</ExternalBureauData>

<!—Perfios specific fields🡪

<Perfios>

<Stmt\_Salary\_1/>

<Stmt\_salary1\_date/>

<Stmt\_salary\_2/>

<Stmt\_salary2\_date/>

<Stmt\_salary\_3/>

<Stmt\_salary3\_date/>

<Stmt\_salary\_4/>

<Stmt\_salary4\_date/>

<Stmt\_salary\_5/>

<Stmt\_salary5\_date/>

<Stmt\_salary\_6/>

<Stmt\_salary6\_date/>

<Stmt\_salary\_7/>

<Stmt\_salary7\_date/>

<Addn\_Perfios\_EMI\_1/>

<Addn\_Perfios\_EMI\_2/>

<Addn\_Perfios\_EMI\_3/>

<Addn\_Perfios\_EMI\_4/>

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<Addn\_Perfios\_EMI\_18/>

<Addn\_Perfios\_EMI\_19/>

<Addn\_Perfios\_EMI\_20/>

<Addn\_Perfios\_CC/>

<Addn\_Perfios\_OD\_Amt/>

<Addn\_OD\_date/>

<Joint\_Acct/>

<High\_value\_deposit/>

<Credit\_amount/>

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<Stmt\_chq\_rtn\_cleared\_in30\_last\_3mnts/>

<Stmt\_chq\_rtn\_last\_1mnt/>

<Stmt\_chq\_rtn\_cleared\_in30\_last\_1mnt/>

<Stmt\_DDS\_rtn\_last\_3mnts/>

<Stmt\_DDS\_rtn\_cleared\_in30\_last\_3mnts/>

<Stmt\_DDS\_rtn\_last\_1mnt/>

<Stmt\_DDS\_rtn\_cleared\_in30\_last\_1mnts/>

<Pensioner/>

<Name\_match/>

<FCU\_indicator/>

<UW\_reqd/>

</Perfios>

</ProcessManagerRequest>

## Duration Field Data Format

Duration fields are those represent the specific years and months the subjects have been lasted, for example, Age, LOB, LOS, Years in UAE etc. To reduce the complexity and improve the comparability, the data format of such fields is confirmed to be YY.MM, e.g. 18.06 for 18 years and 6 months. However, the data type of the fields are still as string.

# Response XML Layout from Process Manager

## XML Layout

The below is the layout of the CallProcessManagerResult XML string the web service response:

<ProcessManagerResponse>

<Application>

<Channel>channel</Channel>

<CallType>call type</CallType>

<ApplicationNumber>application number</ApplicationNumber>

<ReturnDateTime> </ReturnDateTime>

<SystemErrorCode />

<SystemErrorMessage />

<ReturnError RecordNumber="1">

<Error>

<Description />

<Field />

<Value />

</Error>

</ReturnError>

</Application>

<Instinct\_Actions>

<Instinct\_Action>

<Field\_Name />

<Field\_Value />

</Instinct\_Action>

<Instinct\_Output\_XML>

<OutputSchema>

<Output />

</OutputSchema>

</Instinct\_Output\_XML>

</Instinct\_Actions>

<PM\_Results>

<Random\_Number>931</Random\_Number>

<DBR>0.00</DBR>

<Decision\_Results name="MAC">

<PM\_Decision\_Results\_Data>

<PM\_Decision\_Results>

<AppKey />

<Decision\_Objective />

<Last\_Update\_Date />

<Default\_Decision />

<Default\_Reason />

<Default\_Letter />

<Default\_Document />

<System\_Decision />

<System\_Letter />

<System\_Document />

<Decision\_Node\_Id />

<Decision\_CC\_Id />

<Decision\_Test\_Group />

</PM\_Decision\_Results>

</PM\_Decision\_Results\_Data>

<PM\_Reason\_Codes\_Data>

<PM\_Reason\_Codes>

<Reason\_Code />

<Reason\_Description />

<Criteria\_Name />

<Letter\_Code />

<Document />

<Letter\_Reason />

<Category />

</PM\_Reason\_Codes>

</PM\_Reason\_Codes\_Data>

</Decision\_Results>

<Strategy\_Results name="Eligibility">

<PM\_Strategy\_MaxLendingAmount\_Data>

<PM\_Strategy\_MaxLendingAmount\_Results>

<Last\_Update\_Date />

<Entry\_Name />

<Policy\_Number />

<Adjustment\_Number />

<Max\_Lending\_Amount />

<Use\_Requested\_Limit\_Flag />

<Existing\_Limit\_Increase\_Flag />

<Limit\_Increase\_Percent />

<Use\_Characteristic\_As\_Limit\_Flag />

<Use\_Characteristic\_As\_Limit\_Multiplier />

<Limit\_Table\_Id />

<Limit\_Field\_Number />

<Fixed\_Amount\_Flag />

<Fixed\_Amount />

<Base\_Percentage\_Increase\_Flag />

<Base\_Percentage\_Increase\_Percent />

<Limit\_Minimum />

<Limit\_Maximum />

<Limit\_Rounding\_Factor1 />

<Limit\_Rounding\_Factor2 />

<Limit\_Rounding\_Factor3 />

<Limit\_Rounding\_Factor4 />

<Limit\_Rounding\_Cutoff1 />

<Limit\_Rounding\_Cutoff2 />

<Limit\_Rounding\_Cutoff3 />

<Limit\_Reason\_Code />

<Max\_Limit\_Table\_Id />

<Max\_Limit\_Field\_Number />

<Max\_Limit\_Multiplier />

<Use\_Round\_Up\_Factor1\_Flag />

<Use\_Round\_Up\_Factor2\_Flag />

<Use\_Round\_Up\_Factor3\_Flag />

<Use\_Round\_Up\_Factor4\_Flag />

<Strategy\_Node\_Id />

<Strategy\_Test\_Group />

</PM\_Strategy\_MaxLendingAmount\_Results>

</PM\_Strategy\_MaxLendingAmount\_Data>

</Strategy\_Results>

<Strategy\_Results name="Interest Rate">

<PM\_Strategy\_PricingTerm\_Data>

<PM\_Strategy\_PricingTerm\_Results>

<Last\_Update\_Date />

<Entry\_Name />

<Interest\_Rate />

<Max\_Loan\_Term />

<Strategy\_Node\_Id />

<Strategy\_Test\_Group />

</PM\_Strategy\_PricingTerm\_Results>

</PM\_Strategy\_PricingTerm\_Data>

</Strategy\_Results>

<Scoring\_Results name="Recalculation">

<PM\_Scoring\_Results\_Data>

<PM\_Scoring\_Results>

<Scoring\_Objective />

<Last\_Update\_Date />

<Score />

<Score\_Node\_Id />

<Scorecard\_Id />

<Grade />

<Score\_Test\_Group />

</PM\_Scoring\_Results>

</PM\_Scoring\_Results\_Data>

</Scoring\_Results>

<Scoring\_Results name="Application Score">

<PM\_Scoring\_Results\_Data>

<PM\_Scoring\_Results>

<Scoring\_Objective />

<Last\_Update\_Date />

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<Score\_Node\_Id />

<Scorecard\_Id />

<Grade />

<Score\_Test\_Group />

</PM\_Scoring\_Results>

</PM\_Scoring\_Results\_Data>

</Scoring\_Results>

<Decision\_Results name="Eligibility Decision">

<PM\_Decision\_Results\_Data>

<PM\_Decision\_Results>

<AppKey />

<Decision\_Objective />

<Last\_Update\_Date />

<Default\_Decision />

<Default\_Reason />

<Default\_Letter />

<Default\_Document />

<System\_Decision />

<System\_Letter />

<System\_Document />

<Decision\_Node\_Id />

<Decision\_CC\_Id />

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</PM\_Decision\_Results>

</PM\_Decision\_Results\_Data>

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<Reason\_Code />

<Reason\_Description />

<Criteria\_Name />

<Letter\_Code />

<Document />

<Letter\_Reason />

<Category />

</PM\_Reason\_Codes>

</PM\_Reason\_Codes\_Data>

</Decision\_Results>

<Strategy\_Results name="Additional Eligible Cards">

<PM\_Strategy\_Verification\_Data>

<PM\_Strategy\_Verification\_Results>

<Last\_Update\_Date />

<Entry\_Name />

<Number\_Of\_Visits />

<Visits>

<Code />

<Type\_Of\_Visit />

<Mandatory\_Flag />

</Visits>

<Number\_Of\_Calls />

<Calls>

<Code />

<Type\_Of\_Call />

<Mandatory\_Flag />

</Calls>

<Strategy\_Node\_Id />

<Strategy\_Test\_Group />

</PM\_Strategy\_Verification\_Results>

</PM\_Strategy\_Verification\_Data>

</Strategy\_Results>

</PM\_Results>

<PM\_Outputs>

<Application>

<Output\_Accommodation\_Allowance />

<Output\_TAI />

<Output\_Existing\_DBR />

<Output\_Interest\_Rate />

<Output\_Affordable\_EMI />

<Output\_Eligible\_Amount />

<Output\_Final\_Amount/>

<Output\_Additional\_Amount />

<Output\_Final\_DBR />

<Output\_Net\_Salary\_DBR />

<Output\_Salary\_Multiples />

<Output\_CPV\_Waiver />

<Output\_Delegation\_Authority />

<Output\_Eligible\_Cards />

<Output\_Num\_Eligible\_Cards />

<Output\_Decision />

<Output\_Eligible\_Amount\_Path />

<Output\_NSTP>

<Output\_NSTP\_Reason>

<Output\_Age>

<Output\_Affordable\_Ratio/>

<Output\_Stress\_DBR/>

<Output\_TotalDeduction>

<Output\_Stress\_BufferAmt>

<Is\_New\_Score\_Card />

</Application>

</PM\_Outputs>

</ProcessManagerResponse>

## Key Response Fields

NewGen is required to drive the workflow post Process Manager call based on the key fields in the response XML.

| Field Name | Data Type | Length | Max Occurs | XPath |
| --- | --- | --- | --- | --- |
| Grade | SMALLINT |  | 1 | //ProcessManagerResponse/PM\_Results/Scoring\_Results[@name='Application Score']/PM\_Scoring\_Results\_Data/PM\_Scoring\_Results/Grade |
| Reason Code | NVARCHAR | 10 | unbounded | //ProcessManagerResponse/PM\_Results/Decision\_Results/PM\_Reason\_Codes\_Data/PM\_Reason\_Codes[n]/Reason\_Code |
| Reason Description | NVARCHAR | 100 | unbounded | //ProcessManagerResponse/PM\_Results/Decision\_Results/PM\_Reason\_Codes\_Data/PM\_Reason\_Codes[n]/Reason\_Description |
| Reason Category | NVARCHAR | 10 | unbounded | //ProcessManagerResponse/PM\_Results/Decision\_Results/PM\_Reason\_Codes\_Data/PM\_Reason\_Codes[n]/Category |
| Output Decision | CHAR | 1 | 1 | //ProcessManagerResponse/PM\_Outputs/Output\_Decision |
| Output Accommodation Allowance | DECIMAL | 19,2 | 1 | //ProcessManagerResponse/PM\_Outputs/Output\_Accommodation\_Allowance |
| Output TAI | DECIMAL | 19,2 | 1 | //ProcessManagerResponse/PM\_Outputs/Output\_TAI |
| Output Net Salary DBR | DECIMAL | 19,2 | 1 | //ProcessManagerResponse/PM\_Outputs/Output\_Net\_Salary\_DBR |
| Output Existing DBR | DECIMAL | 19,2 | 1 | //ProcessManagerResponse/PM\_Outputs/Output\_Existing\_DBR |
| Output Eligible Amount | DECIMAL | 19,2 | 1 | //ProcessManagerResponse/PM\_Outputs/Output\_Eligible\_Amount |
| Output Eligible Amount Path | NVARCHAR | 4000 | 1 | //ProcessManagerResponse/PM\_Outputs/Output\_Eligible\_Amount\_Path |
| Output Final Amount | DECIMAL | 19,2 | 1 | //ProcessManagerResponse/PM\_Outputs/Output\_Final\_Amount |
| Output Final DBR | DECIMAL | 19,2 | 1 | //ProcessManagerResponse/PM\_Outputs/Output\_Final\_DBR |
| Output Affordable EMI | DECIMAL | 19,2 | 1 | //ProcessManagerResponse/PM\_Outputs/Output\_Affordable\_EMI |
| Output Salary Multiples | DECIMAL | 19,2 | 1 | //ProcessManagerResponse/PM\_Outputs/Output\_Salary\_Multiples |
| Output CPV Waiver | NVARCHAR | 10 | 1 | //ProcessManagerResponse/PM\_Outputs/Output\_CPV\_Waiver |
| Output Delegation Authority | NVARCHAR | 10 | 1 | //ProcessManagerResponse/PM\_Outputs/Output\_Delegation\_Authority |
| Output Eligible Cards | NVARCHAR | 4000 | 1 | //ProcessManagerResponse/PM\_Outputs/Output\_Eligible\_Cards |
| Output Num Eligible Cards | TINYINT |  | 1 | //ProcessManagerResponse/PM\_Outputs/Output\_Num\_Eligible\_Cards |
| Output Interest Rate | DECIMAL | 5,2 | 1 | //ProcessManagerResponse/PM\_Outputs/Output\_Interest\_Rate |

The details of Application Score will be excluded in the Process Manager response. In case of the Calculation Only call, only TAI, Net Salary DBR and Existing DBR are applicable. The other fields are irrelevant.

## Eligible Cards

For new Credit Cards applications based on Salaried or Self-Employed, Process Manager may return zero, one or many eligible card products depending on the eligibility rules. The return value of the eligible products field can be null or a JSON object string. The JSON object string will follow the standard JSON format. CAS will parse the JSON string into an array of eligible products.

<OUTPUT\_Eligible\_Cards>

[{

“Card\_Product”: ”KALYAN-EXPAT”,

“Limit”: 15000,

“Existing\_Flag”: “E”

},{

“Card\_Product”: ”RED-EXPAT”,

“Limit”: 15000,

“Existing\_Flag”: “N”

}]

</OUTPUT\_Eligible\_Cards>

The below fields will be included in the JSON objects.

| Field Name | Data Type | Value |
| --- | --- | --- |
| Card\_Product | VARCHAR(100) | e.g. KALYAN-EXPAT |
| Limit | DECIMAL(19,2) | e.g. 15000 |
| Existing\_Flag | CHAR(1) | E or N |

### Card Eligibility for Credit Card STP

For Credit Card STP journey, eligible cards will be sent as per the logic given in the below table.

|  |  |  |
| --- | --- | --- |
| **Product** | **Card Type** | **Salary Criteria** |
| Conventional | Red card | AED 5000 |
| Air Arabia Platinum Credit card | AED 5000 |
| Titanium Card | AED 8000 |
| Platinum High Flyer | AED 10000 |
| World Master Card | AED 20,000 |
| Skywards World Elite | AED 20,000 |
| Islamic |  |  |
| Murabaha Platinum | AED 8,000 |
| Murabaha World | AED 20,000 |
| Skywards World Elite | AED 20,000 |

To segregate between conventional and Islamic, Dectech will send Card\_Product in the below format

**Card product –Conventional/Islamic**

* For conventional

“Card\_Product”: ” Red card -Conventional”,

* For Islamic

“Card\_Product”: ” Murabaha Platinum -Islamic”,

Example –

<OUTPUT\_Eligible\_Cards>

[{

“Card\_Product”: ” Red card -Conventional”,

“Limit”: 15000,

“Existing\_Flag”: “E”

},{

“Card\_Product”: ” Murabaha Platinum -Islamic”,

“Limit”: 15000,

“Existing\_Flag”: “N”

}]

</OUTPUT\_Eligible\_Cards>

## Error Handling

There are three types of errors that are handled by Process Manager and will be passed back to Loan Origination System should they occur:

1. Critical Error Occurred.

The Critical Error is indicated by Error Code 01. It can be found in the XML, or Invalid License Key of Process Manager.

<ProcessManagerResponse>

<Application\_Header>

<Channel></Channel>

<CallType></CallType>

<ApplicationNumber></ApplicationNumber>

<ReturnDateTime>20140814134632</ReturnDateTime>

<SystemErrorCode>01</SystemErrorCode>

<SystemErrorMessage>Critical Error Occurred</SystemErrorMessage>

<ReturnError RecordNumber="3">

<Error>

<Description>Mandatory Field cannot be found</Description>

<Field>

XML Tag : ApplicationNumber XML Path:

/ProcessManagerRequest/Application\_Header

</Field>

<Value></Value>

</Error>

<Error>

<Description>Mandatory Field cannot be found</Description>

<Field>

XML Tag : Channel XML Path:

/ProcessManagerRequest/Application\_Header

</Field>

<Value></Value>

</Error>

<Error>

<Description>Mandatory Field cannot be found</Description>

<Field>

XML Tag : CallType XML Path:

/ProcessManagerRequest/Application\_Header

</Field>

<Value></Value>

</Error>

</ReturnError>

</Application\_Header>

<PM\_Results />

</ProcessManagerResponse>

1. Mandatory Field cannot be found.

The Mandatory Field Error is indicated by Error Code 02. It can be found in the XML Response:

<ProcessManagerResponse>

<Application\_Header>

<Channel>CC</Channel>

<CallType>PM</CallType>

<ApplicationNumber>2014081900002</ApplicationNumber>

<ReturnDateTime>20140819145909</ReturnDateTime>

<SystemErrorCode>02</SystemErrorCode>

<SystemErrorMessage>Mandatory Field cannot be found</SystemErrorMessage>

<ReturnError RecordNumber="3">

<Error>

<Description>Field cannot be null or empty</Description>

<Field>Application\_Number</Field>

<Value></Value>

</Error>

<Error>

<Description>Field cannot be null or empty</Description>

<Field>Application\_Date</Field>

<Value></Value>

</Error>

<Error>

<Description>Field cannot be null or empty</Description>

<Field>Name</Field>

<Value></Value>

</Error>

</ReturnError>

</Application\_Header>

<PM\_Results />

</ProcessManagerResponse>

1. Invalid Data Type.

The Invalid Data Type Error is indicated by Error Code 03. It can be found in the XML Response:

<ProcessManagerResponse>

<Application\_Header>

<Channel>CC</Channel>

<CallType>PM</CallType>

<ApplicationNumber>2014081900002</ApplicationNumber>

<ReturnDateTime>20140819145236</ReturnDateTime>

<SystemErrorCode>03</SystemErrorCode>

<SystemErrorMessage>Invalid Data Type</SystemErrorMessage>

<ReturnError RecordNumber="4">

<Error>

<Description>Invalid datetime field</Description>

<Field>Application\_Date</Field>

<Value>200000-01-21</Value>

</Error>

<Error>

<Description>Invalid datetime field</Description>

<Field>DateOfBirth</Field>

<Value>1970-31-31</Value>

</Error>

<Error>

<Description>Invalid numeric field</Description>

<Field>AnnualIncome</Field>

<Value>50a0</Value>

</Error>

<Error>

<Description>Invalid numeric field</Description>

<Field>AnnualIncome</Field>

<Value>50a00</Value>

</Error>

</ReturnError>

</Application\_Header>

<PM\_Results />

</ProcessManagerResponse>

# RAKBANK Technical Requirements

## Customer SOAP Header

As requested by the RAKBANK infrastructure, Process Manager needs to compatible with the extra information in the SOAP header for tracing the message in and out. The extra information includes the following elements.

<soap:Envelope xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">

<soap:Header>

<ServiceId>CallProcessManager</ServiceId>

<ServiceType>ProductEligibility</ServiceType>

<ServiceProviderId>DECTECH</ServiceProviderId>

<ServiceChannelId>CAS</ServiceChannelId>

<RequestID>*[Unique Request ID]</*RequestID>

<TimeStampyyyymmddhhmmsss>*YYYY-MM-DDThh:mm:ss.ms*</TimeStampyyyymmddhhmmsss>

<RequestLifeCycleStage>CallProcessManagerResponse</RequestLifeCycleStage>

<MessageStatus>*Success/Failure*</MessageStatus>

</soap:Header>

<soap:Body>

</soap:Body>

</soap:Envelope>

The elements present in SOAP header will be passed in the request to Process Manager web service and required to be included in the response.

The following fields will be echoed back in the Process Manager response without modification:

* Service Id
* Service Type
* Service Provider Id
* Service Channel Id
* Request ID

The following fields will be populated with the updated information in the Process Manager response.

* Time Stamp – value will be the time stamp when the response is written, formatted in YYYY-MM-DDThh:mm:ss.ms
* Request Life Cycle Stage – fixed value, CallProcessManagerResponse
* Message Status – value will be either Success or Failure depending on the result from Process Manager.

# Hardware and Software Requirements

## Client Requirements

|  |  |
| --- | --- |
| *Processor* | *Intel Pentium III 800MHZ (Minimum)*  *Intel Pentium 4 2GHZ (Recommended)* |
| *RAM* | *512MB (Minimum)*  *1024MB (Recommended)* |
| *Preload* | *Microsoft Windows 7 or above*  *Microsoft Office 2003 or above (latest service pack)*  *Microsoft .Net Framework v4.6.2 (latest service pack)* |

## Server Requirements

### Application Server

Minimum server recommendation for Application Server

|  |  |
| --- | --- |
| *Processor* | *16 Core Processors* |
| *RAM* | *64 GB* |
| *Hard Disk* | *73GB\*2 (RAID 1)* |
| *Preload* | *Microsoft Windows 2012 Standard Edition (latest service pack)*  *Microsoft .Net Framework v4.6.2 (latest service pack)* |

### Database Server

Minimum server recommendation for Database Server

|  |  |
| --- | --- |
| *Processor* | *16 Core Processors* |
| *RAM* | *128 GB* |
| *Hard Disk* | *73Gb\*2 (OS)*  *250 GB\*7 or SAN disk (DATABASE)* |
| *Preload* | *Microsoft Windows 2012 Standard Edition (latest service pack)*  *SQL Server 2016 Standard Edition (latest service pack)*  *Microsoft .Net Framework v4.6.2 (latest service pack)*  *IIS v7.0* |

### UAT/Development server

In UAT/Development server, the database and the application server can be running on the same server.

Minimum server recommendation

|  |  |
| --- | --- |
| *Processor* | *8 Core Processors (i.e. Intel Xeon)* |
| *RAM* | *32 GB* |
| *Hard Disk* | *73Gb\*2 (OS)*  *250GB\*7 or SAN disk (DATABASE)* |
| *Preload* | *Microsoft Windows 2012 Standard Edition (latest service pack)*  *SQL Server 2016 Standard Edition (latest service pack)*  *Microsoft .Net Framework v4.6.2 (latest service pack)*  *IIS* |

In terms of splitting the disk space, the following statement can be made:

|  |  |  |
| --- | --- | --- |
|  | *Disks* | *Redundancy* |
| *OS* | *2\*73Gb* | *RAID 1* |
| *Database data* | *4\*73Gb* | *RAID 1+0* |
| *Database logs*  *Temp DB* | *3\*73Gb* | *RAID 5* |

# RAKBANK Checklist

The following tasks must be completed by RAKBANK at least 2 weeks prior to installation of the Process Manager system at RAKBANK so that GBG DecTech can test the system using RAKBANK data:

* Prepare samples of the extract XML request call from Loan Origination System which are in accordance with Process Manager Input XML layout.
* Prepare samples of the XML which is in accordance with Process Manager Input XML layout.

The following tasks must be completed by RAKBANK prior to installation of the Process Manager system:

* Preparation of the hardware and software as per section 7 of this specification, including installation of Microsoft Windows Server 2012 Standard Edition and SQL Server 2016 Standard Edition with latest service packs.
* Ensure there is connectivity from the user’s PC where the Process Manager Client software will be installed to the Process Manager Application Server and from Process Manager Application Server to Process Manager Database Server, including installation of Microsoft Office 2003 or above in user’s PC.

# Sign-off

RAKBANK accepts this Technical Specification as an accurate representation of the technical requirements for the implementation of Process Manager at RAKBANK in UAE.

***Acceptance***

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Authorised Signatory

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Title

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date