Architecture Decision

Transaction Management Hub Release 2

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| Subject Area | Data Replication to TODS | Topic | Information Management |
| Design Decision | Retain existing data replication method for copying the transaction records from the FTM databases to TODS | Id. | 1 |
| Issue or Problem Statement | In the data replication approach taken in R1, all transactions that are written into the FTM database get replicated into TODS. This includes payments and advices that pass through the transaction bus. In TODS, they are all represented as one ‘payment activity type’. | | |
| Assumptions |  | | |
| Motivation | In the strategic end state, the transaction bus generated data that is stored within TODS should be organised into more distinct activity types allowing proper segregation of the data and finer filters for querying. | | |
| Alternatives | 1. Replace existing data replication approach between FTM and TODS. FTM to classify the transactions into different activity types and insert only the appropriate activities into TODS (using either MQ or other mechanism). 2. Replicate all transactions as per the approach taken in R1 into a staging area. Apply ETL on the data to classify the transactions into different activity types based on meta data attributes and then store within the TODS data model. 3. Continue with the existing replication model between FTM and TODS and copy all transactions to TODS. | | |
| Decision | Alternative # 3; continue current replication approach | | |
| Justification | Alternative#1 requires major redesign of the data replication approach between FTM and TODS. There will be performance implications in writing a new record to TODS in real time.  Alternative#2 requires identification of the different activity types that the transactions handled by FTM will fall into and design of the staging area and ETL for loading into TODS. This is a strategic option and will be evaluated for future releases, | | |
| Implications | Storage of the data needs to be accommodated in TODS. | | |
| Derived requirements |  | | |
| Related Decisions | None. | | |

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| Subject Area | Decision on MAC check in TMH Release 2 | Topic | Data Integrity |
| Design Decision | De scope MAC check in TMH Release 2 for the interfaces in scope | Id. | 2 |
| Issue or Problem Statement | Decision on MAC check in the Transaction Bus for rerouting interfaces | | |
| Assumptions | 1. Business performs an account/ledger level reconciliation as part of transaction lifecycle management of payments   2. There is no transformation or modification applied onto messages and message authentication | | |
| Motivation | The payment messages would need to be protected against un-authorized modifications and checked for integrity in transit. | | |
| Alternatives | 1. Use message authentication services (MAC'ng) of SD-Crypto at Transaction Management Bus and validate incoming messages 2. Use channel security (WMQ 7.5) and Advanced Message Security features. 3. Use SSL at WMQ, compliant with WMQ security patterns and ensure strong access controls to message queues at Transaction Management Bus. | | |
| Decision | Alternative #3 | | |
| Justification | The exposure of payment messages at transaction management hub is very limited to administrators and there is a formal change/incident management process +PWORD existing to control privileged access to message queues. The payment data in transit is encrypted through WMQ SSL to handle integrity risks in transmission. There is no modification to messages from source system and destination systems will be able to validate if message authentication codes are sent by source systems. | | |
| Implications | None expected | | |
| Derived requirements |  | | |
| Related Decisions |  | | |

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| Subject Area | Faster Payments Throttling in the Transaction Bus | Topic | Payments Throttling |
| Design Decision | Transaction Bus should throttle the payments from STP to ACI at the same rate as in the current interface | Id. | 3 |
| Issue or Problem Statement | Where should throttling for the Faster Payment SOPs and SIPs from STP to ACI sit? Should this be within the FTM footprint, or in the infrastructure layer? | | |
| Assumptions | STP throttle SOP payments across its MB instances and controls the rate at which messages hit the ACI gateway.  FPS Generic gateway performs a Top up process to feed the ACI gateway queues and ensures it does not get flooded with messages from STP | | |
| Motivation | ACI gateway needs a throttled input as it cannot withstand a very high TPS rate. Hence STP currently throttles the SOP payments at 216 TPS and throttles flow of unattended SIPs at 6 TPS and there is no particular throttling on attended SIPs.  When the Transaction Bus is introduced between the two, it should ensure that ACI continues to get messages at the same TPS as today. | | |
| Alternatives | 1. Do nothing in the Transaction Bus. In an ideal scenario STP is throttling the payments and they can be considered pass through for FTM 2. Move the throttling functionality from STP to FTM which will then ensure that throttling is performed to ACI 3. Move the Top up process from FPS Generic gateway to FTM thereby controlling the input to ACI Gateway 4. FTM to maintain the existing throttling rate to ACI without impacting any of the applications (STP,FPS Generic Gateway or ACI) | | |
| Decision | Alternative #4 | | |
| Justification | * TMH R2 is expected to simply reroute the message between the interfaces. * Moving functionality out of either STP or the FPS Generic Gateway needs to be done out of the FPS Remediation work | | |
| Implications | * IBM has a requirement to ensure that FTM design caters for the output throttling rate expected by the ACI gateway. In case the hub is not able to process the messages at the rate expected, it should store the requests and then throttle it at the agreed rate to ACI gateway | | |
| Derived requirements |  | | |
| Related Decisions |  | | |

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| Subject Area | High Priority payment processing | **Topic** | Payments Priority |
| Design Decision | Using queue priority | **Id.** | 4 |
| Issue or Problem Statement | In order to take care that the processing of high priority payments is not held up by other less urgent payments | | |
| Assumptions |  | | |
| Motivation |  | | |
| Alternatives |  | | |
| Decision | Use separate queues for high priority and low priority payments. | | |
| Justification | Priority queues remediate the situations where a high priority payment, such as CHAPS or online FPS payments, is not processed directly because there are other (low priority) payments in the queue waiting to be processed. In the normal course of events a message that is placed by one of the LBG systems on a queue, will be picked up directly by FTM for processing. Only in situations where very large numbers of transactions are sent to FTM within a short time-frame, it may occur that there is a certain delay with which messages are picked up from a queue by FTM. But even a delay of five seconds can be too long for online FPS payments. This risk can be overcome by making use of existing MQ queues being defined in FTM as high and low priority queues. | | |
| Implications |  | | |
| Derived requirements | Detail the type of payments and priority to be assigned considering various factors like cut-off time, amount, execution date, etc | | |
| Related Decisions |  | | |

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| Subject Area | Meta data for routing decisions in WODM | Topic | Information Management |
| Design Decision | All the meta data attributes should be available in WODM for making routing decisions. | Id. | 5 |
| Issue or Problem Statement | In R1, all the meta data attributes are not being sent to WODM. Routing is based on Source queue name. | | |
| Assumptions | FTM captures all the meta data attributes and stores it in its database and as ISF XML | | |
| Motivation | The Transaction bus is expected to make routing decisions based on meta data attributes and not the source queue names. Hence WODM needs to be passed all of the attributes to allow rules to be based on those attributes. | | |
| Alternatives | 1: Do nothing, send as many attributes as in R1  2: FTM to pass all meta data attributes to WODM to allow meta data based routing decisions | | |
| Decision | Alternative #2 | | |
| Justification | Meta data and content based rules setup and routing is the target state for WODM usage as against hardcoded queue names | | |
| Implications | * Changes in R2 design to accommodate passing all meta data attributes to WODM * Impact on rules setup for R1 and ensuring meta data for Stelink – Common System interface is also updated to pass all attributes to WODM | | |
| Derived requirements |  | | |
| Related Decisions |  | | |

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| Subject Area | Role of the Transaction bus in rerouting payment instructions from Galaxy to GPP | Topic | Role of the Transaction Bus |
| Design Decision | The Transaction bus will sit in between DataPower in the GPP domain and GPP | Id. | 6 |
| Issue or Problem Statement | Galaxy invokes a webservice on GPP for saving a payment instruction. There are two sets of DataPower appliances between them. One DataPower sits in the Galaxy domain acting as its ESB and there is a group of DataPower appliances sitting in front of GPP.  Currently requests go from Galaxy->DataPower (Galaxy Domain)->DataPower (GPP Domain)->GPP.  The Transaction Bus needs to be placed in this chain to allow rerouting of payments from Galaxy to GPP. | | |
| Assumptions | The two DataPower appliances use HTTPS with Mutual authentication. | | |
| Motivation | Transaction bus needs to intercept and reroute the payment requests between Galaxy and GPP. | | |
| Alternatives | 1: Transaction bus replaces the DataPower in the GPP domain and exposes the GPP services to Galaxy.  2. Transaction bus sits between the DataPower in the GPP domain and GPP. | | |
| Decision | Alternative #2 | | |
| Justification | DataPower in the GPP domain provides connectivity via HTTPS with mutual authentication with the DataPower in the Galaxy domain and hosts other services that can be consumed out of GPP. From the clients perspective DataPower is seen as the service provider and the same pattern is applied with TMH now being the service provider. | | |
| Implications |  | | |
| Derived requirements |  | | |
| Related Decisions |  | | |

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| **Subject Area** | Rounding Off Rules | **Topic** | Business Rule |
| **Design Decision** | THM will round the amount to 4 decimal places using standard rounding rules | **Id** | 7 |
| **Issue or Problem Statement** | The instructed amount attribute for Galaxy to GPP interface receives amount upto 5 decimal places. FTM only allows upto 4 decimal places.. | | |
| **Assumptions** |  | | |
| **Motivation** |  | | |
| **Alternatives** | Will be covered in two phases  1. Galaxy - GPP interface: Galaxy is sending amount in 5 decimal places. FTM will round it off to 4 decimal places using standard rounding rules.  2. Round of 4 decimals across FTM. | | |
| **Decision** | Alternate # 1 | | |
| **Justification** |  | | |
| **Implications** |  | | |
| **Derived requirements** |  | | |
| **Related Decisions** |  | | |

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| **Subject Area** | Industrialised Design Methodology | **Topic** | IDM |
| **Design Decision** | Release 2 design process will comply with IDM process completely. | **Id.** | 8 |
| **Issue or Problem Statement** | Should the Release 2 design process and deliverables comply with the Industrialised Design Methodology.? | | |
| **Assumptions** | The deliverables from Release 2 onwards comply with the new EAD Governance process completely. | | |
| **Motivation** | Reusable Artefacts | | |
| **Alternatives** | Use the Architecture Overview and Architecture Decision Artefacts | | |
| **Decision** | Use the Architecture Overview and Architecture Decision Artefacts for governance process. All design and modelling will be done in RSA, work managed via RTC and requirements will be in RRC. | | |
| **Justification** |  | | |
| **Implications** |  | | |
| **Derived requirements** |  | | |
| **Related Decisions** |  | | |