A group of golf balls in a row

Description automatically generated

Object Specification - interfaces

Functional Specification – Technical Specification – Release Notes

|  |  |
| --- | --- |
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| Document Version: | 1.0 |
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**Program *EXCEL*erate**

***Transform today, Excel tomorrow***

# Document Information

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| Item | Description |
| Initial Author | Rajkumar Rajendiran |
| Object Specification Name | ACU\_PTP-I-162 WMS Inventory Reconciliation |
| Blueprint Specification Reference | BPD\_PTP02\_Direct Procurement  BPD\_MD10\_Purchasing Master Data |
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*(Please add or remove responsible parties to the below table according to the approval process in project )*

|  |  |
| --- | --- |
| Client Source |  |
| Priority | Medium - Recommended |
| Core Team Owner: | Judy Vance |
| Contact Number: | TEAMS |
| Email: | [judy\_vance@acushnetgolf.com](mailto:judy_vance@acushnetgolf.com) |
| Completed On: | Click here to enter a date. |
| Functional Spec Completed By: | Rajkumar Rajendiran |
| Contact Number: | MS TEAMS |
| Email: | [Rajkumar.Rajendiran@Rizing.com](mailto:Rajkumar.Rajendiran@Rizing.com) |
| Completed On: | Friday, November 01, 2024 |
| Functional Spec Approved By: | Bert Oetsen |
| Contact Number: |  |
| Email: | Bert\_Oetsen@Acushnetgolf.com |
| Approved On: | Wednesday, November 06, 2024 |
| Technical Spec Completed By: | Ahmad Aizat bin Ali |
| Contact Number: |  |
| Email: | Ahmadaizat.ali@rizing.com |
| Completed On: | Click here to enter a date. |
| Technical Spec Approved By: |  |
| Contact Number: |  |
| Email: |  |
| Approved On: | Click here to enter a date. |
| Development Assigned To: |  |
| Contact Number: |  |
| Email: |  |
| Completed On: | Click here to enter a date. |
| Development Approved By: |  |
| Contact Number: |  |
| Email: |  |
| Approved On: | Click here to enter a date. |
| Middleware Config Assigned To :  Contact Number :  Email :  Completed On : | Click here to enter a date. |
| Off-Shore QA Approved By: |  |
| Contact Number: |  |
| Email: |  |
| Approved On: | Click here to enter a date. |
| On-Site QA Approved By: |  |
| Contact Number: |  |
| Email: |  |
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# Documentation Roles

This describes who or what function is responsible for completing the various sections in this document.

**Business Requirements** – this section to be completed by the Business with the support of the Functional Consultant

**Functional Specification** – this section to be completed by the Functional Consultant with the support of the Business

**Technical Specification** – this section to be completed by the Technical Consultant with the support of the Functional Consultant

**Middleware Specification –** this section to be completed by the Middleware Consultant with the support of Functional / Technical Consultant

**Security** – this section to be completed by the Functional Consultant and the Technical Consultant

**Quality Assurance** – this section to be completed by the QA Team

**Release Notes –** this section can be completed by any team. They can add any notes relevant to the different releases.

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1. Business Requirements
   1. Business drivers and justification

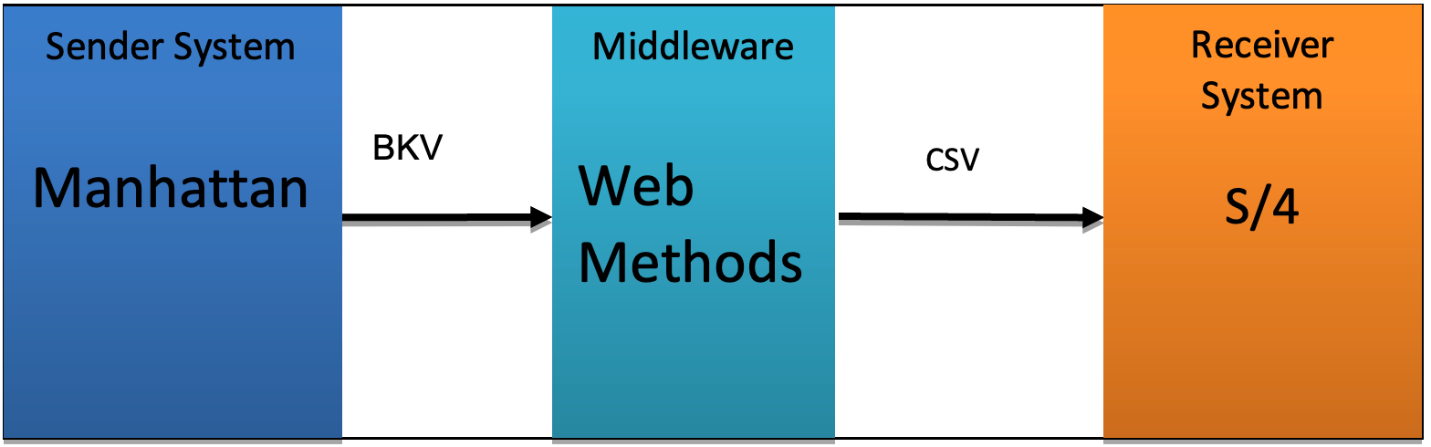
*For the Acushnet (ACU) business, the WMS (Manhattan) is the primary source of truth for inventory quantities. It's crucial for inventory quantities between WMS and S4 to remain synchronized to ensure smooth and uninterrupted business processes. Various actions between WMS and S4 are taken to maintain this synchronization, including physical inventory, cycle counts, and frequent inventory adjustments. In all these different transactions, the warehouse needs to send relevant transaction details to S4 to keep the inventory in sync.*

*In the current state, Acushnet uses an Inventory reconciliation report to keep the inventory sync between M3 and the WMS system. The Acushnet business is expecting to have similar functionality in S4 as well. This interface is designed to get Inventory snapshot data from WMS to S4 to compare stocks.*

* 1. General Requirements

|  |  |
| --- | --- |
| What is the processing frequency for this Interface? |  |
| *What is the expected volume of messages processed via this interface?* | *Huge - As it’s a full reconciliation between WMS and S/4 for all articles and Sites for which inventory is maintained.* |
| *What type(s) of business data will be contained in the message?*  *(Order data, invoice data, inventory data, shipping papers, quality data, etc.)* | Inventory data (Material, Quantity, Storage location, Stock Type -Unrestricted, Stock Type -Blocked, Stock Type – Quality. |
| *Sender System Name* | *WMS-Manhattan* |
| *Receive System Name* | *SAP S4* |
| *Middleware Name* | *Web Methods* |

* 1. Data Flow diagram



**Data Flow Diagram**

* 1. Sender System
     + 1. Description of the sender system and its functionality

*Manhattan will be the sending system in this instance. Goods Receipt will be carried out in the warehouse, and the details will be transmitted to the S4 system.*

* + - 1. Process flow overview
* *The Warehouse Management System (WMS), which holds the details of the inventory in the Distribution Centre (DC), sends a snapshot of their inventory every day to SAP for stock reconciliation.*
* *For this inventory reconciliation, the WMS system will drop the inventory snapshot file, which includes the stock data, to a predefined location in WebMethods.*
* *There can be multiple files for each warehouse location.*
* *The data from all the files for one warehouse should be consolidated to get the total inventory snapshot details from Manhattan.*
* *In S4 the report can be executed separately for each Warehouse or for all Warehouse locations together.*
* *WebMethods will pick the file from the location, convert to .csv and transmit the data into SAP S4 daily.*

A diagram of a software process

Description automatically generated

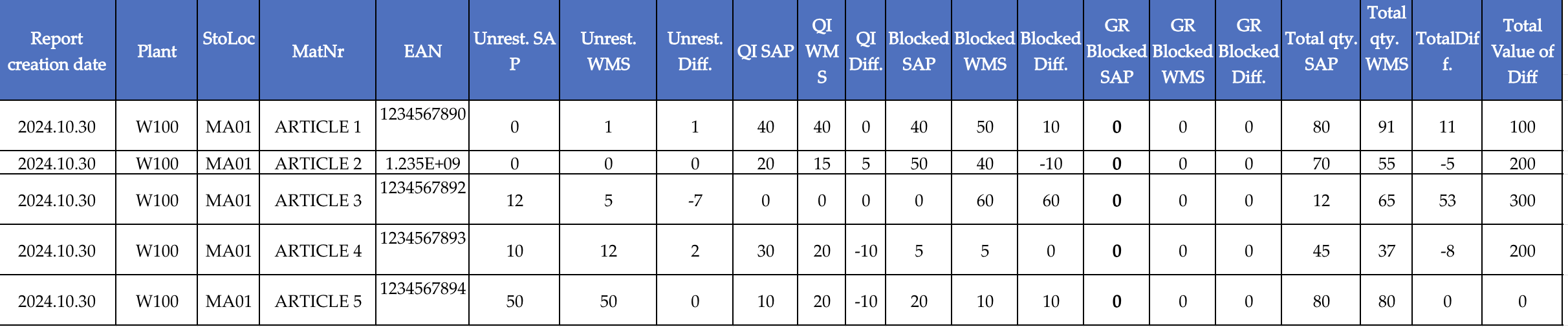
* 1. Receiver System
     + 1. Description of the Receiver System

*S4 will be the receiving system on this occasion. Even though WMS is considered the source of truth for the Inventory, S4 is the system which holds the financials, Oder fulfilments and replenishments, etc. Hence, it is crucial to keep the inventory sync between WMS and S4 to keep the balance of Inventory and respective financial transactions related to Inventory.*

* + - 1. Process flow overview
* *There’s no hard coding and any references in this document for Plant W100, Storage locations CA01 are the variables maintained in Parameter table.*
* *The inventory snapshot files are received from WMS daily in the early morning hours. These files are then used by the stock comparison utility program to compare the stock details provided by WMS with that of SAP and update the custom table* ***ZPTP\_INVSNAP\_REC*** *with the discrepant and non-discrepant records. All the entries in the table MARD will be available in table* ***ZPTP\_INVSNAP\_REC*** *even if there are no quantity discrepancies.*
* *The program will also trigger an email to the respective business users. The email will have all the records when the variable* ***PTP162\_EMAIL\_ALL*** *in the table has a value ‘X’ and will have only the discrepant records when the parameter variable* ***PTP162\_EMAIL\_ALL*** *has a value ‘ ‘ (blank) in the Parameter table.*
* *The Material (Item ID), WMS stock types (Unrestricted-use, Quality Inspection, Blocked), and quantity to be compared are sent in the file. The nomenclature of WMS stock type is different from that of SAP. A value mapping is done to map the WMS stock types with that of SAP. When a stock comparison is done for a stock type in WMS, the corresponding SAP stock type is used.*

|  |  |
| --- | --- |
| **M3 WM Loc** | **SAP Stock Type** |
| AVL | Unrestricted |
| PUT | GR Blocked stock |
| HLD | Quality Held |
| REJ | Blocked |

* *There could be multiple stock types in WMS that can be mapped to one stock type in SAP. In such cases, the sum of the WMS quantities of multiple WMS stock types is considered while comparing the SAP stock in a stock type. For example, if WMS stock types PUT and HLD correspond to the SAP stock type ‘Quality Held’ use, then the quantities in the file for WMS stock types PUT and HLD are summed up for comparison with SAP stock type ‘Quality Held’ use.*
* *The report is generated at*
* ***Material, Plant, Storage location and Stock type level***
* *The sample report will look like the table below:*



***Sample report format***

[Sample Report content](https://acushnetco.sharepoint.com/:x:/r/sites/AcushnetSAPImplementation/Shared%20Documents/PMO%20-%20Restricted/05%20Realize%20Build/01%20Realize%20Build%20Deliverables/R010%20WRICEF/PTP/03%20Interfaces/PTP-I-162%20WMS%20Inventory%20Reconciliation/FS-P2P-I_162_Inventory%20reconciliation%20SAP_WMS.xlsx?d=wf889f209f06a4abeb4cbbf94ef07ad94&csf=1&web=1&e=VSX8mY)

* *The report can be run ad hoc but under normal operations it will be scheduled to run as background job during off-hours and it checks, whether*
  + *The data received from WMS has stock but there is no corresponding stock in SAP.*
  + *There is stock in SAP, but not contained in WMS Stock Report*
* *Based on the option selection in the selection screen, the report displays,*
  + *Only discrepant records*
  + *All the records – both discrepant and non-discrepant records*
* *During the report generation process,*
  + *Erroneous WMS data lines will not stop the generation of the recon report*
  + *Error log report is generated for erroneous lines*
* *The error log report is accessible from within the report. An icon for the same is enabled in the icon bar.*

*When the program updates the custom table, old records (older than 7 days) are deleted, and new records for the current day are inserted. Hence, at any point, the stock reconciliation data for only 7 days is available in the custom table.*

1. Functional Specification
   1. Sender system

*The inventory snapshot containing all the required information is generated in the WMS system and sent to the SAP S/4HANA system every day in the early morning hours.*

* + - 1. Process Flow Overview

*The operational stock movements are interfaced with SAP through the goods movement interface and recorded in SAP with appropriate movement types based on the reason codes sent by the WMS. The Warehouse Management System (WMS), which holds the details of the inventory in the Distribution Center (DC), sends a snapshot of its inventory every day to SAP for stock reconciliation.*

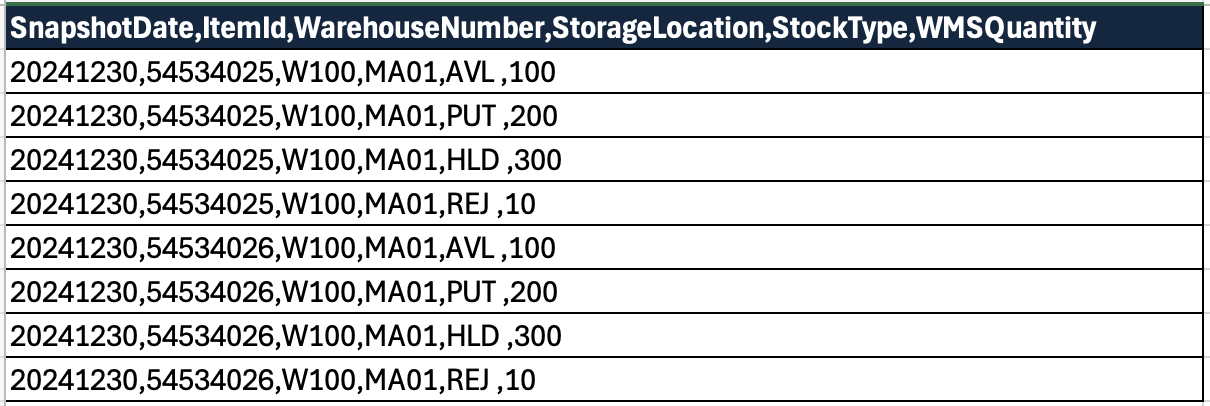
* + - 1. Sender Message Content / Sample Message

*The screenshot below shows the sample file generated for Lakeville from Manhattan, which includes the inventory balances. Also attached is the sample report generated after comparing the files to M3 inventory balances.*

*A computer screen shot of text

Description automatically generated*

***Payload File from WMS***

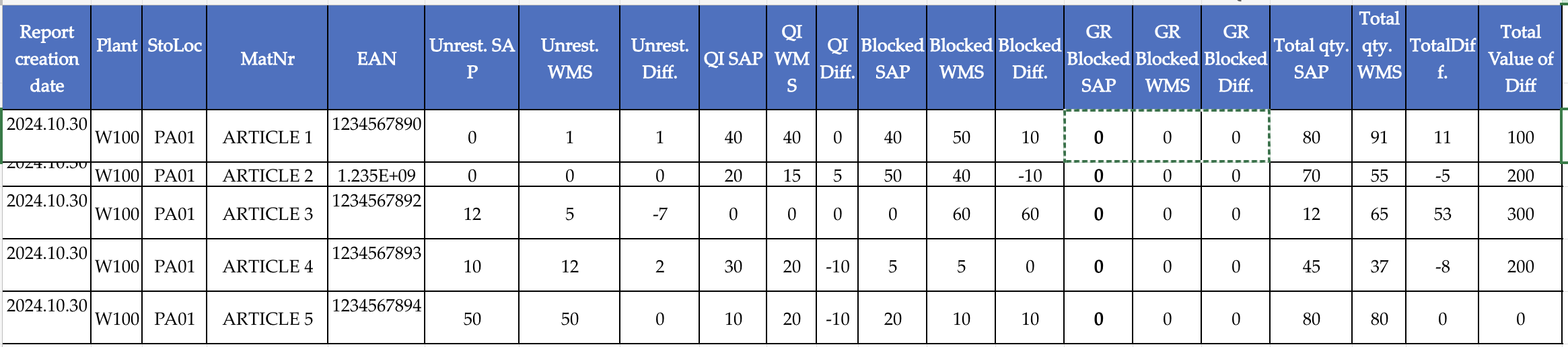


***Webmethods converts the JSON file from WMS to into a .csv file***

***A screenshot of a report

Description automatically generated***

***As-Is Inventory Recon Report***



***To-Be Inventory Recon Report***

* + - 1. Assumptions
* *All the inventory transactions IDOCS from the WMS system to S4 should be processed before taking this inventory snapshot. This inventory snapshot is expected to be taken from WMS in the middle of the night or in the early morning hours.All the interface errors from WMS must be fixed before taking the inventory snapshot.*
* *The WMS system will always provide the stocks of the material in the base unit of measurement.*
* *There will be only manual adjustments done in the SAP or WMS system by the respective business users after analysing the output of this inventory recon report, and there are no automatic adjustments(positive/negative) done as part of this interface.*
* *The stock comparison is only At Article, Site & stock type level. There is no business requirement to do this comparison at Batch level.*
  + - 1. Triggering Method

*NA*

* + - 1. Special processing Notes

*NA*

* + - 1. Status Updates / Message acknowledgements

*NA*

* + - 1. Configuration Requirements

NA

* 1. Receiver System
     + 1. Process flow overview
* *This Interface is built to identify discrepant materials and subsequently perform the postings(manually) according to the positive and negative differences in stock quantities.*
* *WMS will be the single source of truth for the inventory numbers. S4 inventory numbers will be compared, and manual inventory adjustment will be performed in S4 or WMS accordingly.*
* *The file sent by the WM system will be updated in the S4 system custom table with the fields Material, UPC/EAN, WMS stock types (Unrestricted-use, Quality Inspection, Blocked), and quantity to be compared. It is agreed with Business that there will not be any stock quantity comparison at ‘batch’ level*
* *The UPC/EAN number can be obtained from the table MARA-EAN11 for each MATNR number. SAP stock quantity can be obtained from the MARD table for each Material, Plant, Storage location and stock type.*
* *The file may not contain all the articles available in SAP. WMS will send only the materials for which they have stock. There could be a few articles for which stock may be available in SAP and not in WMS.*
* *There will be 2 custom program created in SAP.The first program [****ZPTP\_INVSNAP\_UPDATE****] will read the data from the CSV file and update in the custom table [****ZPTP\_INVSNAP\_REC****]. Before inserting the data, the records which are older than 7 days will be deleted from the table.*
* *The second custom program [****ZPTP\_INVSNAP\_RECON****] will be used to view the discrepant and non-discrepant records from the custom table and send them as an email.*
* *All the entries in the table (MARD) will be available in table ZPTP\_INVSNAP\_REC even if there are no discrepancies in quantities and there are no entries in the file for that article. This way, the custom table* ***ZPTP\_INVSNAP\_REC*** *and the report will not have articles for which there’s no stock available in WMS or SAP. The report will display only the discrepancies when the radio button – “****difference only****” is selected in the selection screen and display all the records when the radio button – “****all****” is selected in the selection screen.*
  + - * 1. Read Material by passing the MATNR to the MARD table.
* Insert All the data to ZPTP\_INVSNAP\_REC table. Before updating always delete existing data where Report creation date is older than 7 days.
* Read MARD table data by passing the Plant, Material and Storage. Stock is MARD-LABST.
  + - * 1. Get Stock valuation by MBEW table. Pass material and plant as MATNR and BWKEY, and the value can be derived.
        2. If MBEW-VPRSV = 'V', then the Value of the stock would be Different Qty \* MBEW-VERPR.
        3. If MBEW-VPRSV = 'S', then the value would be Different Qty \* MBEW-STPRS.
        4. Use the SO\_NEW\_DOCUMENT\_ATT\_SEND\_API1 Function module to send the mail.
      1. Receiving system data format

*WebMethods receives the stock reconciliation file. The file sent by the WMS will have the fields Item Id (Material), WMS stock types (Unrestricted-use, Quality Inspection, Blocked, PUT) and quantity to be compared. The EAN number for each material number can be obtained from the table MARA\_EAN11. SAP stock quantity can be obtained from the MARD table for each Material. The file may not contain all the articles available in SAP. Logos WMS will send only the materials for which they have stock. There could be a few article for which stock may be available in SAP and not in WMS.*

*WebMethods will place the file in a specific AL11 directory after converting the data into a .csv format*

|  |  |
| --- | --- |
| ***Folder*** | */interfaces/DS4/Manhattan* |
| ***Format*** | *.csv* |
| ***File naming convention*** | *WMS\_INV\_SNAPSHOT\_DDMMYYYY\_HHMMSS.csv* |

**CSV File format in AL11:**

|  |
| --- |
| **SnapshotDate, ItemId, WarehouseNumber, StorageLocation,StockType,WMSQuantity** |
| 20241230,54534025, W100, MA01, AVL ,100 |
| 20241230,54534025, W100, MA01, PUT ,200 |
| 20241230,54534025, W100, MA01, HLD ,300 |
| 20241230,54534025, W100, MA01, REJ ,10 |
| 20241230,54534026, W100, MA01, AVL ,100 |
| 20241230,54534026, W100, MA01, PUT ,200 |
| 20241230,54534026, W100, MA01, HLD ,300 |
| 20241230,54534026, W100, MA01, REJ ,10 |

* + - 1. Triggering Methods

* *Once the file is received, WebMethods places the files in a specific AL11 directory mentioned above.*
* *The custom programs (****ZPTP\_INVSNAP\_UPDATE & ZPTP\_INVSNAP\_RECON****) are scheduled daily as a background job in the early morning hours to compare the stock quantities between the file and all articles in the table MARD. The custom table* ***ZPTP\_INVSNAP\_REC*** *is updated with discrepant and non-discrepant records. This means all the entries in the table MARD will be available in table ZPTP\_INVSNAP\_REC even if there’s no discrepancy in quantities except for those articles where stock across the stock types is zero in table MARD and there’s no entry in the file for that article. This way, the Excel file and the report will not have articles for which there’s no stock available in logos WMS and SAP.  The report will display only the discrepancies when the radio button –* ***the difference only is selected in the selection screen and displays all the records when the radio button –****is selected in the selection screen.*
* *The program also sends the discrepancies as an email. The email addresses are maintained as a variable* ***PTP162\_STK\_RECON\_EMAIL*** *in the parameter table, as shown below.*
* *Emails should be triggered site wise and each site will have a different set of recipients.*
  + - XXX@acushnetgolf.com
    - *[YYY@acushnetgolf.com](mailto:YYY@acushnetgolf.com)*
    - [*ZZZ@acushnetgolf.com*](mailto:ZZZ@acushnetgolf.com)
      1. Table details

*Custom Table:* ***ZPTP\_INVSNAP\_REC***

***Table fields mapping***

|  |  |  |
| --- | --- | --- |
| ***Custom table fields*** | ***Primary Key*** | ***SAP Table and mapping*** |
| *Report creation date* | *X* | *Date on which the custom program executes reconciliation* |
| *Plant* | *X* | *MARD-WERKS* |
| *Material* | *X* | *MARD-MATNR where MARD-MATNR is in the file* |
| *Warehouse* | *X* | *W100(Variable from table Parameter Table)* |
| *SLoc* |  | *CA01(Variable from table Parameter table)* |
| *EAN* |  | *EAN GTIN fetched from MARA-EAN11* |
| *Unrestricted SAP qty.* |  | *Table – MARD Field - Value mapping for SAP field(MARD-LABST)* |
| *Unrestricted WMS qty.* |  | *AVL Quantity. from file* |
| *Unrestricted diff qty.* |  | *Difference between Un-restricted SAP qty and Qty. in corresponding WMS stock type from file* |
| *QI SAP qty.* |  | *Table – MARD Field - Value mapping for SAP field(MARD-* INSME*)* |
| *QI WMS qty.* |  | *HLD Quantity from file* |
| *QI diff qty.* |  | *Difference between QI SAP qty and Qty. in corresponding WMS stock type from file* |
| *Blocked SAP qty.* |  | *Table – MARD Field - Value mapping for SAP field(MARD-SPEME)* |
| *Blocked WMS qty.* |  | *REJ Quantity from file* |
| *Blocked diff qty.* |  | *Difference between Blocked SAP qty and Qty. in corresponding WMS stock type from file* |
| *GR Blocked SAP qty.* |  | *Fetch from MSEG table for a plant[W100] sum all qty[MSEG-MENGE] for Movement type(103 & 106) and subtract the qty[MSEG-MENGE] for movement type(104 & 105).For Storage location pass the MSEG-EBELN into EKPO-EBELN and fetch EKPO-LGORT.* |
| *GR Blocked WMS qty.* |  | *PUT Quantity from file* |
| *GR Blocked diff qty.* |  | *Difference between GR blocked stock SAP qty and PUT Qty. in corresponding WMS stock type from file* |
| *Total SAP qty.* |  | *Sum of Un-restricted SAP qty., QI SAP qty. and Blocked SAP qty.* |
| *Total WMS qty.* |  | *Sum of all the quantities in the file for an Item Id* |
| *Total diff qty.* |  | *Difference between Total SAP qty. and Total WMS qty.* |

***Stock Type Value mappings***

*The value mappings are not yet finalized. Given below are the tentative values*

|  |  |
| --- | --- |
| **M3 WM Loc** | **SAP Stock Type** |
| AVL | Unrestricted |
| PUT | GR Blocked |
| HLD | Quality Held |
| REJ | Blocked |

***Org Structure (Site code) mappings***

*Below the mapping between WMS Facility and S4 site code.*

|  |  |
| --- | --- |
| **WMS Facility** | **S4 Site code** |
| FHV | W100 |
| LKV | W110 |
| VST | W140 |
| CAN | W150 |

***Selection Screen***

*•       Report Creation date (multiple entries)*

*•       Radio buttons for Display variant (“difference only”, “all”)*

*•       Warehouse*

*•       Storage location*

*•       Material number in SAP (multiple entries)*

*•       EAN (multiple entries)*

* + - 1. Special processing notes

*The background job for the stock comparison program will be scheduled in the SAP S4 ERP system when the inventory snapshot file is received from WMS. The details of this interface are as below*

***Interface***

*Report Programs -* ***ZPTP\_INVSNAP\_UPDATE & ZPTP\_INVSNAP\_RECON***

*Report T-code –* ***ZPTP\_INVSNAP*** *for program* ***(ZPTP\_INVSNAP\_RECON)***

*Table Name -* ***ZPTP\_INVSNAP\_REC***

*Background program -* ***ZPTP\_INVSNAP\_RECON***

* + - 1. Configuration requirements

***Parameter Table Config details:***

|  |  |  |
| --- | --- | --- |
| ***Variable*** | ***Sample Values*** | ***Purpose*** |
| *PTP162\_EMAIL\_ALL* | *X* | *All stock records will be sent in email.* |
| *PTP162\_EMAIL\_ALL* | *‘ ’ [BLANK]* | *Only the discrepant records will be sent by email.* |
| *PTP162\_STK\_RECON\_EMAIL* | XXX@acushnetgolf.com  [*YYY@acushnetgolf.com*](mailto:YYY@acushnetgolf.com)  [*ZZZ@acushnetgolf.com*](mailto:ZZZ@acushnetgolf.com) | *Email address of report recipient.* |
| *PTP162\_WAREHOUSE* | *FHV -> W100* *LKV -> W110* *VST -> W140*  *CAN-> W150* | *Warehouse numbers applicable for this report.* |
| *PTP162\_SLOC* | *MA01*  *CA01* | *Storage locations applicable for this report.* |

***Note:*** *Emails should be triggered as per Warehouse number. It will be different email recipients based on Plant. So, for the 4 warehouses mentioned above, 4 emails should get triggered respectively. The email id’s [recipients] for each warehouse will be maintained in the parameter table ZENHMAINT against the WRICEF id PTP-I\_162*

* 1. Data mappings

*Mapping document is attached here. This includes the field mapping from source data structure to target data structure.*

[FS\_PTP-I-162 Inventory Snapshot\_Mapping spec.xlsx](https://acushnetco.sharepoint.com/:x:/r/sites/AcushnetSAPImplementation/Shared%20Documents/PMO%20-%20Restricted/05%20Realize%20Build/01%20Realize%20Build%20Deliverables/R010%20WRICEF/PTP/03%20Interfaces/PTP-I-162%20WMS%20Inventory%20Reconciliation/FS_PTP-I-162%20Inventory%20Snapshot_Mapping%20spec.xlsx?d=w139c6bb03e65433aa387aebce1ecd279&csf=1&web=1&e=2AwLXb)

ß

* 1. Message monitoring and re-processing

**Error Handling**

* *The error log report is accessible from within the report. An icon for the same is enabled in the icon bar.*

**Reprocessing**

* *Business users can rerun this report manually if there is any delay in getting the inventory snapshot file from WMS or cross-check again after manually correcting the discrepancies.*
  1. Role of middleware tool
* *Middleware web methods will transfer the inventory snapshot file from Manhattan to SAP S4 and place the file in the AL11 directory.*

1. Technical Specification
   1. Assumptions

File from WMS will be mapped into a proper CSV file format by Webmethod before being sent to SAP.

* 1. Clean Core Compliance Checklist
     + 1. General Information
          1. Tier Level:  Tier 1
          2. Tier 2
          3. Tier 3 \*If checked, its mandatory to provide the “rationale for selection” in below Tier 3 section
       2. Detailed Information

|  |  |
| --- | --- |
| Tier 1 Checks | Remarks on requirements |
| Can be standard API’s like ODATA service, SOAP APIs used to serve the business integration requirements | N/A |
| Can be business events used to produce and consume events for outbound and inbound process | N/A |
| Can be business requirement meet with Custom BO and Custom CDS view | N/A |

|  |  |
| --- | --- |
| Tier 2 Checks | Remarks on requirements |
| Can be business requirement meet with SAP unreleased objects and for which we need to create a custom wrapper. | N/A |
| Brief about the unreleased object advantage over the released objects | N/A |

|  |  |
| --- | --- |
| Tier 3 Checks | Remarks on requirements |
| Are customizations necessary and justified? | Yes. Custom GUI report is required |
| Have all alternatives (Tier 1 and Tier 2) been considered and ruled out? Brief about other explored options if any. | Yes. Not achievable using Tier 1 & 2. |
| Brief about the Tier 3 option which is planned to use like IDOCs, SEGW, BOPF, Custom Remote FM and Custom Webservice | Custom report to collect data from AL11 and update Custom table. |
| Rationale for selection? | Custom program is needed for this program. |

* 1. Enhancement Framework Control Details
     + 1. Header Table

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| RICEF Id | Sub Area | Active | ENH Description | ENH Type | Object Type | Object Name |
| PTP-I-162 | WMS\_INVENTORY | Yes | WMS Inventory Reconciliation |  |  |  |

* + - 1. Parameter Table

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| RICEF Id | Sub Area | Sequence No | Field name | Sign | Option | Low | High |
| PTP-I-162 | WMS\_INVENTORY | 1 | WAREHOUSE | I | EQ | W100 |  |
| PTP-I-162 | WMS\_INVENTORY | 2 | WAREHOUSE | I | EQ | W110 |  |
| PTP-I-162 | WMS\_INVENTORY | 3 | WAREHOUSE | I | EQ | W140 |  |
| PTP-I-162 | WMS\_INVENTORY | 4 | WAREHOUSE | I | EQ | W150 |  |
| PTP-I-162 | WMS\_INVENTORY | 5 | STORAGE\_LOC | I | EQ | CA01 |  |
| PTP-I-162 | WMS\_INVENTORY | 6 | STORAGE\_LOC | I | EQ | MA01 |  |
| PTP-I-162 | WMS\_INVENTORY | 1 | EMAIL | I | BT | W100 | xxx@acusnetgolf.com(TBD) |
| PTP-I-162 | WMS\_INVENTORY | 1 | EMAIL | I | BT | W110 | xxx@acusnetgolf.com(TBD) |
| PTP-I-162 | WMS\_INVENTORY | 1 | EMAIL | I | BT | W140 | xxx@acusnetgolf.com(TBD) |
| PTP-I-162 | WMS\_INVENTORY | 1 | EMAIL | I | BT | W150 | xxx@acusnetgolf.com(TBD) |

* 1. Sender system
     + 1. Technical developments or configurable components on sender system

*n/a*

* + - 1. Communication method

n/a

* + - 1. Sender message structure in detail

*n/a*

* + - 1. Detailed Design
         1. n/a

Object names

Provide the following information:

|  |  |
| --- | --- |
| Object Type | Name |
| Eg: ABAP Report Program | Program Name |

Tables Used

n/a

Data Selection

n/a

Program Interfaces

* + - * 1. n/a
      1. Security & Authorization Objects

*n/a*

* 1. Receiver system
     + 1. Technical developments or configurable components in receiver system

*AL11 path to store new file and archive file needs to be configured*

* + - 1. Communication method

*FILE*

* + - 1. Receiver message structure in detail

CSV file format in AL11

|  |
| --- |
| **SnapshotDate, ItemId, WarehouseNumber, StorageLocation,StockType,WMSQuantity** |
| 20241230,54534025, W100, MA01, AVL ,100 |
| 20241230,54534025, W100, MA01, PUT ,200 |
| 20241230,54534025, W100, MA01, HLD ,300 |
| 20241230,54534025, W100, MA01, REJ ,10 |
| 20241230,54534026, W100, MA01, AVL ,100 |
| 20241230,54534026, W100, MA01, PUT ,200 |
| 20241230,54534026, W100, MA01, HLD ,300 |
| 20241230,54534026, W100, MA01, REJ ,10 |

* + - 1. Detailed design

Create custom table ZPTP\_T\_INVSNAP with below structure:

|  |  |  |  |
| --- | --- | --- | --- |
| Field Name | Description | Data element | DOMAIN |
| REPORT\_DATE | Report Creation Date | ZE\_REPORT\_DATE | DATS |
| WERKS | Plant | WERKS\_D |  |
| LGORT | Storage Location | LGORT\_D |  |
| MATNR | Material | MATNR |  |
| EAN\_ARTICLE | Article Number (EAN/UPC) | EAN11 |  |
| UNR\_SAP\_QTY | Unrestricted SAP qty |  | MENG13V |
| UNR\_WMS\_QTY | Unrestricted WMS qty |  | MENG13V |
| UNR\_DIFF\_QTY | Unrestricted qty difference |  | MENG13V |
| QI\_SAP\_QTY | QI SAP qty |  | MENG13V |
| QI\_WMS\_QTY | QI WMS qty |  | MENG13V |
| QI\_DIFF\_QTY | QI qty difference |  | MENG13V |
| BLK\_SAP\_QTY | Blocked SAP qty |  | MENG13V |
| BLK\_WMS\_QTY | Blocked WMS qty |  | MENG13V |
| BLK\_DIFF\_QTY | Blocked qty difference |  | MENG13V |
| GRBLK\_SAP\_QTY | GR Blocked SAP qty |  | MENG13V |
| GRBLK\_WMS\_QTY | GR Blocked WMS qty |  | MENG13V |
| GRBLK\_DIFF\_QTY | GR Blocked qty difference |  | MENG13V |
| TOT\_SAP\_QTY | Total SAP qty |  | MENG13V |
| TOT\_WMS\_QTY | Total WMS qty |  | MENG13V |
| TOT\_DIFF\_QTY | Total qty difference |  | MENG13V |

Create update program ZPTP\_I\_INVSNAP\_UPDATE

Selection Screen

Parameter for Inbound AL11 file path

Parameter for Archive AL11 file path

Pseudo-logic:

Find inbound filename in specified path using FM EPS2\_GET\_DIRECTORY\_LISTING.

Read file with name WMS\_INV\_SNAPSHOT\*. Use FM OPEN\_DATASET to open the file, FM READ\_DATASET to read the file and FM CLOSE\_DATASET to close the file. There might be multiple files, and these steps might be repeated.

File from WMS will have below structure

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Date | Material | Warehouse Number | Storage Location | Stock Type | WMS Quantity |
| 20241230 | 54534025 | W100 | MA01 | AVL | 100 |
| 20241230 | 54534025 | W100 | MA01 | PUT | 200 |
| 20241230 | 54534025 | W100 | MA01 | HLD | 300 |
| 20241230 | 54534025 | W100 | MA01 | REJ | 10 |
| 20241230 | 54534026 | W140 | CA01 | AVL | 100 |
| 20241230 | 54534026 | W140 | CA01 | PUT | 200 |
| 20241230 | 54534026 | W140 | **CA01** | HLD | 300 |
| 20241230 | 54534026 | W140 | **CA01** | REJ | 10 |

* + - 1. Select MATNR, WERKS, LABST, INSME & SPEME from table MARD where WERKS = W100 or W110 or W140 or W150 and LGORT = CA01 or MA01. ~~These 4 values are maintained in the parameter table in section 3.3.2. If there are multiple records for each MATNR & WERKS combination, combine them into a record. This means quantity field LABST, INSME & SPEME needs be combined as well.~~ These WERKS and LGORT values are maintained in parameter table in section 3.3.2. Records do not need to be combined as they are already unique.
      2. For every combination of Material, Warehouse & Storage location in WMS file, insert a record into internal LT\_INVSNAP with similar structure as table ZPTP\_T\_INVSNAP. Below are the fields to be updated:
* REPORT\_DATE = System date.
* MATNR = Material.
* WERKS = Warehouse Number.
* LGORT = Storage Location
* EAN\_ARTICLE = Get EAN11 from MARA where MATNR = Material.
* UNR\_WMS\_QTY = WMS Quantity where Stock Type = AVL
* QI\_WMS\_QTY= WMS Quantity where Stock Type = HLD
  + - 1. BLK\_WMS\_QTY= WMS Quantity where Stock Type = REJ
      2. GRBLK\_WMS\_QTY= WMS Quantity where Stock Type = PUT

Find a corresponding record from the already selected MARD internal table for the inserted record where:

* MATNR = MATNR
* WERKS = WAREHOUSE
* LGORT = Storage Location

If record is found, update LT\_INVSNAP. Below are the fields to be updated. Leave blank if no records found.

* WERKS = MARD-WERKS
* UNR\_SAP\_QTY = MARD-LABST
* QI\_SAP\_QTY = MARD-INSME
  + - 1. BLK\_SAP\_QTY = MARD-SPEME
      2. GRBLK\_SAP\_QTY =

MSEG-MENGE for BWART (103 and 106)  **-**  MENGE for BWART(104 and 105) - user MATNR , WERKS and LGORT( storage location should picked from MSEG-EBELN = EKPO-EBELN)

For records in MARD internal table that does not have matching record in LT\_INVSNAP, insert new record in LT\_INVSNAP. Below are the fields to be updated:

* REPORT\_DATE = System date.
* MATNR = MARD-MATNR
* WAREHOUSE = WERKS
* LGORT = MARD-LGORT
* EAN\_ARTICLE = Get EAN11 from MARA where MATNR = Material.
* UNR\_SAP\_QTY = MARD-LABST
* QI\_SAP\_QTY = MARD-INSME
  + - 1. BLK\_SAP\_QTY = MARD-SPEME
      2. GRBLK\_SAP\_QTY =
      3. MSEG-MENGE for BWART (103 and 106)  **-**  MENGE for BWART(104 and 105)

Update remaining fields in LT\_INVSNAP:

* UNR\_DIFF\_QTY = UNR\_WMS\_QTY - UNR\_SAP\_QTY.
* QI\_DIFF\_QTY = QI\_WMS\_QTY - QI\_SAP\_QTY.
  + - 1. BLK\_DIFF\_QTY = BLK\_WMS\_QTY - BLK\_SAP\_QTY.
      2. GRBLK\_DIFF\_QTY = GRBLK\_WMS\_QTY - GRBLK\_SAP\_QTY.
      3. TOT\_SAP\_QTY = UNR\_SAP\_QTY + QI\_SAP\_QTY + BLK\_SAP\_QTY + GRBLK\_SAP\_QTY.
      4. TOT\_WMS\_QTY = UNR\_WMS\_QTY + QI\_WMS\_QTY + BLK\_WMS\_QTY + GRBLK\_WMS\_QTY
* TOT\_DIFF\_QTY = TOT\_WMS\_QTY - TOT\_SAP\_QTY.
  + - 1. Update custom table ZPTP\_T\_INVSNAP using LT\_INVSNAP.
      2. Delete ZPTP\_T\_INVSNAP records which is more than 7 days.
      3. Move processed WMS file to archive folder using

OPEN\_DATASET to open the file, FM READ\_DATASET to read the file and FM CLOSE\_DATASET to close the file.

* + - 1. Delete processed file from inbound folder using DELETE DATASET.

Create update program ZPTP\_R\_INVSNAP\_RECON

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Selection Screen | Description | Type | Data Type | Remarks |
| S\_DATE | Report Creation date | Select Options | Date |  |
| P\_WERKS | Warehouse | Select-option without Intervals | WERKS | Possible values search help:  W100 or W110 or W140 or W150 |
| P\_LGORT | Storage Location | Select-option without Intervals | LGORT | Possible values search help:  CA01 or MA01 |
| S\_MATNR | Material | Select Options | MATNR |  |
| S\_EAN | EAN | Select Options | EAN11 |  |
| RB\_DIFF | Display difference only | Radio Button |  |  |
| RB\_ALL | Display All | Radio Button |  |  |
| RB\_ALV | Display ALV | Radio Button |  |  |
| RB\_EMAIL | Send EMAIL | Radio Button |  |  |

Pseudo-logic:

Select all fields from table ZPTP\_T\_INVSNAP where:

REPORT\_DATE = S\_DATE.

WERKS = P\_WERKS.

LGORT = P\_LGORT.

MATNR = S\_MATNR.

EAN11 = S\_EAN.

If RB\_DISP = Display difference only, delete records where TOT\_DIFF\_QTY is initial. Else do nothing.

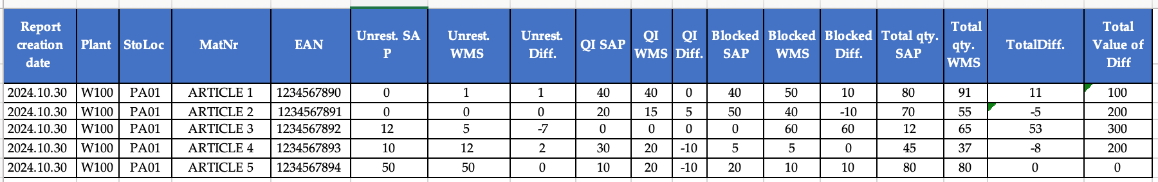
Select VPRSV, VERPR, STPRS from MBEW where:

MATNR = ZPTP\_T\_INVSNAP\_REC-MATNR

BWKEY = ZPTP\_T\_INVSNAP\_REC-WERKS

Find the Total value of difference. If MBEW-VPRSV = V, then TOT\_DIFF\_QTY \* MBEW-VERPR. If MBEW-VPRSV = S, then TOT\_DIFF\_QTY \* MBEW-STPRS.

Display reports with below layout using ALV class CL\_SALV\_TABLE.



* + - 1. Send email with attached ALV report in EXCEL format to the recipient maintained in the parameter table in section 1.3.2 using class CL\_DOCUMENT\_BCS. Based on the parameter table for each WAREHOUSE the recipient list will be picked with the FIELD\_NAME = ‘EMAIL’ as shown in 1.3.2. and trigger email for each warehouse with data relevant for that warehouse in the attachment.

Object names

Provide the following information:

|  |  |
| --- | --- |
| Object Type | Name |
| ABAP Report Program | ZPTP\_R\_INVSNAP\_RECON  ZPTP\_I\_INVSNAP\_UPDATE |
| Table | ZPTP\_T\_INVSNAP |

Tables Used

|  |  |
| --- | --- |
| Custom Table | Name |
| Table | ZPTP\_T\_INVSNAP |

Program Interfaces

*n/a*

* + - 1. Message monitoring and re-processing

*n/a*

* + - 1. Security & Authorization Objects

*(Provide any details on security controls implemented within the receiving system data processing)*

1. Middleware Specification

(Below section is specifically for SAP PI/PO middleware tool. If you are using a different tool please change below section accordingly and use. If the middleware object handled by a third-party they should maintain their own specifications)

* 1. SLD Configurations

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Product | Software component | Software version: | Technical system | Business system |
|  |  |  |  |  |
| . |  |  |  |  |

* 1. Integration Directory
     1. (Include screenshots of middleware configurations )
        1. Configuration Scenario
        2. Sender Communication Channel
        3. Receiver Communication Channel
  2. Integration Repository
     + 1. Data Types
       2. Message Types
       3. External Definitions
       4. Mapping Objects
       5. UDF Details
       6. Operational Mapping
  3. Alerts

*(Provide any alerts configured in middleware system)*

* 1. Additional configurations required on sender , receiver and middleware systems

*(Explain any configurations required on each system for the integration to work)*

*Eg: RFC Destinations*

1. Quality Assurance Requirements
   * + - 1. Describe the (Quality Assurance scope, such as levels of unit and integration testing, automated testing tools, sign-off procedures, etc.)
   1. Test scenarios & data

*(Provide test scenarios and test data in the above excel sheet)*

1. Release Notes
   * 1. Developers / QA team / Consultant Notes
     2. Document all test cases and integration testing scenarios or scripts.
2. Appendix
   * 1. Please note any links to external documents, such as Blueprints or other requirement documents, which may be useful and relevant to this document.

|  |  |
| --- | --- |
| Document Name | Document Path or Link |
|  |  |



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