
**FUNCTIONAL SPECIFICATION DOCUMENT
FOR
INSTALLBASE MANAGEMENT**

***TAVANT WARRANTY MANAGEMENT SYSTEM FOR HVAC SBUS (CS,
RS, PARTS)***

VER 1.0
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**Tavant Technologies India Pvt. Ltd.
#12, CSRIE-II, Guava Garden,
5th Block, Koramangala,
Bangalore 560 095
India**

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Name	Title	SBU	Approved On	Signature
<i>Jean Skemp</i>	Global Warranty Process Leader,	<i>Commercial</i>	<i>3/17/16</i>	<i>Approval email in SharePoint</i>
<i>Robyn Ward (via Mike Stephens)</i>	Warranty Director, Finance	<i>Residential</i>	<i>3/17/16</i>	<i>Approval email in SharePoint</i>
<i>Holly Blanchard (via Tim Nelson)</i>		<i>Global Parts</i>	<i>3/17/16</i>	<i>Approval email in SharePoint</i>
<i>Kirk Spencer</i>	Project Manager	<i>PMO</i>	<i>3/17/16</i>	

For more information

Contact Name	Contact Details	
Devarapalli Moshe	devarapalli.moshe@tavant.com	Tavant
Abhijit Hebsur	abhijit.hebsur@tavant.com	Tavant
Kirk Spencer	kirk.spencer@irco.com	Ingersoll Rand

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1 INTRODUCTION

Tavant is working with HVAC to customize Tavant Warranty Management Solution as per Trane's requirements. This document provides business requirements for managing Install Base in new Trane Warranty System.

1.1 PURPOSE

This document describes the flow of Install Base in TWMS.

1.2 SCOPE

This document covers following information for each business requirement related to Install Base:

- a. AS-IS Functionality – Current process explanation.
- b. To-Be Process for Trane.
- c. Requirements – Itemized and Verifiable High Level Business Requirements.

1.3 DEFINITIONS, ACRONYMS AND ABBREVIATIONS

Abbreviation	Description
TWMS	Tavant Warranty Management System
PR	Part Return
DISTRIBUTOR	Who files Claim, Trane Parts Store, IWD, American Standard Dist.
PRC	Part Return Configuration
NA	North America
EMEIA	Europe, Middle East, India and Africa
WRC	Warranty Return Centre
3 rd Party	Residential Dealer (Installing Contractor)
Processor	Tavant term for the employee with an LOA to pay claims (Trane calls these Claim
Warranty Administrator	Tavant term for person who can do the system configuration or set up
Component	In the context of Term Registration, component means Serialized or Non Serialized Machine. In all other cases component means Serialized Component associated with a serialized machine.

1.4 REFERENCES

Business Requirement Document:

2 SYSTEM FEATURES

Functional Requirements for the following system features are described in detail

2.1 LOAD INSTALL BASE [HVAC-#1]

2.1.1 Requirements

RTM No	Use Cases	Summary
INT-IB-01	1,2	Import install base entities from SIL which included 1. Sales Order header (Sales Order#, Mfg, Sequence, Ship Date, Ship to address) 2. Serialized Machine 3. Non-Serialized Machine 4. Serialized Component on Serialized Machine 5. Serialized Part 6. Non-Serialized Part Install Base upload will be tracked as part of this requirement.
IBM-WR-09	3,4	In addition to auto registration on serialized machines, auto registration is required for all the other types of entities synced from SIL.
IBM-WR-02	3	Ship date to be used as the start date in all cases of auto registration where the unit moves to Common Retail directly. Start date = Ship Date + X days, X days based on Original Source Id & Co-Owned/Ind indicator This is applicable only to Residential.

Functional Design – Use Cases

2.1.2 Use Case 1: Data Model Changes

Description	<ol style="list-style-type: none"> 1. Install Base will be imported from SIL for Commercial & Parts and from R12 for Residential through Install Base sync. 2. The top level entity in SIL that will be considered for import is Sales Order. <ol style="list-style-type: none"> a. Unique SIL Identifier is a combination of Sales order number, MFG & Sequence. b. All these 3 fields to be migrated to Tavant in order to maintain the unique identifier. 3. Sales Order, MFG, SEQ and other details will be imported to TWMS along with all the entities listed on the sales order. The types of entities on sales order to be considered for the import are <ol style="list-style-type: none"> a. Serialized Machine b. Non-Serialized Machine c. Serialized Component on Serialized Machine d. Serialized Part e. Non-Serialized Part 4. The following information will be part of the sales order header <ol style="list-style-type: none"> a. Ship Date b. Ship to Address (Address Line 1 and Address Line 2 City, State, Province, Country, Zip Code)
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5. Item and Model is included on each of the entity available on the sale order.
Note: Only records with Product Model description should be bought in.
6. Other fields that will need to be captured in Tavant and possible on the Install Base record, but not part of initial sync from SIL

Home Owner Name and Address	
Equipment Location Address Line1 and Line2	
Equipment Location State/Province, City, Country, Zip, Zip+	
Zoning Update	
Zoning Validated / locked	If validated then do not re-check
Term Type	Base or Term
Has been registered	Y or N
Has been Sold	Y or N
Has Transfer been purchased	Y or N
Is there Precedence in place	Y or N

Business Values

Actors

Current Process/
Functionality in TWMS

1. Tavant gets Install Base from R12. Alternatively it can also loaded to Tavant in the form the Excel spread sheets.
2. Tavant IB is composed of only serialized units and serialized components.
3. An IB record in Tavant is composed of the following
 - a. Sales Order Number, Serial Number, Business Unit & Item
 - b. Manufacturing Site, Source Warehouse
 - c. Build Date, Ship Date, Installation Date, Delivery Date
 - d. Type, Serialized Part, Operating Unit
 - e. Factory Order Number, Vin Number
 - f. Warranty Start/End Date, Ownership State(Set as "All") & Condition Type(Set as "Both")
 - g. Installing Dealer, Current owner & Latest Buyer
 - h. Warranty History, Transaction History, Components & Additional Info

Proposed Flow

Sales Order

1. A new entity for **Sales Order**

Sales Order		
Property	Data Type	Constraint
Id	Number, 19	PK
Sales Order Number	Text, 255	NOT NULL
MFG	Text, 255	
Sequence	Text, 10	NOT NULL
Business Unit	Text, 255	NOT NULL
Shipment Date	Date	
Ship To Address	Address	FK (Address.Id)
Shipment Priority	Text, 50	

Note: More fields will be added here based on Installbase Integration discussion and confirmation from R12.

Ex: Original_Source ID

Order_Type

Oracle_Sales_Order_Number

2. Combination of Sales Order Number, MFG & Sequence Number is Unique

Inventory Item

3. Many-To-One mapping from Inventory Item to Sales Order
4. New fields to be added

Inventory Item		
Property	Data Type	Constraint
Sales Order	Sales Order	Not Null FK (Sales Order.Id)
Ship To Address	Address	Not Null FK (Address.Id)
Serialized	Boolean [0/1]	Not Null
Part	Boolean [0/1]	Not Null
Quantity	Number, 4	Not Null
Zone	Text, 1 [B/R/U]	
Zone Locked	Boolean [0/1]	
Registered	Boolean [0/1]	Not Null

5. Include Sales Order on the constraint UNIQUE_INVENTORY_ITEM

Product Startup

6. New flag to indicate startup required on product. (Warranty Admin interface will be developed to maintain product startup on other requirement)

Product (Item Group)		
Property	Data Type	Constraint
Startup Required	Boolean [0/1]	

Start Date Configuration

7. A new entity 'Start Date Config' to maintain start date configurations, which will be loaded from back end (Warranty Admin interface will be developed to maintain start date configurations on other requirement).

Note: This is applicable only to Residential.

Start Date Config		
Property	Data Type	Constraint
Business Unit	Text, 50	PK
Distributor Type	Text, 50	PK
Days From Shipment	Number, 4	NOT NULL

Impact on existing BUs	None
Assumptions and Dependencies	R12 install base fields required will be discussed in Deep Dive sessions.
Business Priority	High
References/Expectations	None
Notes	None

2.1.3 Use Case 2: Install Base Upload – Template & Validations

Description	An admin user must be able load Install Base to TWMS through an excel spread sheet. The source of the data would still need to be SIL or R12. Upload will be used only when certain records fail to sync for some reason through the install base sync.
Business Values	
Actors	Warranty Admin
Current Process/ Functionality in TWMS	<p>Current Install Base upload is used to load both Stock and Retail units for non HVAC business units.</p> <ul style="list-style-type: none"> Only serialized machines can be loaded Inventory details: Serial number, Item Number Shipment details: Sales order number, shipment date, delivery date, invoice number, distributor End customer details for Retail units Other additional attributes like engine serial number, factory order number, operating unit, source warehouse, manufacturing site etc.

Proposed Flow

1. An option to upload Install Base will be available for Inventory Admin on the upload management page.
2. This is a new upload and is mapped only with the HVAC business units.
3. The table below provides the following information
 - a. all the fields in the upload template
 - b. all the entities supported by the upload
 - c. Whether a field is applicable for the entity or not (Yes/No)
 - d. MFG & Sequence are applicable for HVAC TCP only, will not be available for Residential HVAC
 - e. Distributor Type is applicable for Residential HVAC only, will not be available for HVAC TCP

Field	TCS / RS	Serialized Machine	Non Serialized Machine	Serialized Component	Serialized Part	Non Serialized Part
Sales Order Number	Both	Yes	Yes	Yes	Yes	Yes
MFG	TCP Only	Yes	Yes	Yes	Yes	Yes
Sequence	TCP Only	Yes	Yes	Yes	Yes	Yes
Serial Number	Both	Yes	No	Yes	Yes	No
Item number	Both	Yes	Yes	No	Yes	Yes
Model	Both	Yes	Yes	No	No	No
Component Serial Number	Both	No	No	Yes	No	No
Component Item Number	Both	No	No	Yes	No	No
Quantity	Both	No	Yes	No	No	Yes
Ship Date	Both	Yes	Yes	No	Yes	Yes
Ship To Address1	Both	Yes	Yes	No	Yes	Yes
Ship To Address2	Both	Yes	Yes	No	Yes	Yes
Ship To City	Both	Yes	Yes	No	Yes	Yes
Ship To State	Both	Yes	Yes	No	Yes	Yes
Ship To Country	Both	Yes	Yes	No	Yes	Yes

Ship To Zip Code	Both	Yes	Yes	No	Yes	Yes
Distributor Type	RS Only	Yes	Yes	No	Yes	Yes

Note: More fields will be added here based on Installbase Integration discussion and confirmation from R12.

4. Business Unit of the uploaded inventory: Any upload in TWMS can be done only for one specific BU. If the user doing the upload belongs to more than 1 BU, the user will be prompted to select a BU before uploading the file. All the records uploaded will be automatically assigned to the BU associated with the upload.
5. Steps to identify the entity type being loaded
 - a. When Component Serial Number or Component Item Number is provided it is treated as a Serialized Component
 - b. Item Number exists in Tavant and item type is PART
 - i. Serial Number is provided then – Serialized Part
 - ii. Serial Number is not provided then – Non Serialized Part
 - c. Item Number does not exist in Tavant or if it exists and item type is MACHINE
 - i. Serial Number is provided then – Serialized Machine
 - ii. Serial Number is not provided then – Non Serialized Machine

6. Field descriptions

Field	Description
Sales Order Number	HVAC TCP: If the Sales Order with the combination of the given SO#, MFG & Sequence does not exist create a new Sales Order record. If exists load the existing record and use it. Residential HVAC: If Sales Order Number does not exist create a new Sales Order record.
MFG	
Sequence	
Serial Number	Serial Number of a Serialized Machine/Serialized Part.
Item number	Machine item number in case of Serialized/Non Serialized Machine. If item does not exist, it will be created automatically for the given model. Part item number in case of Serialized/non Serialized Part
Model	Model Code of the machine item in case of Serialized/Non Serialized Machine
Component Serial Number	Serial number of a serialized component
Component Item Number	Part number of the serialized component
Quantity	Number of Non Serialized Machines/Part on the sales order. Value is ignored for serialized entities and will be defaulted to 1 always.
Ship Date	Shipment date
Ship To Address1	Ship to address
Ship To Address2	Ship to address
Ship To City	Ship to address
Ship To State	Ship to address
Ship To Country	Ship to address
Ship To Zip Code	Ship to address
Distributor Type	Residential HVAC only: Type of distributor like CSO, IWD etc. to determine the start date for auto registration. If the number of days from shipment is not configured for a given type, ship date will be considered as the start date.

7. Validations for different type of entities

a. Serialized Machine

Field	Validation
Sales Order Number	Sales Order Number is mandatory

Sequence	Sequence is mandatory (HVAC TCP only)
Model	Model is mandatory and exists for the given BU
Item Number	Item Number does not exist for a different model
Serial Number	Serial Number does not exist for the given BU and item type (MACHINE)

Note: Fields marked mandatory has to be validated.

Note: More fields will be added here based on Installbase Integration discussion and confirmation from R12.

b. Non Serialized Machine

Field	Validation
Sales Order Number	Sales Order Number is mandatory
Sequence	Sequence is mandatory (HVAC TCP only)
Model	Model is mandatory and exists for the given BU
Item Number	Item Number does not exist for a different model
Quantity	Quantity is mandatory and must be greater than 0
Item Number	Item Number does not exists on the same sales order, MFG & sequence combination

Note: Fields marked mandatory has to be validated.

c. Serialized Component

Field	Validation
Sales Order Number	Sales Order Number is mandatory
Sequence	Sequence is mandatory (HVAC TCP only)
Serial Number	Serial Number is mandatory and exists for a given sales order, MFG & sequence combination
Component Item Number	Component Item Number is mandatory and must exist as an item of type PART
Component Serial Number	Serial Number does not exist for the given BU and item type (PART)

Note: Fields marked mandatory has to be validated.

d. Serialized Part

Field	Validation
Sales Order Number	Sales Order Number is mandatory
Sequence	Sequence is mandatory (HVAC TCP only)
Item Number	Item Number of type PART exists
Serial Number	Serial Number does not exist for the given BU and item type (PART)

Note: Fields marked mandatory has to be validated.

e. Non Serialized Part

Field	Validation
Sales Order Number	Sales Order Number is mandatory
Sequence	Sequence is mandatory (HVAC TCP only)
Item Number	Item Number of type PART exists
Item Number	Item Number does not exists on the same sales order, MFG & sequence combination

Note: Fields marked mandatory has to be validated.

f. Validations applicable for all the types of entities except for serialized components

Field	Validation
Ship Date	Ship date is mandatory
Ship To Address1	Ship To Address1 is mandatory
Ship To City	Ship To City is mandatory
Ship To State	Ship To State is mandatory

Ship To Country	Ship To Country is mandatory
Ship To Zip Code	Ship To Zip Code is mandatory

Note: Only Ship Date is mandatory. Rest of the fields will be optional.

Fields marked mandatory has to be validated.

8. New System BU Configuration

- Name: **Default Zone**
- Type: Text
- Description: To define the default zone of an install base record loaded to TWMS for a given business unit
- Section: None (not available on UI for warranty admin)
- Setup: B for HVAC TCP, R for Residential HVAC, U for the rest of the business units

9. Upload different types of entities

- Sales Order: If Sales Order for a given SO#, MFG & Sequence does not exists create a new Sales Order with the following values
 - Sales Order Number
 - MFG, when not provided default to empty string "
 - Sequence, when not provided default to '999'
- Create inventory item
 - Set all the fields applicable for a given type of entity – serial number, item, ship date & ship to address
 - Derived field values for different entities

Field	Serialized Machine	Non Serialized Machine	Serialized Component	Serialized Part	Non Serialized Part
Serialized	1	0	1	1	0
Part	0	0	1	1	1
Zone	Default Zone	Default Zone	Default Zone	Default Zone	Default Zone
Zone Locked	0	0	0	0	0
Quantity	1	Value Uploaded	1	1	Value Uploaded
Registered	0	0	0	0	0
Type	Stock: if start up required Retail: Otherwise	Retail	Retail	Retail	Retail

- Only in case of serialized component, create an Inventory Item Composition to link the serialized component to its parent serial number

Impact on existing BUs	None A new upload available for HVAC business units only
Assumptions and Dependencies	None
Business Priority	High
References/Expectations	None
Notes	None

2.1.4 Use Case 3: Auto Registration

Description	Auto Base Registration 1. <u>For HVAC TCP</u>
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	<ul style="list-style-type: none"> a. Serialized machine: When a serial number is synced to TWMS, if the product, to which the serial number is linked to, does not require startup, then it is automatically base registered in Tavant with Commercial Zoning. Ship date will be set as the startup date on the serial number, which is also the warranty start date. The serial number is available in a common retail inventory where any distributor can access it. b. Non-Serialized machine: A non-serialized machine is always registered automatically. Ship date is the date of startup. c. In addition to auto registration on serialized machines, auto registration is required for Serialized and non-serialized Parts synced from SIL. d. Auto registration based on the following parameters <ul style="list-style-type: none"> i. Startup required for Products Serialized Status <p>2. <u>For Residential HVAC</u></p> <ul style="list-style-type: none"> a. Serialized and Non Serialized Machines are always registered automatically b. Start date = Ship Date + X days, X days based on DSO/IWD indicator
Business Values	
Actors	
Current Process/ Functionality in TWMS	

Proposed Flow

1. The following entities will be auto registered
 - a. Non serialized machines and parts
 - b. Serialized machines where start up is not required
2. New System BU Configuration
 - a. Name: **Enable HVAC Warranty**
 - b. Type: Boolean (Yes/No)
 - c. Description:
 - i. Yes: All the HVAC specific functionality will be enabled
 - ii. No: HVAC specific functionality will be disabled
 - d. Section: None (not available on UI for warranty admin)
 - e. Setup: Yes for HVAC TCP & Residential HVAC, No for the rest of the business units
3. Auto registration (when BU configuration 'Enable HVAC Warranty' is enabled)
 - a. End customer information is not required
 - b. Find applicable policies based on the following parameters
 - i. Product/Model/Part Group: Product/Model for machines, Part Group for parts
 - ii. Policy type: Standard
 - iii. Zoning: Default zone
 - iv. Term Type: Base
 - v. Applicability period: Start date to be within this period
 - vi. Ship to country / state
 - vii. Nth digit of the item number
 - c. Find the start date
 - i. Find a start date configuration for the given business unit and distributor type (if provided)

- ii. If start date configuration is not found, then shipment date is the start date
- iii. If start date configuration is found, then start date = shipment Date + Configured Days from Shipment
- d. Find the end date
 - i. No Max: Start Date + Month Covered from Start
 - ii. Max: Minimum of
 - 1. Start Date + Month Covered from Start
 - 2. Ship Date + Month Covered from Shipment
- e. Create a warranty with the list of all applicable policies and the coverage period
- f. Link the warranty with the BR transaction

Impact on existing BUs	
Assumptions and Dependencies	
Business Priority	
References/Expectations	
Notes	

2.1.5 Use Case 4: Inventory Transactions

Description	
Business Values	
Actors	
Current Process/ Functionality in TWMS	

Proposed Flow

For serialized machines where inventory type is Stock.

- An IB transaction for shipment will be created as shown below



Date	From Company	Move To Customer	Customer Type	Transaction Type	Invoice	Details
12/01/2015	IR			IB		

For all types of entities when inventory type is Retail

- An IB transaction for shipment
- a BR transaction for base registration
- A link 'view' on BR transaction to view the warranty coverage. This link is visible only for internal HVAC users.



Date	From Company	Move To Customer	Customer Type	Transaction Type	Invoice	Details
12/01/2015	IR			BR		view
12/01/2015	IR			IB		

Impact on existing BUs	
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Assumptions and Dependencies	
Business Priority	
References/Expectations	
Notes	

2.2 INVENTORY LOOKUP [HVAC-#2]

2.2.1 Requirements

RTM No	Use Cases	Summary
IBM-EH-03	2	Delivery date to be renamed to Startup Date and installation date is not required. Throughout the application for CS and RS.
IBM-EH-05	2	Equipment details page for Non-Serialized machine.
IBM-LS-02	1	Must be able to do a quick search on sales order and navigate quickly to the equipment details page of serialized and non-serialized units.
IBM-EH-01	2	Do not display the max warranty end date on the equipment details page. Display the text - 'See below for coverage'
IBM-EH-07	2	Remove Warranty End Date from EHP Page
PLC-WC-03	2	Overall warranty end date on equipment should be removed.
PLC-WC-56	2	Provision to allow a select list of users to view the existing limited warranty coverage and any applicable warranty campaign for a given unit serial #

Functional Design – Use Cases

2.2.2 Use Case 1: Inventory Quick Search

Description	Quick search on inventory based on serial number/sales order number/model
Business Values	
Actors	Internal Users, Distributors
Current Process/ Functionality in TWMS	Quick search can be done based on a serial number only. It is applicable only serialized machines.

Proposed Flow

1. New System BU Configuration
 - a. Name: **Is MFG and Sequence Applicable**

- b. Type: Boolean (Yes/No)
- c. Description: Whether MFG & Sequence are required to uniquely identify a sales order along with the sales order number
- d. Section: None (not available on UI for warranty admin)
- e. Setup:
 - 1. HVAC TCP : Yes
 - 2. Residential HVAC : No
 - 3. Non HVAC BUs : No
- 2. Click on Inventory link under the 'Quick Search' section on the home page.
- 3. Opens page where Sales Order Number and/or Serial Number can be entered (based on BU configuration 'Enable HVAC Warranty')

Sales Order Number:

Serial Number:

Model:

- 4. When model is specified, sales order is mandatory
- 5. When Sales Order Number alone is entered a list of all the records (both serialized/non-serialized) will be listed
 - a. MFG & Ship Date will be displayed only for HVAC TCP (based on BU configuration 'Is MFG and Ship Date Applicable')

Sales Order Number:						
MFG	Ship_Date	Serial Number	Item Number	Model	Quantity	View
						view
						view

- 6. Click on the 'view' link to open the equipment details page in a new tab.
- 7. When a serial number is provided, then the equipment details page is displayed directly.
- 8. When a sales order number and model are provided, then the equipment details page is displayed directly.

Impact on existing BUs	None This quick search page will be displayed only for HVAC business units based on the BU configuration 'Enable HVAC Warranty'. For non HVAC BUs current quick search page will be display and hence no impact.
Assumptions and Dependencies	None
Business Priority	High
References/Expectations	None
Notes	None

2.2.3 Use Case 2: Equipment Details Page

Description	
Business Values	
Actors	
Current Process/ Functionality in TWMS	

Proposed Flow

Equipment Info

1. Rename
 - a. Delivery Date as 'Startup Date'
2. Remove
 - a. Warranty Start Date
 - b. Warranty End Date
 - c. Hours in Service
3. Add
 - a. Sales Order Number: a hyperlink which opens a new tab with all the contents of the sales order (the page that is displayed from inventory quick search)
 - b. Zone
 - c. Zone Locked
 - d. Ship to Address

Note: These are new fields. Other fields on EH Page will remain unchanged.

Equipment Info	
Serial Number:	Business Unit Name:
Product Type: <i>Machine/Part</i>	Manufacturing Site:
Product:	Build Date:
Model Number:	Shipment Date:
Item Number:	Startup Date:
Item Description:	Sales Order Number: SO#
Zone: <i>B/R/U</i>	Zone Locked: <i>Yes/No</i>
Item Condition:	Invoice:
Ownership:	
Ship To Address	
Address Line 1:	
Address Line 2:	
City:	State/Province:
Country:	Zip Code:

Note: For RS, Sales Order Number will be a hyperlink and will show Inventories only to internal users. For CS Sales Order Number will be a hyperlink and will be enabled to all the users. Clicking on this hyperlink will popup all the Serial Numbers and Models belonging to that SO#.

Serialized Component

Serialized Components

Serial Number	Part Number	Description

Transaction History

TRANSACTION HISTORY						
Date	From Company	Move To Customer	Customer Type	Transaction Type	Invoice	Details

Claim History

1. Remove Hours in Service


CLAIM HISTORY							
Claim Number	Date of Claim	Status	Failure Date	Repair Date	Parts Replaced	Fault Location	Total Amount Credited

Field Modification


FIELD MODIFICATION				
Field Modification Code	Class	End Date	Description	Status

Warranty Coverage

- Warranty Coverage section is not available for unit in Stock (required startup)
- For units which are auto registered and in Retail, warranty coverage will be displayed in a new tab by clicking on the 'Warranty Lookup' link displayed on top of EH Page. Warranty Lookup link will be displayed to all the Internal and External Users. Upon clicking this link it will validate HSM and display the Coverage.
- 'Warranty Lookup' link should be shown on home page as well.

Home	Quick Search 
Equipment Transfer	Retail Machine Transfer
Extended Warranty Purchase	Mark as Scrapped
Create Claim	Warranty Lookup

EQUIPMENT INFO			
Serial Number:	11041LTU4F	Business Unit Name:	HVAC TCP
Product Type:	MACHINE	Manufacturing Site:	
Product:	Custom Air Handling 0251	Build Date:	
Model Number:	Trane Custom 0251	Shipment Date:	02/10/2011

<ul style="list-style-type: none"> ▶ Due Parts Receipt (1) ▶ Request for Extension(1) 	<ul style="list-style-type: none"> ▶ Submit D ▶ Warranty ▶ Equipme ▶ Register ▶ Create C ▶ Search C ▶ Search C ▶ Search Ir ▶ Search It ▶ Create P ▶ Create P ▶ Scan Bar
 Common Actions <ul style="list-style-type: none"> ▶ Policy Definition ▶ Labor Rates ▶ Manage Additional Labour Eligibility ▶ Warranty Lookup ▶ Manage Minimum Labour Round Up 	

Impact on existing BUs	None All the changes to the Equipment Details page is controlled by a BU configuration 'Enable HVAC Warranty' and non HVAC BU will not be effected.
Assumptions and Dependencies	None
Business Priority	High
References/Expectations	None
Notes	None

2.3 MANUAL BASE REGISTRATION [HVAC-#3]

2.3.1 Requirements

RTM No	Use Cases	Summary
IBM-WR-01	1	When a serial number is synced to TWMS, if the product on the serial number requires start up then it is synced as Common Stock. Any distributor who does the start-up can file a Tavant warranty registration. Also a Claim Admin can file a Tavant Warranty Registration. Once an IB record is synced to Tavant, the unit can be moved to one of the following states in Tavant based on the business unit and start up required or not.
IBM-WR-05	1	Base Registration in Tavant (When unit in Stock/OEM Stock) a. Capture end customer address, start date and b. Default CS Zoning and Only base terms are applicable c. The unit moves to common retail
IBM-WR-25	1	DISTRIBUTOR or Warranty admin will also provide the jobsite location at time of Tavant registration.
PLC-WC-01	1	While applying coverage on a serial number, sales order, model combination (serial could be null) (during auto/manual registration) all the applicable policies are fetched which includes Standard, Extended and Goodwill types. The start and end date for each applicable policy is calculated

independently based on the type of policy.

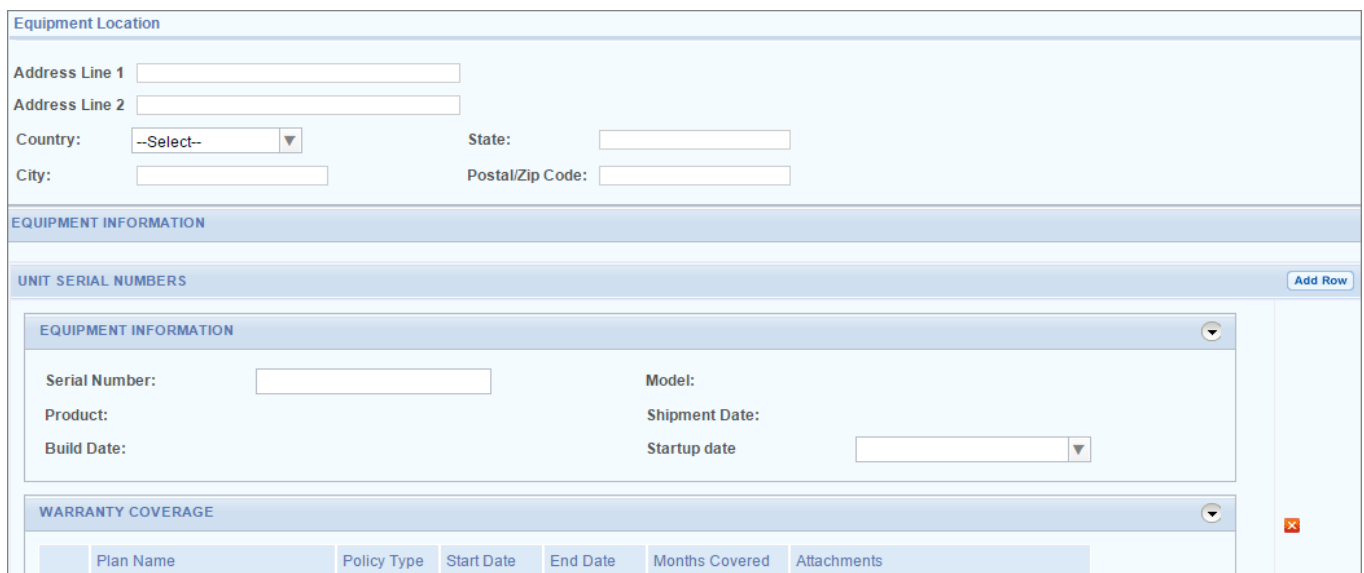
Functional Design – Use Cases

2.3.2 Use Case 1: Manual Base Registration

Description	When product requires start up, unit will be placed in common Stock when synced to Tavant. Once the start-up is done, the distributor or an internal user will do a base registration and move the unit to common retail. End customer details are not available.
Business Values	
Actors	Inventory Admin, Distributor
Current Process/ Functionality in TWMS	When a unit is in stock, it is associated with a distributor. That distributor can do a registration to move the unit to Retail of the distributor. End Customer details, installation date and delivery date are captured during registration. Warranty terms are calculated and overall warranty start/end dates will be displayed. An inventory transaction of type 'WR' will be created.

Proposed Flow

- Manual base registration is done on serialized machines which require startup and are in common stock.
- Initiate base registration
 - Inventory Admin and Distributors will be allowed to do base registration
 - A link on the home page 'Warranty Registration' under the 'Go To' section will be available.
 - Button labelled 'Warranty Registration' on the equipment details page will also be there. The button is displayed only for Stock inventory.



- ~~Installing Dealer: Will be an auto-completer to select a third party. It is optional.~~
- Equipment Location: These fields will be Free text, to provide the job location. These are optional fields.
- When opened from an equipment details page, serial number, model, product, shipment date and build date are populated automatically. Otherwise model, product, shipment date and build date will be displayed once the serial number is selected.
- Enter the startup date and warranty coverage section will be loaded with applicable policies.

7. Click on 'Add Row' button to add more serial numbers.
8. Enter comments and click on Submit. Base terms for the default zone will be applied similar to auto registration.
9. The unit moves to common retail.
10. An inventory transaction of type 'BR' will be created similar to auto registration.
11. All the changes done to the Tavant registration screen is based on the BU configuration 'Enable HVAC Warranty'.
12. This will be applicable for both CS and RS.

Impact on existing BUs	
Assumptions and Dependencies	
Business Priority	
References/Expectations	
Notes	

2.4 TERM REGISTRATION - PORTAL [HVAC-#4]

2.4.1 Requirements

RTM No	Use Cases	Summary
IBM-WR-83	1	Product registration can be done from any of the brand sites (Trane, Ameristar, American Standard).
IBM-WR-21	2	Must be able to register warranty for customer types – End Customer, Builder, and 3rd Party
IBM-WR-26	3	The system should have the facility to check for valid Unit Model/ part serial number during Warranty registration.
IBM-WR-28	3	The system should have the facility to specify the Unit Serial Numbers within a system. (Outdoor Unit, Indoor Unit, Air Handler and Heat Exchange)
IBM-WR-29	3	The system should have the facility to check and prompt an error if the Unit serial no is associated to any another active registration.
IBM-WR-30	3	vi. During registration, the system must have the facility to capture mandatory details like Serial No, Model Number, Install Date., Commercial vs Residential use.
IBM-WR-32	3	The system should have the facility to validate the Model code Number and Warranty Start Date based on defined rules
IBM-WR-34	3	During registration, if the component accessories does not have a serial number, the system should have ability to capture component type, model number and install date against the installed system (Ex: Thermostat)
IBM-WR-36	4,5	<ul style="list-style-type: none"> Display the applicable terms for given equipment address and components based on the HSM check Once, year of installation, model family, registration type and zoning is specified, the system must have the capability to apply the correct warranty policy and assign

		appropriate warranty terms
IBM-WR-39	6	Ability to generate the pdf document of the term registration in a predefined format.
IBM-WR-41	2	9. The registration system should have the facility to record the owner details required for claim processing including the home property address, contact information as well as the equipment location. Owner Info and address and equipment location as defined above. HSM check is always done on Equipment location. The purpose of owner address is in case of Recalls. They can schedule the Dealer to come and get the Equipment picked.
IBM-WR-42	5	In case the residential equipment address already exists in Tavant Database for commercial business or vice versa, system should prompt an error and route the registration for validation, associate the zoning in Tavant (Melissa Local DB) for determining registration terms. (This will be implemented thro Auto Registration)
IBM-WR-57	5	Administrators should be allowed to set up a parameter to allow registration within a certain number of days of installation completion / unit sale. Any registration happening post this specific period will have base warranty terms associated with it.
IBM-WR-58	5	Administrators should be allowed to set up a parameter to allow registration within a certain number of days of resale of a home. System should validate against Melissa home ownership records. If registration is done post this period & transfer has not been done, then the system would update the warranty terms equipment would have no warranty. Tavant to calculate Term for RS and CS based on parameters from HSM and Policy setup in Tavant.
IBM-WR-62	5	Ability to validate home transfer with Melissa and have new warranty terms only if transfer fees are paid. Any registration done with sale dates before Aug 1st 2011 cannot be transferable and would always have terms as is.
IBM-WR-64	2	Ability to capture the Country of Use in the registration to know the coverage ownership. Ex: Unit is made in the US and failure happened in Canada.
IBM-WR-65	5	Provision to maintain a list of geographical regions / states where law requires the manufacturer to provide full warranty coverage irrespective of whether a unit is registered or not. (e.g.) Quebec in Canada and California in the United States.
IBM-WR-40	3	Provision to indicate appropriate BU (RS/CS/Global Parts) for a given registration record
IBM-WR-38	6	Ability to have a term registration record go through an approval process in case registration does not meet pre-defined rules (ex: too many units in an address etc.). Such registration would be active only after somebody in factory has verified the information entered. Here the SN# exists in Tavant and is mapped to one of the Tavant BUs. So the admin of the SN# BU, will have the SN# in Pending Approval queue.
IBM-WR-53	3	Validation required to ensure that an Assembly ((e.g.) Compressor)/ Component In Service date is greater than or equal to Assembly / Component Build Date. (For all registered components). In the event that Unit Build date is available, check whether Assembly or Component In-service date is greater than the Unit Build date.
IBM-WR-74	6	The dealer would have the opportunity to change set the warranty start date up to a specific number of days from ship date. This value should be a configurable for DSO & IWD channels separately. In case if the date is beyond this specific days, then a proof of installation has to be attached and the registration routed for manual review

Functional Design – Use Cases

2.4.2 Use Case 1: Product Registration Screen 1 (Welcome)

Description	Product registration can be done from any of the brand sites, which does not required authentication.
Business Values	
Actors	Home Owner/Installing Dealer/Builder
Current Process/ Functionality in TWMS	Not Applicable. Does not exist in TWMS.

Proposed Flow

- Product Registration can be initiated by clicking on a registration link on one of following brand sites

Brand	Brand Site
Trane	http://www.trane.com/Index.aspx
Ameristar	http://www.ameristarac.com
American Standard	https://www.americanstandardair.com

- Tavant will provide the URLs to be used for registration on these brand sites. The URLs to be used will be as shown in table below. The URLs are tentative and yet to be finalized.

Brand	Registration URL
Trane	https://hvac.tavant.com/restServices/wrApp/register/trane
Ameristar	https://hvac.tavant.com/restServices/wrApp/register/amstr
American Standard	https://hvac.tavant.com/restServices/wrApp/register/amstd

- Each link will open the product registration site in Tavant. Tavant site is the same for all these links except for the following

- Skin: look and feel is specific to the brand
- Logo: respective brand's logo



- Brand Name: respective brand names wherever applicable
 - Trane
 - Ameristar Heating & Cooling
 - American Standard Heating & Air Conditioning

- No authentication required on the Tavant URLs.

- Header



- Clicking on the logo at the top left corner of the header will open the brand's home page in a new browser window.
- A link to a pdf document on the top right corner of the header – Need help locating your model / serial number

Brand	Link
Trane	https://www.trane.com/residential/downloads/SNInstructions-trane.pdf
Ameristar	https://msit.comfortsite.com/lw/resources/Locating The Serial Numbers On Your New Products.pdf

American Standard	https://www.americanstandardair.com/Homeowner/docs/SNInstructions-AS.pdf
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- c. Link to display privacy policy on the bottom left corner of the footer.

Brand	Link
Trane	https://www.trane.com/residential/site/templates/privacypolicy.aspx
Ameristar	http://www.ameristarac.com/home/privacy
American Standard	https://www.americanstandardair.com/privacy-policy.html

6. Footer

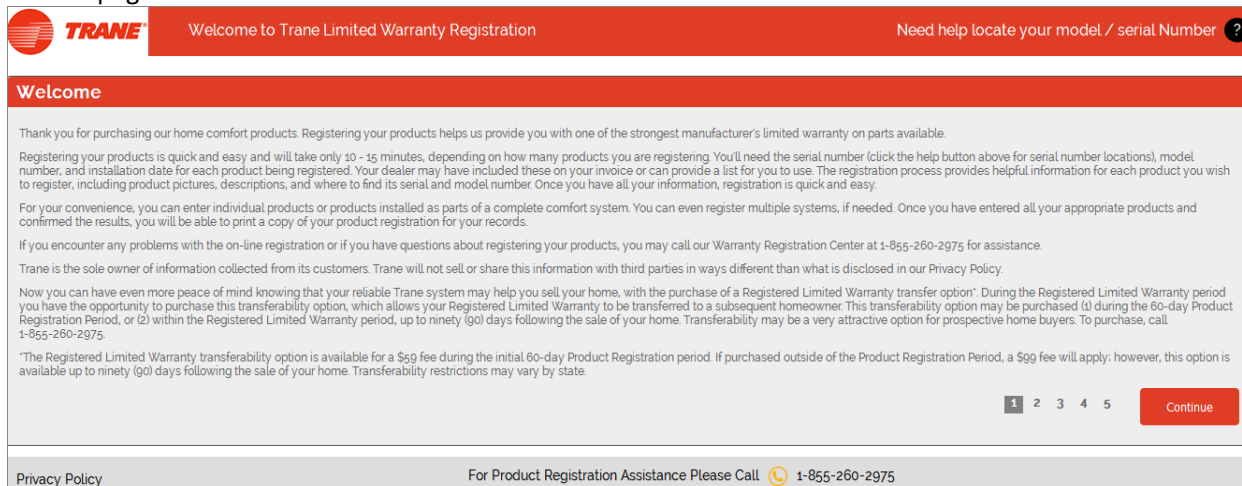
Privacy Policy

For Product Registration Assistance Please Call ☎ 1-855-260-2975

- a. Link to display privacy policy on the bottom left corner of the footer.

Brand	Link
Trane	https://www.trane.com/residential/site/templates/privacypolicy.aspx
Ameristar	http://www.ameristarac.com/home/privacy
American Standard	https://www.americanstandardair.com/privacy-policy.html

7. Welcome page



- a. The contents of the welcome page varies slightly from brand to brand. Use the content from the following links
- i. <https://msit.comfortsite.com/lw/lwtrane.html>
 - ii. <https://msit.comfortsite.com/lw/lwamstr.html>
 - iii. <https://msit.comfortsite.com/lw/lwamstd.html>

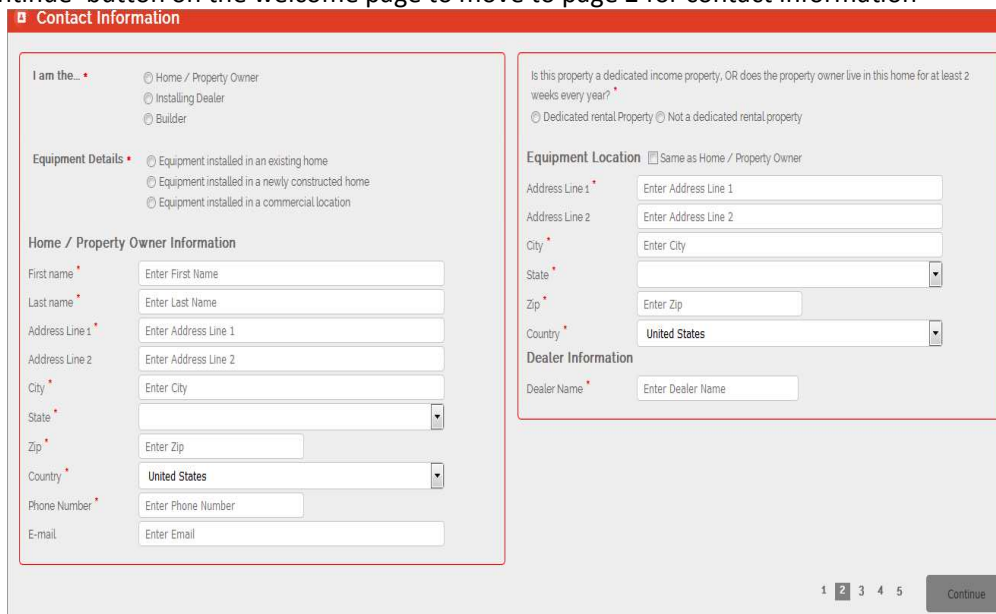
Impact on existing BUs	None
Assumptions and Dependencies	None
Business Priority	High
References/Expectations	Logos, Links, Phone numbers and other Contents if needs to be changed, then Mike has to confirm before GO LIVE. RS to provide this info.
Notes	None

2.4.3 Use Case 2: Product Registration Screen 2 (Contact Information)

Description	Capture the user type (home owner/installing dealer/builder), home owner name and address, equipment address for term registration. Validate the address against Melissa if required through an integration with the black box.
Business Values	
Actors	Home Owner/Installing Dealer/Builder/Registration Agent
Current Process/ Functionality in TWMS	Not Applicable. Does not exist in TWMS

Proposed Flow

1. Click on 'Continue' button on the welcome page to move to page 2 for contact information



2. Following information is captured
 - a. Type of user: Owner / Installing Dealer / Builder
 - b. Equipment details
 - c. Owner information: First Name, Last Name, Address, Phone Number and Email
 - d. Is a dedicated rental property or not
 - e. Equipment Address: will be disabled when it is same as owner address
 - f. Dealer Name(Auto Completer)
 - g. Dealer Email: displayed only when the user type is 'Installing Dealer'
 - h. Builder Email: displayed only when the user type is 'Builder'

Note: Dealer Name Auto completer will have Dealer Name, City, State/Province details.

This Auto completer will accept any value (free text if Dealer entered is not found)

Note: Dedicated Rental Property" radio button fields should be removed.

Note: Email Field

1. This should be a Non Mandatory field for both CS and RS.
2. If email is entered, it should be captured and displayed to on Certificate.
3. If not entered, field should still be displayed, but with blank email.
4. If email is entered, it should be captured and email should be sent to consume for completing the

registration.

5. If email is not entered, registration should get completed without any email confirmation.

6. Validations and logic for rest of the fields will not change.

3. All the mandatory fields are indicated by an * symbol

4. Country: Drop down with United States and Canada only.

5. State: Drop down with a list of states based on the country selected

6. Continue button will be enabled only when all the mandatory fields are entered

7. Validate the equipment address when clicked on continue

a. Invoke the black box to validate the address – an integration through Fusion middle ware

b. Input to the black box

i. Address Line 1

ii. Address Line 2

iii. City

iv. State

v. Country

vi. Zip Code

c. Output from back box

i. Valid: Y/N

ii. Error Message: when Valid is N

iii. Melissa suggested address

1. Address Line 1

2. Address Line 2

3. City

4. State

5. Country

6. Zip Code

iv. Zone: B/R (only when Valid is Y)

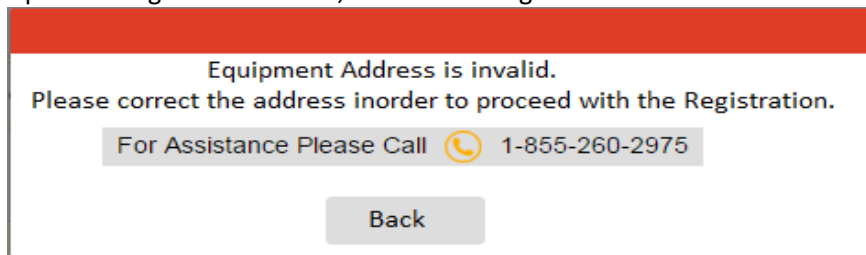
v. Home Sale Flag: Y/N (only when Valid is Y)

vi. Home Sale Date: (only when home sale flag is Y)

8. If address is not valid, display an error dialog with the error message from the black box.

a. If Address is not valid, we should stop the registration and provide a message to gain assistance.

Upon clicking of Back button, close the dialog and allow the user to correct the address and validate again.



b. If user does know and not able to proceed, they can call for Assistance.

c. User will call Registration Admin and provide all information.

d. Registration Admin will be able to register in Tavant on behalf of user

e. Once registred, this Address should get locked and HSM should not be performed in future.

f. Purpose of locking is to prevent checking HSM again on that address

9. If address is valid move to page 2 to proceed with registration.

Impact on existing BUs

None

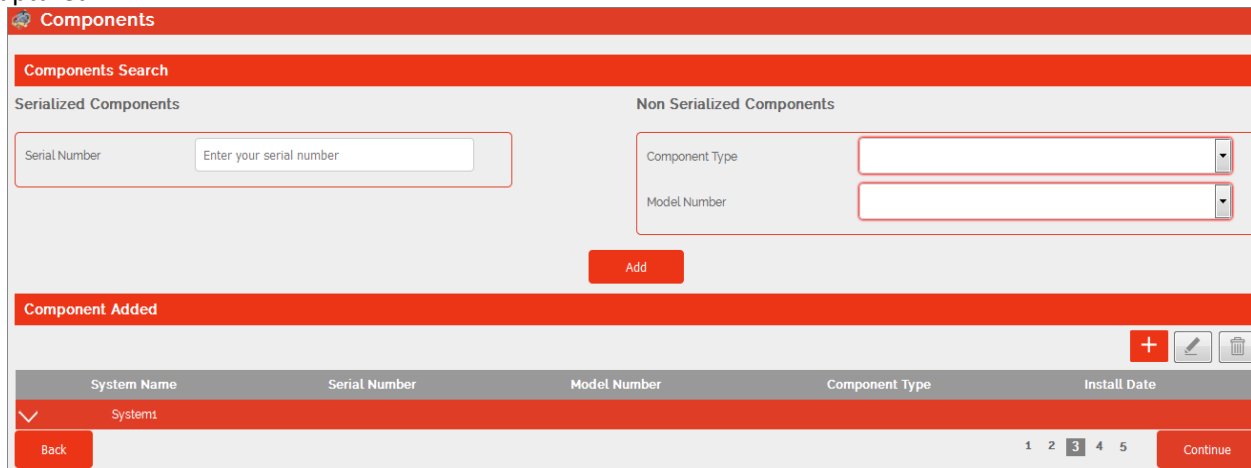
Assumptions and Dependencies	None
Business Priority	High
References/Expectations	None
Notes	None

2.4.4 Use Case 3: Product Registration Screen 3 (Components)

Description	Capture the serial number for serialized units. Component type and model for non-serialized units. Provide the install date and group the components as systems.
Business Values	
Actors	Home Owner/Installing Dealer/Builder
Current Process/ Functionality in TWMS	Not Applicable. Does not exist in TWMS

Proposed Flow

- When address is valid or the user want to proceed with invalid address move to page 3 where the components are captured



- Both serialized and non-serialized units can be selected
- In case of serialized unit
 - Enter the serial number and click on add button to validate the serial number
 - If SN# does not exist in Tavant
 - If BU configuration 'Check Oracle Inventory' is enabled, check if serial number exists in Oracle Inventory. This is an integration through Fusion.
 - If SN# does not exist in Oracle inventory, display an error message 'Invalid Serial Number' and the serial number cannot be added to a system.
 - If SN# exists in Oracle inventory, add the serial number to the selected system
 - If BU configuration 'Check Oracle Inventory' is not enabled, display an error message 'Invalid Serial Number' and the serial number cannot be added to a system.
 - If SN# exists in Tavant
 - If 1st segment of SIOP is not RS HVAC - Display error message " 'Serial Number not eligible for Registration.' and the serial number cannot be added to a system.
 - 1st segment of SIOP is RS HVAC

1. If the serial number is already present on an existing registration, display error 'Serial Number found on an existing registration' and the serial number cannot be added to a system.
2. If the serial number is not present on an existing registration
 - a. open a dialog to capture the install date
 - b. enter install date and click on add
 - c. install date must be after the build date (if build date is available on the inventory)
 - d. Install date must be On or Before registration date.
 - e. add the serial number to the selected system

System Name	Serial Number	Model Number	Component Type	Install Date
System1	SN#XXX	#Model#	#Product#	12/01/2015

- f. When added to the system, display the model and component type along with the serial number
- g. Click on edit icon to update the install date
- h. Click on remove icon to delete the serial number from system

4. In case non serialized unit
 - a. Select a component type from the drop down (List of Products setup for Residential HVAC in TWMS)
 - b. Select a model from the drop down. The values listed in this drop down are based on the component type selected (list of models setup for the selected product in TWMS with 1st segment as RS HVAC)
 - c. Click on add button, a dialog to capture the install date
 - d. Select install date and click on add button
 - e. The non-serialized component is added to the selected system with model and component type.
5. Identify the BU of the registration
 - a. When the first component added is serialized – find the BU on the serial number
 - b. When the first component added is non-serialized
 - i. If the select model is configured for Residential HVAC, then BU for registration is Residential HVAC
 - ii. Otherwise, it is HVAC TCP
 - c. Once the BU for the registration is identified, any further serial number and model selected is validated against that BU. When a component from a different BU is selected an appropriate error message is displayed and the component is not allowed to be added.
6. By default a system named 'System1' will be available.
 - a. Add icon to create new system
 - b. Edit icon to edit the name of the system
 - c. Delete icon to delete an entire system



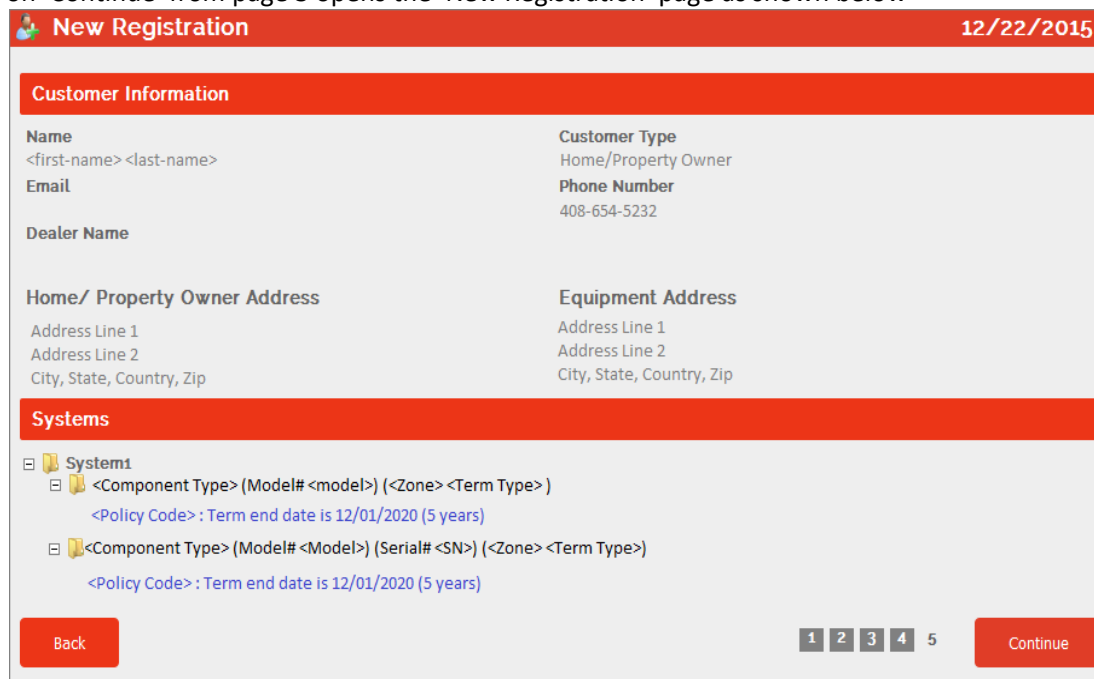
7. Continue button will be enabled only when at least one serialized or non-serialized component is added
8. Click on continue button and move to page 4 to view the terms.

Impact on existing BUs	None
Assumptions and Dependencies	None
Business Priority	High
References/Expectations	None

Notes	None
2.4.5 Use Case 4: Product Registration Screen 4 (New Registration)	
Description	Display the applicable terms for given equipment address and components based on the HSM check
Business Values	
Actors	Home Owner/Installing Dealer/Builder
Current Process/ Functionality in TWMS	Not Applicable. Does not exist in TWMS

Proposed Flow

1. Clicking on 'Continue' from page 3 opens the 'New Registration' page as shown below



2. Customer Information is displayed as read only
3. Terms have been calculated for each component and displayed in the form of a tree
 - a. Level 1 : System
 - b. Level 2 : component details (Units)
 - i. Format for Non Serialized : <Component Type> (Model# <Model>) (<Zone> <term Type>)
 - ii. Format for Serialized : <Component Type> (Model# <Model>) (Serial# <SN>) (<Zone> <Term Type>)
 - iii. <Zone> is either Residential or Commercial
 - iv. <Term Type> is Base or Extended
 - c. Level 3 : list of applicable policies in the following format
Term end date is <end date> (<years/months covered>)
Need not display days if remaining coverage is in number of Days. Just show the Term End Date.
4. When the serial number does not exist in Tavant no terms are applied for that serial number. A flag on the component indicates that the serial number is not valid.
5. Registration record is saved along with the terms calculated with status as 'Draft'

6. Click on continue to complete the registration.

Impact on existing BUs	None
Assumptions and Dependencies	None
Business Priority	High
References/Expectations	None
Notes	None

2.4.6 Use Case 5: Find Applicable Terms

Description	Find applicable terms
Business Values	
Actors	Home Owner/Installing Dealer/Builder
Current Process/ Functionality in TWMS	Not Applicable. Does not exist in TWMS

Proposed Flow

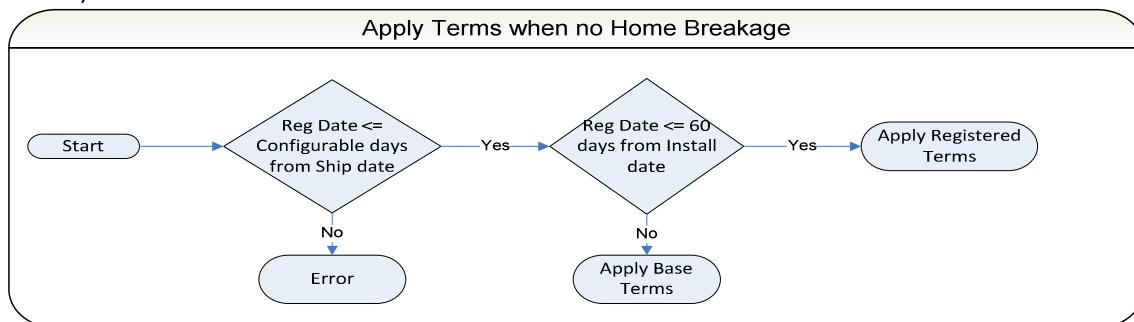
1. A new entity to maintain precedence list 'PrecedentAddress' with the following attributes
 - a. AddressLine1
 - b. AddressLine2
 - c. City
 - d. State
 - e. Country
 - f. Zip Code
 - g. Install Date

This precedence list will be handled in Tavant in accordance to the solution defined in HSM
2. List a list of locations (combination for Country & State) to be maintained at the back end like California, US & Quebec, Canada. When the equipment is in these location, HSM check is NOT done and registered terms are always applied.
3. Find the type of terms (Base/Registered) to be applied
 - a. Input parameters
 - i. Ship Date
 - ii. Install Date
 - iii. Valid Equipment Address
 - iv. Home Sale Flag & Home Sale Date
 - v. Availability of Transfer Options
 - vi. 2 new application properties added for this purpose (these properties cannot be configured by warranty admin)
 1. registration.term.fromShipDate.window=90 days
 2. registration.term.fromInstallDate.window=60 (here number of days needs to be configurable)

Term Registration

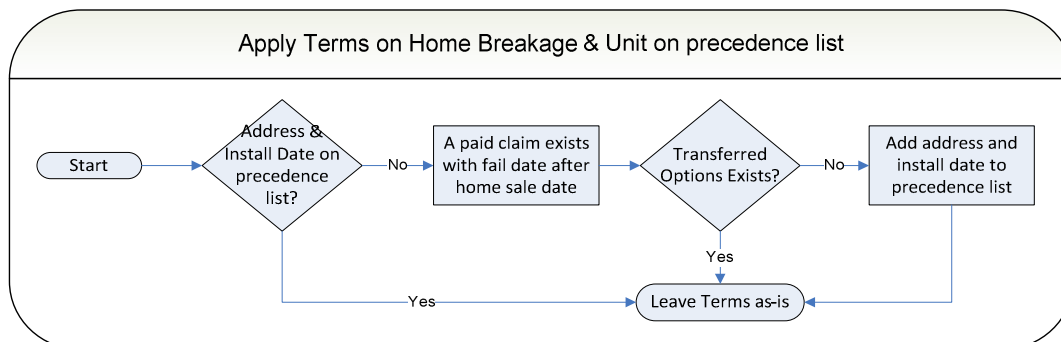
Number of days from Ship Date for Term Registration	<input type="text" value="90"/>
Number of days from Installation Date for Term Registration	<input type="text" value="60"/>
Number of days from Home Sale Date for Term Registration	<input type="text" value="90"/>

- b. When there is no Home Breakage (Home Sale Date = Install Date OR Home Sale Date is before Install Date)

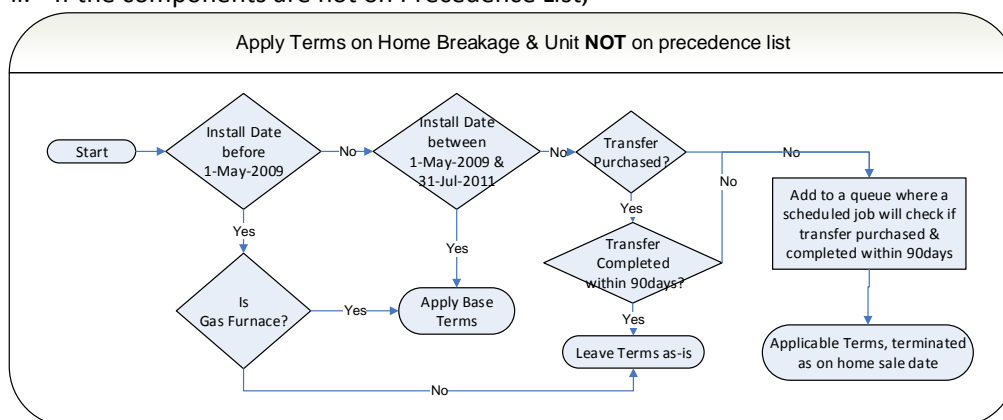


The error messages will be as defined by business team

- c. In case of a Home Breakage
- i. Check if unit on Precedence List.



- ii. If the components are not on Precedence List,



1. Add a flag against each component on the registration record to indicate whether transfer

is purchased or not.

2. Add home sale flag and home sale date on the registration record

Note: **Transfer Completed** means they have Purchased the Transfer and have registered again on the Registration Site.

Note: Registration Admin will be doing this in Tavant on behalf of Consumer.

Registration Admin will be allowed to transfer the registration from one owner to another.

It is not necessary that transfer has to be purchased to change the owner (for example to an immediate family member). Transfer is considered to be completed once this is done by Registration Admin.

4. Calculate terms

- a. Based on the following parameters
 - i. Model
 - ii. Policy type: Standard
 - iii. Zoning: B/R from HSM
 - iv. Term Type: Base/Registered
 - v. Applicability period: Start date to be within this period
 - vi. Ship to country / state
 - vii. Nth digit of the item number
 - viii. Country/State of use from equipment address
- b. Start date = install date
- c. Find the end date
 - i. No Max: Start Date + Month Covered from Start
 - ii. Max: Minimum of
 1. Start Date + Month Covered from Start
 2. Ship Date + Month Covered from Shipment

Impact on existing BUs	None
Assumptions and Dependencies	None
Business Priority	High
References/Expectations	None
Notes	None

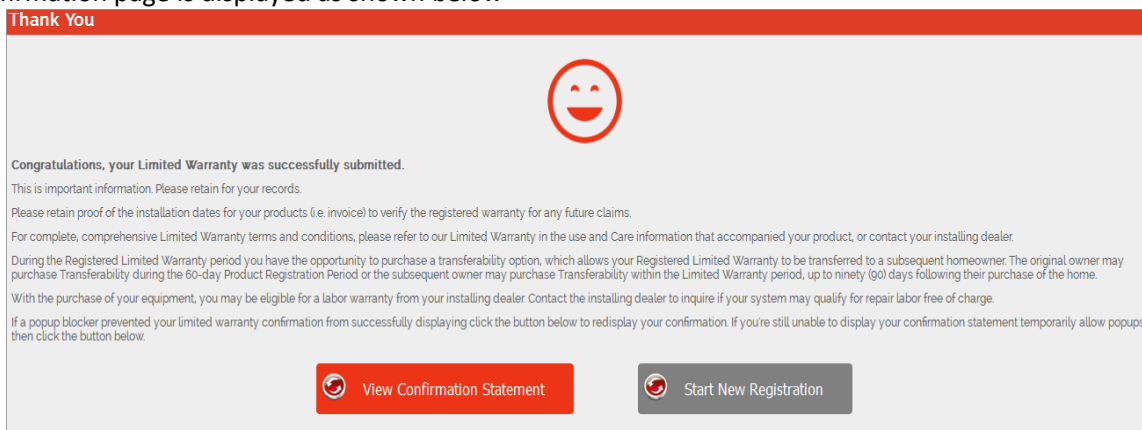
2.4.7 Use Case 6: Product Registration Screen 5 (Generate Certificate)

Description	Once the product registration is completed, generate a PDF certificate which can be downloaded or printed by the user.
Business Values	
Actors	Home Owner/Installing Dealer/Builder
Current Process/ Functionality in TWMS	Not Applicable. Does not exist in TWMS

Proposed Flow

1. Clicking continue on page 4 will complete the registration
2. When the number of units registered on the given address is more than a configured value, the registration status is set to 'Pending Approval'.
3. Otherwise status of the registration is set as 'Active'

4. Generate a new registration ID
5. Flag the registration for review (review reason=invalid serial number) when there is one or more invalid serial numbers (not existing in TWMS but exists in Oracle Inventory)
6. Flag the registration for review (review reason=invalid start date) when there is one or more serialized components for which the install date provided is after the allowed window period (based on start date configuration)
7. For serialized components set the registered flag to yes and create an inventory transaction of type 'WR'. A view link is displayed to the internal users to view the warranty coverage.
8. A confirmation page is displayed as shown below

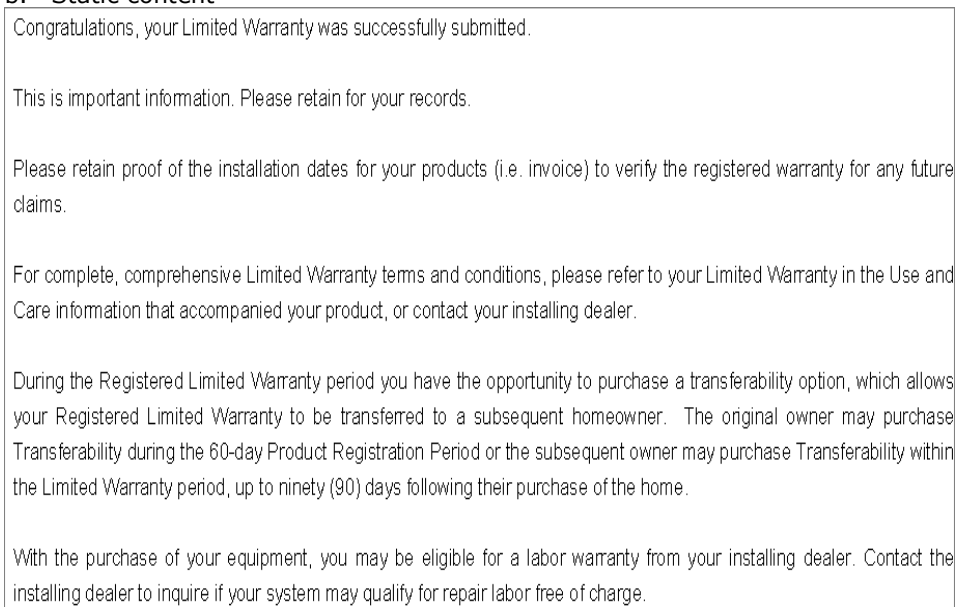


9. Warranty certificate is generated in PDF and opened in a new window.

a. Header: Logo based on brand



b. Static content



Note: 5th para will be shown only if at least one of the product on that registration is installed On or After Aug 1, 2011

c. Customer information

Name :
Phone Number :
Email :
Dealer :

Home / Property Owner Address

Address Line 1
Address Line 2
City, State, Zip

Equipment Address

Address Line 1
Address Line 2
City, State, Zip

d. Warranty terms

Transfer Purchased will not be displayed for the date before Aug 1, 2011.

Limited Warranty Terms - Transfer Purchased : No
System 1

Thermostat (Model# ACONT200AN11AA) (Residential Extended)

Functional Parts - 12/22/2020 (Term Length 5 years)

Note: Assuming Transfer Purchase is at Registration Level, and even if one Unit on a given registration is On or After Aug 1, 2011.

e. Footer: Logo/Brand Name based on the brand

Trane Limited Warranty Customer Service Number 1-855-260-2975



Impact on existing BUs	None
Assumptions and Dependencies	None
Business Priority	High
References/Expectations	None
Notes	None

2.5 UPDATE START DATE [HVAC-#5]

2.5.1 Requirements

RTM No	Use Cases	Summary
IBM-LS-05	1	1. Distributor must be able to update the startup date through commissioning report on a serial number/sales order/model combination (serial may be null) which has been registered automatically or manually. When startup date is updated, warranty start & end dates must be recalculated. Need "Commissioning Report" form which the distributor can use to request start date change, allow for attachments, and will not require approval. The dealer will be allowed to change the start date only once, additional commissioning reports on same machine/record will

		not be allowed. If dealer needs to update the start date more than once, then he needs to ask the warranty administrator.
IBM-WR-54	1	Any change to a warranty start date on a registration record should be addressed as per specific business rule (Ex: validation against ship date/build date/install date)
IBM-WA-01	2	Admin must be able to update the startup date on a serial number/sales order/mfg (shipment number)/model combo which has been registered automatically or manually. (in some case serial will be null)
PLC-WC-07	1, 2	Need to allow users to make request for start date change with approval from warranty administrator system would update warranty periods based on new start date. The request would require backup documents. (Can be done using commissioning report. Warranty period will be updated based on the startup date provided. Change required to override the startup date with the new date provided by CSO)

Functional Design – Use Cases
2.5.2 Use Case 1: Start Date Update by Distributor

Description	<ol style="list-style-type: none"> Distributor must be able to update the startup date through commissioning report on a serial number/sales order/model combination (serial may be null) which has been Tavant registered automatically or manually. When startup date is updated, warranty start & end dates must be recalculated. May need "Form/Report" form which the distributor can use to request start date change, allow for attachments, and will not require approval. The Distributor will be allowed to change the start date only once, additional commissioning reports on same machine/record will not be allowed. If Distributor needs to update the start date more than once, then he needs to ask the warranty administrator. This is only applicable for the CS BU. RS BU will not allow this functionality. Any request to update the start date in the RS BU will need to be made outside of the warranty system and the warranty admin/ registration agent will update. Note: In Tavant, Registration Admin will have Registration Agent role. An extra validation will be there only for Residential:- <ol style="list-style-type: none"> In case of IWD, the new start date must be within 'C' (can be configured by admin) days from Ship date. In case of DSO dealer, the new start date must be within 'D' (can be configured by admin) days from Ship date. (Note:- C and D will be numeric value set-up by the Trane admin) When distributor is not allowed to update the start date, appropriate message to be displayed informing the distributor to contact the admin. This message must be configurable by the admin.
Business Values	
Actors	Warranty Admin, Distributor
Current Process/ Functionality in TWMS	<p>Admin can setup a commissioning report for specific products.</p> <p>Once the unit is registered distributor can submit the commissioning report and provide a new installation date.</p> <p>If this installation date is within a configured window period start date will be updated to this new installation date.</p> <p>Distributor or the Admin will be allowed to submit this report only once and the report cannot</p>

be updated later on.

Proposed Flow

1. Configure a commissioning report
2. Distributor can access the report by clicking on the 'Reports' button available on the equipment details page (of both serialized and non-serialized units in retail).
3. Distributor can provide the installation date and submit the report.
4. Once the report is submitted, from then on the report opens in read only mode and the distributor is not allowed to update the start date. In such a case a message to be displayed to the distributor to contact the admin for any further updates to the start date. This message is configured as a BU configuration which can be modified by the admin.
5. When the report is submitted the first time by distributor, start date on the inventory is updated. Start/end dates of the policies are updated accordingly and policy audit is created for the same.
6. When a commissioning report is not configured distributor will not be allowed to update the start date even for the first time.
7. New Admin BU Configuration
 - a. Name: **Contact Information to Request for Start Date Update**
 - b. Type: Text
 - c. Description: Message to the distributor indicating that the start date can be updated only once and whom to contact for further updates
 - d. Section: INVENTORY -> Warranty Registration
 - e. Setup: Business to configure the message
8. If RS wants to configure the Commissioning Report, below points will be applicable:
 - If the inventory has distributor type indicator (DSO/IWD) associated with it, find the window period from the start date configuration for the corresponding distributor type. Installation date provided cannot cross the window period from the shipment date. Display a validation error indicating the same.
 - If the inventory does not have a distributor type indicator associated with it, find the window period from the BU configuration 'Warranty Start Date override Window Period by Installation Date'. Installation date provided cannot cross the window period from the shipment date. Once the report is submitted display a message that installation date is beyond the acceptable date and hence startup date is not updated.

Impact on existing BUs	Enhancement A message can be configured to be displayed on the report page once the report has been submitted. If this is not configured message will not be displayed for that BU.
Assumptions and Dependencies	None
Business Priority	High
References/Expectations	None
Notes	None

2.5.3 Use Case 2: Start Date Update by Warranty Admin

Description	Admin must be able to update the startup date on a serial number/sales order/mfg (shipment number)/model combo which has been registered automatically or manually. (in some case serial will be null)
-------------	--

	<ol style="list-style-type: none"> 1. Internal Users will have the ability to update the Start up date on the EHP Page. 2. System will recalculate the Terms as part of the new Date. 3. System will audit the changes made to the Start date.
Business Values	
Actors	Warranty Admin
Current Process/ Functionality in TWMS	Admin will be allowed to update the start only once, similar to distributor.
Proposed Flow	
<ol style="list-style-type: none"> 1. When a commissioning report is configured, warranty admin can access the report by clicking on the 'Reports' button available on the equipment details page (of both serialized and non-serialized units in retail). 2. Admin is allowed to update the installation date on the report even after the report has been submitted by the distributor. Admin is allowed to update Start date any number of times. 3. There is no validation on the installation date provided by the warranty admin. 4. When the installation date is updated and submitted, start date on the inventory is updated. Start/end dates of the policies are updated accordingly and policy audit is created for the same. 	
Impact on existing BUs	Enhancement Admin will be allowed to update the start date even after the commissioning report has been submitted
Assumptions and Dependencies	None
Business Priority	High
References/Expectations	None
Notes	None

2.6 WARRANTY LOOKUP FROM BRAND SITES [HVAC-#6]

2.6.1 Requirements

RTM No	Use Cases	Summary
	1,2	Allow warranty lookup from brand sites

Functional Design – Use Cases

2.6.2 Use Case 1: Warranty Lookup Page

Description	Allow warranty lookup from brand sites
Business Values	
Actors	Home Owner/Installing Dealer/Builder
Current Process/	Nor Applicable. Does not exist in TWMS

Functionality in TWMS

Proposed Flow

- Product Registration can be initiated by clicking on a registration link on one of following brand sites

Brand	Brand Site
Trane	http://www.trane.com/Index.aspx
Ameristar	http://www.ameristarac.com
American Standard	https://www.americanstandardair.com

- Tavant will provide the URLs to be used for registration on these brand sites. The URLs to be used will be as shown in table below. The URLs are tentative and yet to be finalized.

Brand	Registration URL
Trane	https://hvac.tavant.com/restServices/wrApp/register/trane
Ameristar	https://hvac.tavant.com/restServices/wrApp/register/amstr
American Standard	https://hvac.tavant.com/restServices/wrApp/register/amstd

- Each link will open the product registration site in Tavant. Tavant site is the same for all these links except for the following

- Skin: look and feel is specific to the brand
- Logo: respective brand's logo



- Brand Name: respective brand names wherever applicable
 - Trane
 - Ameristar Heating & Cooling
 - American Standard Heating & Air Conditioning

- No authentication required on the Tavant URLs.

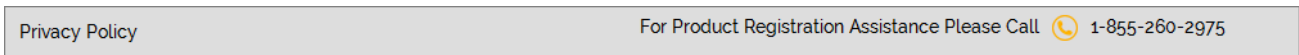
- Header



- Clicking on the logo at the top left corner of the header will open the brand's home page in a new browser window.
- A link to a pdf document on the top right corner of the header – Need help locating your model / serial number

Brand	Link
Trane	https://www.trane.com/residential/downloads/SNInstructions-trane.pdf
Ameristar	https://msit.comfortsite.com/lw/resources/Locating The Serial Numbers On Your New Products.pdf
American Standard	https://www.americanstandardair.com/Homeowner/docs/SNInstructions-AS.pdf

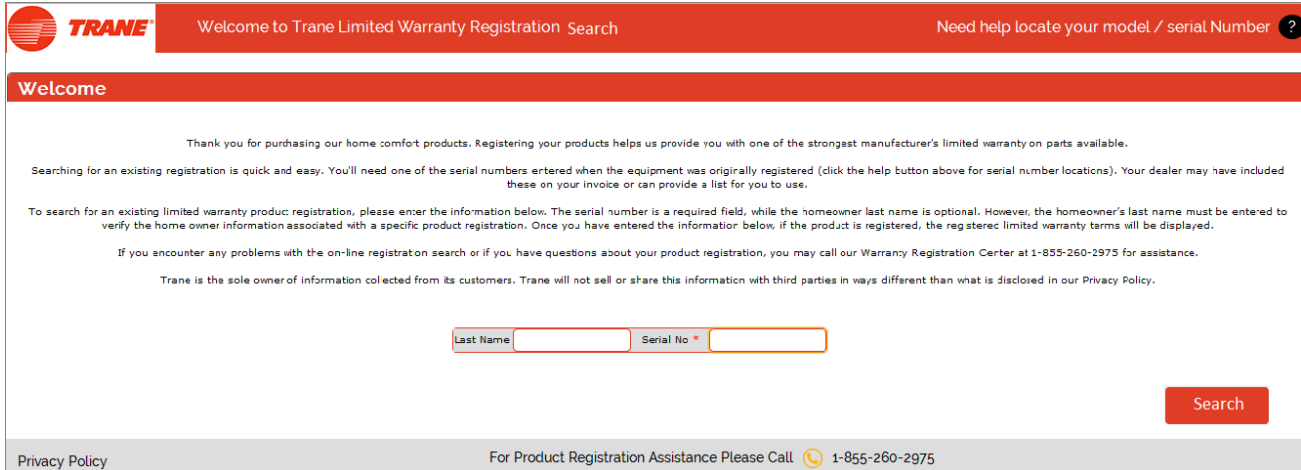
- Footer



- Link to display privacy policy on the bottom left corner of the footer.

Brand	Link
Trane	https://www.trane.com/residential/site/templates/privacypolicy.aspx
Ameristar	http://www.ameristarac.com/home/privacy
American Standard	https://www.americanstandardair.com/privacy-policy.html

7. Lookup page



Welcome to Trane Limited Warranty Registration Search

Need help locate your model / serial Number ?

Welcome

Thank you for purchasing our home comfort products. Registering your products helps us provide you with one of the strongest manufacturer's limited warranty on parts available.

Searching for an existing registration is quick and easy. You'll need one of the serial numbers entered when the equipment was originally registered (click the help button above for serial number locations). Your dealer may have included these on your invoice or can provide a list for you to use.

To search for an existing limited warranty product registration, please enter the information below. The serial number is a required field, while the homeowner last name is optional. However, the homeowner's last name must be entered to verify the home owner information associated with a specific product registration. Once you have entered the information below, if the product is registered, the registered limited warranty terms will be displayed.

If you encounter any problems with the on-line registration search or if you have questions about your product registration, you may call our Warranty Registration Center at 1-855-260-2975 for assistance.

Trane is the sole owner of information collected from its customers. Trane will not sell or share this information with third parties in ways different than what is disclosed in our Privacy Policy.

Last Name Serial No *

Search

Privacy Policy For Product Registration Assistance Please Call ☎ 1-855-260-2975

- The welcome contents of the page varies slightly from brand to brand. Use the content from the following links
 - <https://msit.comfortsite.com/lw/publicsearch.asp?brand=trane>
 - <https://msit.comfortsite.com/lw/publicsearch.asp?brand=amstr>
 - <https://msit.comfortsite.com/lw/publicsearch.asp?brand=amstd>
- Last name is optional, but serial number is mandatory
- Search button will be enabled only if serial number is provided

Impact on existing BUs	None
Assumptions and Dependencies	None
Business Priority	High
References/Expectations	None
Notes	None

2.6.3 Use Case 2: Warranty Lookup Result

Description	Generate a PDF certificate for the warranty terms
Business Values	
Actors	Home Owner/Installing Dealer/Builder
Current Process/ Functionality in TWMS	Nor Applicable. Does not exist in TWMS

Proposed Flow

- Click on Search button
- Check if HSM check is required
If Yes, then Capture the address.
- For HSM and calculating terms, refer logic in next Section 2.7.2, Point Number 5 onwards.
- Generate a certificate in pdf and display it.
 - Header: same as in case of product registration

- b. Static content: same as in case of product registration
- c. Owner & Equipment Address

Home / Property Owner Address

Address Line 1
Address Line 2
City, State, Zip

Equipment Address

Address Line 1
Address Line 2
City, State, Zip

- d. Warranty terms: same as in case of product registration
 - e. Footer: same as in case of product registration
5. Note: Only display owner & equipment address if the last name is provided during serial number entry, if the last name is not provided do not display owner & equipment address on the certificate. Display rest of the fields.

Impact on existing BUs	None
Assumptions and Dependencies	None
Business Priority	High
References/Expectations	For HSM and calculating terms, refer logic in next Section 2.7.2, Point Number 5 onwards.
Notes	None

2.7 WARRANTY LOOKUP IN TAVANT [HVAC-#7]

2.7.1 Requirements

RTM No	Use Cases	Summary
	1	Warranty lookup in Tavant
IBM-EH-04	1	Goodwill coverage must not be shown on the warranty coverage displayed on the equipment.

Functional Design – Use Cases

2.7.2 Use Case 1: Warranty Lookup in Tavant

Description	Distributor or an internal user will have to find the warranty on a serialized or non-serialized unit.
Business Values	
Actors	Distributor, Internal Users
Current Process/ Functionality in TWMS	Warranty coverage is displayed on the equipment history page of a serialized machine which is in Retail. This is not applicable for serialized units in Stock and non-serialized units.

Proposed Flow

1. Warranty Coverage Lookup display
 - a. A button labelled 'Warranty Coverage' is displayed on the equipment details page of both serialized and non-serialized units.

- b. Warranty Lookup link should also be shown on home page as well.
 2. This button is visible for both the distributors and internal users when the BU configuration 'Enable HVAC Warranty' is turned on.
 3. This button is not available if the unit is in Stock
 4. Maintain a HSM Lookup table at the back end. This tables contains a list of all the 6th segment values which require HSM check
 5. Check if HSM check is required or not
 - a. Find the 1st & 6th segments of SIOP from the item master for the given serial number/model
 - b. If BU=Residential HVAC and 1st Segment is 'RS HVAC', HSM is required
 - c. If BU=HVAC TCP and 6th segment is in the HSM Lookup table, HSM is required
 6. If HSM check is not required display the terms available on the unit.
 7. If HSM check is required
 - a. capture equipment address – address line1, address line 2, city, state, country and zip code
 - b. display a legal message and a check box to accept the terms and conditions
 - c. only if this check box is checked, 'Find Coverage' button will be enabled to proceed further.
 - i. Invoke HSM for Address validation
 1. Input to HSM: Address
 2. Response from HSM: Address validity?, suggested address, zone & home sale info
 - ii. If invalid address – show error
 - iii. If address is valid
 1. Set the address to address suggested by Melissa
 2. If unit is non serialized
 - a. Check if the unit was registered – find the non-serialized registration based on model and address
 - b. If not registered – Apply Base Terms
 - c. Otherwise fetch the registered terms and check for home sale
 3. If unit is serialized
 - a. If unit was already registered and the registered address is not the same as entered address – error
 - b. If zoning not yet verified and the zone from HSM response is not the same as default zone – update base terms As per HSM
 - c. Fetch the terms (registered or base) and Check for home sale
 4. Home sale check (based on HSM response)
 - a. In case of a Home Breakage
 - i. Transfer options not purchased
 1. Unit installed before 1-May-2009: If Gas Furnace terms change to base, for all others no change in term
 2. Unit installed between 1-May-2009 & 31-Jul-2011: If on precedence list no change in terms, if not on precedence list reset terms to base terms.
 3. Unit installed after 31-Jul-2011: If on precedence list no change in terms, if not on precedence list expire terms on date of home sale.
 - ii. Transfer options purchase and completed within 90 days (if after Aug 1, 2011)
 1. Show the existing terms
 - b. When there is no Home Breakage – show the existing terms
 8. If distributor does the lookup, do not display goodwill coverage
- Note: This entire flow has to apply for Warranty Look up and Claim Filing.

Impact on existing BUs	None Controlled by a BU configuration – Enable HVAC Warranty
Assumptions and Dependencies	None
Business Priority	High
References/Expectations	None
Notes	None

2.8 TERM REGISTRATION - EMAIL CONFIRMATION [HVAC-#8]

2.8.1 Requirements

RTM No	Use Cases	Summary
IBM-WR-76	1	In case the customer does not confirm, then the system should send X number of reminders to the customer requesting confirmation of registration record. If no confirmation than the dealer gets notification that registration would be terminated in X days. Post this duration, the terminate the term registration process. Registration Admin should be able to search and modify the term registration even after the termination the term registration. Note: This is applicable only for RS.
IBM-WR-11	1	End customer confirmation on Term Registration 1. Send an email to end customer with warranty certificate attached 2. A link in the email - clicking on the link will notify Tavant and the registration will be considered as confirmed. Note: This is applicable only for RS.

Functional Design – Use Cases

2.8.2 Use Case 1: Email Confirmation for Term Registration

Description	Once the term registration is done, home owner will be sent an email explaining the purpose and a link to confirm the registration. Home owner will have to click on a link in the email to active the registration. Reminder emails will be sent and the number of reminders must be configurable. Registration will be automatically terminated after the max number of reminders. Once the registration is confirmed another email will be sent with the warranty certificate. Note: This is applicable only for RS. Terminate means Stop the registration process and provide Base Terms
Business Values	
Actors	Home Owner/Third Party
Current Process/ Functionality in TWMS	Not Applicable. Does not exist in TWMS

Proposed Flow

1. A new Admin BU Configuration
 - a. Name: **User Types for Email Confirmation of Term Registration**
 - b. Type: Multi Select (Home Owner, Installing Dealer, Builder)
 - c. Description: Email confirmation on term registration will be enabled when the selected user types does the term registration.
 - d. Section: INVENTORY -> Warranty Registration
 - e. Setup: Business to configure. By default no user type will be selected for all the business units.
2. A new Admin BU Configuration
 - a. Name: **Number of Reminders for Confirmation of Term Registration**
 - b. Type: Number
 - c. Description: The number of email reminders to confirm the term registration before the registration is terminated.
 - d. Section: INVENTORY -> Warranty Registration
 - e. Setup: Business to configure. The value will be set to 3 initially for all the business units.
3. When a specific user type is configured for email confirmation, and if the user of the same user type is doing a term registration
 - a. Email of the home owner becomes mandatory for term registration.
 - b. Once the registration process is completed, an alert will be shown to the user indicating that the registration will be activated only after the email confirmation.
 - c. Status of the registration record will be set to 'Pending Confirmation'
 - d. An email will be sent to the email id of the home owner with a link to activate the registration. The link will be something like <https://hvac.tavant.com/restServices/wrApp/confirmation?id=2342233123123>. The actual URL is yet to be finalized. The link will have a unique id associated with the registration record.
 - e. A separate email will be sent to the Dealer/Builder email ID if provided during registration and this email will be without the link.
 - f. When clicked on the link, registration status will be set to 'Active' and a message indicating the activation of the registration will be displayed to the user.
 - g. The same email will be resent to the owner X times (BU Configuration - Number of Reminders for Confirmation of Term Registration)
 - h. A scheduled job which is configured to run once every day
 - i. Finds all the pending registrations
 - ii. If the number of emails sent is less than or equal to the configured count, resend the email and increase the count on the registration by 1
 - iii. If the number of emails has reached the limit, set the status of the registration as 'Terminated' and stop sending emails.
 - i. Once the registration is confirmed another email will be sent with the warranty certificate The email will also have an attachment of the warranty certificate in PDF.

Email Field

1. This should be a Non Mandatory field for both CS and RS.
2. If email is entered, it should be captured and displayed to on Certificate.
3. If not entered, field should still be displayed, but with blank email.
4. ~~If email is entered, it should be captured and email should be sent to consume for completing the registration.~~
5. If email is not entered, registration should get completed without any email confirmation.

6. Validations and logic for rest of the fields will not change

Impact on existing BUs	None
Assumptions and Dependencies	None
Business Priority	High
References/Expectations	None
Notes	None

2.9 REGISTRATION ADMIN [HVAC-#9]

2.9.1 Requirements

RTM No	Use Cases	Summary
IBM-WR-69	2	Provision to attach a document to a registration record & indicate the same to user when looking at the record
IBM-WR-70	2	Provision to add notes to the registration & indicate the same to user when looking at the record
IBM-WR-50	2	Ability to display the User ID(incase of Trane Employees)/Registering Person(incase of non-Trane users like home owner) associated with the Product registration record.
IBM-WR-63	2	Provision to record and display the last modified by and last modified date for each unit registered.

Functional Design – Use Cases

2.9.2 Use Case 1: Registration Admin Role and Inboxes

Description	A new role 'Registration Admin' to manage the term registrations is needed. Registration Admin will have queues to which various types of pending registration will be sent for review/approval/correction.
Business Values	
Actors	Registration Admin
Current Process/ Functionality in TWMS	Not Applicable. Does not exist in TWMS.

Proposed Flow

1. A new roles to manage term registrations 'Registration Admin'
2. On the left navigation menu add a new folder labelled 'Term Registration' on the 'Registration/Transfer' tab when the BU configuration 'Enable HVAC Warranty' is enabled.
3. Term Registration folder is available only for users having the role of 'Registration Admin'

4. The following inboxes will be listed under the Term Registration folder
 - a. Pending Approval : no of units registered at a given address has exceeded the limit
 - b. Invalid Serial Numbers : Serial number does not exist in Tavant, but exists in Oracle
 - c. Pending Confirmation : when email confirmation is needed
5. Columns displayed on the listing page
 - a. Pending Approval

Field	Sorting?	Filtering?
Registration Id	Yes	Yes
Registration Date	Yes	Yes
Reason for Review	Yes	No

- b. Invalid Serial Numbers

Field	Sorting?	Filtering?
Registration Id	Yes	Yes
Registration Date	Yes	Yes
Serial Numbers	Yes	Yes

- c. Pending Confirmation

Field	Sorting?	Filtering?
Registration Id	Yes	Yes
Registration Date	Yes	Yes
Owner First Name	Yes	Yes
Owner Last Name	Yes	Yes
Owner Email	Yes	Yes
Number of Reminders	Yes	No

Note: Registration Admin will be doing this in Tavant on behalf of Consumer.

Registration Admin will be allowed to transfer the registration from one owner to another.

It is not necessary that transfer has to be purchased to change the owner (for example to an immediate family member). Transfer is considered to be completed once this is done by Registration Admin.

Transfer Completed means they have Purchased the Transfer and have registered again on the Registration Site.

Impact on existing BUs	None Controlled by a BU configuration – Enable HVAC Warranty
Assumptions and Dependencies	None
Business Priority	High
References/Expectations	None
Notes	None

2.9.3 Use Case 2: Registration Detail Page

Description	Registration admin should be able to view/modify most of the information on a registration record.
Business Values	
Actors	Registration Admin

Current Process/
Functionality in TWMS

Not Applicable. Does not exist in TWMS

Proposed Flow

1. Double clicking on a record from any of the registration Admin's inboxes with open the details page in read only mode
2. Registration details page – read only
 - a. Registration Id, Registration Date and Registration Status
 - b. User Type, Owner Information & Equipment Address
 - c. A list of all the components on the registration. The following details displayed for each component
 - i. System name
 - ii. Serial number
 - iii. Model
 - iv. Component Type
 - v. Install date
 - vi. Last Modified On
 - vii. Last Modified By
 - viii. Terms for each component
 1. Policy Code
 2. Start date
 3. End date
 4. Months Covered
 - d. Notes
 - e. List of documents attached on the registration
 - f. Edit button : open the registration details in edit mode
 - g. Cancel button : close the details page
 - h. Additional buttons displayed based on the status of registration
 - i. Pending Approval
 1. Approve: Registration status updated to Active
 2. Reject: Registration status updated to Rejected
3. Registration details page – edit mode
 - a. Registration Id, Registration Date and Registration Status – read only
 - b. User Type, Owner Information & Equipment Address – in edit mode
 - c. A list of all the components on the registration. The following details displayed for each component
 - i. System name – read only
 - ii. Serial number – editable only for invalid serial numbers
 - iii. Model – read only
 - iv. Component Type – read only
 - v. Install date - editable
 - vi. Terms for each component
 1. Policy Code
 2. Start date (editable)
 3. End date (editable)
 4. Months Covered
 - d. Notes – editable text area
 - e. List of documents attached on the registration along with the ability to attach more documents.
 - f. Submit Button: If equipment address or install date is modified repeat the entire process of term

registration and recalculate the terms. Update the last modified date and last modified by on the registration record.

- g. Cancel button : close the details page

Impact on existing BUs	None Controlled by a BU configuration – Enable HVAC Warranty
Assumptions and Dependencies	None
Business Priority	High
References/Expectations	None
Notes	None

2.10 REGISTRATION LOOKUP [HVAC-#10]

2.10.1 Requirements

RTM No	Use Cases	Summary
IBM-WR-37	1	The system should have the ability to display all registrations (active and inactive) against a specific installed equipment address
IBM-WR-72	1	Provision to access registration records that pertain to the specific business unit. This would be accessible only to the warranty team
IBM-WR-31	1	The system should provide a facility to display all the active/inactive unit and part serial numbers for a customer (Home Owner).

Functional Design – Use Cases

2.10.2 Use Case 1: Registration Lookup Screen

Description	A registration admin or an internal user should be able to search and view all the registrations in various states.
Business Values	
Actors	Registration Admin, Internal Users
Current Process/ Functionality in TWMS	Not Applicable. Does not exist in TWMS.

Proposed Flow

1. A link on the left Navigation menu 'PreDefined Registration Search' under the 'Registration/Transfer' tab
2. This link is displayed only for internal users when the BU configuration 'Enable HVAC Warranty' is true.
3. Clicking on the link will open a search page with the following search parameters
 - a. Registration Id

- b. Date of registration – From Date & To Date
 - c. Serial Number
 - d. Model
 - e. Status
 - f. Equipment Address: Address 1, Address 2, City, State, Country, Zip Code
4. Enter at least one search parameter and click on search button, to display a list of registrations matching the search criteria. The following columns are displayed on the listing page

Field	Sorting?	Filtering?
Registration Id	Yes	Yes
Registration Date	Yes	Yes
Status	Yes	No

- 5. Double click on any registration record to open the registration details page in read only mode
- 6. Edit button on the registration details page will be available only for the user having the role 'Registration Admin'

Impact on existing BUs	None Controlled by a BU configuration – Enable HVAC Warranty
Assumptions and Dependencies	None
Business Priority	High
References/Expectations	None
Notes	None

2.11 COMPONENT REPLACEMENT HISTORY [HVAC-#11]

2.11.1 Requirements

RTM No	Use Cases	Summary
IBM-WR-47	1	If a unit is replaced as part of a claim, on claim approval, the system will update the registration to reflect the replaced unit as 'Active' while inactivating the registration for the old serial number along with original warranty end date New Serial number should have the same end date as the original serial number.
IBM-WR-49	1	The 'Unit/Component Change History' will display registration term and history, User-id, Username, Component Name, In service date, Date of registration update.

Functional Design – Use Cases

2.11.2 Use Case 1: Component Replacement History

Description	When a serialized component is replaced by another one <ul style="list-style-type: none"> 1. Replaced component must be deactivate, and warranty to be terminated 2. Warranty to be transferred on to the new component 3. Maintain a history of this replacement
Business Values	

Actors	Distributors, Internal Users
Current Process/ Functionality in TWMS	Once the claim is accepted component on the serialized machine will be updated. New replaced serial number will be substituted by the new serial number. Replaced unit will be deactivate and warranty will be terminated. Replacement history is maintained.
Proposed Flow	
<p>When a serialized component on a machine is replaced with a new serial number on a warranty claim, once the claim is accepted</p> <ol style="list-style-type: none"> 1. On the equipment details page, under the serialized components section, the new serial number will be listed instead of the replaced serial number 2. Replaced serial number will be deactivated and the warranty will be terminated 3. Warranty on the replaced serial number will be transferred to the new serial number with the same start and End dates. 4. From serialized components section of the equipment details page, click on the history link to view the component change history - replaced component, install date of replaced component and the claim number on which the component is replaced. 	
Impact on existing BUs	None
Assumptions and Dependencies	None
Business Priority	High
References/Expectations	None
Notes	Functionality exists, but there is an impact on the existing implementation due to data model changes done for HVAC.

2.12 EQUIPMENT TRANSFER [HVAC-#12]

2.12.1 Requirements

RTM No	Use Cases	Summary
IBM-IT-02	1	(CS and RS) ETR (Equipment Transfer): To transfer the equipment from one end customer to another. This transaction type is not required for Commercial Sales organization. However, this transaction should be allowed for equipment belonging to Residential Sales Organization, provided that 'Transfer Option' has been purchased on the equipment. This purchase is done outside of Tavant, but Tavant will be notified - may be through an excel upload.
IBM-WR-60	1	(CS and RS) If transferability has been purchased, the new owner would get the balance of the remaining warranty terms. There is no restriction on the number of transfers on the equipment
IBM-WR-77	1	(RS Only) Transfer of ownership to an immediate family member is automatic, subject to appropriate evidence of a family connection. Provision to handle this exception to the home ownership transfer logic. This is just a normal transfer. Without any fees.

IBM-WR-59	2	(RS Only) Ability to capture transfer fees information that has been purchased by home owner on a registration record. This would be manually updated on the registration record
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Functional Design – Use Cases
2.12.2 Use Case 2: Update Transfer Options on Registrations

Description	Registration admin must be allowed to update the transfer purchase information on a registration.
Business Values	
Actors	Registration Admin
Current Process/ Functionality in TWMS	Not Applicable. Does not exist in TWMS

Proposed Flow

1. Registration Admin will be allowed to update the transfer options (transfer purchased flag and transfer fee)
2. On the registration details page (through Pre-Defined Registration Search) a button labelled 'Update Transfer Options' will be available only for the Registration Admin
3. When clicked on 'Update Transfer Options' a tab is opened with the following details
 - a. List of all components on the registration (read only)– System, Serial Number, Model, Install date
 - b. A check box to indicate whether the transfer options are purchased or not
 - c. A text box to capture the \$amount of transfer fee. Will be enabled only when the check box is checked
 - d. Save button - to save the changes done
 - e. Cancel button – to close the tab without saving the changes done

Impact on existing BUs	None
Assumptions and Dependencies	None
Business Priority	High
References/Expectations	None
Notes	None

2.13 UPLOAD EXTENDED WARRANTY PURCHASE [HVAC-#13]
2.13.1 Requirements

RTM No	Use Cases	Summary
IBM-EW-02	1	TWMS will be notified of the extended warranty purchase through an Excel upload.
PLC-WC-06		Must have an integration between Extended Warranty Staging to Tavant to apply Extended Warranty Policies. Policy will be applied immediately for any unit in common retail. For any unit in stock, the policy would be applied at time of Tavant Registration.

Functional Design – Use Cases
2.13.2 Use Case 1: Excel Upload

Description	TWMS will be notified of the extended warranty purchase through an Excel upload.
Business Values	
Actors	Warranty Admin
Current Process/ Functionality in TWMS	Not Applicable. Does not exist in TWMS.

Proposed Flow

1. A new excel upload 'Extended Warranty Purchases' will be added and mapped to HVAC TCP only
2. This upload is available only for warranty admin
3. Field for upload
 - a. Serial Number
 - b. Sales Order Number
 - c. Model
 - d. MFG
 - e. Sequence
 - f. Extended Warranty Policy Code
 - g. Start Date
 - h. End Date
 - i. Purchase Date (This is Ship Date in Falcon)
4. Serial Number to be provided for serialized units
5. Sales Order Number and model combination to be provided for non-serialized units
6. If extended policy provided is a variable date policy, only then start and end dates are required. Otherwise system will automatically calculate the start and end dates.
7. If the unit is in Stock, save the information in the Extended Warranty Notifications. When the unit is manually registered automatically apply the extended warranty along with the base terms.

Impact on existing BUs	None This upload is available only for HVAC BUs
Assumptions and Dependencies	Extended Warranty policy can be uploaded thro Integration Ref: PLC-WC-06
Business Priority	High
References/Expectations	None
Notes	None

2.14 INVENTORY SEARCH [HVAC-#14]

2.14.1 Requirements

RTM No	Use Cases	Summary
IBM-LS-01	2	a) Pre-defined Stock/Retail search to be applicable for both serialized and non-serialized units. Search based on Sales Order, Mfg. columns must be added.
IBM-LS-03	3	Ability to search for both serialized and non-serialized units through a predefined set of search parameters and building a search query.

Functional Design – Use Cases

2.14.2 Use Case 1: Stock and Retail Inboxes

Description	All the units are common stock or common retail. Stock and retail units are not associated with a distributor.
Business Values	
Actors	Distributor
Current Process/ Functionality in TWMS	Stock and Retail inboxes of a distributor will list only those serial number associated with the distributor.

Proposed Flow

1. Stock and Retail inboxes will not be available for distributors since all the Stock and Retail inventory is common.
2. This behavior is controlled by a BU configuration 'Enable HVAC Warranty' (which will be enabled only for HVAC BUs)
3. A distributor or an internal user can find an inventory through
 - a. Quick Inventory Search
 - b. Pre-Defined Stock Search
 - c. Pre-Defined Retail Search
 - d. Define Search Query

Impact on existing BUs	None Controlled by a BU configuration – Enable HVAC Warranty
Assumptions and Dependencies	None
Business Priority	High
References/Expectations	None
Notes	None

2.14.3 Use Case 2: Predefined Search for Stock and Retail

Description	Ability to search for serialized/non-serialized units based on a pre-defined set of search parameters. New fields added for HVAC need to be included in the search parameters.
Business Values	

Actors	Internal user
Current Process/ Functionality in TWMS	<p>Predefined Stock Search: can search for only serialized machines in stock based on a pre-defined set of search parameters</p> <p>Predefined Retail Search: can search for only serialized machines in Retail based on a pre-defined set of search parameters</p> <p>For a distributor, only those units which are associated with that distributor will be listed.</p>

Proposed Flow

1. There will be only one PreDefined search for both Stock and Retail.
2. PreDefined search will not be shown to the Distributors
3. Add Sales Order Number to the pre-defined set of search parameters on Pre-Defined Search
 - a. Sales Order Number, free text
 - b. Type, radio buttons (Machine, Part, All)
 - c. Serialized, radio button (Yes, No)
 - d. Ship Date (from and to options)
 - e. Radio button to select Stock or Retail.

INVENTORY SEARCH

Stock/Retail: ☒ All ☐ Stock ☐ Retail

- 4.
5. Search for all the types of entities and include the type (Machine/Part) column on the default search results view

Impact on existing BUs	None Controlled by a BU configuration – Enable HVAC Warranty
Assumptions and Dependencies	None
Business Priority	High
References/Expectations	None
Notes	None

2.14.4 Use Case 3: Define Search Query

Description	Ability to search for serialized/non-serialized units by building a query based on a set of search parameters. New fields added for HVAC need to be included in the search parameters.
Business Values	
Actors	Internal user
Current Process/ Functionality in TWMS	<p>Define search query: can search for serialized machine only by preparing a query based on the parameters available.</p> <p>For a distributor, only those units which are associated with that distributor will be listed.</p>

Proposed Flow

1. Add the following parameters on which a query can be built upon
 - a. Sales Order Number
 - b. Type
 - c. Is Serialized

- d. Ship to State
- e. Ship to Country
- f. Is Registered
- g. Zone
- 2. Search for all the types of entities and include the type (Machine/Part) column on the default search results view
- 3. Defined search will not be shown to the Distributors

Impact on existing BUs	None Controlled by a BU configuration – Enable HVAC Warranty
Assumptions and Dependencies	None
Business Priority	High
References/Expectations	None
Notes	Define Search is already common for both Stock and Retail.

2.15 INVENTORY ADMIN [HVAC-#15]

2.15.1 Requirements

RTM No	Use Cases	Summary
IBM-WA-04	1	Admin must be able to update an Install Base record in TWMS for serial number, product, model, sales order number, mfg(shipment number), component model/serial, customer info, start date.
IBM-WR-46	2	The system should provide a facility to mark a unit/ accessory as 'Active/Inactive' for a respective Unit Serial # along with corresponding warranty end date
IBM-WR-68	2	Provision to indicate that the Trane RS coverage on a Unit / assembly / component is Void along with the reason. This could happen due to multiple reasons - abuse of product, theft.
PLC-WC-08		Need to allow Warranty Administrator to upload template which can add or remove warranties associated to a serial, sales order, model combo.

Functional Design – Use Cases

2.15.2 Use Case 1: Update Inventory Details

Description	Admin should be able to update inventory details like sales order number, mfg, model etc.
Business Values	
Actors	Inventory Admin
Current Process/ Functionality in TWMS	Not Applicable. Does not exist in TWMS

Proposed Flow

1. A button labelled 'Edit Inventory' will be displayed on the equipment details page.

2. The button is available only for users with role Inventory Admin when the BU Configuration 'Enable HVAC Warranty' is turned on.
3. When clicked on this button a page with the following inventory details will be displayed in edit mode
 - a. Sales Order Number
 - b. MFG
 - c. Sequence
 - d. Model
 - e. Serial Number
 - f. Quantity (for non-serialized units only)
 - g. Ship to Address - Address 1, Address2, City, State, Country, Zip Code
 - h. Shipment Date
 - i. Start Date
4. Click on 'Save' button to save the changes done.
5. Click on 'Cancel' to close without saving the changes
6. Once the changes are saved an entry is made into a staging table (inventory id, updated on, updated by) indicating that the inventory is updated. Only the Start Date update will be synced to SIL on regular basis through an integration.

Impact on existing BUs	None Controlled by a BU configuration – Enable HVAC Warranty
Assumptions and Dependencies	None
Business Priority	High
References/Expectations	None
Notes	None

2.15.3 Use Case 2: Update Warranty Details

Description	
Business Values	
Actors	Inventory Admin
Current Process/ Functionality in TWMS	Adding new applicable policies is allowed. End date of existing policies can be updated

Proposed Flow

1. A button labelled 'Add/Edit Policies' will be displayed on the equipment details page.
2. The button is available only for users with role Inventory Admin
3. When clicked on this button a page with the current warranty details will be displayed.
4. A list of policies with
 - a. Policy code, policy type, start date, status in read only
 - b. End date, can be updated
 - c. Comments, text area to provide update comments
5. New policies which are applicable on the inventory can also be added
6. Click on 'Save' button to save the changes done.
7. Click on 'Cancel' to close without saving the changes

8. Warranty Coverage will be synced to CLTRNP through an Integration (Effective Warranty update) in the following cases:
 - I. Product Registration
 - II. Change in terms due to Warranty Lookup(HSM)
9. This is done only if the BU configuration 'Enable HVAC Warranty' is enabled

Impact on existing BUs	None Controlled by a BU configuration – Enable HVAC Warranty
Assumptions and Dependencies	None
Business Priority	High
References/Expectations	None
Notes	None

2.16 TERM REGISTRATION – CUSTOM REPORTS [HVAC-#16]

2.16.1 Requirements

RTM No	Use Cases	Summary
IBM-WR-43	1	Ability to pre-define specific questions pertaining to end customer that needs to be responded in the product/term registration process. (Ex: Marketing questions pertaining to extended warranty)

Functional Design – Use Cases

2.16.2 Use Case 1: Pre Defined Questions on Term Registration

Description	Ability to pre-define specific questions pertaining to end customer that needs to be responded in the product/term registration process. (Ex: Marketing questions pertaining to extended warranty) Note: Applicable only to RS.
Business Values	
Actors	Warranty Admin, Home Owner/Installing Dealer/Builder
Current Process/ Functionality in TWMS	Not Applicable. Does not exist in TWMS.

Proposed Flow

1. Add a new type of custom report – 'Term Registration'
2. This new type is available only if the BU configuration 'Enable HVAC Warranty' is turned on
3. Warranty Admin can configure a custom report of type Term Registration with all the required questions
4. There can be only one active custom report of type Term Registration for a given BU
5. During term registration after all the components are added and if a custom report has been configured, a form with all the configured questions will be displayed. Answering questions will be mandatory.
6. Then the terms will be displayed.

7. User will have to complete the form and click on continue to complete the registration and generate the certificate
8. Applicable only to RS.

Impact on existing BUs	None Controlled by a BU configuration – Enable HVAC Warranty
Assumptions and Dependencies	None
Business Priority	High
References/Expectations	None
Notes	None

2.17 WARRANTY ADMIN [HVAC-#17]

2.17.1 Requirements

RTM No	Use Cases	Summary
IBM-WA-03	1	Admin to setup products which require start-up
IBM-WR-14	2	Admin will be allowed to configure 2 window periods which are used to identify the default warranty start date for units which are not registered. <ul style="list-style-type: none"> X - number of days from date of shipment for IWD dealers Y - number of days from date of shipment for DSO dealers

Functional Design – Use Cases

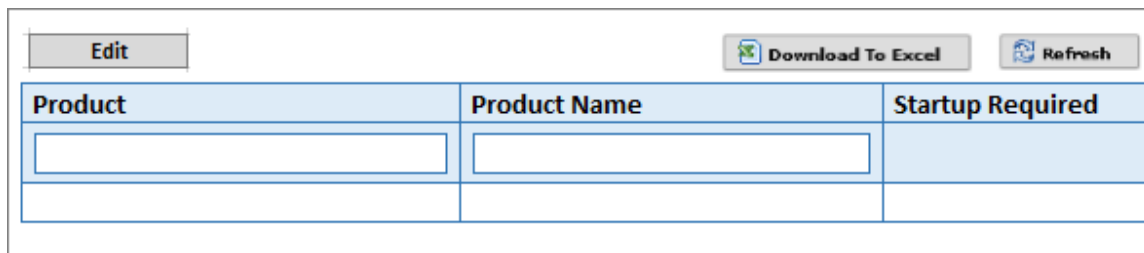
2.17.2 Use Case 1: Manage Products for Startup

Description	Admin to setup products which require start-up
Business Values	
Actors	Warranty Admin
Current Process/ Functionality in TWMS	Not Applicable. Does not exist in TWMS.

Proposed Flow

1. New System BU Configuration
 - a. Name: **Enable product startup**
 - b. Type: Yes/No
 - c. Description: To enable/disable the ability to configure product startup by warranty admin
 - d. Section: None (not available on UI for warranty admin)
 - e. Setup:
 1. HVAC TCP : Yes
 2. Residential HVAC : Yes
 3. Non HVAC BUs : No

2. Link to manage product startup
 - a. A link labelled '**Manage Products for Startup**' on the left navigation menu under the Warranty Admin tab
 - b. This link is displayed to Warranty Admin only if the BU configuration 'Enable product startup' is set to Yes
3. Listing page
 - a. Click on the link 'Manage Products for Startup' to open a list of all Products



Product	Product Name	Startup Required
<input type="text"/>	<input type="text"/>	

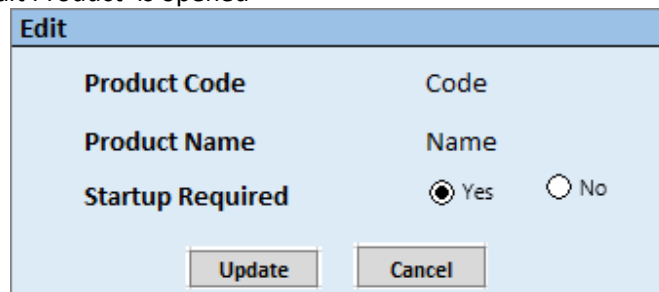
- b. Fields listed

Field	For UI	For Excel	Sorting	Filtering	Description
Product	Yes	Yes	Yes	Yes	Product code
Product Name	Yes	Yes	Yes	Yes	Product name
Startup Required	Yes	Yes	Yes	No	Yes/No

- c. Standard buttons for 'Download to Excel' and 'Refresh' displayed on the top right corner of the page

4. Edit startup information on Product

- a. A button 'Edit' on the top left corner of the listing page
- b. Select a Product from the list and click on 'Edit' button
- c. A dialog titled 'Edit Product' is opened



Edit

Product Code Code

Product Name Name

Startup Required
☒ Yes
 ☐ No

- i. Product Code & Product Name: Read only values
- ii. Startup Required: Radio button with Yes/No options
- iii. Update: button to submit
 1. Update startup required on the product
- iv. Cancel: button to close the dialog without any changes.

Impact on existing BUs	None <ul style="list-style-type: none"> A system BU Configuration 'Enable product startup' (not available for warranty admin) to enable the functionality for both RS and CS
Assumptions and Dependencies	None
Business Priority	High

References/Expectations	None
Notes	None

2.17.3 Use Case 2: Manage Start Date Configurations

Description	Admin will be allowed to configure 2 window periods which are used to identify the default warranty start date for units which are not registered.
Business Values	
Actors	Warranty Admin
Current Process/ Functionality in TWMS	Not Applicable. Does not exist in TWMS

Proposed Flow

1. New System BU Configuration
 - a. Name: **Enable start date configuration**
 - b. Type: Yes/No
 - c. Description: To enable/disable the ability to configure start date by warranty admin based on the distributor type
 - d. Section: None (not available on UI for warranty admin)
 - e. Setup:
 1. HVAC TCP : No
 2. Residential HVAC : Yes
 3. Non HVAC BUs : No
2. Link to manage start date configurations
3. By clicking on the 'Manage Business Configuration' >> 'Inventory' >> 'Warranty registration' tabs, admin will be allowed to edit the number of days from ship for those distributor types setup
4. This link is displayed to Warranty Admin only if the BU configuration 'Enable start date configuration' is set to Yes
5. Define a new entity 'Start Date Config' with the following properties
 - a. Id, Auto generated primary key
 - b. Business Unit
 - c. Distributor Type (DSO/IWD)
 - d. Days from Ship
6. Initial data will be setup from back end as shown below

ID	BUSINESS_UNIT_INFO	DISTRIBUTOR_TYPE	DAYS_FROM_SHIP
1	Residential HVAC	DSO	60
2	Residential HVAC	IWD	90

7. Distributor types are not editable and are maintained from back end.

INVENTORY
Warranty Registration

Date to be Used for Warranty Registration Modification/Deletion

Delivery Date

Days to be Used for Warranty Registration Modification/Deletion

99999999

Warranty Registration needs Manual Approval

☐ Yes ☒ No

Set Start Date as Ship Date+x for Distributor of type DSO

30

Set Start Date as Ship Date+x for Distributor of type IWD

30

Impact on existing BUs

None

Controlled by a BU configuration which will be turned off for non HVAC business units

Assumptions and Dependencies

None

Business Priority

High

References/Expectations

None

Notes

None

2.18 CLAIM RULES [HVAC-#18]

2.18.1 Requirements

RTM No	Use Cases	Summary
IBM-WR-75	1	Provision to validate whether the Warranty Start date (In Service date) of a unit is greater than the manufacturing (build date) by 'X' no of days and suitably indicate the same to the claims adjudicator.

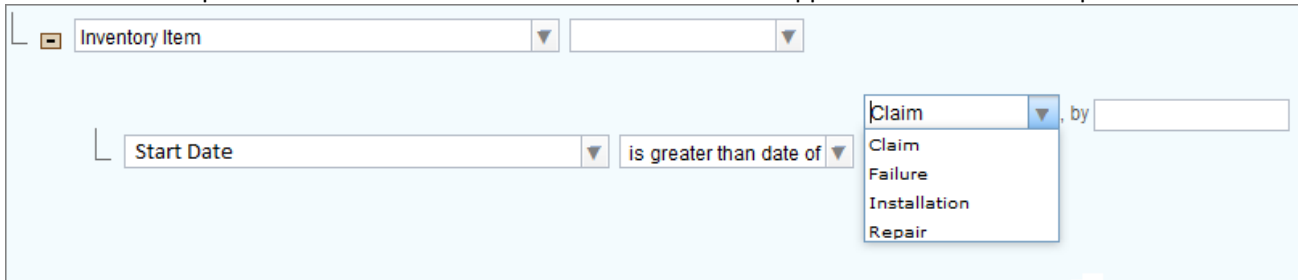
Functional Design – Use Cases

2.18.2 Use Case 1: Summary

Description	Provision to validate whether the Warranty Start date (In Service date) of a unit is greater than the manufacturing (build date) by 'X' no of days and suitably indicate the same to the claims adjudicator
Business Values	
Actors	
Current Process/ Functionality in TWMS	Claim processing rules can be set based on a business condition which is built based on the various parameters available on claim.

Proposed Flow

Add a build date parameter as shown in the below screen shot to support the rule to be setup



Configure a claim processing rule based on this condition, so that when the condition is met claim is sent for manual review and the processor can see the message configured on this rule.

Note:

Mfg date to be used by RS

Ship date for CS/Parts

Impact on existing BUs	Enhancement A new parameter to the claim business conditions framework will be added
Assumptions and Dependencies	None
Business Priority	High
References/Expectations	None
Notes	None

2.19 MOBILE APP [HVAC-#19]

2.19.1 Requirements

RTM No	Use Cases	Summary
IBM-EH-06	1	Equipment history page to be accessible on a mobile device. Should be able to search on serial/sales order. Search results to display the links to serialized/non-serialized machines/components.

Functional Design – Use Cases

2.19.2 Use Case 1: Equipment Details

Description	Equipment history page to be accessible on a mobile device. Should be able to search on serial/sales order. Search results to display the links to serialized/non-serialized machines/components.
Business Values	
Actors	
Current Process/ Functionality in TWMS	Currently available for non HVAC business units

Proposed Flow

TBD

Note: This will be discussed in Integration meetings.
Mobile App needs to invoke HSM first always

Impact on existing BUs	None
Assumptions and Dependencies	None
Business Priority	High
References/Expectations	None
Notes	None

2.20 RMA & SHIPMENT PRIORITY ON IB SYNC [HVAC-#20]
2.20.1 Requirements

RTM No	Use Cases	Summary
IBM-IT-01	1	RMA to be supported by Install Base sync.
NEW 614	1	Bring over the order shipment priority into Install Base from SIL

Functional Design – Use Cases
2.20.2 Use Case 1: RMA on IB Sync

Description	RMA to be supported by Install Base sync.
Business Values	
Actors	IB Sync with SIL, IB Sync with R12
Current Process/ Functionality in TWMS	<p>Currently when TWMS receive an RMA on IB Sync</p> <ol style="list-style-type: none"> Inventory Type will be set to IR_STOCK No claims can be files on this unit <p>Now when the unit is resold, TWSM gets a Machine Sale transaction and the unit in IR_STOCK will not be moved to the Stock/Retail of a different distributor.</p> <p>All these transaction are recorded on the same serial number.</p> <p>The second distributor will not have visibility to the transactions associated with the previous distributor.</p>

Proposed Flow
RMA

When there is an RMA over the IB sync

- Inventory type will be set to IR_STOCK
- Warranty will be deleted
- Inventory will not be available for claim submission or warranty registration
- An inventory transaction of type RMA will be created

After an RMA, there can be another shipment record for the same serial number but on a different sales order number
 1. Create a new inventory item on a new sales order number with its own warranty

Shipment Priority

Add a new property on sales order entity 'Shipment Priority' to store the values obtained from SIL

Impact on existing BUs	None
Assumptions and Dependencies	None
Business Priority	High
References/Expectations	None
Notes	None

2.21

2.21.1 Requirements

RTM No	Use Cases	Summary
IBM-WR-44	1	Ability to bulk upload all Term/product registration information from a predefined format on a need basis. This would be required typically. For builder work. Warranty Admin will be doing bulk upload. This will go through HSM (standard process like any other registration) It will still be considered as multiple registration. Note: This is applicable only to RS.

Functional Design – Use Cases

2.21.2 Use Case 1:

Description	Ability to bulk upload all Term/product registration information from a predefined format on a need basis.
Business Values	
Actors	Registration Admin
Current Process/ Functionality in TWMS	Not Available

Proposed Flow

1. There will be a new upload Bulk Term Registration. This upload will be only applicable only to RS HVAC.
2. Only the Registration Admin will be allowed to do this upload.
3. All the fields which are on the Registration site, will be available on the template.
4. All the validations applicable on the Registration site, will be applicable for the template as well.

Impact on existing BUs	None
Assumptions and	None

Dependencies	
Business Priority	High
References/Expectations	None
Notes	None

2.22 FUTURE REQUIREMENTS [HVAC-#21]

2.22.1 Requirements

RTM No	Summary	Comments
IBM-WR-51	Ability to capture and display the origin of Registration record as a Source field [Shipment/Call Centre/Home Owner etc.]. Who did registration Capture Dealer Information Note: This is applicable only to RS.	Requirement is to Capture who is doing the registration. Since it is public site, there will not be any information on the user Future requirement
IBM-WR-73	If a dealer is doing a term registration on behalf of the home owner, then there is a fee that will be charged which will be reversed once the home owner confirms the registration. Note: This is applicable only to RS.	Future requirement (as long as Tavant starts accepting payment) However, there will not be any Fee reversal.
IBM-WR-55	In case specific property is being used as a demo property by a builder, then the registration needs to be associated with the builder and would continue to the home owner whenever property is transferred. (Note: Home owner would get the remaining portion of the warranty terms) This requires a change to the ship with limited warranty document	This is a future requirement.

3 EXISTING REQUIREMENTS

Below is the list of requirements which are currently existing in TWMS. Tavant will be preparing a separate document explain all such requirements with relevant screenshots.

Requirement ID	Description
IBM-EH-02	Display Shipment date in equipment history pages for both Stock and Retailed units
IBM-EW-01	CSOs are not allowed to purchase Extended Warranty through the warranty system.

Requirement ID	Description
IBM-WR-22	During Tavant registration an existing end customer can be selected or a new end customer can be created. No validation. Account number not required. But Name and Address is required. Since it is not needed UNKNOWN might be an option.
IBM-WR-48	The system should provide an option to view the 'Unit/Component Change History' which will indicate all the components that are active and inactive on a specific address along with corresponding warranty start date and warranty end date
IBM-WR-52	Provision to validate that the install date is not a future date and is greater than or equal to the ship date (if available)
IBM-WR-56	System should capture the Registration Date to know when the Registration happened.
IBM-WR-78	All Registrations must go to manual review (core functionality will be used to control warranty for product that requires Trane Mandatory Start Up) CS Only
IBM-WR-82	Provision to define a model hierarchy that could be used for warranty reserve forecasting
IBM-WR-45	Provision to create error log for all the term /product registration records that failed the upload process

4 NEW BU CONFIGURATIONS

Name	Type	Effected Functionality
Default Zone	System	Install Base upload : Default zone used for auto registrations
Enable HVAC Warranty	System	1. Install Base upload – apply HVAC base registration for auto registration 2. EHP – HVAC specific details page 3. Registration admin and predefined registration search
Enable Product Startup	System	1. Warranty Admin -> Manage Product Startup : Show / hide link 2. Install Base upload : Whether product startup to be verified or not
Enable Start Date Configurations	System	1. Warranty Admin -> Manage Start Date Configuration : Show / hide link 2. Install Base upload : Whether start date configuration to be verified or not for auto registration
Is MFG and Sequence Applicable	System	Inventory quick search on Sales Order: Whether to display the columns MFG & Sequence when all the contents of a Sales Order are listed
Check Oracle Inventory	Admin	Term registration : whether to check in Oracle Inventory or not
Contact Information to Request for Start Date Update	Admin	Open commissioning report already submitted by distributor.
User Types for Email Confirmation of Term Registration	Admin	Term registration : to enable or disable email confirmation
Number of Reminders for Confirmation of Term Registration	Admin	Term Registration : when email confirmation is enabled, no of reminders after which the registration will be terminated

5 NON-FUNCTIONAL REQUIREMENTS

None