

TITAN-Secure

A Secure Cold Chain and Anti-Counterfeiting Solution

Leveraging IoT & Blockchain

Quick Start Guide

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1. Introduction

Cold Chain management solution for Pharma addresses the challenges and concerns of the pharmaceutical companies, by providing near real-time tracking of the temperature sensitive consignments in a transparent and immutable manner throughout the supply chain, by combining IoT and Blockchain. The solution provides actionable insights for all the stakeholders through real time data capture, comprehensive analytics and immutable access with increased granularity (product, box, carton, or pallet level), thus helping in achieving business transformation and reaping the associated benefits.

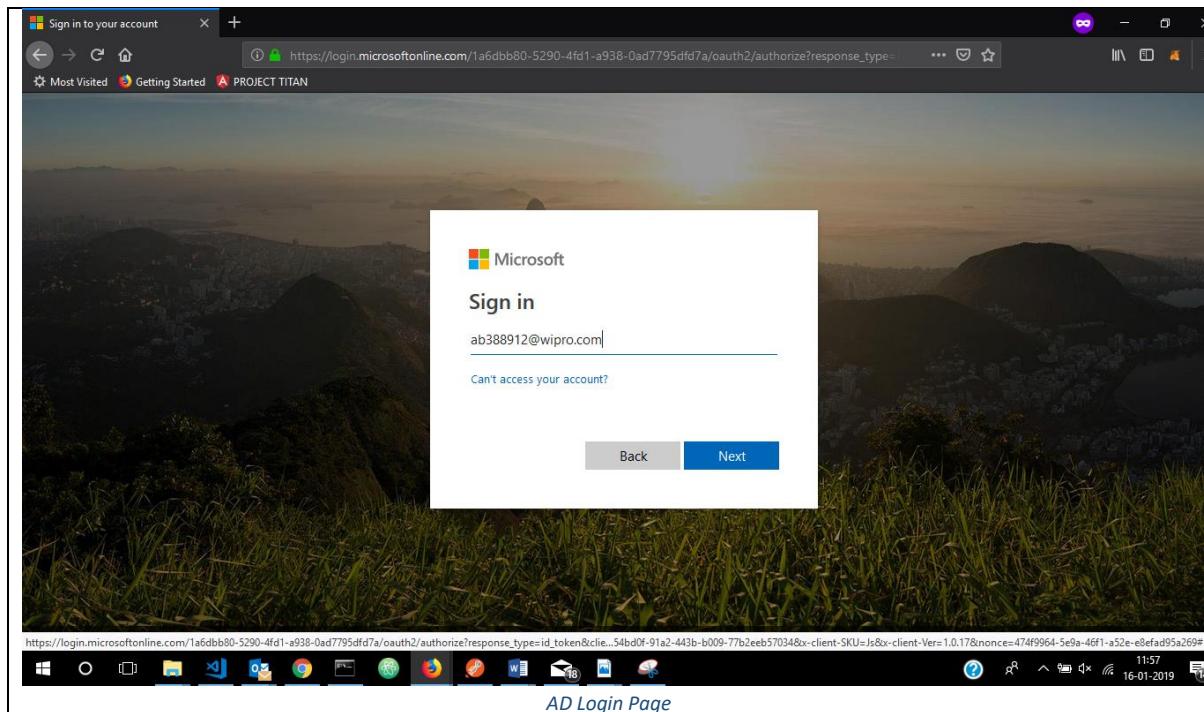
This quick start guide describes how to interact with the Titan-Secure Portal. This portal has a provision to create, monitor and track the shipments at a pallet, carton, box and a unit level. The portal allows to monitor the near real-time humidity, temperature, shock & vibration and tamper status of the various artifacts in the shipment. The immutability of transactions from portal is achieved by Blockchain.

Note: For the Blockchain functionalities to work, you need to add an extension named “**Metamask**” to your web browser (for eg. Chrome or firefox). To add the extension, please follow the following steps,

- Go to <https://metamask.io>
- Select the right Metamask for your browser
- Download and install the extension

2. Login

- When you visit <http://titan-secure.azurewebsites.net>, you will be redirected to Azure AD Authentication page where there is a login form, where user needs to provide the credentials in order to get authorized to use the web application.
- After successful validation by the Azure AD, based on the user role the web app will redirect you to “**Admin**” Page if the user role is **ADMIN**, else it will redirect to “**Dashboard**” page hiding the **Admin Tab** for anyone to access.



3. Admin Tab

The administrator will have full access to the system. Below mentioned are the main roles for an administrator.

- User Management
- Device management
- Shipment Management

Under **ADMIN** page, we have 3 tabs for each of the above mentioned feature. (i.e. User Tab, Shipment Tab and a Device Tab)

3.1 User Management

Under User Management, an admin can perform following actions:

1. Adding User and Assign Role
2. Editing/Updating User Role
3. Deleting/Removing User

The User Management Page is shown in the below image.

User Management				
Full Username	Email	Role	Status	Action
Abhishek Amakumar Holder (Industrial & Engineering Services (I&ES))	@wipro.com	Administrator	active	
Vijay Kumar (Industrial & Engineering Services (I&ES))	@wipro.com	Administrator	active	
E C Jayasree - (Industrial & Engineering Services (I&ES))	@wipro.com	General User	active	
Ibrahim.cherkani	@shire.com	Administrator	active	
Remil Paul Jose (Industrial & Engineering Services (I&ES))	@wipro.com	Administrator	active	
Sujan Thanjavuru (MFG)	@wipro.com	Administrator	active	
Leclercq. François	@shire.com	Administrator	active	
nicolas.souris	@shire.com	Administrator	active	

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User Management Page

3.1.1 Adding User and assigning role

You can see a “+” sign on the right side of the table in the user management page. This button is used to add a user and assign the user role. When you click on the “+” symbol, a pop up will open which looks like the image shown below:

Full Username	Email	Role	Status
Username	Email	Select	active

Vijay Kumar (Industrial & Engineering Services (I&ES))	@wipro.com	Administrator	active	
E C Jayasree - (Industrial & Engineering Services (I&ES))	@wipro.com	General User	active	
Ibrahim.cherkani	@shire.com	Administrator	active	
Remil Paul Jose (Industrial & Engineering Services (I&ES))	@wipro.com	Administrator	active	
Sujan Thanjavuru (MFG)	@wipro.com	Administrator	active	
Leclercq. François	@shire.com	Administrator	active	
nicolas.souris	@shire.com	Administrator	active	

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User Management Page

When you click on the “Username” column, a list of all the user who are included in the Active Directory group will be seen as below.

Titan-Secure A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain Dashboard Admin

User Shipments Devices

User Management Page

Full Username Email Role Status

Vijay Kumar (Industrial & Engineering Services (I&ES))	vijay.kumar@wipro.com	Select	active
Remil Paul Jose (Industrial & Engineering Services (I&ES))	remil.paul.jose@wipro.com	Select	active
Sree Harsha Bandaru (Industrial & Engineering Services (I&ES))	sree.harsha.bandaru@wipro.com	Select	active
Suman Sharma (Industrial & Engineering Services (I&ES))	suman.sharma@wipro.com	Select	active
Abhishek Amolkumar Hader (Industrial & Engineering Services (I&ES))	abhishek.hader@wipro.com	Select	active
E C Jayasree - (Industrial & Engineering Services (I&ES))	e.c.jayasree@wipro.com	Select	active
Ankita Nayak (Industrial & Engineering Services (I&ES))	ankita.nayak@wipro.com	Select	active
Ibrahim.cherkani	ibrahim.cherkani@shire.com	Select	active
Remil Paul Jose (Industrial & Engineering Services (I&ES))	remil.paul.jose@wipro.com	Select	active
Sujan.Thonjavuru (MFG)	sujan.thonjavuru@wipro.com	Select	active
Leclercq. Francois	leclercq.francois@shire.com	Select	active
Nicolas.souris	nicolas.souris@shire.com	Select	active
Thierry.Glissoux	thierry.glissoux@shire.com	Select	active

Cancel Save

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After you select the user from the list, the Email field gets auto populated and you assign the role by clicking in the “Role” field where in you can select any role from the drop down list and assign it to the user by clicking on the “Save” Button.

Titan-Secure A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain Dashboard Admin

User Management Page

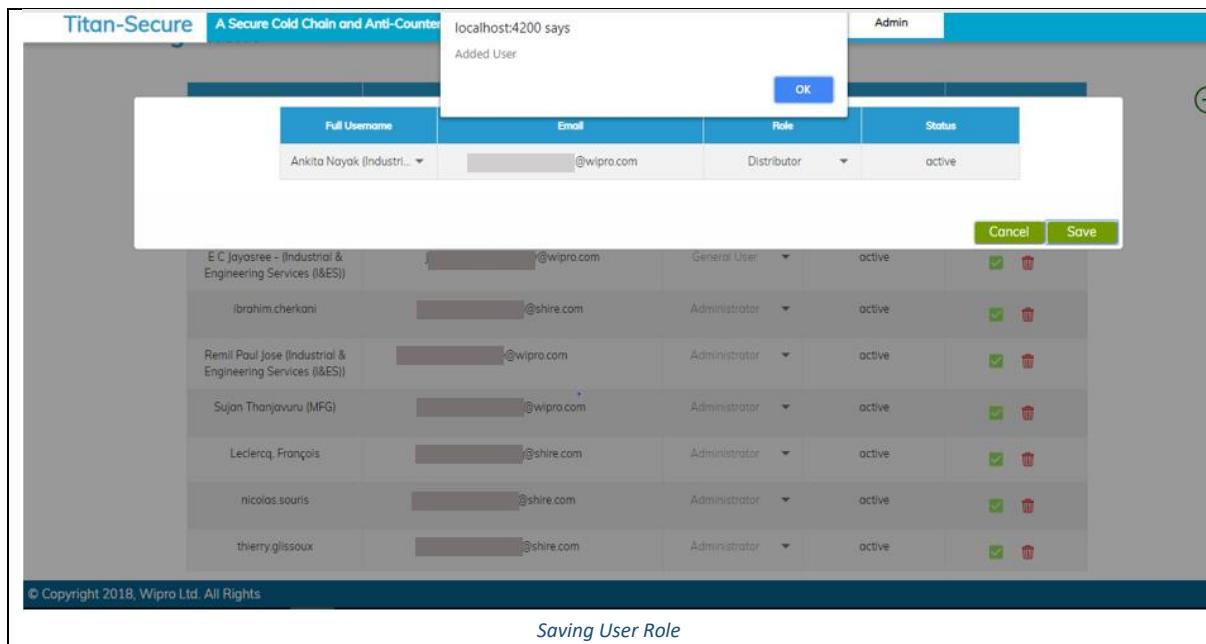
Full Username Email Role Status

Ankita Nayak (Industrial & Engineering Services (I&ES))	ankita.nayak@wipro.com	Distributor	active
E C Jayasree - (Industrial & Engineering Services (I&ES))	e.c.jayasree@wipro.com	Administrator	active
Ibrahim.cherkani	ibrahim.cherkani@shire.com	3PL	active
Remil Paul Jose (Industrial & Engineering Services (I&ES))	remil.paul.jose@wipro.com	General User	active
Sujan.Thonjavuru (MFG)	sujan.thonjavuru@wipro.com	Administrator	active
Leclercq. Francois	leclercq.francois@shire.com	Administrator	active
Nicolas.souris	nicolas.souris@shire.com	Administrator	active
Thierry.Glissoux	thierry.glissoux@shire.com	Administrator	active

Cancel Save

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After Saving the form, you will get a response as “Added User” and the user will be seen in the list of active users.



A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain					Dashboard	Admin
Remil Paul Jose (Industrial & Engineering Services (I&ES))	R...@wipro.com	Administrator	active			
Sujan Thanjavuru (MFG)	S...@wipro.com	Administrator	active			
Leclercq, François	L...@shire.com	Administrator	active			
nicolas.souris	N...@shire.com	Administrator	active			
thierry.glissoux	T...@shire.com	Administrator	active			
chotursi	C...@wipro.com	Administrator	active			
sonthosh.modathil	S...@wipro.com	Administrator	active			
Pradeep TS	P...@sysgain.com	Administrator	active			
Narasimha Vivek Tuluva	N...@sysgain.com	Administrator	active			
Ankita Nayak (Industrial & Engineering Services (I&ES))	A...@wipro.com	Distributor	active			

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User Added to Active Users List

3.1.2 Editing/Updating User Role

This section will show how to update/change/edit the role of the user. In the Active Users List, when you click on the “role” column against any particular user, you will be able to see a drop down list consisting of different roles as seen in the below image.

Titan-Secure		A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain		Dashboard	Admin	
Remill Paul Jose (Industrial & Engineering Services (I&ES))	[REDACTED]@wipro.com	Administrator	active			
Sujan Thanjavuru (MFG)	[REDACTED]@wipro.com	Administrator	active			
Leclercq, François	[REDACTED]@shire.com	Administrator	active			
nicolas.souris	[REDACTED]@shire.com	Administrator	active			
thierry.glissoix	[REDACTED]@shire.com	Administrator	active			
chad.tursi	[REDACTED]@wipro.com	Administrator	active			
santhosh.modathil	[REDACTED]@wipro.com	Administrator	active			
Pradeep TS	[REDACTED]@sysgain.com	Distributor Administrator	active			
Narasimha Vivek Tuluva	[REDACTED]@sysgain.com	3PL	active			
Anikita Nayak (Industrial & Engineering Services (I&ES))	[REDACTED]@wipro.com	General User	active			

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Selecting User Role while Updating role

After selecting the role from the list, you need to click on button seen in the last column of the table.

Titan-Secure		A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain		Dashboard	Admin	
Remill Paul Jose (Industrial & Engineering Services (I&ES))	[REDACTED]@wipro.com	Administrator	active			
Sujan Thanjavuru (MFG)	[REDACTED]@wipro.com	Administrator	active			
Leclercq, François	[REDACTED]@shire.com	Administrator	active			
nicolas.souris	[REDACTED]@shire.com	Administrator	active			
thierry.glissoix	[REDACTED]@shire.com	Administrator	active			
chad.tursi	[REDACTED]@wipro.com	Administrator	active			
santhosh.modathil	[REDACTED]@wipro.com	Administrator	active			
Pradeep TS	[REDACTED]@sysgain.com	Administrator	active			
Narasimha Vivek Tuluva	[REDACTED]@sysgain.com	Administrator	active			
Anikita Nayak (Industrial & Engineering Services (I&ES))	[REDACTED]@wipro.com	3PL	active			

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Update Role Button Highlighted

Once you click on the button, the user role will be updated and you will get a response as under.

Titan-Secure A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain

Admin					
Remil Paul Jose (Industrial & Engineering Services (I&ES))	[REDACTED]@wipro.com	Administrator	active		
Sujan Thanjavuru (MFG)	[REDACTED]@wipro.com	Administrator	active		
Leclercq, François	[REDACTED]@shire.com	Administrator	active		
nicolas.souris	[REDACTED]@shire.com	Administrator	active		
thierry.gillisoux	[REDACTED]@shire.com	Administrator	active		
chad.tursi	[REDACTED]@wipro.com	Administrator	active		
santhosh.modathil	[REDACTED]@wipro.com	Administrator	active		
Pradeep TS	[REDACTED]@sysgain.com	Administrator	active		
Narasimha Vivek Tuluva	[REDACTED]@sysgain.com	Administrator	active		
Anikita Nayak (Industrial & Engineering Services (I&ES))	[REDACTED]@wipro.com	3PL	active		

User Role Updated Response

You can now check the “user role” against the user in the active user list which will be changed to the new role that you have assigned.

Titan-Secure A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain

Admin					
Remil Paul Jose (Industrial & Engineering Services (I&ES))	[REDACTED]@wipro.com	Administrator	active		
Sujan Thanjavuru (MFG)	[REDACTED]@wipro.com	Administrator	active		
Leclercq, François	[REDACTED]@shire.com	Administrator	active		
nicolas.souris	[REDACTED]@shire.com	Administrator	active		
thierry.gillisoux	[REDACTED]@shire.com	Administrator	active		
chad.tursi	[REDACTED]@wipro.com	Administrator	active		
santhosh.modathil	[REDACTED]@wipro.com	Administrator	active		
Pradeep TS	[REDACTED]@sysgain.com	Administrator	active		
Narasimha Vivek Tuluva	[REDACTED]@sysgain.com	Administrator	active		
Anikita Nayak (Industrial & Engineering Services (I&ES))	[REDACTED]@wipro.com	3PL	active		

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User Role Updated Response

3.1.3 Deleting a User

To delete a user from the Active Users List, you click on the symbol as seen in the last column of the table.

Titan-Secure A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain						Dashboard	Admin
Remil Paul Jose (Industrial & Engineering Services (I&ES))	[REDACTED]@wipro.com	Administrator	▼	active			
Sujan Thanjavuru (MFG)	[REDACTED]@wipro.com	Administrator	▼	active			
Leclercq, François	[REDACTED]@shire.com	Administrator	▼	active			
nicolas.souris	[REDACTED]@shire.com	Administrator	▼	active			
thierry.glossoux	[REDACTED]@shire.com	Administrator	▼	active			
chad.tursi	[REDACTED]@wipro.com	Administrator	▼	active			
santhosh.modathil	[REDACTED]@wipro.com	Administrator	▼	active			
Pradeep TS	[REDACTED]@sysgain.com	Administrator	▼	active			
Narasimha Vivek Tuluva	[REDACTED]@sysgain.com	Administrator	▼	active			
Ankita Nayak (Industrial & Engineering Services (I&ES))	[REDACTED]@wipro.com	3PL	▼	active			

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Delete User Button Highlighted

After clicking on the button, you will get a response as below.

Titan-Secure A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain						Admin
localhost:4200 says User Info Deleted from the DB						
Remil Paul Jose (Industrial & Engineering Services (I&ES))	[REDACTED]@wipro.com	Administrator	▼	active		
Sujan Thanjavuru (MFG)	[REDACTED]@wipro.com	Administrator	▼	active		
Leclercq, François	[REDACTED]@shire.com	Administrator	▼	active		
nicolas.souris	[REDACTED]@shire.com	Administrator	▼	active		
thierry.glossoux	[REDACTED]@shire.com	Administrator	▼	active		
chad.tursi	[REDACTED]@wipro.com	Administrator	▼	active		
santhosh.modathil	[REDACTED]@wipro.com	Administrator	▼	active		
Pradeep TS	[REDACTED]@sysgain.com	Administrator	▼	active		
Narasimha Vivek Tuluva	[REDACTED]@sysgain.com	Administrator	▼	active		
Ankita Nayak (Industrial & Engineering Services (I&ES))	[REDACTED]@wipro.com	3PL	▼	active		

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Delete User Response

The user will be removed from the active users list table as seen below

Titan-Secure		A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain		Dashboard	Admin	
Engineering Services (I&ES)						
ibrahim.cherkanl	ibrahim.cherkanl@shire.com	Administrator	active			
Remil Paul Jose (Industrial & Engineering Services (I&ES))	remil.paul.jose@wipro.com	Administrator	active			
Sujan Thanjavuru (MFG)	sujan.thanjavuru@wipro.com	Administrator	active			
Leclercq, François	francois.leclercq@shire.com	Administrator	active			
nicolas.souris	nicolas.souris@shire.com	Administrator	active			
thierry glissoux	thierry.glissoux@shire.com	Administrator	active			
chad.tursi	chad.tursi@wipro.com	Administrator	active			
santhosh.modathil	santhosh.modathil@wipro.com	Administrator	active			
Pradeep TS	pradeep.ts@sysgain.com	Administrator	active			
Narasimha Vivek Tuluva	narasimha.vivek.tuluva@sysgain.com	Administrator	active			

➡

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User Deleted from Active Users List

3.2 Device Management

Before creating any association between beacons, gateways, trackers and shipments, *the gateways and trackers need to be onboarded on to the system*. The web application does not allow admin to associate any gateways or trackers to the shipment if the gateway or the tracker is not onboarded on to the system.

3.2.1 Gateway and Tracker Onboarding

This page consists of a list of Gateways and Trackers that are onboarded on to the system. The system also allows admin to edit or delete a gateway or tracker from the database. The view of the page is shown below.

Titan-Secure		A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain		Dashboard	Admin	
User	Shipments	Devices				
Device Management						
Model	Device Type	Created On	Status	Actions		
C031061830-00529	Gateway	Dec 3, 2018, 12:07:12 PM	Offline			
352093085666104	Tracker	Dec 3, 2018, 12:07:25 PM	Online			
GW-1	Gateway	Dec 14, 2018, 4:52:42 PM	Online			
C030011837-00044	Gateway	Jan 7, 2019, 7:42:17 AM	Offline			
352093088201115	Tracker	Jan 7, 2019, 7:43:20 AM	Online			
C031051823-00112	Gateway	Jan 9, 2019, 2:50:56 PM	Offline			
AZ-GW-1	Gateway	Jan 16, 2019, 5:38:13 AM	Online			
AZ-TR-1	Tracker	Jan 16, 2019, 5:38:25 AM	Online			
AZ-GW-2	Gateway	Jan 16, 2019, 6:05:41 AM	Online			
AZ-TR-2	Tracker	Jan 16, 2019, 6:05:53 AM	Online			

Gateway and Tracker List

The system facilitates the user to on-board gateways and trackers on to the system by clicking in the “+ Add Device” button seen on the top right corner of the page. After clicking on that button a dialog box will open asking you to add Mac ID and select the type of device from a drop down list. Once you have filled the required information, click on the “Add” button which will store the device information in the database.

TITAN-Secure

localhost:4200/Administration

Titan-Secure | A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain

User Shipments Devices

Device Management

Add Device

ModId	Device Type	Created On	Status	Actions
C031061830-00529	Gateway	Dec 3, 2018, 12:07:12 PM	Offline	trash
352093085666104	Tracker	Dec 3, 2018, 12:07:25 PM	Online	trash
GW-1	Gateway	Dec 14, 2018, 4:52:42 PM	Online	trash
C030011837-00044	Gateway	Jan 7, 2019, 7:42:17 AM	Offline	trash
352093088201115	Tracker	Jan 7, 2019, 7:43:20 AM	Online	trash
C031051823-00112	Gateway	Jan 9, 2019, 2:50:56 PM	Offline	trash
AZ-GW-1	Gateway	Jan 16, 2019, 5:38:13 AM	Online	trash
AZ-TR-1	Tracker	Jan 16, 2019, 5:38:25 AM	Online	trash
AZ-GW-2	Gateway	Jan 16, 2019, 6:05:41 AM	Online	trash
AZ-TR-2	Tracker	Jan 16, 2019, 6:05:53 AM	Online	trash

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11:14 21-01-2019

Adding Device Information

Once the device is successfully added to the database, you will get a response as below.

Titan-Secure

localhost:4200 says

Device is onboarded

OK

Admin

Device Management

Add Device

ModId	Device Type	Created On	Status	Actions
C031061830-00529	Gateway	Dec 3, 2018, 12:07:12 PM	Offline	trash
352093085666104	Tracker	Dec 3, 2018, 12:07:25 PM	Online	trash
GW-1	Gateway	Dec 14, 2018, 4:52:42 PM	Online	trash
C030011837-00044	Gateway	Jan 7, 2019, 7:42:17 AM	Offline	trash
352093088201115	Tracker	Jan 7, 2019, 7:43:20 AM	Online	trash
C031051823-00112	Gateway	Jan 9, 2019, 2:50:56 PM	Offline	trash
AZ-GW-1	Gateway	Jan 16, 2019, 5:38:13 AM	Online	trash
AZ-TR-1	Tracker	Jan 16, 2019, 5:38:25 AM	Online	trash
AZ-GW-2	Gateway	Jan 16, 2019, 6:05:41 AM	Online	trash
AZ-TR-2	Tracker	Jan 16, 2019, 6:05:53 AM	Online	trash

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Device onboarded Successfully response

You will be able to see the device in the list of onboarded devices as below.

Titan-Secure A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain

Dashboard Admin

User Shipments Devices

Device Management

Model	Device Type	Created On	Status	Actions
C031061830-00529	Gateway	Dec 3, 2018, 12:07:12 PM	Offline	
352093085666104	Tracker	Dec 3, 2018, 12:07:25 PM	Online	
GW-1	Gateway	Dec 14, 2018, 4:52:42 PM	Online	
C030011837-00044	Gateway	Jan 7, 2019, 7:42:17 AM	Offline	
352093088201115	Tracker	Jan 7, 2019, 7:43:20 AM	Online	
C031051823-00112	Gateway	Jan 9, 2019, 2:50:56 PM	Offline	
AZ-GW-1	Gateway	Jan 16, 2019, 5:38:13 AM	Online	
AZ-TR-1	Tracker	Jan 16, 2019, 5:38:25 AM	Online	
AZ-GW-2	Gateway	Jan 16, 2019, 6:05:41 AM	Online	
AZ-TR-2	Tracker	Jan 16, 2019, 6:05:53 AM	Online	
GW-2	Gateway	Jan 21, 2019, 5:46:30 AM	Online	

Device onboarded and added to the list

The process for Onboarding a tracker is same as above.

3.2.2 Off boarding/Removing onboarded Gateway and Tracker

You can also off board/Remove the onboarded devices by clicking on the icon corresponding to the device you want to off-board

Titan-Secure A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain

Dashboard Admin

User Shipments Devices

Device Management

Model	Device Type	Created On	Status	Actions
C031061830-00529	Gateway	Dec 3, 2018, 12:07:12 PM	Offline	
352093085666104	Tracker	Dec 3, 2018, 12:07:25 PM	Online	
GW-1	Gateway	Dec 14, 2018, 4:52:42 PM	Online	
C030011837-00044	Gateway	Jan 7, 2019, 7:42:17 AM	Offline	
352093088201115	Tracker	Jan 7, 2019, 7:43:20 AM	Online	
C031051823-00112	Gateway	Jan 9, 2019, 2:50:56 PM	Offline	
AZ-GW-1	Gateway	Jan 16, 2019, 5:38:13 AM	Online	
AZ-TR-1	Tracker	Jan 16, 2019, 5:38:25 AM	Online	
AZ-GW-2	Gateway	Jan 16, 2019, 6:05:41 AM	Online	
AZ-TR-2	Tracker	Jan 16, 2019, 6:05:53 AM	Online	
GW-2	Gateway	Jan 21, 2019, 5:46:30 AM	Online	

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Delete Device Button Highlighted

Once you click on the delete device button highlighted in the image above, you will get a response as below:

Titan-Secure A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain

User Shipments Devices

Device Management

localhost:4200 says
Device is deleted successfully

OK

Add Device

Model	Device Type	Created On	Status	Actions
C031061830-00529	Gateway	Dec 3, 2018, 12:07:12 PM	Offline	
352093085666104	Tracker	Dec 3, 2018, 12:07:25 PM	Online	
GW-1	Gateway	Dec 14, 2018, 4:52:42 PM	Online	
C030011837-00044	Gateway	Jan 7, 2019, 7:42:17 AM	Offline	
352093088201115	Tracker	Jan 7, 2019, 7:43:20 AM	Online	
C031051823-00112	Gateway	Jan 9, 2019, 2:50:56 PM	Offline	
AZ-GW-1	Gateway	Jan 16, 2019, 5:38:13 AM	Online	
AZ-TR-1	Tracker	Jan 16, 2019, 5:38:25 AM	Online	
AZ-GW-2	Gateway	Jan 16, 2019, 6:05:41 AM	Online	
AZ-TR-2	Tracker	Jan 16, 2019, 6:05:53 AM	Online	
GW-2	Gateway	Jan 21, 2019, 5:46:30 AM	Online	

Device Deleted Response

The Gateway with Mac-Id “**GW-2**” will now be removed from the onboarded device list as below.

Titan-Secure A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain

User Shipments Devices

Device Management

Add Device

Model	Device Type	Created On	Status	Actions
C031061830-00529	Gateway	Dec 3, 2018, 12:07:12 PM	Offline	
352093085666104	Tracker	Dec 3, 2018, 12:07:25 PM	Online	
GW-1	Gateway	Dec 14, 2018, 4:52:42 PM	Online	
C030011837-00044	Gateway	Jan 7, 2019, 7:42:17 AM	Offline	
352093088201115	Tracker	Jan 7, 2019, 7:43:20 AM	Online	
C031051823-00112	Gateway	Jan 9, 2019, 2:50:56 PM	Offline	
AZ-GW-1	Gateway	Jan 16, 2019, 5:38:13 AM	Online	
AZ-TR-1	Tracker	Jan 16, 2019, 5:38:25 AM	Online	
AZ-GW-2	Gateway	Jan 16, 2019, 6:05:41 AM	Online	
AZ-TR-2	Tracker	Jan 16, 2019, 6:05:53 AM	Online	

Device Deleted from onboarded devices list

3.3 Shipment Management

The web application allows the admin to create and manage the shipments. The web application will allow the admin to map the beacons with product, box, carton and pallet that will be used during the transport. After that, the web application will allow the admin to create association between objects which will help while monitoring the sensor data during the transport. After the association among the objects is created, the admin will have assign gateways and trackers to each pallet. Each of these process will be discussed in this section.

3.3.1 Create Shipment

When you visit the **Shipments Tab** under Admin page, you will be able to see a list of all the shipments. This page shows a summarized detail of each shipment in each ribbon as shown below.

Titan-Secure | A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain | Dashboard | Admin

User **Shipments** Devices

Shipments

Shipment ID	Status	Purchase Order	Source Location	Created On	Products	Documents	Associations
SHIRE-PILOT-0X123	Active	PO-0X1232	Lessines,BE Kentucky,US	Dec 18, 2018, 6:55:44 PM Created On	1 21 10 0	Documents	Associations
MS-Demo-Shipment	Deactivated	PO-0X1142	New York,USA Seattle,USA	Jan 7, 2019, 7:26:51 AM Created On	1 6 1 2	Documents	Associations
MS-RED-NRF-Demo	Active	PO-0X4112	New York,USA Redmond,USA	Jan 7, 2019, 3:18:44 PM Created On	1 4 1 1	Documents	Associations
Shipment-1X1A	Active	PO-0X5556	Bangalore New York	Jan 9, 2019, 2:36:27 PM Created On	1 2 0 0	Documents	Associations
Shipment-Demo-22	Active	PO-98X1	Bangalore Kolkata	Jan 10, 2019, 7:07:21 AM Created On	1 13 3 6	Documents	Associations

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Shipments Tab- Shipment List

To create a new Shipment, you need to click on the '+' symbol seen on the top right corner above the shipment List.

Titan-Secure | A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain | Dashboard | Admin

User **Shipments** Devices

Shipments

Shipment ID	Status	Purchase Order	Source Location	Created On	Products	Documents	Associations
SHIRE-PILOT-0X123	Active	PO-0X1232	Lessines,BE Kentucky,US	Dec 18, 2018, 6:55:44 PM Created On	1 21 10 0	Documents	Associations
MS-Demo-Shipment	Deactivated	PO-0X1142	New York,USA Seattle,USA	Jan 7, 2019, 7:26:51 AM Created On	1 6 1 2	Documents	Associations
MS-RED-NRF-Demo	Active	PO-0X4112	New York,USA Redmond,USA	Jan 7, 2019, 3:18:44 PM Created On	1 4 1 1	Documents	Associations
Shipment-1X1A	Active	PO-0X5556	Bangalore New York	Jan 9, 2019, 2:36:27 PM Created On	1 2 0 0	Documents	Associations
Shipment-Demo-22	Active	PO-98X1	Bangalore Kolkata	Jan 10, 2019, 7:07:21 AM Created On	1 13 3 6	Documents	Associations

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Create Shipment Button Highlighted

Once you click on the '+' symbol, a dialog box opens for you to add the required information about the shipment such as Shipment ID, Purchase Order Number, Source, Destination, Logistics Partner and list of products.

The screenshot shows the Titan-Secure interface. At the top, there's a navigation bar with tabs for User, Shipments (which is selected), and Devices. Below this is a sub-navigation bar for Shipments, showing a list of existing shipments: SHIRE-PILOT-0X123 (Active), MS-Demo-Shipment (Deactivated), MS-RED-NRF-Demo (Active), Shipment-1X1A (Active), and Shipment-Demo-22 (Active). A modal window titled 'Create Shipment' is open, prompting for Shipment ID (AZ-TEST-1), Purchase Order (AZ-PO-01), Logistics Partner (DHL), Source (BANGALORE), and Destination (CHENNAI). In the 'Product List' section, the note 'NOTE: Enter the list of products separated by commas here' is displayed, followed by the entry 'Medicine1: 200'. At the bottom of the modal are 'Close' and 'Create' buttons. The main 'Shipments' table below shows five rows of shipment details, including their status, purchase order, destination, creation date, and various metrics like quantity and type. A copyright notice at the bottom left reads '© Copyright 2018, Wipro Ltd. All Rights Reserved.' and the modal has a footer with the text 'Create Shipment Dialog Box'.

After adding the required Information, click on “Create” button and you will get an alert box with the message “*Consignment is Successfully Added to Blockchain with Transaction Hash: TXN_HASH*”. This is a confirmation that the shipment details have been successfully added to the Blockchain.

When you reload your “Shipments” Tab, you will see that a new shipment with Shipment ID **AZ-TEST-1** is added to the list of shipments and can be seen in a Blue Ribbon as below.

This screenshot shows the same interface after a new shipment has been added. The 'Shipments' table now includes a sixth row for 'AZ-TEST-1' (Shipment Id New). The 'Associate' button is visible in the last column of this row. The rest of the table structure remains the same, displaying the five previous shipments with their respective details and metrics.

The next step is to Map Beacons to the object and assigning Tracker and Gateway to each of the pallets present in the shipment.

3.3.2 Mapping Beacons to Objects

The web application provides an interface for the admin to map each beacon sensor with a particular object (i.e. Product, Box, Carton, Pallet). These mapping data is required to monitor the sensor data during the transit of the shipment. This mapping will help in monitoring the sensor data at multiple level (Product level, Box Level, Carton Level and Pallet Level).

In the “Shipments” Tab when you click on the “Associate” button against “New” shipment, you will see the following page

The screenshot shows the 'Shipment' tab selected in the navigation bar. At the top, there are tabs for 'User', 'Shipments' (which is active), and 'Devices'. Below the tabs, a header bar includes 'A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain', 'Dashboard', and 'Admin'. The main content area is titled 'Shipments' with a back arrow icon. It shows shipment details: AZ-TEST-1 (Shipment Id, New), AZ-PO-01 (Purchase Order), Bangalore (Location), and Chennai (Location). The date '1/16/19, 6:00 AM' is also listed. Below this, there are buttons for 'Map Beacons', 'Associate Hierarchy', 'Associate Objects', and 'Assign Gateways'. A dropdown menu labeled 'Room Temperature' is open. A table for 'Map Beacons' is displayed, with columns for Serial No., Beacon Id, Object ID, Object Type, Content, Temperature (°C), Temperature Alert Threshold Time, Humidity (%), Humidity Alert Threshold Time, and Actions. The 'Temperature (°C)' column has sub-columns for 'Min' and 'Max'. A green 'Map' button is highlighted with a red box. A blue arrow points to the 'Map' button from the left. A green 'Next>' button is at the bottom right.

3.3.2.1 Adding a Mapping

You can see a green “Map” button on the top left corner above the table and a drop down list below it in the above image. This drop down list contains pre-configured threshold temperatures and humidity values based on the class of storage you choose.

The following are the preconfigured threshold Values.

Storage Class	Minimum Temperature	Maximum Temperature	Minimum Humidity	Maximum Humidity
Room Temperature	20	30	30	90
Cold Storage	2	8	30	90
Cool Storage	8	15	30	90

When you click on the “Map” Button after selecting the Type of Storage from the Drop Down List, a new row is added in the table where minimum and maximum threshold values will be automatically populated based on the storage class you have selected. These values are also editable.

The screenshot shows the 'Shipment' tab selected in the navigation bar. At the top, there are tabs for 'User', 'Shipments' (which is active), and 'Devices'. Below the tabs, there are buttons for 'Map Beacons', 'Associate Hierarchy', 'Associate Objects', and 'Assign Gateways'. A dropdown menu labeled 'Room Temperature' is open. A table for 'Map Beacons' is displayed, with columns for Serial No., Beacon Id, Object ID, Object Type, Content, Temperature (°C), Temperature Alert Threshold Time, Humidity (%), Humidity Alert Threshold Time, and Actions. The 'Temperature (°C)' column has sub-columns for 'Min' and 'Max'. The 'Humidity (%)' column has sub-columns for 'Min' and 'Max'. A green 'Map' button is highlighted with a red box. A blue arrow points to the table row with the new values. A green 'Next>' button is at the bottom right.

To map a beacon to an object, you need to add the **Beacon Id** of the Beacon Sensor, the **Object ID** of the object you want to map the beacon with, the **type** of the Object and the content of the object as below.

Where **Beacon ID** would be the barcode with unique ID of the beacon (eg. BLE address)

And **Object ID** would be the unique ID or Barcode on the object being mapped

Adding Mapping Information

Once you have filled all the related information, click on the symbol seen in the last column of the table. This will save the mapping information in the database. Similarly, you can add as many mapping as required for your shipment in this page. After adding all the mappings in the database, you will be able to see all the mappings in this page as below.

View Object-Beacon Mapping

3.3.2.2 Editing a Mapping

The web app also allows to edit the mapping. To edit the mapping, click on edit button next to green check mark in the last column of the table. Once you have click on the edit button a dialog box will open that contains the previously filled information about that mapping. The dialog box will be seen as below

Titan-Secure | A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain | Dashboard | Admin

Bangalore

Beacon Id	Object ID	Object Type	Content	Temperature (°C)		Temperature Alert Threshold Time		Humidity (%)		Humidity Alert Threshold Time	
				Min	Max	Min	Max	Min	Max		
AZ-BEACON-01	AZ-BOX-01	Box	Me...	20	30	1	30	90	1		

Cancel **Update**

Serial No.	Beacon Id	Object ID	Object Type	Content	Temperature (°C)		Temperature Alert Threshold Time		Humidity (%)		Humidity Alert Threshold Time		Actions
					Min	Max	Min	Max	Min	Max			
1	AZ-BEACON-01	AZ-BOX-01	...	M...	20	30	1	30	90	1			
2	AZ-BEACON-02	AZ-PALLET-01	...	M...	20	30	1	30	90	1			
3	AZ-BEACON-03	AZ-CARTON-01	...	M...	20	30	1	30	90	1			
4	AZ-BEACON-04	AZ-PRODUCT-01	...	M...	20	30	1	30	90	1			

Next>

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Edit Mapping Dialog Box

You can edit the information in this dialog box. In case of this example, we are editing the maximum temperature from 30 to 32. After editing the information, click on the “Update” Button.

Once the record is successfully updated in the database, you will get the following response.

Titan-Secure | A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain | Dashboard | Admin

Bangalore

localhost:4200 says
Record has been updated

OK

Beacon Id	Object ID	Object Type	Content	Temperature (°C)		Temperature Alert Threshold Time		Humidity (%)		Humidity Alert Threshold Time	
				Min	Max	Min	Max	Min	Max		
AZ-BEACON-01	AZ-BOX-01	Box	Me...	20	32	1	30	90	1		

Cancel **Update**

Serial No.	Beacon Id	Object ID	Object Type	Content	Temperature (°C)		Temperature Alert Threshold Time		Humidity (%)		Humidity Alert Threshold Time		Actions
					Min	Max	Min	Max	Min	Max			
1	AZ-BEACON-01	AZ-BOX-01	...	M...	20	30	1	30	90	1			
2	AZ-BEACON-02	AZ-PALLET-01	...	M...	20	30	1	30	90	1			
3	AZ-BEACON-03	AZ-CARTON-01	...	M...	20	30	1	30	90	1			
4	AZ-BEACON-04	AZ-PRODUCT-01	...	M...	20	30	1	30	90	1			

Next>

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Mapping Update Response

The changes will be reflected in the Mapping List Table as below.

Titan-Secure A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain Dashboard Admin

Shipment Id New AZ-PO-01 Purchase Order Chennai Created On 1/16/19, 6:00 AM

Map Beacons Associate Hierarchy Associate Objects Assign Gateways

+ Map Room Temperature ▾

Serial No.	Beacon Id	Object ID	Object Type	Content	Temperature (°C)		Temperature Alert Threshold Time	Humidity (%)	Humidity Alert Threshold Time	Actions	
					Min	Max					
1	AZ-BEACON-01	AZ-BOX-01	...	M...	20	32	1	90	30	1	
2	AZ-BEACON-02	AZ-PALLET-01	...	M...	20	30	1	30	90	1	
3	AZ-BEACON-03	AZ-CARTON-01	...	M...	20	30	1	30	90	1	
4	AZ-BEACON-04	AZ-PRODUCT-01	...	M...	20	30	1	30	90	1	

Next>

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Mapping Updated in List

3.3.2.3 Deleting a Mapping

To delete any mapping from the database, you need to click on the red “bin” symbol seen the last column of the table against the respective row containing the mapping you want to delete.

Once the mapping is deleted/removed from the database, you will get following response.

Titan-Secure A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain Dashboard Admin

Shipment Id New AZ-PO-01 Purchase Order Chennai

localhost:4200 says Beacon is deleted successfully

OK

Map Beacons Associate Hierarchy Associate Objects

+ Map Room Temperature ▾

Serial No.	Beacon Id	Object ID	Object Type	Content	Temperature (°C)		Temperature Alert Threshold Time	Humidity (%)	Humidity Alert Threshold Time	Actions	
					Min	Max					
1	AZ-BEACON-01	AZ-BOX-01	...	M...	20	32	1	90	30	1	
2	AZ-BEACON-02	AZ-PALLET-01	...	M...	20	30	1	30	90	1	
3	AZ-BEACON-03	AZ-CARTON-01	...	M...	20	30	1	30	90	1	
4	AZ-BEACON-04	AZ-PRODUCT-01	...	M...	20	30	1	30	90	1	

Next>

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Delete Mapping Response

The mapping will no longer be seen in the table consisting the list of Beacon-Object Mapping. In this example, we have deleted the mapping for beacon “AZ-BEACON-01”.

Serial No.	Beacon Id	Object ID	Object Type	Content	Temperature (°C)		Humidity (%)		Actions
					Min	Max	Min	Max	
1	AZ-BEACON-02	AZ-PALLET-01	Pallet	... M...	20 30	1	30 90	1	
2	AZ-BEACON-03	AZ-CARTON-01	Cartons	... M...	20 30	1	30 90	1	
3	AZ-BEACON-04	AZ-PRODUCT-01	Boxes	... M...	20 30	1	30 90	1	

[Next >](#)

Mapping Deleted

After all the beacon sensors to the objects are mapped as required in the shipment, the next step is to Create Association among the objects. Click on the “Next” button seen on the bottom right side to proceed to association.

3.3.3 Create Association among Objects

Once the beacons are mapped with the object, the next step is to create association among the objects. This association will help us in defining hierarchy among the objects in a shipment (*i.e. which product is in which box, which box is in which carton, which carton is in which pallet*).

Once you have clicked on the “Next” button after mapping your beacons and objects, the following page will be seen.

[<Previous](<Previous>) [Next >](>Next>")

Define Hierarchy Level

Simply drag and drop the labels from the left section to right section of the page. This definition of hierarchy is needed to know till which level are we monitoring the sensor data.

Since we are monitoring sensor data till product level (*i.e. beacons are attached to products as well*) we will drag and drop each label on the right section of the page.

AZ-TEST-1
Shipment Id
New

AZ-PO-01
Purchase Order

Bangalore
Chennai

1/16/19, 6:00 AM
Created On

Map Beacons Associate Hierarchy Associate Objects Assign Gateways <Previous Next>

- Pallet
- Cartons
- Boxes
- Product

- Pallet
- Cartons
- Boxes
- Product

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Hierarchy Defined

After defining the hierarchy, click on the **Next** button to associate objects. The following page will appear.

User Shipment Devices

AZ-TEST-1
Shipment Id
New

AZ-PO-01
Purchase Order

Bangalore
Chennai

1/16/19, 6:00 AM
Created On

Map Beacons Associate Hierarchy Associate Objects Assign Gateways <Previous Next>

	Summary
Unlinked	1
Not Utilized	1

Products Remaining - AZ-PRODUCT-01

Boxes Remaining - BZ-BOX-01

Association

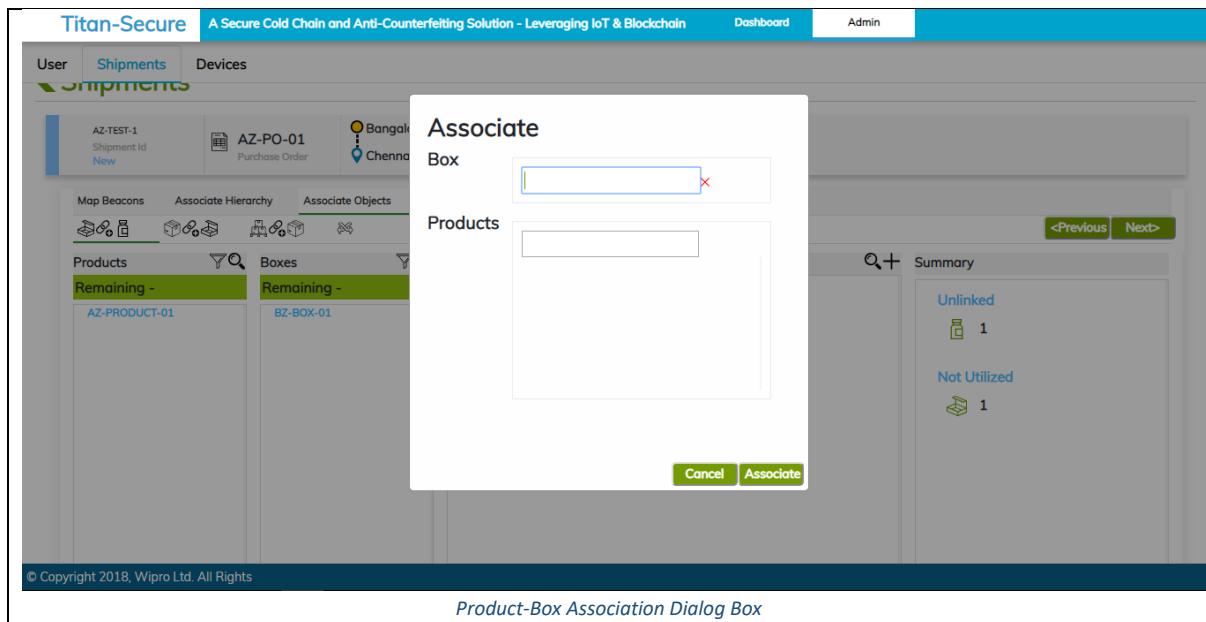
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Product-Box Association Page

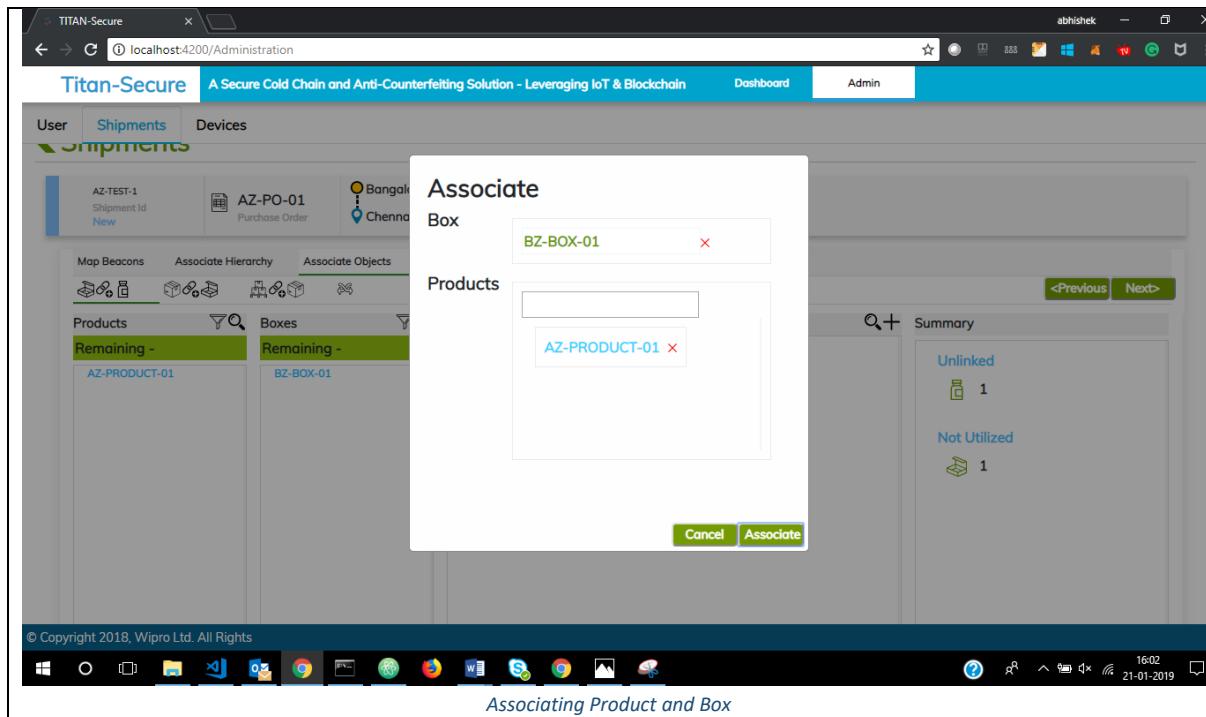
Since we have all four level of hierarchy, we have to associate products → box, box → carton and carton → pallet.

- Product with Box Association**

Step-1: To associate products with the box, click on the “+” symbol and a dialog box will open as shown below.



Step-2: You need to add Object Id of the box against the **Box** field (which can be a barcode scanned by a barcode scanner). Add object id of the product in the **Products** field and press enter or tab key (which can be a barcode scanned by a barcode scanner configured to add an enter or tab at the end of scan). This will add the product id in the below text area in the form of a label as seen below. You can add multiple Products this way.



Step-3: Once you have added all Product IDs and box id, click on the **Associate** button. This will save the association in database and you will be able to see this association under the “Association” section of the page.

Titan-Secure | A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain | Dashboard | Admin

User Shipments Devices

Shipment Id New AZ-PO-01 Purchase Order Chennai Created On 1/16/19, 6:00 AM

Map Beacons Associate Hierarchy Associate Objects Assign Gateways

Products Remaining - Boxes Remaining - Association Summary

BZ-BOX-01 BZ-BOX-01 AZ-PRODUCT-01

Unlinked 0
Not Utilized 1

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[View Association](#)

Depending on the level of hierarchy you have defined, you need to follow the similar instructions (step 1 to step 3) while associating box with carton and while associating carton with pallet. Once all the associations are done, you will be able to see association summary as below.

Titan-Secure | A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain | Dashboard | Admin

AZ-TEST-1 Shipment Id New AZ-PO-01 Purchase Order Bangalore Created On 1/16/19, 6:00 AM

AZ-PO-01 Purchase Order Chennai Created On 1/16/19, 6:00 AM

Map Beacons Associate Hierarchy Associate Objects Assign Gateways

Association Summary

AZ-PALLET-01
 AZ-CARTON-01
 BZ-BOX-01
 AZ-PRODUCT-01

Unlinked 0
Not Utilized 0

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16:27 21-01-2019

[Association Summary](#)

Once the association among the objects is done, the next step is to assign gateway and tracker to each pallet in the shipment. Click on the next button and the following page will open.

The screenshot shows the 'Shipment' details for AZ-PO-01. The shipment was created on 1/16/19, 6:00 AM, from Bangalore to Chennai. The 'Assign Gateways' tab is active. A green '+' button is located in the top right corner of the main content area.

3.3.4 Assigning Gateways and Tracker

Before assigning any gateway or tracker to the pallet, it is important that the gateway or the tracker is onboarded and added to the database. If you try to assign any gateway or tracker that is not yet onboarded, you will get an alert saying '*Could not assign gateways to pallets. Please contact admin.*' Please refer to section [3.2.1 Gateway and Tracker Onboarding](#).

To assign gateway and tracker to the pallet/s in the shipment, click on the "+" symbol seen on the top right corner. Once you click on the "+" button, a row will get added where you need to enter Pallet's Object ID, Gateway's and Tracker's serial numbers or unique IDs (in case of the gateway it would be the Serial Number and the GPS tracker is identified by its IMEI number).

The screenshot shows the 'Shipment' details for AZ-PO-01. The shipment was created on 1/16/19, 6:00 AM, from Bangalore to Chennai. The 'Assign Gateways' tab is active. Three entries are listed under 'Gateway': AZ-PALLET-01, AZ-GW-3, and AZ-TR-3. The entry AZ-TR-3 has a red 'X' icon next to it, indicating it is not assigned.

After filling the required fields, click on “Create” button seen on the top right corner. After the Gateway and tracker is successfully assigned to the pallet, you will see a response – “Gateway is Assigned”

Now go to “Shipments” Tab and reload the page. You will now see that the shipment with Shipment ID “AZ-TEST-1” will now be in “Active” state represented by a green ribbon.

The screenshot shows the Titan-Secure interface with the 'Shipments' tab selected. The table lists five shipments:

- MS-Demo-Shipment (Shipment Id: Deactivated)
- MS-RED-NRF-Demo (Shipment Id: Active)
- Shipment-IX1A (Shipment Id: Active)
- Shipment-Demo-22 (Shipment Id: Active)
- AZ-TEST-1 (Shipment Id: Active)

The 'AZ-TEST-1' row is highlighted with an orange border. Each row contains details such as Shipment ID, Purchase Order, Origin, Destination, Creation Date, and various status indicators (e.g., Temperature, Humidity, Location). Buttons for 'Update Status' and 'Close' are also present.

3.3.5 Uploading and Viewing Documents

3.3.5.1 Uploading Documents

In “Shipments” tab, in each ribbon representing the active shipments there is an upload document button which is shown in the below image.

The screenshot shows the Titan-Secure interface with the 'Shipments' tab selected. The table lists the same five shipments as before. The 'AZ-TEST-1' row is highlighted with an orange border. The 'Documents' button for this row is circled in red, indicating it is the target for the upload operation.

When you click on upload document button, it will expand a section where you can upload your documents. The expanded Section looks as below.

Titan-Secure Shippments | A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain | Dashboard | Admin

Shipment Id: AZ-TEST-1 | Purchase Order: AZ-PO-01 | Created On: Jan 16, 2019, 6:00:54 AM | Status: Active | Location: Bangalore, Chennai | Quantity: 13 | Temperature: 1 | Humidity: 3 | Light: 6 | Documents: 1 | Associations: 1

Document Upload

Choose Files | No file chosen

Select Document Type | Choose Document Type

Upload to Blockchain

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Expanded Upload Document Section

Click on “Choose Files” Button which will open a window for you to select the file.

Titan-Secure Shippments | A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain | Dashboard | Admin

Shipment Id: PO-9BX1 | Purchase Order: | Created On: Jan 10, 2019, 7:07:21 AM | Status: Active | Location: Bangalore, Kolkata | Quantity: 2 | Temperature: 1 | Humidity: 0 | Light: 0 | Documents: 13 | Associations: 0

Shipment Id: AZ-TEST-1 | Purchase Order: AZ-PO-01 | Created On: Jan 16, 2019, 6:00:54 AM | Status: Active | Location: Bangalore, Chennai | Quantity: 1 | Temperature: 4 | Humidity: 1 | Light: 1 | Documents: 4 | Associations: 1

Document Upload

Choose Files | document (1)

File U

Open

This PC | 3D Objects | Desktop | Documents | Downloads | Music | Pictures | Videos | Local Disk (C:) | Data (D:)

REPORT SAMPLES | Titan-Secur-e-Webapp-04-Jan-2019 | document (1).pdf | document (2).pdf | document (3).pdf | document (4).pdf | document (5).pdf | document (6).pdf | document (7).pdf | document (8).pdf

File name: document (1).pdf | Open | Cancel

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Choose File Window

Once you choose your file, a loading animation will be seen.

Titan-Secure A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain

Dashboard Admin

Shipments

Shipment Id	Status	Purchase Order	Location	Created On	Count	Count	Count	Documents	Associations
Shipment-Demo-1	Active	New York			2	0	0	Documents	Associations
Shipment-Demo-2	Active	PO-98X1	Bangalore Kolkata	Jan 10, 2019, 7:07:21 AM	13	1	3	Documents	Associations
AZ-TEST-1	Active	AZ-PO-01	Bangalore Chennai	Jan 16, 2019, 6:00:54 AM	4	1	1	Documents	Associations

Document Upload

Choose Files document (1).pdf

File Upload in progress!

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File Upload In Progress

Once the file is uploaded, you will see “File Uploaded Successfully” message as below.

Titan-Secure A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain

Dashboard Admin

Shipments

Shipment Id	Status	Purchase Order	Location	Created On	Count	Count	Count	Documents	Associations
Shipment-Demo-1	Active	KOLKATA			13	3	6	Documents	Associations
AZ-TEST-1	Active	AZ-PO-01	Bangalore Chennai	Jan 16, 2019, 6:00:54 AM	4	1	1	Documents	Associations

Document Upload

Choose Files document (1).pdf

File Uploaded Sucessfully!

Select Document Type Choose Document Type

Upload to Blockchain

File Uploaded Successfully

The next step is to upload document information to the Blockchain. For this, select the Document Type from the drop down list.

The screenshot shows the 'Titan-Secure Shipment' application interface. At the top, there's a header bar with the title 'A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain'. Below the header is a dashboard section with various shipment details: 'Shipment Id: AZ-TEST-1', 'Status: Active', 'Purchase Order: AZ-PO-01', 'City: Bangalore', 'Created On: Jan 16, 2019, 6:00:54 AM', and a summary of items: 13 boxes, 3 containers, 6 pallets, 4 documents, and 1 association. There are also 'Documents' and 'Associations' buttons.

The main area is titled 'Document Upload' and shows a message 'File Uploaded Sucessfully!' with a green checkmark icon. A file selection input field 'Choose Files' shows 'document (1).pdf'. Below this is a dropdown menu titled 'Select Document Type' with options: 'Choose Document Type', 'Invoice' (which is selected), 'Purchase Order', 'Proforma Invoice', 'Insurance Cover', 'Goods List', 'Airway Bill Document', and 'Receipt'. A green button labeled 'Upload to Blockchain' is visible.

At the bottom left, a copyright notice reads '© Copyright 2018, Wipro Ltd. All Rights Reserved'. The bottom right corner of the interface has the text 'Selecting Document Type'.

After selecting the Document Type, click on “Upload to Blockchain” button which will upload the document information in the Blockchain. After successful upload, you will see a response as below.

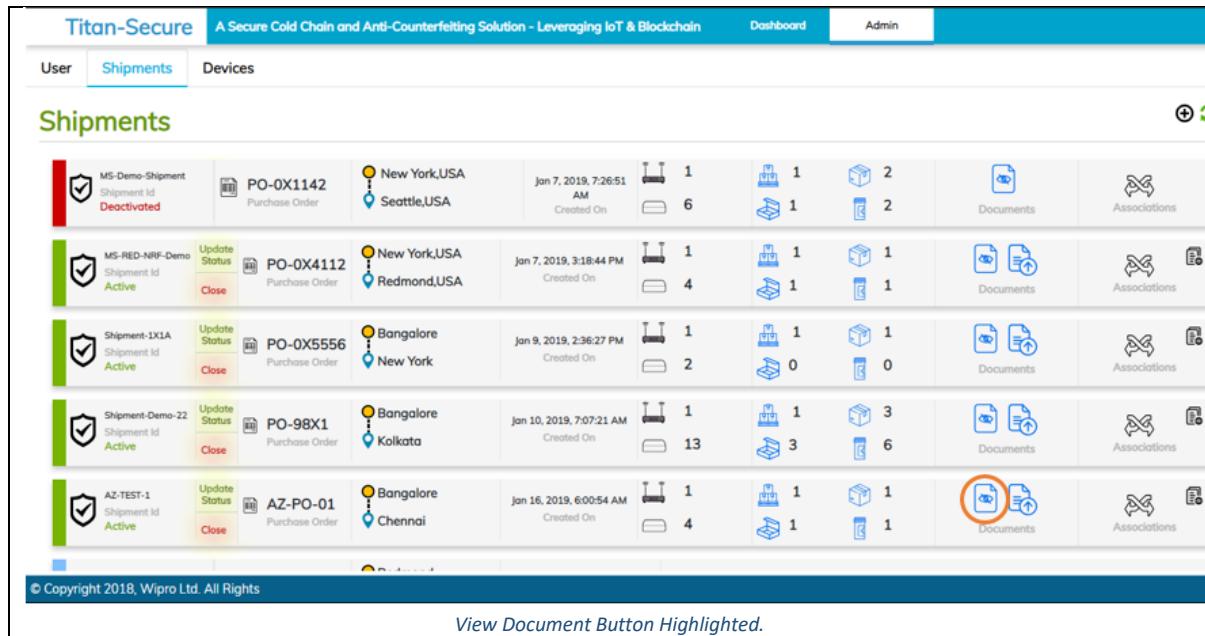
This screenshot shows the same 'Titan-Secure Shipment' application interface as the previous one, but with a different focus. It displays a modal dialog box from 'localhost:4200' with the message 'Consignment successfully updated in Blockchain with Transaction Hash : 0xf948f2d8fcf16d3c55acc43e1c75c4a411d6b45b10a3147c5a47255f97757c94'. An 'OK' button is visible at the bottom of the dialog.

The main interface below the dialog shows the 'Document Upload' section with the 'File Uploaded Sucessfully!' message and the green checkmark icon. The 'Select Document Type' dropdown is open, showing the same list of options as the previous screenshot. The 'Upload to Blockchain' button is also present.

At the bottom left, a copyright notice reads '© Copyright 2018, Wipro Ltd. All Rights Reserved'. The bottom right corner of the interface has the text 'Successfully Uploaded to Blockchain'.

3.3.5.1 Viewing Documents

Click on the **view document** button  in the ribbon corresponding to the shipment you want to view documents of. The **view document** button is highlighted in the below image.

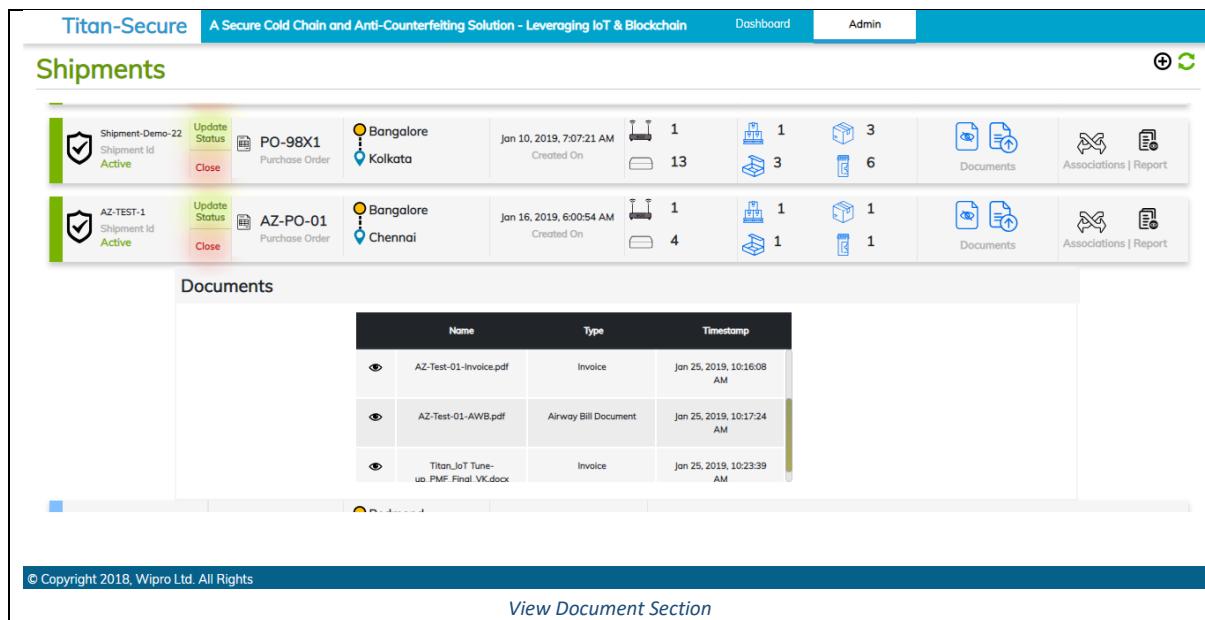


The screenshot shows the Titan-Secure dashboard with the 'Shipments' section. There are five shipments listed:

- MS-Demo-Shipment (Shipment Id: Deactivated)
- MS-RED-NRF-Demo (Shipment Id: Active)
- Shipment-1X1A (Shipment Id: Active)
- Shipment-Demo-22 (Shipment Id: Active)
- AZ-TEST-1 (Shipment Id: Active)

For each shipment, there are columns for Status, Update Status, Purchase Order ID, Location, Created On, and various metrics (e.g., 1 container, 1 building, 2 boxes). The 'Documents' button for AZ-TEST-1 is circled in orange. Below the table, a message says "View Document Button Highlighted."

When you click the View Document Button, a section gets expanded below the ribbon where you will be able to see a table which contains a list of documents against the respective shipment. The expanded section is highlighted in the below image.



The screenshot shows the Titan-Secure dashboard with the 'Shipments' section. Two shipments are visible:

- Shipment-Demo-22 (Shipment Id: Active)
- AZ-TEST-1 (Shipment Id: Active)

The 'Documents' section is expanded for Shipment-Demo-22, showing a table with the following data:

Name	Type	Timestamp
AZ-Test-01-Invoice.pdf	Invoice	Jan 25, 2019, 10:16:08 AM
AZ-Test-01-AWB.pdf	Airway Bill Document	Jan 25, 2019, 10:17:24 AM
Titan_IoT_Tune-up_PMF_Final.VC.docx	Invoice	Jan 25, 2019, 10:23:39 AM

Below the table, a message says "View Document Section".

To view the document, right click on the  symbol seen in the first column of the table and click on "Open Link in new tab"

The screenshot shows the 'Shipments' section of the Titan-Secure application. A context menu is open over a document entry for 'AZ-TEST-1'. The menu options include: Open link in new tab, Open link in new window, Open link in incognito window, Save link as..., Copy link address, Open image in new tab, Save image as..., Copy image, Copy image address, and Search Google for image. Below the menu, there is a table titled 'Timestamp' showing two entries: 'Jan 25, 2019, 10:16:08 AM' and 'Jan 25, 2019, 10:17:24 AM'. At the bottom of the page, there is a copyright notice: '© Copyright 2018, Wipro Ltd. All Rights Reserved' and a link 'View Document Section'.

You will now be able to view the document in the new tab or it will get downloaded if the file extension is other than “.pdf”

3.3.6 Updating Shipment Status

In each of the Active Shipment Ribbon, you will be able to see “Update Status” button glowing in green colour.

- Click on “Update Status” button, a dialog box will open as below.

The screenshot shows the 'Shipments' section of the Titan-Secure application. An 'Update Shipment Status' dialog box is open over a shipment entry for 'AZ-TEST-1'. The dialog box has fields for 'Shipment ID: AZ-TEST-1', 'Select Status' (dropdown), and 'Choose Status' (button). There are 'Close' and 'Update Status' buttons at the bottom. The background shows a list of other shipments with their details and status indicators.

Update Shipment Status Dialog Box

- From the drop-down list, select the status of your choice as shown below.

Selecting Shipment Status

- After you have selected shipment status, click on the “Update Status” button. This will update the status value of the shipment in the database and also a record of this update will be stored in the Blockchain. After successful updation of the status, you will get the following response from Blockchain.

Shipment Status Updated Successfully.

To check if the status of the shipment is updated or not, click near the shipment ID of the ribbon as shown below.

The screenshot shows the Titan-Secure Shipment Management interface. At the top, there are tabs for User, Shipments (which is selected), and Devices. Below the tabs is a section titled 'Shipments' with a green header. The main area displays a table of shipments:

Shipment ID	Status	Purchase Order	Location	Created On	Temperature	Humidity	Shock/Vibrations	Unreachable Devices	Documents	Associations
MS-RED-NRF-Demo	Active	PO-0X4112	New York, USA Redmond, USA	Jan 7, 2019, 3:18:44 PM	1	1	1	1	Documents	Associations
Shipment-1X1A	Active	PO-0X5556	Bangalore New York	Jan 9, 2019, 2:36:27 PM	1	1	1	0	Documents	Associations
Shipment-Demo-22	Active	PO-98X1	Bangalore Kolkata	Jan 10, 2019, 7:07:21 AM	1	1	3	6	Documents	Associations
AZ-TEST-1	Active	AZ-PO-01	Bangalore Chennai	Jan 16, 2019, 6:00:54 AM	1	1	1	1	Documents	Associations
MS-Demo-1245	New	PO-0123	Redmond LA	Jan 18, 2019, 3:40:09 PM					+ Associate	

At the bottom of the page, there is a copyright notice: © Copyright 2018, Wipro Ltd. All Rights Reserved. and a button: Visit Shipment Dashboard Button.

This will open the dashboard of that respective shipment where you can check the status value under Shipping Details Sections as shown below.

The screenshot shows the Titan-Secure Shipment Dashboard for shipment AZ-TEST-1. At the top, there are tabs for Dashboard, Shipment (selected), and Admin. Below the tabs is a section titled 'SHIPMENT >> AZ-TEST-1'. The main area is divided into several sections:

- Shipping Details:** Shows the Shipment ID (#AZ-TEST-1), Purchase Order (AZ-PO-01), Source (Bangalore), Destination (Chennai), Status (Distributors WH), and Last Known GPS (UTC).
- Blockchain Transactions:** Displays two entries for document uploads on Jan 25, 2019, at 10:23:39 AM (UTC) and 10:17:24 AM (UTC). Each entry includes the Transaction Hash.
- Shipping Objects:** Shows 1 container and 1 box.
- Incidents:** A row of five cards showing 0 for each category: Temper Incidents, Temperature Breach, Humidity Breach, Shock/Vibrations, and Unreachable Devices.
- Map:** A map of Europe and North Africa showing the shipment's path from Bangalore to Chennai, with various tracking points marked along the route.

At the bottom of the page, there is a copyright notice: © Copyright 2018, Wipro Ltd. All Rights Reserved. and a button: Verifying Shipment Status Updation.

To check whether the record of shipment status is recorded in Blockchain or not, you can simply check the Blockchain Transactions sections under the Shipping Details sections where all the transaction made to the Blockchain are shown in chronological order.

Titan-Secure A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain Dashboard Admin

DASHBOARD >> SHIPMENT >> AZ-TEST-1

Shipping Details

Shipping ID	# AZ-TEST-1
Purchase Order	AZ-PO-01
Source	Bangalore Jan 16, 2019, 6:00:54 AM (UTC)
Destination	JP Chennai
Status	Distributors WH
Last Known GPS (UTC)	

Blockchain Transactions

- Jan 28, 2019, 5:54:58 AM (UTC)
Shipment Status Updated
Transaction Hash : 0x005dc3c92f601757230cca640565bb
- Jan 25, 2019, 10:17:24 AM (UTC)
Document Upload
Transaction Hash : 0x8ec5d6bd1010497b36f965ab7585:

Shipping Objects

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Verifying Shipment Status Update

Click on the transaction hash which will show the transaction details in a modal as below.

Titan-Secure A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain Dashboard Admin

DASHBOARD >> SHIPMENT >> AZ-TEST-1

Shipping Details

Shipping ID	# AZ-TEST-1
Purchase Order	AZ-PO-01
Source	Bangalore Jan 16, 2019, 6:00:54 AM (UTC)
Destination	JP Chennai
Status	Distributors WH
Last Known GPS (UTC)	

Blockchain Transactions

- Jan 22, 2019, 9:07:43 AM (UTC)
Shipment Status Updated
Transaction Hash : 0x11ed0a38e5a7298c73c659c4b37a9bed0e32bee2817071524d539fb96b8190
- Jan 22, 2019, 5:51:38 AM (UTC)
Shipment Status Updated
Transaction Hash : 0x025154ff30798b78487c927c05286

Shipping Objects

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Shipment Status Updated Blockchain Details

3.3.7 Deactivating Shipment

The web application also allows the admin to deactivate or close a shipment. To deactivate/ close any shipment, click on “Close” button which is highlighted in the below image.

Close Shipment Button

After clicking on the **close** button, a modal will open as shown below.

Close Shipment Dialog Box

From the drop-down list, select the type of status you want to close/ deactivate the shipment with.

Selecting Close Shipment Status

Once you have selected the close shipment status, click on the **Deactivate Shipment** button. A dialog box will open which will ask for confirmation about closing/deactivating the shipment as shown below.

Close Shipment Confirmation

When you click on “Yes” button, you will get a response from Blockchain as below and the shipment is now deactivated.

The screenshot shows the 'Shipment' tab of the Titan-Secure application. A modal dialog box in the top right corner displays the message: "localhost:4200 says Consignment successfully updated in Blockchain with Transaction Hash : 0x2df3344eee21a9cfa399eb7701bc3d37dab295586235a67922d3a43469 c02267". There is an 'OK' button at the bottom of the modal. The main table lists five shipments:

Shipment ID	Purchase Order	Location	Created On	Counters	Actions
MS-RED-NRF-Demo	PO-0X4112	New York,USA Redmond,USA	Jan 7, 2019, 3:18:44 PM	1 4 1	Documents Associations
Shipment-1X1A	PO-0X5556	Bangalore New York	Jan 9, 2019, 2:36:27 PM	1 2 1 0	Documents Associations
Shipment-Demo-22	PO-98X1	Bangalore Kolkata	Jan 10, 2019, 7:07:21 AM	1 13 1 3 6	Documents Associations
AZ-TEST-1	AZ-PO-01	Bangalore Chennai	Jan 16, 2019, 6:00:54 AM	1 4 1 1 1	Documents Associations
MS-Demo-1245	PO-0123	Redmond LA	Jan 18, 2019, 3:40:09 PM		+ Associate

At the bottom left, there is a copyright notice: "© Copyright 2018, Wipro Ltd. All Rights Reserved". At the bottom center, a link reads "Close Shipment Response".

When you reload your “**Shipments Tab**”, the shipment will get deactivated and the shipment will be represented by a dark red ribbon as shown in the below image.

The screenshot shows the 'Shipment' tab of the Titan-Secure application. The fourth row in the table is highlighted with a red border, indicating the shipment is deactivated. The table data is identical to the previous screenshot:

Shipment ID	Purchase Order	Location	Created On	Counters	Actions
MS-RED-NRF-Demo	PO-0X4112	New York,USA Redmond,USA	Jan 7, 2019, 3:18:44 PM	1 4 1	Documents Associations
Shipment-1X1A	PO-0X5556	Bangalore New York	Jan 9, 2019, 2:36:27 PM	1 2 1 0	Documents Associations
Shipment-Demo-22	PO-98X1	Bangalore Kolkata	Jan 10, 2019, 7:07:21 AM	1 13 1 3 6	Documents Associations
AZ-TEST-1	AZ-PO-01	Bangalore Chennai	Jan 16, 2019, 6:00:54 AM	1 4 1 1 1	Documents Associations
MS-Demo-1245	PO-0123	Redmond LA	Jan 18, 2019, 3:40:09 PM		+ Associate

At the bottom left, there is a copyright notice: "© Copyright 2018, Wipro Ltd. All Rights Reserved". At the bottom center, a link reads "Deactivated Shipment Red Ribbon highlighted".

4. Dashboard

This section describes the “**Dashboard**” page of the web application. This page consists of many subpages which will be described in this section.

4.1 Dashboard Summary

This page has three main components. The top row shows tabs with the counts of current shipments and Alerts. The “**Current Shipment**” section shows the list of all the active shipments by default. This section also shows a “red bell icon” against Shipment IDs that have alerts. The “**Shipment Tracker**” section shows last known location of all the shipments by default. Moreover, by clicking on the specific

shipment in the “Current Shipments” section, only that particular shipment will be highlighted on the map.

The screenshot shows the 'Dashboard Summary Page' of the Titan-Secure system. At the top, there's a header bar with the title 'Titan-Secure' and a subtitle 'A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain'. Below the header are several status indicators: 'Current Shipments' (4), 'Unreachable Devices' (0), 'Temperature Breach' (17), 'Shock/Vibrations' (0), 'Humidity Breach' (37), and 'Tamper Incidents' (58). The main area features a large world map titled 'Shipment Tracker'. On the map, there are three red location markers: one in North America (USA), one in Europe (Germany), and one in Asia (China). To the left of the map is a sidebar titled 'Current Shipments' listing four entries: 'SHIRE-PILOT-0X123', 'MS-RED-NRF-Demo', 'Shipment-1X1A', and 'Shipment-Demo-22'. The bottom of the page includes a copyright notice '© Copyright 2018, Wipro Ltd. All Rights Reserved' and a footer bar with the text 'Dashboard Summary Page'.

- Overlay Popup on Map**

In “Shipment Tracker” Section, multiple markers will be displayed showing the last known location of each Shipment by default.

This screenshot is identical to the one above, showing the 'Dashboard Summary Page' of the Titan-Secure system. It features the same header, status indicators, and world map with three red location markers. The 'Current Shipments' sidebar also lists the same four entries. The copyright notice and footer bar are present at the bottom.

- In “Current Shipment” Section, when you click on any row with a Shipment ID, only one marker on the map will be highlighted that shows the location of that particular shipment.

Titan-Secure | A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain | Dashboard | Admin

DASHBOARD >> SUMMARY

Current Shipments: 4

- SHIRE-PILOT-0X123
- MS-RED-NRF-Demo
- Shipment-1X1A
- Shipment-Demo-22

Unreachable Devices: 0

Temperature Breach: 17

Shock/Vibrations: 0

Humidity Breach: 37

Tamper Incidents: 58

Map of North America and the Arctic region showing the locations of the shipments.

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- When you click on that marker, an overlay popup will be displayed against the marker that will show the shipment details of that particular shipment.

Titan-Secure | A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain | Dashboard | Admin

DASHBOARD >> SUMMARY

Current Shipments: 4

- SHIRE-PILOT-0X123
- MS-RED-NRF-Demo
- Shipment-1X1A
- Shipment-Demo-22

Unreachable Devices: 0

Temperature Breach: 17

Shock/Vibrations: 0

Humidity Breach: 37

Tamper Incidents: 58

Map of North America and the Arctic region showing the locations of the shipments. An overlay popup for the 'MS-RED-NRF-Demo' shipment displays the Shipment Status and a list of Incidents.

Shipment Status:

Shipment ID	# MS-RED-NRF-Demo
Status	HQ to LSP
Purchase Order	PO-0X4112
Incidents	29

Incidents (Time in UTC):

Incident Type	Time	Action	Status
Product-1C	1/19/19, 4:12 PM	Hover Here	TAMPERED
Pallet-1C	1/19/19, 4:12 PM	Alert Closed	
Product-1C	1/19/19, 4:12 PM	Hover Here	TAMPERED
Pallet-1C	1/19/19, 4:12 PM	Alert Closed	
Carton-1A	1/19/19, 4:12 PM	Hover Here	TAMPERED
Pallet-1C	1/19/19, 4:12 PM	Alert Closed	

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Popup on the Map Showing Shipment Details and Alerts

When you click on the marker for the first time, the incidents list may take time to load. An animation will be seen and we need to click on the marker every 5-10 seconds till we get response from Blockchain as shown below.

Titan-Secure | A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain | Dashboard | Admin

DASHBOARD >> SUMMARY

Current Shipments: 4 | Unreachable Devices: 0 | Temperature Breach: 17 | Shock/Vibrations: 0 | Humidity Breach: 37 | Tamper Incidents: 58

Current Shipments

- i SHIRE-PILOT-0X123
- i MS-RED-NRF-Demo

Status	Purchase Order	Incidents
H/O to LSP	PO-0X4112	13 29
New York,USA	Jan 7, 2019, 3:18:44 PM	0 49
Redmond,USA		

Shipment Tracker

Shipment Status: # MS-RED-NRF-Demo

Status	Purchase Order	Incidents
H/O to LSP	PO-0X4112	13 29
New York,USA	Jan 7, 2019, 3:18:44 PM	0 49
Redmond,USA		

Incidents (Time in UTC)

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Loading Alerts/Incidents

The incidents list will get filled once you get response from the Blockchain.

• Accordion for Shipment Overview

In the “Current Shipments” Section, when you click on the “i” symbol against a particular shipment ID, an accordion will be displayed below the shipment ID which will show an overview of the shipment status.

Titan-Secure | A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain | Dashboard | Admin

DASHBOARD >> SUMMARY

Current Shipments: 4 | Unreachable Devices: 0 | Temperature Breach: 17 | Shock/Vibrations: 0 | Humidity Breach: 37 | Tamper Incidents: 58

Current Shipments

- i SHIRE-PILOT-0X123
- i MS-RED-NRF-Demo

Status	Purchase Order	Incidents
H/O to LSP	PO-0X4112	13 29
New York,USA	Jan 7, 2019, 3:18:44 PM	0 49
Redmond,USA		

Shipment Tracker

Shipment Status: # MS-RED-NRF-Demo

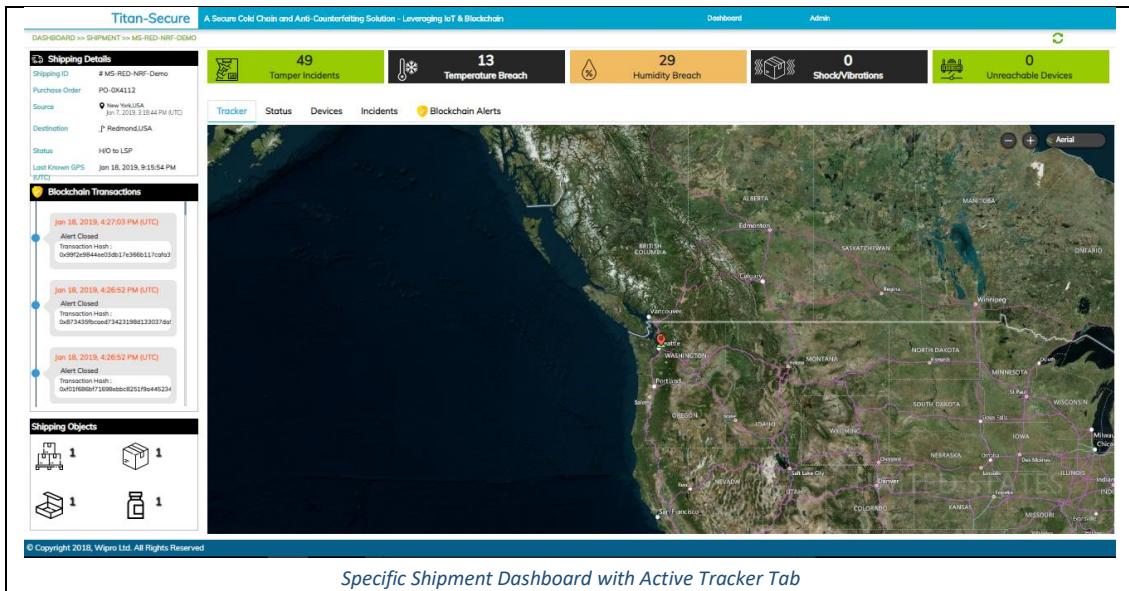
Status	Purchase Order	Incidents
H/O to LSP	PO-0X4112	13 29
New York,USA	Jan 7, 2019, 3:18:44 PM	0 49
Redmond,USA		

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Accordion to view shipment overview

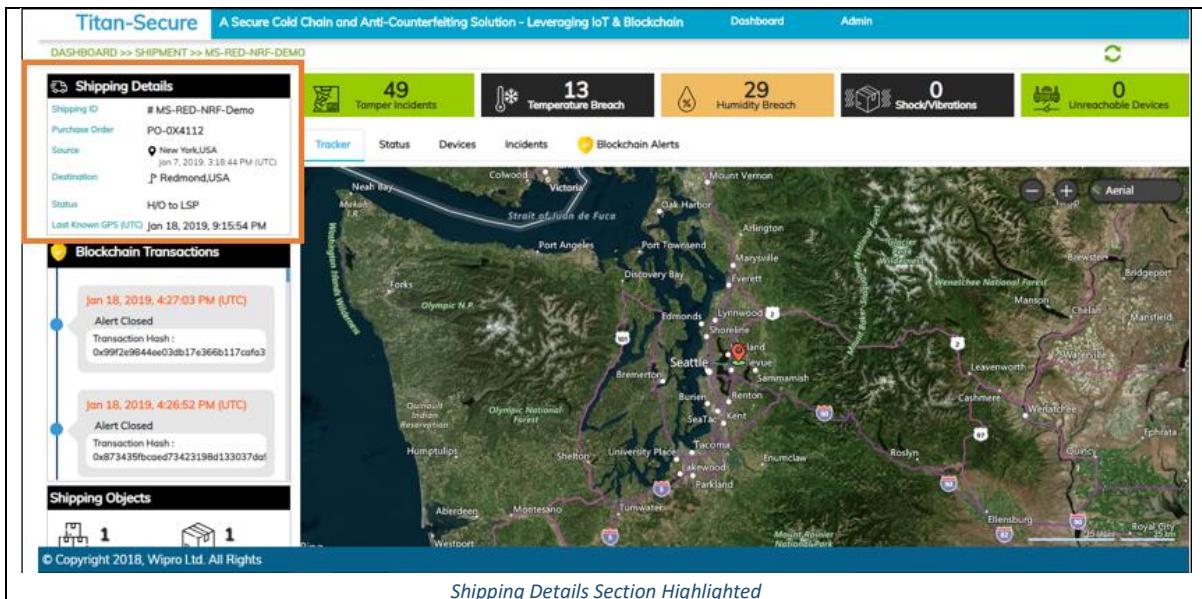
4.2 Specific Shipment Dashboard

When you click on symbol against a particular Shipment ID in “Current Shipment” section it will redirect you to a page that will have details of the shipment. This page has 5 tabs which will be described in this section. The five tabs are: Tracker, Status, Devices, Incidents and Blockchain Alerts. The main layout of this page consists of Shipment Details, Alert Summary Tabs, Blockchain Transaction, Shipping Object Details and Tabs Section.



• Shipping Details Section

This section shows basic information about the shipment such as Shipment ID, Purchase Order Number, Source, Destination, Status of the shipment and the last known time of GPS signal. This section is highlighted in the below image.



• Blockchain Transactions Section

This section consists history of all the Blockchain transactions in chronological order. The type of transaction is also shown below the timestamp. This section is highlighted in the below image.

The screenshot shows the Titan-Secure dashboard for a shipment labeled "MS-RED-NRF-DEMO". At the top, there are several status indicators: 49 Tamper Incidents, 13 Temperature Breach, 29 Humidity Breach, 0 Shock/Vibrations, and 0 Unreachable Devices. Below these are tabs for Tracker, Status, Devices, Incidents, and Blockchain Alerts. A map of North America is displayed. On the left, there's a "Blockchain Transactions" section with two entries. The first entry is for "Shipment Status Updated" on Jan 7, 2019, at 3:31:29 PM (UTC), with a transaction hash of 0x2c537f26c4e202e588278548b926fd. The second entry is for "Shipment Created" on the same day at 3:18:42 PM (UTC), with a transaction hash of 0x6ef2f5a3fe1e327e5456382e18c900. An orange box highlights this "Blockchain Transactions" section.

When you click on the transaction hash, a dialog box will open which will show the transaction details as shown below.

The screenshot shows the same dashboard as above, but with a modal dialog box titled "SHIPMENT CREATION" overlaid. This dialog box contains the transaction details for the "Shipment Created" event: Transaction Hash: 0x6ef2f5a3fe1e327e5456382e18c900, Shipment ID: MS-RED-NRF-Demo, Purchase Order Number: PO-0X4112, Source: New York, USA, Destination: Redmond, USA, and Time Of Creation (UTC): Jan 7, 2019, 3:18:42 PM. The background map and other sections of the dashboard are visible behind the dialog.

- **Shipping Objects Section**

This section consists of number of pallet, carton, boxes and products that are packaged under a specific shipment. This section is highlighted in the below image.

Blockchain Transactions

- Jan 7, 2019, 3:31:29 PM (UTC) Shipment Status Updated Transaction Hash: 0x2c537f26c4e202e588278548b929fd
- Jan 7, 2019, 3:18:42 PM (UTC) Shipment Created Transaction Hash: 0x6ef2f5a3fb9327e5456382e18c900

Shipping Objects

- 1 Pallet
- 1 Box
- 1 Carton
- 1 Bottle

Bing

Shipping Objects Section

4.2.1 Tracker Tab

By default, the “Tracker” Tab will be rendered which will show the last known location of the shipment. The view of this tab is shown above. When you click on the marker, a pop-up will be displayed next to the marker that will show shipment details and incidents.

DASHBOARD >> SHIPMENT >> MS-RED-NRF-DEMO

Shipping Details

Shipping ID	# MS-RED-NRF-Demo
Purchase Order	PO-0X4112
Source	New York,USA
Destination	Redmond,USA
Status	H/O to LSP
Last Known GPS (UTC)	Jan 18, 2019, 9:15:54 PM

Blockchain Transactions

- Jan 18, 2019, 4:27:03 PM (UTC) Alert Closed Transaction Hash: 0x997e9844ee03db1e366b117cafa3
- Jan 18, 2019, 4:26:52 PM (UTC) Alert Closed Transaction Hash: 0xb7345fbcaed73423198d133037daf

Shipping Objects

- 1 Pallet
- 1 Box

Shipment Status

Status	PO to LSP	Purchase Order	PO-0X4112	Incidents
Location	New York,USA	Date	Jan 7, 2019, 3:18:44 PM	Count
Marker	Green	Marker	Green	Count

Incidents (Time in UTC)

- Product-1C U1B19, 4:12 PM Hover Help
- Pallet-1C Alert Closed U1B19, 4:12 PM Hover Help TAMPERED
- Pallet-1C Alert Closed U1B19, 4:12 PM Hover Help TAMPERED
- Carton-1A U1B19, 4:12 PM Hover Help
- Pallet-1C Alert Closed U1B19, 4:12 PM Hover Help TAMPERED

Tracker Tab

4.2.2 Status Tab

The “Status” Tab will show a list of objects (i.e. product, box, carton or pallet) along with their Object ID, Beacon ID, the object it is associated with, Temperature, Humidity, Shock and Vibration Alerts, and count of incidents.

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DASHBOARD >> SHIPMENT >> MS-RED-NRF-DEMO

Shipping Details

Shipping ID	# MS-RED-NRF-Demo
Purchase Order	PO-0X4112
Source	New York, USA Jan 7, 2019, 3:18:44 PM (UTC)
Destination	Redmond, USA
Status	H/O to LSP
Last Known GPS (UTC)	Jan 18, 2019, 9:15:54 PM

Blockchain Transactions

- Jan 18, 2019, 4:27:03 PM (UTC) Alert Closed Transaction Hash: 0x99f2e9844ee03db17e366b117cafa3
- Jan 18, 2019, 4:26:52 PM (UTC) Alert Closed Transaction Hash: 0x873435fbcoed73423198d133037da5

Shipping Objects

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Status Tab

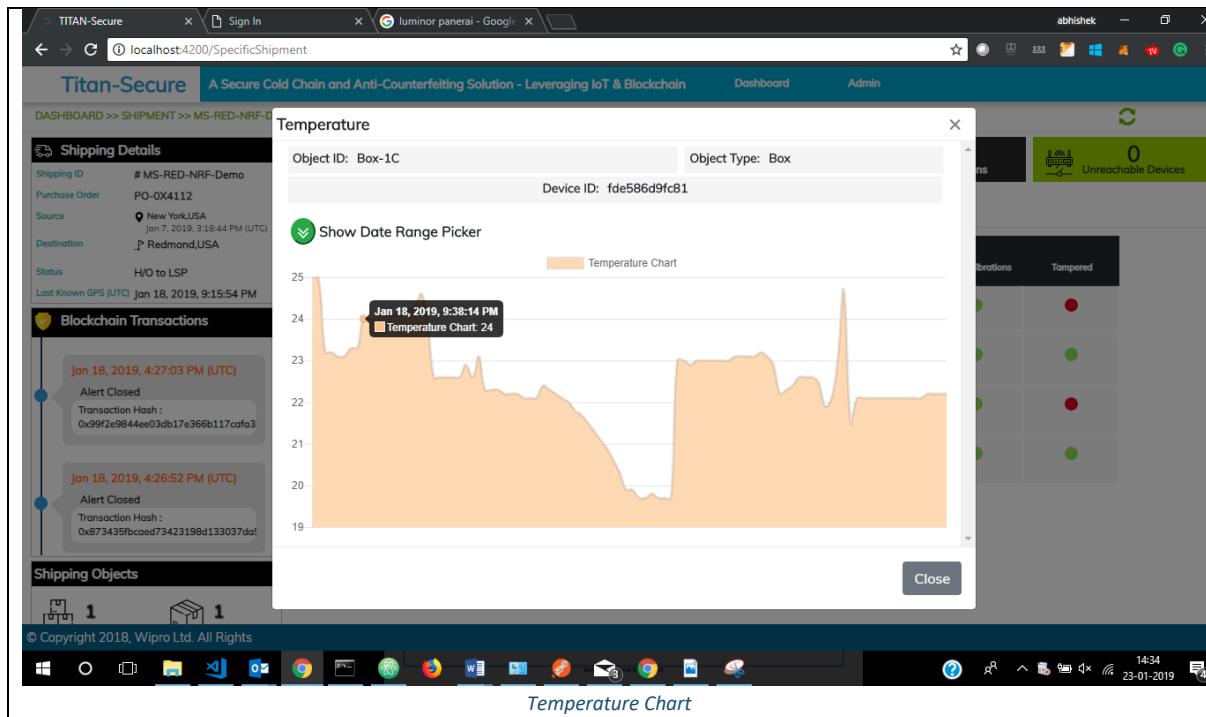
Key Metrics:

- 49 Tamper Incidents
- 13 Temperature Breach
- 29 Humidity Breach
- 0 Shock/Vibrations
- 0 Unreachable Devices

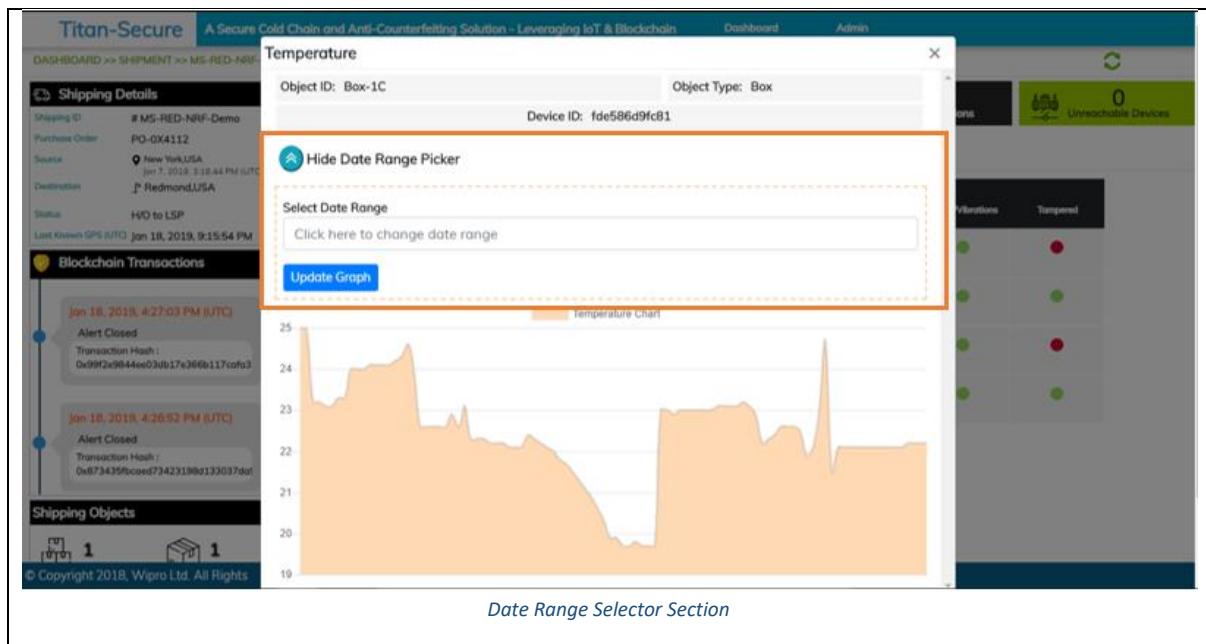
Table: Status

Object	Object ID	Beacon ID	Timestamp (Local Time)	Temperature (°C)	Humidity (%)	Shock/Vibrations	Tampered
Box	Box-1C	fde586d9fc81	Jan 18, 2019, 9:50:08 PM	25	39.9	●	●
Carton	Carton-1C	c85ce0d0b1ce	Jan 18, 2019, 9:50:08 PM	23.3	37	●	●
Pallet	Pallet-1C	ceb6f903664b	Jan 18, 2019, 9:50:08 PM	23.4	36.1	●	●
Product	Product-1C	d22d52d6d891	Jan 18, 2019, 9:50:08 PM	23.7	37.7	●	●

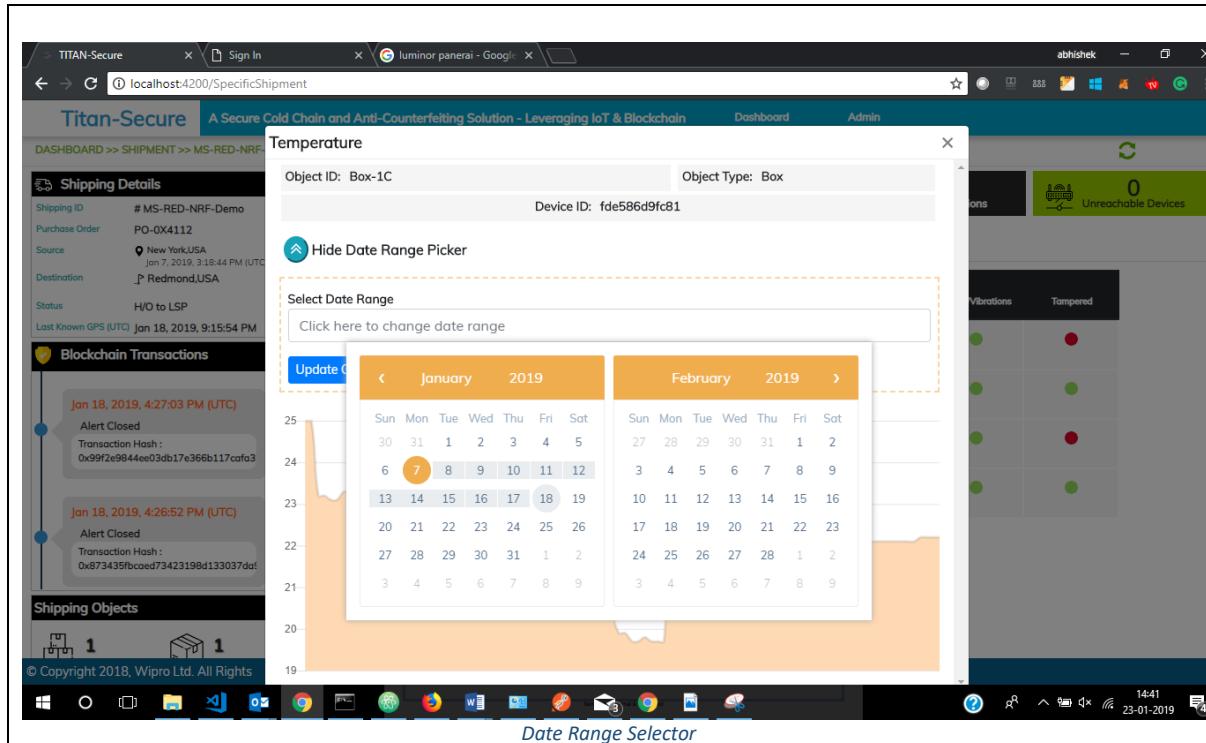
Also, a user can visualize the temperature and humidity data of each object through a chart that will be rendered when a user clicks on button.



By default, last 100 temperature or humidity values will be plotted in the graph. To change the date range for plotting the graphs, click on the green “arrow down” button which will expand a section where you can select your date range as below.



You can select the date range by clicking in the box area where it says “Click her to change Date Range”. After clicking, you will get date selector as below.



You can select the date range and click on **update** button. The graph will get updated by the temperature or humidity values that falls under the selected date range.

4.2.3 Devices Tab

The “Devices” Tab will consist of a list of association of beacons and objects with Gateways. The connectivity status of the devices will also be shown in this list.

This screenshot shows the 'Device Tab with Connectivity Status' in the Titan-Secure dashboard. The top navigation bar includes 'Titan-Secure', 'A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain', 'Dashboard', and 'Admin'. Below the navigation is a header with sections for 'Shipping Details', 'Incidents', and 'Blockchain Alerts'. The 'Incidents' section displays metrics: 49 Tamper Incidents, 13 Temperature Breach, 29 Humidity Breach, 0 Shock/Vibrations, and 0 Unreachable Devices. A table below lists a single device entry: C030011837-00044, which is a Gateway and currently Offline, associated with a Pallet. The 'Blockchain Transactions' section shows two closed alerts from Jan 18, 2019, with transaction hashes. The 'Shipping Objects' section shows one carton and one box. The footer includes a copyright notice for Wipro Ltd. and a link to the Device Tab with Connectivity Status.

4.2.4 Incidents Tab

The “Incidents” Tab consists of a list of all the alerts that has occurred over the course of monitoring the shipment. The list contains details about the alerts like the object (product, box, carton or pallet) where the alert has occurred, timestamp when the alert has occurred, type of alert (Temperature, Humidity, Tamper, Shock/Vibration Alert) and the location where the alert has taken place.

This screenshot shows the 'Incidents Tab' in the Titan-Secure dashboard. The top navigation bar is identical to the previous screenshot. The 'Incidents' tab is selected in the navigation bar. The main area displays a table of incidents. The columns include Object ID, Object Type, Content, Alert Type, Status, Action, View Alert Details, and View ACKs. The table lists several incidents involving Cartons, Products, and Boxes, each with a status of 'Closed' and an 'Acknowledge' button. The footer includes a copyright notice for Wipro Ltd. and a link to the Incidents Tab.

One can acknowledge the alert by clicking on the “Acknowledge” button. Clicking on that button will open a dialog box asking for **acknowledgement note**. Once you fill the acknowledgement note, click on “Acknowledge” button to store this note in the database.

Acknowledging an incident

The incident which is already acknowledged will be marked as “Acknowledged” under “Action” column. You can view the Acknowledgement note by clicking on the button. This will open a dialog box which will show the Acknowledgement Note as below.

Viewing Acknowledgement Notes

4.2.5 Blockchain Alert Tab

This tab shows all the alerts that are stored in Blockchain. All the information regarding the alert will be shown in this tab along with Alert Starting Time and Alert Ending Time.

Titan-Secure A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain Dashboard Admin

DASHBOARD >> SHIPMENT >> MS-RED-NRF-DEMO

Shipping Details

Shipping ID	# MS-RED-NRF-Demo
Purchase Order	PO-0X4112
Source	New York,USA Jan 7, 2019, 3:18:44 PM (UTC)
Destination	Redmond,USA
Status	H/O to LSP
Last Known GPS (UTC)	Jan 18, 2019, 9:15:54 PM

Blockchain Transactions

Jan 18, 2019, 4:27:03 PM (UTC) Alert Closed Transaction Hash : 0x99f2e9844ee03db17e366b117cafa3
Jan 18, 2019, 4:26:52 PM (UTC) Alert Closed Transaction Hash : 0x873435fbcoed73423198d133037da

Shipping Objects

1	1
---	---

49 Tamper Incidents 13 Temperature Breach 29 Humidity Breach 0 Shock/Vibrations 0 Unreachable Devices

Tracker Status Devices Incidents Blockchain Alerts

Blockchain Alerts Tab

Object	Beacon ID	Block Timestamp (UTC)	Location	Type	Value	Alert Start Time (Local Time)
Product	d22d52d6d891	Jan 18, 2019, 4:27:03 PM	10500 NE 8th St, Bellevue, WA 98004	Tamper	Green	Jan 18, 2019, 9:42:12 PM
Pallet	ceb6f903664b	Jan 18, 2019, 4:26:52 PM	10500 NE 8th St, Bellevue, WA 98004	Tamper	Green	Jan 18, 2019, 9:42:12 PM
Carton	d22d52d6d891	Jan 18, 2019, 4:26:52 PM	10500 NE 8th St, Bellevue, WA 98004	Tamper	Green	Jan 18, 2019, 9:42:12 PM
Carton	ceb6f903664b	Jan 18, 2019, 4:26:46 PM	10500 NE 8th St, Bellevue, WA 98004	Tamper	Green	Jan 18, 2019, 9:42:12 PM
Box	ceb6f903664b	Jan 18, 2019, 4:26:41 PM	10500 NE 8th St, Bellevue, WA 98004	Tamper	Green	Jan 18, 2019, 9:42:12 PM
Product	fde586d9fc81	Jan 18, 2019, 4:26:32 PM	10500 NE 8th St, Bellevue, WA 98004	Tamper	Green	Jan 18, 2019, 9:34:16 PM
Box	fde586d9fc81	Jan 18, 2019, 4:26:32 PM	10500 NE 8th St, Bellevue, WA 98004	Tamper	Green	Jan 18, 2019, 9:34:16 PM

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5. Report

The web application allows the admin to create and download the shipment report. To download shipment report, first navigate to the “**Admin**” page with Active “**Shipments**” Tab. You will be able to see the list of shipments represented by red, blue and green ribbons as shown below.

In each of the Active Shipment Ribbon, there is a view report button which is highlighted in the following image

Titan-Secure A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain Dashboard Admin

User Shipments Devices

Shipments

SHIRE-PILOT-0X123 Shipment Id Active	Update Status Close	PO-0X1232 Purchase Order	Lessines,BE Kentucky,US	Dec 18, 2018, 6:55:44 PM Created On	1 21	1 10	10 0	Documents	 Click Here to View Report
MS-Demo-Shipment Shipment Id Deactivated	Update Status Close	PO-0X1142 Purchase Order	New York,USA Seattle,USA	Jan 7, 2019, 7:26:51 AM Created On	1 6	1 1	2 2	Documents	
MS-RED-NRF-Demo Shipment Id Active	Update Status Close	PO-0X4112 Purchase Order	New York,USA Redmond,USA	Jan 7, 2019, 3:18:44 PM Created On	1 4	1 1	1 1	Documents	
Shipment-1X1A Shipment Id Active	Update Status Close	PO-0X5556 Purchase Order	Bangalore New York	Jan 9, 2019, 2:36:27 PM Created On	1 2	1 0	1 0	Documents	
Shipment-Demo-22 Shipment Id Active	Update Status Close	PO-98X1 Purchase Order	Bangalore Kolkata	Jan 10, 2019, 7:07:21 AM Created On	1 13	1 3	3 6	Documents	

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Admin Page- Shipments Tab and View Report Button

When you click on the **view report** button, the report corresponding to the selected shipment will be seen as below.

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[Download Report](#)

Titan- Secure - A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain

SHIPMENT REPORT

Shipment ID: MS-RED-NRF-Demo
 Purchase Order No.: PO-0X4112
 Created On: Jan 7, 2019, 3:18:44 PM
 From: New York,USA
 To: Redmond,USA
 Last Known GPS: Jan 18, 2019, 9:15:54 PM
 Current Location: Yet to Include
 Status: H/O to LSP

Alert Summary

Tamper	Humidity	Temperature	Shock/Vibrations	Unreachable Devices
49	13	29	0	0

Alert Details

Object ID	Object Type	Alert Type	Alert Value	Status	Alert Location	Ack Notes
Carton-1C	Carton	Tamper	true	Closed	Electronic City Road, Bengaluru, KA 560100	-
Product-1A	Product	Tamper	true	Closed	Electronic City Road, Bengaluru, KA 560100	-

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[View Shipment Report](#)

To download this report, click on the “**Download Report**” button seen on the top left corner of the page.

Titan-Secure A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain

[Download Report](#)

Titan- Secure - A Secure Cold Chain and Anti-Counterfeiting Solution - Leveraging IoT & Blockchain

SHIPMENT REPORT

Shipment ID: MS-RED-NRF-Demo
 Purchase Order No.: PO-0X4112
 Created On: Jan 7, 2019, 3:18:44 PM
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Alert Summary

Tamper	Humidity	Temperature	Shock/Vibrations	Unreachable Devices
49	13	29	0	0

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 [document \(25\).pdf](#) Starting... [Show all](#)

[View Shipment Report](#)