# API Document


# (Integrated Command & Control Center)

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# API REFERENCE

trinityICCC uses REST based API for integration with 3rd party Smart city elements to control, view and manage the subsystems. This document describes the standard API requirement to complete the integration. The data sent in request and response both are in JSON format.

# ITS INTEGRATION

## VEHICLE ASSIGN NOTIFICATION

This REST API is meant to be consumed by Intelligent transport Management Application to Notify the Route changes happened for a particular bus to ICCC

**ROOT URL:** http://<IP>:<PORT>/iotWebservices/

**URL:** :http://<IP>:<PORT>/iotWebservices/ITMSIntegration/sendItmsActionDetails

**DESCRIPTION:** This API is used for notifying vehicle assign details to ICCCApplication.

**PATH:** /ITMSIntegration/sendItmsActionDetails

**METHOD:** Post

**URL PARAMS:** None

**REQUEST HEADERS:** Content-Type: application/json

**DATA PARAMS:**

| Parameter Name | Parameter Type | Data Type | Required |
|---|---|---|---|
| phoneNo | body | String | true |
| name | body | String | true |
| basicId | body | String | true |
| message | body | String | true |

**CONSUMES**: application/json

**PRODUCES:** application/json

**SAMPLE INPUT:** {"phoneNo":"8088892599","name":"Anil","basicId":"432","message":"Panic Alert"}

**RESPONSE HEADERS:** None

**SUCCESS RESPONSE:**

**CODE: 200**

**CONTENT:** {"success": true, "message": "Updated ITMS action details"}

**ERROR RESPONSE:**

**CODE: 200 or 500**

**CONTENT:** {"success": true, "message": Error in updating ITMS action details"}

## BUS STOP DISPLAY INTEGRATION

This REST API is meant to be consumed by Intelligent transport Management Application to create, edit and delete operation for bus stop display board.

**ROOT URL:** http://<IP>:<PORT>/IOT_integration/

**URL:** http://<IP>:<PORT>/IOT_integration/IOTIntegration/busStopDisplayOperation

**DESCRIPTION:** This api is used for create, edit and delete operation for bus stop display board.

**PATH:** /IOTIntegration/busStopDisplayOperation

**METHOD:** Post

**URL PARAMS:** None

**REQUEST HEADERS:** Content-Type: application/json

**DATA PARAMS:**

| Parameter Name | Parameter Type | Data Type | Required |
|---|---|---|---|
| operation_id | body | int | true |
| macAddress | body | String | true |
| deviceName | body | String | true |

**CONSUMES:** application/json

**PRODUCES:** application/json

**SAMPLE INPUT:**

{

"operation_id": 1,

"macAddress": "13246544464",

"deviceName": "demo_name"

}

**RESPONSE HEADERS:** None

**SUCCESS RESPONSE:**

**CODE: 200**

**CONTENT:** {"status ": "success"}

**ERROR RESPONSE:**

**CODE: 200 or 500**

**CONTENT:** {" status ":" failed", "message": "failed due to 'message-details'"}

## GET ALL BUS SCHEDULES

This REST API is meant to be consumed by Intelligent transport Management Application to Get All Scheduled Route details.

**2) ROOT URL:** http://<IP>:<PORT>/ IOT_integration/

**URL:** http://<IP>:<PORT>/ IOT_integration/IOTIntegration/getScheduledRoutes

**DESCRIPTION:** This api is used to get scheduled routes.

**PATH:** /IOTIntegration/getScheduledRoutes

**METHOD:** Post

**URL PARAMS:** None

**REQUEST HEADERS:** Content-Type: application/json

**DATA PARAMS:**

| Parameter Name | Parameter Type | Data Type | Required |
|---|---|---|---|
| operation_id | body | int | true |
| macAddress | body | String | true |
| deviceName | body | String | true |

**CONSUMES:** application/json

**PRODUCES:** application/json

**SAMPLE INPUT:**

```
{
        "operation_id": 1,
        "macAddress": "13246544464",
        "deviceName": "demo_name"
}
```

**RESPONSE HEADERS:** None

**SUCCESS RESPONSE:**

**CODE: 200**

**CONTENT:** {"status ": "success"}

**ERROR RESPONSE:**

**CODE: 200 or 500**

**CONTENT:** {" status ":" failed", "message": "failed due to 'message-details'"}

## LIVE ROUTE DETAILS

This REST API is meant to be consumed by Intelligent transport Management Application to Get route details which are live (route details, poi details)

**ROOT URL:** http://<IP>:<PORT>/IOT_integration/

**URL:** http://<IP>:<PORT>/IOT_integration/IOTIntegration/getOnGoingRouteDetails

**DESCRIPTION:** This using mac address.

**PATH:/**IOTIntegration/getOnGoingRouteDetails

**METHOD:** Post

**URL PARAMS:** None

**REQUEST HEADERS:** Content-Type: application/json

**DATA PARAMS:**

| Parameter Name | Parameter Type | Data Type | Required |
|---|---|---|---|
| macAddress | body | String | true |

**CONSUMES**: application/json

**PRODUCES**: application/json

**SAMPLE INPUT**: {"routeId":8361,"macAddress": "861075026365494"}

**RESPONSE HEADERS**: None

**SUCCESS RESPONSE**:

**CODE**: **200**

**CONTENT**: {"status ": true, “ongoingRoutes”:[{}] }

Or

{"status ": false, “message”: “There is no vehicle for This mac address "}

**ERROR RESPONSE**:

**CODE**: **200**

**CONTENT**: {" status ":”failed”, “message”: “failed due to ‘message-details’"}

## ETA DETAILS FOR BUSROUTE

This REST API is meant to be consumed by Intelligent transport Management Application to Get get ETA details for particular bus stop.

**ROOT URL**: http://<IP>:<PORT>/ IOT_integration/

**URL**: http://<IP>:<PORT>/ IOT_integration/IOTIntegration/getPoiETAData

**DESCRIPTION**: This api is used to get ETA details for particular bus stop.

**PATH**: IOTIntegration/getPoiETAData

**METHOD**: Post

**URL PARAMS**: None

**REQUEST HEADERS**: Content-Type: application/json

**DATA PARAMS**:

| Parameter Name | Parameter Type | Data Type | Required |
|---|---|---|---|
| operation_id | body | Int | true |
| routeId | body | Int | true |

| poiId | body | Int | true |
|---|---|---|---|

**CONSUMES**: application/json

**PRODUCES**: application/json

**SAMPLE INPUT**: {"operationId":1,"routeId":8361,"poiId":8277}

**RESPONSE HEADERS**: None

**SUCCESS RESPONSE**:

**CODE**: **200**

**CONTENT**: {"status ": true, "poiEtaData":[{}] }

Or

{"status ": true, "message":"no result found"}

**ERROR RESPONSE**:

**CODE**: **200**

**CONTENT**: {" status ": false, "message": failed due to 'message-details'"}

## ALERT NOTIFICATION

This REST API is meant to be consumed by Intelligent transport Management Application to notify all alert coming from a bus terminals

**ROOT URL**: http://<IP>:<PORT>/IOT_integration/

**URL**: http://<IP>:<PORT>/IOT_integration/IOTIntegration/insertPanicAlertData

**PATH**: IOTIntegration/insertPanicAlertData

**METHOD**: Post

**URL PARAMS**: None

**REQUEST HEADERS**: Content-Type: application/json

**DATA PARAMS**:

| Parameter Name | Parameter Type | Data Type | Required |
|---|---|---|---|
| dateTime | body | String | true |

| | | | |
|---|---|---|---|
| alertType | body | String | true |
| alertTypeId | body | int | true |
| macId | body | String | true |
| latitude | body | float | true |
| basicId | body | int | true |
| location | body | String | true |
| longitude | body | float | true |

**CONSUMES**: application/json

**PRODUCES**: application/json

**SAMPLE INPUT**:


```
{
    "dateTime": "2017-11-21 15:02:23",
    "alertType": "Panic Alert",
    "alertTypeId": 1036,
    "macId": "ITMS4321",
    "latitude": 15.848595,
    "basicId": 2118,
    "location": "",
    "longitude": 74.49979
}
```


**RESPONSE HEADERS**: None

**SUCCESS RESPONSE**:

**CODE**: **200**

**CONTENT**: {"status ": true, "message": inserted successfully"}

**ERROR RESPONSE**:

**CODE**: **200**

**CONTENT**: {" status ": false, "message": failed due to 'message-details'"}

# SWM INTEGRATION

## VEHICLE ASSIGN NOTIFICATION

This REST API is meant to be consumed by Solid Waste Management Application to notifying vehicle assign details to ICCC Application

**ROOT URL:** http://<IP>:<PORT>/iotWebservices/

**URL:** http://<IP>:<PORT>/iotWebservices/SWMIntegration/sendAssignedVehicleDetails

**PATH:** /SWMIntegration/sendAssignedVehicleDetails

**METHOD:** Post

**URL PARAMS:** None

**REQUEST HEADERS:** Content-Type: application/json

**DATA PARAMS:**

| Parameter Name | Parameter Type | Data Type | Required |
|---|---|---|---|
| vehicleMacId | body | String | true |
| vehicleNumber | body | String | true |
| basicId | body | String | true |

**CONSUMES:** application/json

**PRODUCES:** application/json

**SAMPLE INPUT:** {"vehicleMacId":"","vehicleNumber":"","basicId":"123"}

**RESPONSE HEADERS:** None

**SUCCESS RESPONSE:**

**CODE: 200**

**CONTENT:** {“success”: true,” message”: “Assigned vehicle updated successfully”}

**ERROR RESPONSE:**

**CODE: 200 or 500**

**CONTENT:** {“success”: false,” message”:” Error in updating assigned vehicle details”}

## BIN ALERT NOTIFICATION

This REST API is meant to be consumed by Intelligent transport Management Application to notifying bin empty status details to ICCC Application.

**2) ROOT URL:** http://<IP>:<PORT>/iotWebservices/

**URL:** http://<IP>:<PORT>/iotWebservices/SWMIntegration/sendBinEmptyStatus

**PATH:** /SWMIntegration/sendBinEmptyStatus

**METHOD:** Post

**URL PARAMS:** None

**REQUEST HEADERS:** Content-Type: application/json

**DATA PARAMS:**

| Parameter Name | Parameter Type | Data Type | Required |
|---|---|---|---|
| collectionTime | body | String | true |
| macId | body | String | true |
| basicId | body | String | true |

**CONSUMES:** application/json

**PRODUCES:** application/json

**SAMPLE INPUT:** {"collectionTime":"2017-01-0221:02:01","macId":"123","basicId":"123"}

**RESPONSE HEADERS:** None

**SUCCESS RESPONSE:**

**CODE: 200**

**CONTENT:** {"success": true, " message": "Updated bin empty status successfully"}

**ERROR RESPONSE:**

**CODE: 200 or 500**

**CONTENT:** {"success": true, "message": Error in updating bin empty status"}

## INCOMPLETE TRIP DETAILS

This REST API is meant to be consumed by Solid Waste Management Application to notifying incomplete trip details to ICCC Application.

**3) ROOT URL:** http://<IP>:<PORT>/iotWebservices/

**URL:** http://<IP>:<PORT>/iotWebservices/SWMIntegration/sendIncompleteTripDetails

**PATH:** /SWMIntegration/sendIncompleteTripDetails

**METHOD:** Post

**URL PARAMS:** None

**REQUEST HEADERS:** Content-Type: application/json

**DATA PARAMS:**

| Parameter Name | Parameter Type | Data Type | Required |
|---|---|---|---|
| vehicleId | body | String | true |
| collectionPoints | body | JSON Array | true |

**CONSUMES:** application/json

**PRODUCES:** application/json

**SAMPLE INPUT:**

{"vehicleId": collectionPoints":

[{"collectionPoint":"Test","totalBins":20,"collectedBins":10,"collectedTime":"2017-01-02

08:12:12","binDetails":[{"binId":"Bin1","houseHolderName":"Trinity","Status":true}]}]}

**RESPONSE HEADERS:** None

**SUCCESS RESPONSE:**

**CODE: 200**

**CONTENT:** {"success": true, "message":" Alert Registered Successfully"}

**ERROR RESPONSE:**

**CODE: 200 or 500**

**CONTENT:** {"success": false, "message": Error in alert registration"}

## ROUTE CHANGE NOTIFICATION

This REST API is meant to be consumed by Solid Waste Management Application to notifying incomplete trip details to ICCC Application.

**1) ROOT URL:** http://<IP>:<PORT>

URL:http://<IP>:<PORT>/IOT_integration/VehicleGatewayregistered/getRouteDetailsOfVehicle

**PATH:** /VehicleGatewayregistered/getRouteDetailsOfVehicle

**METHOD:** Post

**URL PARAMS:** None

**REQUEST HEADERS:** Content-Type: application/json

**DATA PARAMS:**

| Parameter Name | Parameter Type | Data Type | Required |
|---|---|---|---|
| MacAddress | body | String | true |

**CONSUMES:** application/json

**PRODUCES:** application/json

**SAMPLE INPUT:** {"MacAddress":"359569050319251"}

**RESPONSE HEADERS:** None

**SUCCESS RESPONSE:**

**CODE: 200**

**CONTENT:** [{"route_geom":"LINESTRING(15.840420000000002 74.5027, 15.83867 74.50199, 15.837430000000001 74.50145, 15.83632 74.501020000000011, 15.835550000000001 74.500790000000009, 15.83449 74.50058, 15.834500000000002 74.50049, 15.834660000000001 74.500250000000008, 15.834920000000002 74.499990000000011, 15.83514 74.499670000000009, 15.835690000000001 74.49916, 15.83622 74.498640000000009, 15.836380000000002 74.49848, 15.83632 74.498340000000013, 15.836210000000001 74.498, 15.836030000000001 74.49693, 15.835810000000002 74.495910000000009)","bin":[{"Mac_Address":"359569050306514","Lat":15.837307103067026,"Long":74.50147211551666}]}]

**ERROR RESPONSE:**

**CODE: 500**

## BIN SENSOR STATUS

This REST API is meant to be consumed by Solid Waste Management Application to notifying incomplete trip details to ICCC Application.

**ROOT URL:** http://<IP>:<PORT>/

**URL:** http://<IP>:<PORT>/trinity-SWM-API rest/getBinSensorData

**PATH:** /rest/getBinSensorData

**METHOD:** Post

**URL PARAMS:** None

**REQUEST HEADERS:** Content-Type: application/json

**DATA PARAMS:**

| Parameter Name | Parameter Type | Data Type | Required |
|---|---|---|---|
| dt | body | String | true |
| MacAddress | body | String | true |
| vol | body | Integer | true |
| BasicId | body | String | true |

**CONSUMES:** application/json

**PRODUCES:** application/json

**SAMPLE INPUT:**

{"dt":"2017-07-28 15:48:27","MacAddress":"359569050293332","vol":29,"BasicId":54333344654}

**RESPONSE HEADERS:** None

**SUCCESS RESPONSE:**

**CODE: 200**

**CONTENT:** {"Status":"success","Result":"inserted successfully."}

**ERROR RESPONSE:**

**CODE: 200 or 500**

**CONTENT:** {"success": error," message":" please enter correct data."}

---

**3) ROOT URL:** http://<IP>:<PORT>/

**URL:**http://<IP>:<PORT>/IOT_integration/VehicleGatewayregistered/vehicles

**DESCRIPTION:** This api is used to register vehicle Data to SWM.

**PATH:** VehicleGatewayregistered/vehicles

**METHOD:** Post

**URL PARAMS:** None

**REQUEST HEADERS:** Content-Type: application/json

**DATA PARAMS:**

| Parameter Name | Parameter Type | Data Type | Required |
|---|---|---|---|
| operation_id | body | int | true |
| simNumber | body | String | true |
| macAddress | body | String | true |
| deviceName | body | String | true |

**Note: operation_id for Insert is 1, Update is 2, Delete is 3.**

**CONSUMES:** application/json

**PRODUCES:** application/json

**SAMPLE INPUT:**

{" operation_id ":1," simNumber ":"," macAddress ":"", "deviceName ":""}

**RESPONSE HEADERS:** None

**SUCCESS RESPONSE:**

**CODE: 200**

**CONTENT:** {"Status": "success"}

**ERROR RESPONSE:**

**CODE: 200 or 500**

**CONTENT:** {"success": "error"}

## SMART BIN REGISTRATION

This REST API is meant to be consumed by Solid Waste Management Application to register Bin Id Details to SWM.

**4) ROOT URL:** http://<IP>:<PORT>/

**URL:**http://<IP>:<PORT>/IOT_integration/AllregisteredBins/bindetails

**PATH:** AllregisteredBins/bindetails

**METHOD:** Post

**URL PARAMS:** None

**REQUEST HEADERS:** Content-Type: application/json

**DATA PARAMS:**

| Parameter Name | Parameter Type | Data Type | Required |
|---|---|---|---|
| operation_id | body | int | true |
| macAddress | body | String | true |
| deviceName | body | String | true |
| latitude | body | String | true |
| longitude | body | String | true |
| simNumber | body | String | true |
| binTagId | body | String | true |

**Note: operation_id for Insert is 1, Update is 2, Delete is 3.**

**CONSUMES:** application/json

**PRODUCES:** application/json

**SAMPLE INPUT:**

```
{
    "operation_id": 1,
    "macAddress": "",
    "deviceName": "",
```

"latitude": "",
"longitude": "",
"simNumber": "",
"binTagId": ""
}

**RESPONSE HEADERS:** None

**SUCCESS RESPONSE:**

**CODE: 200**

**CONTENT:** {"Status": "success"}

**ERROR RESPONSE:**

**CODE: 200 or 500**

**CONTENT:** {"success": "error"}

# SMART LIGHTING INTEGRATION

## SMART LIGHTING POLE REGISTRATION

This REST API is meant to be consumed by Lighting Application System to manage Lighting devices register by the trinityICCC Administrator. The data sent in request and response both are in JSON format.

**1. Response**

The status of the response can be determined from two fields:
1. *status* field in response body
2. HTTP Status Header

**Response Body:**

The response body will always have a *status* field showing the status of the request. The value of
the *status* field will be:
1. success - if the request was successful
2. failure - if the request was failure

In case of failure the response body will also contain a *message* field that will contain the error
message.

**HTTP Status Header:**
The HTTP *Status* Header in the response will be *200 OK* in case of success and will be anything
other than *200 OK* in case of failure.

## ASSET ONBOARDING

### Device Registration

API: **http://IP:PORT/ICCCIntigration/registerLightingDevice**

Method: POST

Request Body:

| Sl.no | Field | Data type | Description | Info |
|---|---|---|---|---|
| 1 | Operation_ID | integer | ID of operation to be performed | 1 for adding new device, 2 for updating existing device |
| 2 | Device Name | string | Name of device | |
| 3 | Device Type | integer | Type of device | |
| 4 | Latitude | float | Latitude of location where device is installed | |
| 5 | Longitude | float | Longitude of location where device is installed | |
| 6 | MAC Address | string | MAC address of the device | |
| 7 | Device Location | string | Full address of location where device is installed | |

**Ex:**

{
"operation_id": 1, //1 for adding 2 for updating
"Device Name": "Lighting device",
"Device Id": 18, //For parking default value will be 18
"longitude": 77.5959877,
"latitude": 12.981728,
"Mac Address": "123456793",
"device_location ": "Gubbi Thotadappa Rd, Kempegowda, Sevashrama, Bengaluru, Karnataka 560023, India"
}

**Response:**

| Sl.no | Field | Data Type | Description | Info |
|---|---|---|---|---|
| 1 | status | String | True/false status | |

**Ex:**

**Success response:**

{
" success ": "true",
"message", "Device configured successfully"
}

**Failure response:**

{
" success ": "false",
"message", "Device not configured"
}

## REAL TIME DATA INTEGRATION

Real Time Data Packet is sent from the Lighting Device to the Trinity IoT Hub through REST API on top of trinityIoT. The payload will be of JSON Object format which is explained below.

**REST API**:

**http://IP:PORT/PSIMWebRestService/rest/lightingServices/sendLightingDetails**

**Request Type**:POST,

**Body Part**:


```
{
        "DeviceMACId": null,
        "FeederIdentifier": "00000000-0000-0000-0000-000000000000",
        "FeederName": null,
        "TimeStamp": "0001-01-01T00:00:00",
        "PhaseL1Voltage": 0.0,
        "PhaseL2Voltage": 0.0,
        "PhaseL3Voltage": 0.0,
        "MainsVoltagesR": 0.0,
        "MainsVoltagesY": 0.0,
        "MainsVoltagesB": 0.0,
        "OutputVoltageU": 0.0,
        "OutputVoltageV": 0.0,
        "OutputVoltageW": 0.0,
        "PhaseWiseCurrentI1": 0.0,
        "PhaseWiseCurrentI2": 0.0,
        "PhaseWiseCurrentI3": 0.0,
        "Frequency": 0.0,
        "Phase1PowerFactor": 0.0,
        "Phase2PowerFactor": 0.0,
        "Phase3PowerFactor": 0.0,
        "TotalActivePower": 0.0,
        "TotalReactivePower": 0.0,
```

"TotalActiveEnergy": 0.0,

"TotalReactiveEnergy": 0.0,

"TotalKVAHEnergy": 0.0,

"ApparentPowerKVA": 0.0,

"MeteringKWhCumulative": 0.0,

"MeteringKVAhCumulative": 0.0,

"Temperature": 0.0,

"BatteryVoltage": 0.0,

"MCBTrip": 0,

"ContactorFailure": 0,

"DoorOpen": 0,

"GroundLeakage": 0,

"BatteryChargingVoltage": 0.0,

"ContactorStatus": 0,

"GSMSignalStrength": 0,

"GSMModemStatus": 0,

"Contactor": 0,

"DimmingSchedules": [

{

"StartTime": "2017-04-20T12:49:35.0791499+05:30",

"EndTime": "2017-04-21T12:49:35.080151+05:30"

}

],

"OperationSchedules": [

{

"StartTime": "2017-04-20T12:49:35.080151+05:30",

"EndTime": "2017-04-21T12:49:35.080151+05:30"

}

```
        ]
}
```

**RESPONSE**

**Success response:**

```
        {
        " success ": "true",
        "message", "Data Received"
        }
```

**Failure response:**

```
        {
        " success ": "false",
        "message", "Failed to receive"
        }
```

## ENERGY CONSUMPTION

Data Packet is sent from the IoT Hub to the Lighting Application Server through Apache trinityIoT- publish-subscribe model. The payload will be of JSON Object format which is explained below.

**Topic :** LIGHTING

**Payload :** JSON Object

Payload Description:

Payload:

{

“LIGHTING” : {

“<PARAMETER>”:<VALUE>,

… ,

… ,

… ,

}

}