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1. About this Document

This document contains API reference information for Security and Surveillance solution.

This document also contains Database Design with Entity-Relationship information.

2. Intended Audience

This document is intended for programmer, manager, architect to understand how to utilize reference implementation for Security and Surveillance solution

3. Pre-requisites

Reader should be aware of full stack development to interpret API reference information and Database design.

4. Introduction

This document will provide API reference for below modules:

Backend:

This module will provide api to North bound interfaces like web application and South bound interfaces are for Aggregator and Compute Engine

Aggregator:

Aggregator is part of South bound section. This module will communicate with DVR and provide stream services for various cameras and push images for analytics.

Compute Engine:

Compute Engine is part of South bound section. This module will make analytics and deep learning detection of camera images.

Web app:

Web app is part of North bound section. It will mainly interact with user and backend module for numerous services from UI.

Api Version	/v1/
Base Path	/heimdall/
SOLUTIONURL	http://<URL>
Socket URL	http:// <URL>:5006

5. Back End:

This module will provide two types of API's

North Bound API (NB):

North Bound API set includes communication between backend module and application layer like web application, mobile application, custom application etc. Classification will help us to identify api which belong to back end to application layer.

South bound API (SB):

South Bound API set includes communication between backend module to lower layer like Aggregator, Compute engines (like Jetson/Movidius/Cloud based DL algorithm). This classification will help us to identify api's which belong to backend to lower layer.

6. To Add Compute Engine (NB)

POST /computeengines

Description

This api is part of North Bound Api set. It is used by web application to manually register compute engine on solution.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
deviceType	Required	Type of compute engine: Jetsontx2, Movidius, Cloud algorithm	String	Jetsontx2
name	Required	Name/Label of compute engine	String	Jetson 2
macId	Required	Mac Id of compute engine	String	12:CD:2M:34:67:90
location	Optional	Location of compute engine	String	Location details: pillar number 25
ipAddress	Required	Ip address of compute engine	String	10.9.56.342

Responses

Return Value	Description
201	Compute engine created successfully

Example

Request:-

https://<url>/computeengines

Body:-

```
{
  "macId" : "10.9.43.90",
  "name" : "Local-Testing-TX2-78",
  "deviceType" : "Jetson-TX2",
  "ipAddress" : "10.9.43.90",
  "location" : "MobiliyaOffice"
}
```

Response:-

```
{
  "_id": 5acb14a0cc2c6e2718e56f44
  "macId" : "10.9.43.90",
  "name" : "Local-Testing-TX2-78",
  "deviceType" : "Jetson-TX2",
  "ipAddress" : "10.9.43.90",
  "location" : "MobiliyaOffice",
  "status" : 1,
  "lastSeen" : 1523275630
}
```

7. To delete Compute Engine (NB)

DELETE /computeengines/{id}

Description

This api is part of North Bound Api set. It is used by web application to offboard compute engine from solution.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example

computeEngineId	Required	Compute engine ID to delete	String	5ac5ada9391b313bc563eb45
-----------------	----------	-----------------------------	--------	--------------------------

Responses

Return Value	Description
204	Deleted compute engine successfully
404	Compute engine not found

Example

Request:-

https://<url>/computeengines/5ac5ada9391b313bc563eb45

Response:-

No Content

8. To Register Compute Engine (SB)

POST /devices/computeengines

Description

This api is part of South Bound Api set. It is used by compute engine to register on solution.

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
------	----------	-------------	-----------	---------

macId	Required	Mac id of compute engine	String	12:CD:2M:34:67:90
name	Required	Compute engine name	String	Jetson-12
deviceType	Required	Type of compute engine:- Jetson tx2 Movidius	String	Movidius
cameraSupported	Required	No of camera supported	String	2
ipAddress	Required	Ip address of compute engine	String	12.78.34.67
location	Required	Location of compute engine	String	1 st floor
jetsonCamFolderLocation	Required	Jetson folder location	String	user@ip:/home//Cam
wayToCommunicate	Required	Rsync or restAPI	String	Rsync
detectionAlgorithms	Required	Detection algorithms	Array	[{ "fps" : 1, "featureName" : "humanDetection", "status" : 0, "objectSupported" : [], "shapeSupported" : ["1"] }]

Responses

Return Value	Description
201	Compute engine registered successfully

Example

Request:-

`https://<url>/devices/computeengines`

Body:-

```
{
  "macId" : "10.9.43.78",
  "name" : "Local-Testing-TX2-78",
  "deviceType" : "Jetson-TX2",
  "ipAddress" : "10.9.42.90",
  "cameraSupported" : 3,
  "location" : "MobiliyaOffice",
  "jetsonCamFolderLocation" : "password@ip:/home/Cam",
  "wayToCommunicate" : "rsync",
  "availability" : 3,
  "detectionAlgorithms" : [
    {
      "fps" : 1,
      "featureName" : "humanDetection",
      "status" : 0,
      "objectSupported" : [],
      "shapeSupported" : [
        "1"
      ]
    }
  ]
}
```

Response:-

```
{
  "_id": 5acb14a0cc2c6e2718e56f44
  "macId" : "10.9.43.78",
  "name" : "Local-Testing-TX2-78",
  "deviceType" : "Jetson-TX2",
  "ipAddress" : "10.9.43.78",
  "cameraSupported" : 3,
  "location" : "MobiliyaOffice",
  "jetsonCamFolderLocation" : "password@ip:/home/Cam",
  "wayToCommunicate" : "rsync",
```

```
"status" : 0,
"lastSeen" : 1523275630,
"availability" : 3,
"detectionAlgorithms" : [
  {
    "fps" : 1,
    "featureName" : "humanDetection",
    "status" : 0,
    "objectSupported" : [],
    "shapeSupported" : [ "1" ]
  }
]
```

9. To Get Compute Engine List (NB)

GET /computeengines

Description

This api is part of North Bound Api set. It is used by web application to get list of compute engines.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Responses

Return Value	Description
200	Compute engine details

Example

Request:-

https://<url>/computeengines

Response:-

```
[
  {
    "_id": "5ac5ada9391b313bc563eb45",
    "macId": "10.9.43.78",
    "name": "Local-Testing-TX2-78",
    "deviceType": "Jetson-TX2",
    "ipAddress": "10.9.43.78",
    "cameraSupported": 3,
    "location": "MobiliyaOffice",
    "jetsonCamFolderLocation": "password@ip:/home/nvidia/Compute",
    "wayToCommunicate": "rsync",
    "status": 2,
    "lastSeen": 1523343778,
    "availability": 3,
    "detectionAlgorithms": [
      {
        "fps": 1,
        "featureName": "humanDetection",
        "status": 0,
        "objectSupported": [],
        "shapeSupported": ["1"]
      }
    ]
  }
]
```

10. To Get Compute Engine By Id(NB)

GET /computeengines/{id}

Description

This api is part of North Bound Api set. It is used by web to get compute engine details by id..

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
computeEngineId	Required	Compute engine ID	String	5ac5ada9391b313bc563eb45

Responses

Return Value	Description
200	Compute engine details

Example

Request:-

`https://<url>/computeengines/5ac5ada9391b313bc563eb45`

Response:-

```
{
  "_id": "5ac5ada9391b313bc563eb45",
  "macId": "10.9.47.90",
  "name": "Local-Testing-TX2-78",
  "deviceType": "Jetson-TX2",
  "ipAddress": "10.9.43.78",
  "cameraSupported": 3,
  "location": "MobiliyaOffice",
  "jetsonCamFolderLocation": "passwordd@ip:/home/nvidia/Compute-",
  "wayToCommunicate": "rsync",
  "status": 2,
  "lastSeen": 1523343778,
  "availability": 3,
  "detectionAlgorithms": [
    {
      "fps": 1,
      "featureName": "humanDetection",
      "status": 0,
      "objectSupported": [],
      "shapeSupported": ["1"]
    }
  ]
}
```

11. To Whitelist Or Unwhitelist Compute Engine NB)

PUT / computeengines/{id}

Description

This api is part of North Bound Api set. It is used by web to whitelist or unwhitelist compute engine.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
computeEngineId	Required	Compute engine ID	String	5ac5ada9391b313bc563eb45
status	Required	1- Whitelist 0 - unwhitelist	Number	1 / 0

Responses

Return Value	Description
200	Compute engine updated

Example

Request:-

`https://<url>/computeengines/5ac5ada9391b313bc563eb45`

Body:-

```
{
  "status": 1
}
```

Response:-

```
{
  "_id": "5ac5ada9391b313bc563eb45",
  "macId": "10.9.43.78",
  "name": "Local-Testing-TX2-78",
  "deviceType": "Jetson-TX2",
  "ipAddress": "10.9.45.90",
  "cameraSupported": 3,
  "location": "MobiliyaOffice",
  "jetsonCamFolderLocation": "password@ip:/home/nvidia/Compute-",
  "wayToCommunicate": "rsync",
  "status": 2,
  "lastSeen": 1523343778,
  "availability": 3,
  "detectionAlgorithms": [{
    "fps": 1,
    "featureName": "humanDetection",
    "status": 0,
    "objectSupported": [],
    "shapeSupported": ["1"]
  }]
}
```

12. To Get Features Supported By Compute Engine(NB)

GET /analytics/computeengines/features

Description

This api is part of North Bound Api set. It is used by web to get list of supported features.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Responses

Return Value	Description
200	Compute engine feature list

Example

Request:-

https://<url>/analytics/computeengines/features

Response:-

```
["faceDetection","faceRecognition","humanDetection","objectDetection"]
```

13. To Add Aggregator (NB)

POST /aggregators

Description

This api is part of North Bound API set. It is consumed by web application to onboard Aggregator to solution.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
name	Required	Name/Label of aggregator	String	AggregatorDvr2
url	Required	Base URL of DVR/NVR to stream camera	String	<valid URL>
channelId	Required	Number of total camera supported	String	16
macId	Required	MacId of aggregator	String	
ipAddress	Required	Ip Address of aggregator	String	10.8.23.765
location	Optional	Location of DVR/NVR	String	Location details: pillar number 25

Responses

Return Value	Description
201	Created aggregator successfully
409	aggregator already exist

Example

Request:-

https://<url>/aggregator

Body:-

```
{
  "name": "aggregatorDvr2",
  "url": "rtsp://<username>:<pwd>@<IP>/user=admin&password=admin&channel=1&stream=0",
```

```
“channelId”:”32”,
```

```
“macId”: “”,
```

```
“ipAddress”: “10.8.45.341”,
```

```
“location”:” Pillar 23”
```

```
}
```

Response:-

```
{
```

```
“_id”:”5ac35b2c391b313bc563eb31”,
```

```
“name”:”aggregatorDevr2”,
```

```
“url”: “rtsp://<username>:<pwd>@<IP>/user=admin&password=admin&channel=1&stream=0”,
```

```
“channelId”: “32”
```

```
“ipAddress”: “10.8.45.341”
```

```
}
```

14. To register Aggregator (SB)

POST /devices/aggregators

Description

This api is part of South Bound API set. It is used by Aggregator module. On boot aggregator will register itself with solution by using this api.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
name	required	The aggregator name	String	<aggregator name>
url	required	Base URL of Aggregator	String	<url>

IpAddress	required	IP address of Aggregator	String	192.168.123.12
macId	Required	Mac id of Aggregator	String	12:23:23:23:43:34
location	Optional	Physical location where aggregator is installed	String	Floor3
channelId	Optional	Channel id for DVR/NVR	string	32
availability	Optional	Availability	String	yes

Responses

Return Value	Description
201	Aggregator registered successfully

Example

Request:-

https://<url>/devices/aggregators

Body:-

```
{
  "name": "aggregatorDvr2",
  "url": "rtsp://<username>:<pwd>@<IP>/channel=1",
  "ipAddress": "192.158.123.23",
  "macId": "23:23:23:23:23",
  "channelId": "32",
  "location": "Pillar 23",
  "availability": "yes"
}
```

Response:-

```
{  
  "return": "registered successfully",  
}
```

15. To offboard Aggregator (NB)

DELETE /aggregators/{id}

Description

This api is part of North Bound API set. It is consumed by web application to offboard Aggregator to solution.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
aggregatorId	Required	ID of aggregator	String	1234

Responses

Return Value	Description
204	deleted aggregator successfully
404	aggregator not found

Example

Request:-

https://<url>/aggregator/123

Response:-

No content

16. Get Aggregator List (NB)

GET /aggregators

Description

This api is part of North Bound API set. It is consumed by web application to get list of registered aggregators to solution.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON
Return Value	Description
200	Aggregator list

Example

Request:-

https://<url>/aggregator

Response:-

```
[
  {
    "id": "5ac35b2c391b313bc563eb31",
    "name": "Aggregator01",
    "url": "rtsp://<username>:<password>@<ip_address>:<port>/cam/realmonitor?channel=<id>&subtype=0",
    "ipAddress": "10.9.56.234",
    "macId": "cb448ea8a08446",
```

```
{
  "location": "location",
  "channelId": 35,
  "status": 0,
  "availability": "yes",
  "lastSeen": 1522818010
}
```

17. Get Aggregator details by id (NB)

GET /aggregators/{id}

Description

This api is part of North Bound API set. It is consumed by web application to get aggregator details by aggregator id.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
aggregatorId	Required	ID of aggregator	String	1234

Responses

Return Value	Description
200	Aggregator details
404	aggregator not found

Example

Request:-

https://<url>/aggregator/5ac35b2c391b313bc563eb31

Response:-

```
{
  "_id" : "5ac35b2c391b313bc563eb31",
  "macId" : "cb448ea8a08446",
  "__v" : 0,
  "name" : "AggregatorLocalK",
  "url" : "rtsp://<username>:<password>@<ip_address>:<port>/cam/realmonitor?channel=<id>&subtype=0",
  "ipAddress" : "10.9.42.243",
  "status" : 2,
  "lastSeen" : 1522818010,
  "availability" : "yes",
  "location" : "4rth Floor",
  "channelId" : "32"
}
```

18. To whitelist/unwhitelist Aggregator (NB)

PUT /aggregators/{id}

Description

This api is part of North Bound API set. It is consumed by web application to whitelist or unwhitelist aggregator details by aggregator id.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
aggregatorId	Required	ID of aggregator	String	1234

Status	Required	1- Whitelis 0- Unwhitelist	Numaber	0/1
--------	----------	-------------------------------	---------	-----

Responses

Return Value	Description
200	Aggregator details updated
404	aggregator not found

Example

Request:-

`https://<url>/aggregator/5ac35b2c391b313bc563eb31`

Request:-

```
{
  "status": 1
}
```

Response:-

```
{
  "_id" : "5ac35b2c391b313bc563eb31",
  "macId" : "cb448ea8a08446",
  "__v" : 0,
  "name" : "AggregatorLocalK",
  "url" : "rtsp://<username>:<password>@<ip_address>:<port>/cam/realmonitor?channel=<id>&subtype=0",
  "ipAddress" : "10.9.42.243",
  "status" : 2,
  "lastSeen" : 1522818010,
  "availability" : "yes",
  "location" : "4rth Floor",
  "channelId" : "32"
}
```


19. To update Aggregator (NB)

PUT /aggregators/{id}

Description

This api is part of North Bound API set. It is consumed by web application to update aggregator details.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
aggregatorId	Required	ID of aggregator	String	1234

Responses

Return Value	Description
200	Aggregator details updated
404	aggregator not found

Example

Request:-

https://<url>/aggregator/5ac35b2c391b313bc563eb31

Request:-

```
{
  "name": "Aggregator1",
  "location": "new location"
}
```

```
}

```

Response:-

```
{
  "_id" : "5ac35b2c391b313bc563eb31",
  "macId" : "cb448ea8a08446",
  "__v" : 0,
  "name" : "AggregatorLocalK",
  "url" : "rtsp://<username>:<password>@<ip_address>:<port>/cam/realmonitor?channel=<id>&subtype=0",
  "ipAddress" : "10.9.42.243",
  "status" : 2,
  "lastSeen" : 1522818010,
  "availability" : "yes",
  "location" : "4rth Floor",
  "channelId" : "32"
}
```

20. To Add Camera (NB)

POST /cameras

Description

This is part of North Bound API set. To add camera to solution from web application

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
deviceName	Required	Name/Label of camera	String	receptionCamera
Location	Optional	Location of camera	String	4 th floor
streamingUrl	Required	Url of camera	string	rtsp://<username>:<password>@<IP>:<PORT>/cam/realmonitor?channel=6

				&subtype=0
aggregatorId	Required	DVR where this camera belongs to	String	123
type	Required	Type of camera : IP/IR	String	ip
computeEngineId	Required	Compute engine where we would like to process camra image	String	25
deviceType	Required	Type of the camera	String	DVR/IP

Responses

Return Value	Description
201	Created camera successfully
409	camera already exist

Example

Request

https://<url>/cameras

Body

```
{
  "deviceType": "DVR",
  "deviceName": "n",
  "aggregatorId": "5abddc9ac9c689388c2d4522",
  "computeEngineId": "5abcaba5c9c689388c2d35ee",
  "streamingUrl": "rtsp://<username>:<password>@<IP>:<Port>/cam/realmonitor?channel=6&subtype=0",
  "location": "a"
}
```

Response

```
{
  "message": "Device not found,sent request to aggregator"
}
```

21 . To Get List Of cameras (NB)

GET /cameras

Description

This is part of North Bound API set. To get list of all cameras.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Response

Return Value	Description
200	Created camera successfully

Example

Request:-

`https://<url>/cameras`

response

```
[
  {
    "_id": "5abe5af1985303593446a9ae",
    "deviceType": "DVR",
    "deviceName": "Cafeteria",
    "streamingUrl": "rtsp://username:password@ip:port/cam/realmonitor?channel=1&subtype=0",
    "status": "0",
    "computeEngine": "5abcaba5c9c689388c2d35ee",
    "aggregator": "5abddc9ac9c689388c2d4522",
    "location": "Pune",
    "imageHeight": 720,
    "imageWidth": 1280,
    "frameWidth": 1131,
    "frameHeight": 452,
    "type": "cameraDetails",
    "lastSeen": "2018-03-30T15:42:41.904Z",
    "isPlotted": 1,
    "boundingBox": [
      {
        "shape": "Rectangle",
        "x": 1,
        "y": 1,
        "x2": 99,
        "y2": 99,
        "detectionObjects": ["person"],
        "markerName": "Cafeteria default"
      }
    ]
  }
]
```

```

    , "tagName": "Cafeteria default"
  }
},
"feature": "humanDetection" }
]

```

22. To Get Camera Details By Id (NB)

GET /cameras/{id}

Description

This is part of North Bound API set. To get camera details by camera id.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Response

Return Value	Description
200	Created camera successfully

Example

Request:-

`https://<url>/cameras/5abe5af1985303593446a9ae`

Response:-

```

{
  "id": "5abe5af1985303593446a9ae",
  "deviceType": "DVR",
  "deviceName": "Cafeteria",
  "streamingUrl": "rtsp://<user>:<password>@<ip>:<port>/cam/realmonitor?channel=1&subtype=0",
  "status": "0",
  "computeEngine":
  {
    "id": "5abcaba5c9c689388c2d35ee",
    "macId": "10.9.43.75",
    "name": "Dev-TX2-78",

```

```

"deviceType":"Jetson-TX2",
"ipAddress":"10.9.43.75",
"cameraSupported":3,
"location":"MobiliyaOffice",
"jetsonCamFolderLocation":"wnd@10.9.78.90:/home/nvidia/Compute-Engine-Yolo/Cam",
"wayToCommunicate":"rsync",
"status":2,
"lastSeen":1523200791,
"availability":4,
"detectionAlgorithms":[
  {
    "fps":1,
    "featureName":"humanDetection",
    "status":0,
    "objectSupported":[]
    ,"shapeSupported":["1"]
  }
],
"aggregator":
{
  "_id":"5abddc9ac9c689388c2d4522",
  "macId":"3fb029a3123247",
  "name":"AggregatorDev",
  "url":"rtsp",
  "ipAddress":"10.9.43.104",
  "availability":"yes",
  "location":"4rth Floor Amar Apex"
  ,"channelId":"32",
  "status":2,
  "lastSeen":1523200760
},
"location":"Pune",
"imageHeight":720,
"imageWidth":1280,
"frameWidth":1131,
"frameHeight":452,
"type":"cameraDetails",
"lastSeen":"2018-03-30T15:42:41.904Z",
"isPlotted":1,
"boundingBox":[
  {
    "shape":"Rectangle"
    ,"x":1,
    "y":1
    ,"x2":99
    ,"y2":99,
    "detectionObjects":["person"],
    "markerName":"Cafeteria default",
    "tagName":"Cafeteria default"
  }
],
"feature":"humanDetection"
}

```

23. To Validate Marker Name (NB)

GET /cameras/markers

Description

This is part of North Bound API set. To validate if given marker name is valid or not..

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Response

Return Value	Description
200	Valid marker
409	Marker name already taken for camera
400	Invalid marker name

Example

Request:-

https://<url>/cameras/markers?marker=line

Response

```
{ "message": "Valid marker" }
```

24. To Get bounding box (NB)

GET /cameras/bboxes

Description

This is part of North Bound API set. To get bounding box marker name details.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Response

Return Value	Description
200	Valid marker

Example

Request:-

`https://<url>/cameras/bboxes`

Response

```
[{"camId":"5acb1609cc2c6e2718e56f45","markerName":"MarkerMobile360_1"}]
```

25. To delete Camera (NB)**DELETE /cameras/{id}****Description**

This is part of North Bound API set. To remove camera from solution from web application

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
cameraId	Required	Camera id to be removed	String	25

Responses

Return Value	Description
204	removed camera successfully

Example

Request

https://<url>/cameras/5acb1609cc2c6e2718e56f45

Response

No content

26. Request Raw Image (NB)

POST /cameras/raw

Description

This is part of North Bound API set. To request raw image from aggregator.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
deviceType	Required	Device type of camera	String	DVR
cameraId	Required	Camera Id	String	5acb1609cc2c6e2718e56f45
aggregatorId	Required	Aggregator Id	String	5ac35b2c391b313bc563eb31
computeEngineId	Required	Compute engine id	String	5ac35b2c391b313bc563eb31

Responses

Return Value	Description
200	Request sent to aggregator

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Example

Request:-

https://<url>/cameras/raw

Body:-

```
{
  "deviceType": "Mobile",
  "cameraId": "5acb1609cc2c6e2718e56f45",
  "aggregatorId": "5ac35b2c391b313bc563eb31",
  "computeEngineId": "5acb1440391b313bc563eb54"
}
```

Response:-

```
{
  "message": "Request sent to aggregator"
}
```

27. Save camera configuration (NB)

PUT/cameras/aoi

Description

This is part of North Bound API set. To save camera configuration i.e bounding boxes.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
Coords	Required	Coordinates of bounding box	Array	
frameWidth	Required	Width and height of frame	Object	{"width":596,"height":238.4},
imageHeight	Required	Image height	String	720
imageWidth	Required	Image width	String	1280
deviceName	Required	Name of the camera	String	camName

Responses

Return Value	Description
200	Configuration saved

Example

Request:-

`https://<url>/cameras/raw`

Body:-

```
{
  "Coords":
  [
    {
      "shape": "Rectangle",
      "x": 3.1879194630872485,
      "y": 5.453020134228188,
      "x2": 89.26174496644295,
      "y2": 94.37919463087248,
      "markerName": "cafe",
      "tagName": "",
      "detectionObjects": ["person"]
    }
  ],
  "frameWidth": { "width": 596, "height": 238.4 },
  "imageHeight": 720,
  "imageWidth": 1280,
  "deviceName": "Cafeteria",
}
```

Response:-

```
{
  "_id": "5abe5af1985303593446a9ae",
  "deviceType": "DVR",
  "deviceName": "Cafeteria",
  "streamingUrl": "rtsp://komal:AgreeYa@10.9.42.91:554/cam/realmonitor?channel=1&subtype=0",
  "status": "0",
  "computeEngine": "5abcaba5c9c689388c2d35ee",
  "aggregator": "5abddc9ac9c689388c2d4522",
  "location": "Pune",
  "imageHeight": 720,
  "imageWidth": 1280,
  "frameWidth": 596,
  "frameHeight": 238.4,
  "lastSeen": "2018-03-30T15:42:41.904Z",
  "isPlotted": 1,
  "boundingBox":
  [
    {
      "shape": "Rectangle",
      "x": 3.1879194630872485,
      "y": 5.453020134228188,
      "x2": 89.26174496644295,
      "y2": 94.37919463087248,
      "markerName": "cafe",
      "tagName": "",
      "detectionObjects": ["person"]
    }
  ],
  "feature": "humanDetection"
}
```

28.Start or stop camera (NB)

PUT/cameras/status

Description

This is part of North Bound API set. To start or stop camera streaming.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
status	Required	1- to start streaming 0 - stop streaming	Number	0/1
camId	Required	Cam id	string	5abddc9ac9c689388c2d4522
aggregatorId	Required	Aggregator id	String	5abddc9ac9c689388c2d4522
computeEngineId	Required	Compute engine id	String	5abddc9ac9c689388c2d4522

Responses

Return Value	Description
200	Camera status updated

Example

Request:-

`https://<url>/cameras/status`

Body:-

```
{
  "status":1,
  "camId":"5abe5af1985303593446a9ae",
  "aggregatorId":"5abddc9ac9c689388c2d4522",
  "computeEngineId":"5abcaba5c9c689388c2d35ee"
}
```

Response:-

```
{
  "message":"Camera status updated"
}
```

29.To toggle streaming (NB)

POST /cameras/toggle/streaming

Description

This is part of North Bound API set. To toggle streaming i.e to request to stop sending images to backend when user is not accessing results.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
flag	Required	1- to start image send functionality 0 - stop image send functionality	Number	0/1

camId	Required	Cam id	string	5abddc9ac9c689388c2d4522
aggregatorId	Required	Aggregator id	String	5abddc9ac9c689388c2d4522

Responses

Return Value	Description
200	Camera status updated

Example

Request:-

`https://<url>/cameras/toggle/streaming`

Body:-

```
{
  "flag":1,
  "camId":"5ac719b6005a1d1a3c4614de",
  "aggregatorId":"5ac4d35d391b313bc563eb44"
}
```

Response:-

```
{ "message": "success" }
```

30.To Plot Camera On Map (NB)

PUT /cameras/plot

Description

This is part of North Bound API set. To plot cameras on floor map.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
camIds	Required	Camera Ids	String	5ac5afa1b1090f46f052434f,5ac5afa1b1090f46f05243

Responses

Return Value	Description
200	Camera plotted

Example

Request

https://<url>/cameras/plot?camIds=5ac5afa1b1090f46f052434f,5ac5afa1b1090f46f05243

Response:-

```
{"message": "Camera plotted"}
```

31.To Save Powerbi Configuration (NB)

POST /powerbi

Description

This is part of North Bound API set. To save powerbi configurations.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
------	------------

Response formats	JSON
-------------------------	------

Parameters

Name	Required	Description	Data Type	Example
confName	Required	Camera device type	string	Report
grant_type	Required	Cam id	string	password
username	Required	username	String	Username
password	Required	password	String	password
Client_id	Required	Client id	String	Sddfb-7866bb
Client_secret	Required	Client secret	String	Ehh89wgg26
resource	Required	resource	string	https://windows.net/
oauthUrl	Required	Oauth url	string	https://login
contentTypeHeader	Required	headers	string	Applicaton/json
embed_url	Required	Embed url	string	https://url
dId	Required	did	string	did

Responses

Return Value	Description
200	Camera status updated

Example

Request

https://<url>/powerbi

Body

```
{
  "confName": "Report",
  "grant_type": "",
  "username": "username",
  "password": "pwd",
```

```
"client_idl": "client_id",
"client_secret": "client_secret",
"resource": "",
"oauthUrl": "url",
"contentTypeHeader": "application/json",
"embed_url": "url",
"dId": "dId"
}
```

Response

```
{
  "message": "success",
}
```

32.To Get camera List By Features (NB)

GET /analytics/cameras/features

Description

This is part of North Bound API set. To get camera list by features.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Responses

Return Value	Description
200	Camera status updated

Example

Request:-

`https://<url>/analytics/cameras/features`

Response:-

[

```
{
  "_id": "Other",
  "count": 3,
  "feature": "Other"
},
{
  "_id": "faceDetection",
  "count": 1,
  "feature": "faceDetection"
}
]
```

33.To Get Camera By Aggregator Or Feature (NB)

GET /analytics/cameras/list

Description

This is part of North Bound API set. To get camera list filter by aggregator or feature.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
filter	Optional	Get camera list by filter	String	Aggregator/feature
deviceName	Optional	Search camera by name	string	5abddc9ac9c689388c2d4522

Responses

Return Value	Description
200	Camera status updated

Example

Request:-

`https://<url>/analytics/cameras/list?filter=feature&deviceName=cam`

Response:-

```
[
  {
    "cameras": [
      {
        "camId": "5ac5afa1b1090f46f052434f",
        "deviceName": "DemoCamera",
        "isPlotted": 1,
        "deviceType": "DVR",
        "streamingUrl": "rtsp",
        "status": "0",
        "computeEngine": "5ac5ada9391b313bc563eb45",
        "aggregator": "5ac4d35d391b313bc563eb44",
        "boundingBox": [
          {
            "tagName": "DemoCamera default",
            "markerName": "DemoCamera default",
            "detectionObjects": ["person"],
            "y2": 99,
            "x2": 99,
            "y": 1,
            "x": 1,
            "shape": "Rectangle"
          }
        ],
        "feature": "humanDetection",
        "imageHeight": 720,
        "imageWidth": 1280,
        "location": "cafe1"
      }
    ]
  }
]
```

34. To Add User Face Details (NB)

POST /faces

Description

This is part of North Bound API set. To add user details to solution from web application

Requires authentication

Valid bearer token should be provided

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data	Example
------	----------	-------------	------	---------

			Type	
faceId	Required	Face Id	String	5acb4f17264ea2130c4a162b
age	Required	Age of user	Number	23
gender	Required	Gender of user	string	Female
userData	Required	User name	String	Emma

Responses

Return Value	Description
201	Face details created successfully

String

Example

Request:-

https://<url>/faces

Body:-

```
{"faceId":"5acb4f17264ea2130c4a162b","userData":"a","age":31,"gender":"male"}
```

Response:-

```
{"result":"User Added to the face list"}
```

35. To Update User Face Details (NB)

PUT/faces

Description

This is part of North Bound API set. To update user details to solution from web application

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
Id	Required	Face Id	String	5acb4f17264ea2130c4a162b
age	Optional	Age of user	Number	23
gender	Optional	Gender of user	string	Female
userData	Optional	User name	String	Emma

Responses

Return Value	Description
200	Face details updated successfully
404	Face not found

Example

Request:-

https://<url>/faces/5acb4f17264ea2130c4a162b

Body:-

```
{"age": "34", "gender": "male", "userData": "a"}
```

Response:-

```
{
  "_id": "5acb4f17264ea2130c4a162b", "age": 34,
  "gender": "male",
  "faceRectangle": { "top": 333, "left": 930, "width": 41, "height": 41 },
  "deviceName": "FaceRecognition",
  "userImage": "data:image/jpg;base64, /9j/4AAQSkZJR",
  "timestamp": 1523280371,
  "createdDate": "Monday, 9 April 2018",
  "persistedFaceId": "0e95278c-70bb-4b33-bef7-2c9a6ead330c",
  "userData": "a",
  "createdAt": "2018-04-09T11:31:35.318Z",
  "status": 1 }
}
```

36. Get Total Count Of Faces (NB)

POST /faces/count

Description

This is part of North Bound API set. To get total count of identified and unidentified face details.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Responses

Return Value	Description
200	Total count of identified and unidentified faces

Example

Request:-

https://<url>/faces/count

Response:-

[{count: 30 , status: 1 }, {count:20 , status: 0}]

37. Get List Of Face Details (NB)

GET /faces

Description

This is part of North Bound API set. To get list of identified or unidentified user face details.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
Status	Optional	1 - identified face details 0 - unidentified face details	String Number	receptionCamera 1 / 0
Page	Optional	Number of page	Number	1
Limit	Optional	Number of records to fetch	Number	10

Responses

Return Value	Description
200	Face list by given filter

Example

Request;_

https://<url>/faces?status=1&page=0&limit=2

Response:-

```
[
  {
    "_id": "5ac764a94d34794508d63262",
    "persistedFaceId": "99293b64-7da7-41f3-a67e-03b677b34ed8",
    "deviceName": "FaceRecognition",
    "age": 25,
    "gender": "male",
    "faceRectangle": {
      "height": 36,
      "width": 36,
      "left": 1064,
      "top": 344
    },
    "userImage": "data:image/jpg;base64, /9j/4AAQSkZJRgAB",
    "timestamp": 1523266291,
    "createdAt": "2018-04-06T12:14:33.566Z",
    "createdDate": "Friday, 6 April 2018",
    "status": 1,
    "userData": "shubham"
  }
]
```

38. To Delete Face details (NB)

DELETE /faces

Description

This is part of North Bound API set. To delete face details of users..

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
faceIds	Required	Face Ids	String	5acb4f29264ea2130c4a162d

Responses

Return Value	Description
204	Face deleted

Example

Request:-

https://<url>/faces?faceIds=5acb4f29264ea2130c4a162d,5abddc9ac9c689388c2d452z

Response:-
No Content

39. To Add Map (NB)

POST /maps

Description

This is part of North Bound API set. To add floor map to solution from web application

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
name	Required	Floor map name	String	First Floor
base64	Required	Floor map	String	

		image		
cameras	Required	Plotted camera s on map	Array	[{"camId":"5ac5b4a4b1090f46f0524350","rotationAngle":0,"deviceName":"Line Test","x":60.20512459027949,"y":43.73045376762849}]

Responses

Return Value	Description
201	Map details created successfully

Example

Request:-

<https://<url>/maps>

Body:-

```
{
  "name":"dsfnk",
  "base64":"",
  "cameras":
  [
    {
      "camId":"5ac5b4a4b1090f46f0524350",
      "rotationAngle":0,
      "deviceName":"Line Test",
      "x":60.20512459027949,
      "y":43.73045376762849
    }
  ]
}
```

Response:-

```
{
  "name":"dsfnk",
  "base64":"",
  "imagePath":"https://abc.com:5008/dsfnk.jpg",
  "createdAt":"2018-04-09T13:36:30.399Z",
  "cameras":
  [
    {
      "camId":"5ac5b4a4b1090f46f0524350",
      "rotationAngle":0,
      "deviceName":"Line Test",
      "x":"60.20512459027949",
      "y":"43.73045376762849",

```

```

    "isDeleted":0
  }
},
  "_id":"5acb6c5eb67255201c426f94
"}

```

40. To Update Map Details (NB)

PUT /maps

Description

This is part of North Bound API set. To update map details to solution from web application

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
Map Id	Required	Map Id	String	5acb4f17264ea2130c4a162b
cameras	Required	Cameras plotted on map	Array	[{"cameras":[{"camId":"5ac5afa1b1090f46f052434f","rotationAngle":225,"deviceName":"DemoCamera","x":26.965667183590032,"y":13.503669067534076}]}

Responses

Return Value	Description
200	Map details updated successfully

Example

Request:-

`https://<url>/maps/5ac5afa1b1090f46f052434f`

Body:-

```
{
  "cameras":
  [
    {
      "camId":"5ac5afa1b1090f46f052434f"
      "rotationAngle":225,
      "deviceName":"DemoCamera",
      "x":26.965667183590032,
      "y":13.503669067534076
    }
  ]
}
```

Response:-

```
{
  "_id":"5acb480e303cc93bf0554fcb",
  "name":" qwe",
  "base64":"",
  "imagePath":"https://abc.com:5008/ qwe.jpg",
  "createdAt":"2018-04-09T11:01:34.704Z",
  "cameras":
  [
    {
      "y":"13.503669067534076",
      "x":"26.965667183590032",
      "deviceName":"DemoCamera",
      "rotationAngle":225,
      "camId":"5ac5afa1b1090f46f052434f"
      , "isDeleted":0
    }
  ]
}
```

41. To Get Maps (NB)

GET /maps

Description

This is part of North Bound API set. To get list of floor map.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Responses

Return Value	Description
200	List of floor map

Example

Request:-

https://<url>/maps

Response:-

```
[
  {
    "_id": "5acb480e303cc93bf0554fcb",
    "name": "qwe",
    "base64": "",
    "createdAt": "2018-04-09T11:01:34.704Z",
    "cameras": [
      {
        "y": "13.503669067534076",
        "x": "26.965667183590032",
        "deviceName": "DemoCamera",
        "rotationAngle": 225,
        "camId": "5ac5afa1b1090f46f052434f",
        "isDeleted": 0
      }
    ]
  }
]
```

42. To Delete Floor Map (NB)

DELETE /maps

Description

This is part of North Bound API set. To delete floor map details.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
Floor map id	Required	Floor map id	String	5acb4f17264ea2130c4a162b

Responses

Return Value	Description
204	Floor map details deleted

Example

Request:-

https://<url>/maps/5ac5afa1b1090f46f052434f

Response:-

No Content

43. To Get notification List (NB)

GET /notifications

Description

This is part of North Bound API set. To get notification list

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Responses

Return Value	Description
200	Notification list

Example

Request:-

https://<url>/notifications

Response:-

```
[
  {
    "_id": "5ac774467e1ac226384857a6",
    "message": "Tripline Crossed",
    "createdAt": "2018-04-06T13:21:10.312Z"
  }
]
```

44. Get Power Bi Access Token (NB)

GET /powerbi/auth

Description

This is part of North Bound API set. To get power bi access token.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Responses

Return Value	Description
200	Access token details

Example

Request:-

`https://<url>/powerbi/auth?confName=Reports`

Body:-

```
{}
```

Response:-

```
{
  "token_type": "Bearer",
  "username": "username",
  "confName": "Report",
}
```

45. To Update user role (NB)

PUT /roles

Description

This is part of North Bound API set. To update user role details.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
User id	Required	User id	String	5ac5b403391b313bc563eb47
Role	Required	User role	String	Admin / User

Responses

Return Value	Description
200	User role Updated

Example

Request:-

https://<url>/roles/5ac5b403391b313bc563eb47

Body:-

```
{  
  "role": "Admin"  
}
```

Response:-

```
{
```

```
{
  "_id": "5ac5b403391b313bc563eb47",
  "emailId": "emma@domain.com",
  "role": "Admin",
  "lastName": "Emma",
  "firstName": "Emma"
}
```

46. To Get User Role List (NB)

GET /roles

Description

This is part of North Bound API set. To get all user role details except superAdmin.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Responses

Return Value	Description
200	User role details

Example

Request:-

https://<url>/roles

Response:-

```
[
  {
    "_id": "5ac5b403391b313bc563eb47",
    "emailId": "emma@domain.com",
    "role": "Admin",
    "lastName": "Emmaa",
    "firstName": "Emma"
  }
]
```

47. To Get User role (NB)

GET /users

Description

This is part of North Bound API set. To get user email and role details from access token.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Responses

Return Value	Description
200	User role details

Example

Request:-

https://<url>/users

Response:-

```
{  
  "email": "emma@domain.com",  
  "role": "Admin"  
}
```

48. To Add video Indexer (NB)

POST /videos

Description

This is part of North Bound API set. To start video indexing.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
aggregatorId	Required	Aggregator id	String	5ac5b403391b313bc563eb47
camId	Required	Camera id	String	5ac5b403391b313bc563eb47
deviceName	Required	Camera name	String	VideoCam
videoName	Required	Video name	String	ReceptionVideo
datetime	Required	Video indexing start date time	date	2018-04-10 00:58
duration	Required	Video indexing duration	Number	2
streamingUrl	Required	Camera streaming url	String	rtsp://<username>:<password>@<IP>:<PORT>/cam/realmonitor?channel=6&subtype=0

Responses

Return Value	Description
--------------	-------------

201	Video indexing start
-----	----------------------

Example

Request:-

`https://<url>/videos`

Body:-

```
{
  "aggregatorId": "5ac4d35d391b313bc563eb44",
  "camId": "5ac5afa1b1090f46f052434f",
  "deviceName": "DemoCamera",
  "videoName": "ke",
  "datetime": "2018-04-10 00:58",
  "duration": 1,
  "streamingUrl": "rtsp://<username>:<password>@<IP>:<PORT>/cam/realmonitor?channel=6&subtype=0"
}
```

Response:-

```
{
  "_id": "5acc3c2bdb846a39bc054128",
  "camId": "5ac5afa1b1090f46f052434f",
  "deviceName": "DemoCamera",
  "videoName": "ke",
  "datetime": "2018-04-10 00:58",
  "duration": "1",
  "streamingUrl": "rtsp://<username>:<pwd>@<IP>:<PORT>/cam"

  "status": 0,
  "filename": "5ac5afa1b1090f46f052434f_1523334187",
  "createdAt": "2018-04-10T04:23:07.497Z",
  "indexId": "wjedheih88"
}
```

49. Callback Api For Video Indexing (NB)

POST /devices/videos

Description

This is part of North Bound API set. To update user role details.

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
filename	Required	Video index file name	String	5ac4d35d391b313bc563eb44_843566777
indexId	Required	Index id	String	Djhj87jbhbb

Responses

Return Value	Description
200	Video indexing Done

Example

Request:-

`https://<url>/devices/videos?filename=5ac4d35d391b313bc563eb44_843566777&indexId=djhj`

Response:-

```
{
  "message": "success",
}
```

50. To Get Indexed Video List (NB)

GET /videos

Description

This is part of North Bound API set. To get indexed video list.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
Status	Optional	1 - indexed videos 0 - scheduled videos	Number	1 / 0

Responses

Return Value	Description
200	Video index List

Example

Request:-

https://<url>/videos?status=1

Response:-

```
[
  {
    "_id": "5acc3c2bdb846a39bc054128",
    "camId": "5ac5afa1b1090f46f052434f",
    "deviceName": "DemoCamera",
    "videoName": "ke",
    "datetime": "2018-04-10 00:58",
    "duration": "1",
    "streamingUrl": "rtsp://username:password@ip:port/url",
    "status": 0,
    "filename": "5ac5afa1b1090f46f052434f_1523334187",
    "createdAt": "2018-04-10T04:23:07.497Z",
    "indexId": "nweh99bhj"
  }
]
```


51. To Get video index widget (NB)

GET /widgets

Description

This is part of North Bound API set. To update user role details.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
indexId	Required	Index id	String	ndjj90dnj

Responses

Return Value	Description
200	Video index widget details

Example

Request:-

`https://<url>/widgets?indexId=ndjj90dnj`

Response:-

```
[
  {
    "widget": "media",
    "result": "https://www.videoindexer.ai/embed/player/82e82bf1cn"
  }
]
```

52. To send Results (SB)

POST /results

Description

This is part of South Bound API set. To send result from compute engine.

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
deviceName	Required	Name/Label of camera	String	receptionCamera
imageName	Required	Image name	String	camId_feature_timestamp.jpg
totalCount	Required	Total number of detection count	Number	2
boundingBoxes	Required	Bounding boxes drawn by user	Array	[{ "objectType": "person", "bboxes": { "x1": "494", "y1": "87", "x2": "536", "y2": "136" }, "tagName": "DemoCamera default", "markerName": "DemoCamera default" }]
feature	Required	Feature name	String	humanDetection
bboxResults	Required	Results along with marker name, tag name and count	Array	[{ "markerName": "DemoCamera default", "tagName": "DemoCamera default", "count": "3" }]

--	--	--	--	--

Responses

Return Value	Description
201	Created camera successfully
409	camera already exist

Example

Request:-
 https://<url>/cameras

Body:-

```
{
  "totalCount":0,
  "dimageName":"5abddc9ac9c689388c2d4522_humaneDetection_123456.jpg",
  "boundingBoxes": [],
  "countPerBox":"rtsp://<username>:<password>@<IP>:<Port>/cam/realmonitor?channel=6&subtype=0",
  "deviceName":"cam1",
  "feature": "humanDetection",
  "userId": "emma@gmail.com",
  "bboxResults": [
    {
      "tagName": "",
      "markerName": "Toll Exit2",
      "count": "0"
    }
  ]
}
```

Response:-

```
{
  "message":"success"
}
```

53. To send Images (SB)

POST /images

Description

This is part of South Bound API set. To send images from aggregator to backend.

Resource Information

Type	HTTP/HTTPS
------	------------

Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
imgName	Required	Image name	String	Camid_feature_timestamp.jpg
imgBase64	Required	Base 64 image	String	4 th floor

Responses

Return Value	Description
200	Images sent

Example

Request:-

https://<url>/images

Body:-

```
{
  "imgName": "image",
  "imgBase64": "base64Img"
}
```

Response:-

```
{
  "message": "success"
}
```

54. To Get Detection Count By Feature (NB)

GET /analytics/results/features

Description

This is part of North Bound API set. To get detection count by feature.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
feature	Required	Feature name	String	receptionCamera
from	Optional	From date	Number	1523298603
To	Optional	To date	Number	1523298690

Responses

Return Value	Description
200	Get result count by feature and date

Example

Request:-

https://<url>/analytics/results/features?feature=faceRecognition&from=1523298600

Response:-

[

```
{
  "_id": "5ac5b735b1090f46f0524357",
  "count": 27,
  "avg": 0.11065573770491803,
  "min": 0,
  "max": 2,
  "deviceName": "FaceRecognition",
  "totalCount": 1
}
```

55. To Get results of plotted cameras on floor map (NB)

POST /analytics/results/cameras

Description

This is part of North Bound API set. To get total number of detections for plotted camera for selected floor map.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
camId	Required	Camera Id	String	5ac5afa1b1090f46f052434f
deviceName	Required	Camera name	String	Reception
rotationAngle	Required	Camera angle	Number	225
x	Required	X coordinate	String	23.88
y	Required	Y coordinate	String	56.99

Responses

Return Value	Description
--------------	-------------

200	Get results for camera plotted on floor map
-----	---------------------------------------------

Example

Request:-

`https://<url>/analytics/results/cameras`

Body:-

```
[
  {
    "y": "13.503669067534076",
    "x": "26.965667183590032",
    "deviceName": "DemoCamera",
    "rotationAngle": 225,
    "camId": "5ac5afa1b1090f46f052434f",
    "isDeleted": 0
  }
]
```

Response:-

```
[
  {
    "results": [
      {
        "count": 7,
        "camId": "5ac5afa1b1090f46f052434f",
        "deviceName": "DemoCamera"
      }
    ],
    "totalCount": 7
  }
]
```

56. Get Live Camera Result (NB)

POST /analytics/results/live

Description

This is part of North Bound API set. To get live camera results.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
cameras	Required	Selected Camera for live dashbboard	Array	[{"id":0,"camId":"5ac719b6005a1d1a3c4614de","deviceName":"MovidiusCamera","itemName":"MovidiusCamera"}]
flag	Required	1 - Start live camera results 0 - stop live camera results	String	1 / 0
Filter	Required	View live dashboard by camera or marker	string	camera/filter

Responses

Return Value	Description
200	Live cmaera details

Example

Request:-

`https://<url>/analytics/results/live`

Body:-

```
{
  "cameras":
  [
    {
      "id":0,
      "camId":"5ac719b6005a1d1a3c4614de",
      "deviceName":"MovidiusCamera",
      "itemName":"MovidiusCamera"
    }
  ],
  "flag":1,
  "filter":"camera"
}
```



```
}
```

Response:-

```
{
  "deviceName":"MovidiusCamera"
,"markerNames":["table1","table2"]
}
```

57. To Get User History(NB)

GET /analytics/results/user/history

Description

This is part of North Bound API set. To get user history details.

Requires authentication

Valid bearer token should be provided

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
persistedFaceId	Required	Persisted face id	String	50293b6d-7aa-4f113-a07e-03b677e34ed9

Responses

Return Value	Description
200	User history details

Example

Request:-

<https://<url>/analytics/results/user/history?persistedFaceId=99293b64-7da7-41f3-a67e-03b177e34edd>

Response:-

```
[
  {
    "_id": "5ac719b86e54ec316c929933",
    "imageName": "5abe6eb0985303593446a9d1_faceRecognition_1522997686919.jpg",
    "timestamp": 1522997688,
    "resultCount": 1,
    "camId": "5abe6eb0985303593446a9d1",
    "deviceName": "Reception",
    "feature": "faceRecognition",
    "totalCount": 1,
    "createdAt": "2018-04-06T06:54:48.500Z",
    "result": [
      {
        "id": "02609285-5209-41d2-ac95-beca07d47c04",
        "bboxes": { "x1": 571, "y1": 323, "x2": 620, "y2": 372 },
        "age": 37.6,
        "gender": "male",
        "userData": "Emma",
        "persistedFaceId": "f3beff57-9e69-4d45-b7a8-44396b90edd2",
        "faceRectangle": { "top": 323, "left": 571, "width": 49, "height": 49 },
        "deviceName": "Cam 14",
        "userId": "emma@domain.com",
        "relativeY": 48.263888888888886,
        "relativeX": 46.5234375
      }
    ]
  }
]
```

58. Get Camera Profile Image (NB)

GET /profiles/cameras

Description

This is north bound API used to display camera profile images.

Requires authentication

Valid bearer token based

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

--	--

Parameters

Name	Required	Description	Data Type	Example
camIds	Required	Array of camera ids	String	5ac35b2c391b313bc563eb31

Responses

Return Value	Description
200	List of profile images

/cameras **Example**

Request:-

`https://<url>/profiles/cameras?camIds=5ac35b2c391b313bc563eb31,5ac35b2c391b313bc563eb32`

Response:-

```
[
  {
    "_id": "5abe5b1e5bcea61ad0858196",
    "cameraId": "5abe5af1985303593446a9ae",
    "imageBase64": "base64image",
    "createdAt": "2018-04-08T15:14:38.907Z"
  }
]
```

59. Send Raw Image (SB)

GET /devices/cameras/raw

Description

This is south bound API used to get raw image response from Aggregator..

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Responses

Return Value	Description
200	Success

/cameras

Example

Request:-

`https://<url>/devices/cameras/raw`

Response:-

```
{
  "imgName": "5abe5b1e5bcea61ad0858196_humanDetection.jpg",
  "imgBase64": "image",
  "userId": "user@domain.com",
  "streamingUrl": "rtsp"
}
```

60. Get Add Camera Response (SB)

GET /devices/cameras/response

Description

This is south bound API used to get add camera response from Aggregator.

Resource Information

Type	HTTP/HTTPS
Response formats	JSON

Responses

Return Value	Description
200	Success

/cameras

Example

Request:-

https://<url>/devices/cameras/response

Response:-

```
{
  "deviceName": "cam1",
  "status": "0",
  "userId": "user@domain.com"
}
```

61. Get Web Socket raw image (NB)

Description

This is part of North Bound API set. This feature helps to communicate the raw image from the backend to the webapp.

Assumption:

Connected to SOCKETURL

Topics

Subscriber topic - rawImage/userId

Requires authentication

Secure web socket

Resource Information

Type	Web socket
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
imageBase64Payload	Required	The raw image to be displayed on webapp for bounding box selection	BSON	Base64 payload

rawImageName	Required	Raw image name	string	<image name>
Streaming url	Required	Rtsp url	String	rtsp

Example

Connection request

https://<SOCKETURL>

Topic to subscribe

rawImage/userId

Response

```
{
  "rawImageName": <image name>,
  "imageBase64Payload": <Base64 payload>
}
```

62. Web Socket Result image/metadata Update (NB)

Description

This is part of North Bound API set. This feature helps to communicate the result image (along with result metadata) from backend to the webapp.

Assumption:

Connected to SOCKETURL

Topics

Subscriber topic - liveImage

Requires authentication

Secure web socket

Resource Information

Type	Web socket
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
imgBase64	required	The result image to be displayed on webapp	BSON	Base64 payload
bbox	required	Bounding boxes of detected objects	string	{“x”:"10”,“y”:"100”,“x2”:"150”,“y2”:"157”}
Result	required	Number of detections with respect to area of interest	integer	{“result”: [“1”]}
countPerBox	required	Detection count	Number	2
imageName	required	Image name	string	Camid_feature_timestamp.jpg
camId	required	Camera id	string	5ac5afa1b1090f46f052434f
feature	required	Feature name	String	humanDetection
bboxResults	required	result	Array	[{ "markerName": "DemoCamera default", "tagName": "DemoCamera default", "count": "3" }]
totalResult	required	Total detection count	Number	2

Example

Connection request

<https://<SOCKETURL>>

Topic to subscribe

liveImage

Response Body

```
{
  'totalResult': 3,
  'bbox': [ {
    "objectType": "person",
    "bboxes": { "x1": "494", "y1": "87", "x2": "536", "y2": "136" },
    "tagName": "DemoCamera default",
    "markerName": "DemoCamera default"
  } ],
  "imageName":
  "5ac5afa1b1090f46f052434f_humanDetection_1523338516806.jpg"
  "camId": "5ac5afa1b1090f46f052434f",
  "deviceName": "cam",
  "feature": "humaneDetection",
  "bboxResults": [ {
    "markerName": "DemoCamera default",
    "tagName": "DemoCamera default",
    "count": "3"
  } ]
}
```

63. Web Socket add camera response (NB)

Description

Whenever the notification from camera is received from aggregator, this socket response will notify the webapp if the camera is valid or not. This is part of North Bound API set.

Assumption:

Connected to SOCKETURL

Topics

Subscriber topic - addCameraResponse/userId

Requires authentication

Secure web socket

Resource Information

Type	Web socket
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
------	----------	-------------	-----------	---------

status	required	If 0 - Invalid entry <camera name> 1 - Camera added <camera name>	string	{"status": "1"}
cameraId	required	Camera id	string	{"camname":<cameraid>}

Example

Connection request

<https://<SOCKETURL>>

Topic to subscribe

addCameraResponse/userId

Response

```
{
  "status": "1",
  "cameraId": <camera id>
}
```

64. Web Socket notification (NB)

Description

This feature helps to send notification to web application.

Assumption:

Connected to SOCKETURL

Topics

Subscriber topic - notification

Requires authentication

Secure web socket

Resource Information

Type	Web socket
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
message	required	Notification message	string	Aggregator id down
type	required	Type of notification respect to area of interest	String	DeviceDown/Triple

Example

Connection request

<https://<SOCKETURL>>

Topic to subscribe

notification

Response

```
{
  "message": "Compute engine is down",
  "type": "DeviceDown"
}
```

65. Web Socket live dashboard (NB)

Description

This feature send live results for selected camera from backend to the webapp.

Assumption:

Connected to SOCKETURL

Topics

Subscriber topic - liveDashboard/userId

Requires authentication

secure web socket

Resource Information

Type	Web socket
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
camId	required	Camera id	string	5ac5afa1b1090f46f052434f
deviceName	Required	Camera name	String	Cam1
count	Required	Detection count	Number	2
Timestamp	Required	Epoch time	Mumber	1523338516806
bboxResults	Required	Reults	Array	{ "markerName": "DemoCamera default", "tagName": "DemoCamera default", "count": "3" }]

Example

Connection request

<https://<SOCKETURL>>

Topic to subscribe

liveDashboard/userId

Response

{

```

“camId”: “5ac5afa1b1090f46f052434f”,
“deviceName”: “cam1”,
“count”: 2,
“timestamp”: “1523338516806”,
“bboxResults”: [
  { markerName: "DemoCamera default", "tagName": "DemoCamera default", "count": "3" }
]
}

```

66. Web Socket for face recognition results (NB)

Description

This feature send live results for selected camera from backend to the webapp.

Assumption:

Connected to SOCKETURL

Topics

Subscriber topic - faceRecognition/userId

Requires authentication

secure web socket

Resource Information

Type	Web socket
Response formats	JSON

Parameters

Name	Required	Description	Data Type	Example
persistedfaceId	required	Persisted face id	string	5ac5afa1b1090f46f052434f
userData	Required	name	String	Emma
age	Required	age	Number	23
gender	Required	gender	string	Female
deviceName	Required	Camera name	string	Cam1
userImage	Required	Base 64 image	string	Base64
faceRectangle	Required	coordinates	object	{‘x’: 99, ‘y’: 77}

timestamp	Required	Epoch time	number	1523338516806
-----------	----------	------------	--------	---------------

Example

Connection request

https://<SOCKETURL>

Topic to subscribe

faceRecognition/userId

Response

```
{
  "age": 23,
  "gender": "female",
  "faceRectangle": {"x": 12, "y": 34},
  "deviceName": "cam1",
  "userImage": "base64"
}
```

67. Iothub check camera (SB)

Description

This is part of South bound api set. This is used by backend to ensure the newly added camera is validated by aggregator.

Topics

Publisher topic - checkCamera

Requires authentication

Certificate based

Resource Information

Type	Iothub
Response formats	JSON

Parameters (for checkCamera)

Name	Required	Description	Data Type	Example
------	----------	-------------	-----------	---------

deviceType	required	Device type DVR/ IP device	String	DVR
streamingUrl	required	Camera URL to stream the camera	String	<camera Url>
userId	Optional	User id who has initiated the request	String	123

Example

Connection request

<https://<IotHuburl>>

Topic - checkCamera

Request

```
{
  "deviceType": "DVR",
  "streamingUrl": "<streamingUrl>",
  "userId": "123"
}
```

68. Iothub To select area of interest and start streaming engine (SB)

Description

This is part of South Bound Api set. This is used by backend to pass on information about area of interest to Compute engine and ask Aggregator to start streaming. This will get confirmation from compute engine and Aggregator by Iothub subscriber topic.

Topics

Publisher topic - startStreaming

Requires authentication

Certificate based

Resource Information

Type	Iothub
Response formats	JSON

Parameters (for startStreaming)

Name	Required	Description	Data Type	Example
aggregatorId	Required	Aggregator id to start streaming	String	123
computeEngineId	Required	Compute engine selection	String	231
cameraId	required	Select camera	String	Unique ID
bBox	Required	Area of interest from Northbound	Array of objects	
streamingUrl	required	Camera URL to stream the camera	String	<camera Url>
userId	Optional	User id who has initiated the request	String	123

Example

Connection request

<https://<IotHuburl>>

Topic - startStreaming

Request

```
{
  "boundingBox": [
    {
      "tagName": "DemoCamera default",
      "markerName": "DemoCamera default",
      "detectionObjects": [
        "person"
      ],
      "y2": 99,
      "x2": 99,
      "y": 1,
      "x": 1,
      "shape": "Rectangle"
    }
  ],
  "frameWidth": {
```

```

    "width": 345,
    "height": 235
  },
  "imageHeight": 6789,
  "imageWidth": 1289,
  "feature": "humanDetection",
  "deviceType": "DVR",
  "camId": "5ac5afa1b1090f46f052434f",
  "streamingUrl": "rtsp",
  "deviceName": "Reception"
  "aggregatorId": "5ac5afa1b1090f46f052434f",
  "computeEngineId": "5ac5afa1b1090f46f052434f",
  "jetsonCamFolderLocation": "password@ip/folderlocation",
  "cloudServiceUrl": "url"
  "wayToCommunicate": "Rsync"
  "computeEngineFps": 1,
}

```

64. Iothub to stop cameras (SB)

Description

This is part of South Bound Api set. This is used by backend to stop camera streaming and processing.

Topics

Publisher topic - stopCameras

Requires authentication

Certificate based

Resource Information

Type	Iothub
Response formats	JSON

Parameters (for stopCameras)

Name	Required	Description	Data Type	Example
aggregatorId	Required	Aggregator id to stop streaming	String	123
cameraId	Required	Select camera/s	Array	Unique ID
userId	Optional	User id who has initiated the request	string	123

computeEngineId	Required	Compute engine selection	String	231
-----------------	----------	--------------------------	--------	-----

Example

Connection request

https://<Iothub_url>

Topic - stopCameras

Request

```
{  
  "cameraId": ["13","45"],  
  "userId": "123",  
  "computeEngineId": "123",  
  "aggregatorId": "231"  
}
```

65. Database Design

NOTE:- There are two collections **resultDetails** and **snsdata**. **snsdata** contains all collections except resultDetails.

