Onboarding BLE Devices using SCIM

SCIM API Definition

API for Onboarding Device	Description
`POST /scim/v2/Devices`	This is the API used for onboarding a BLE device using SCIM.
`GET /scim/v2/Devices/{id}?onboardApp={onboardAppID}`	
`DELETE /scim/v2/Devices/{id}?onboardApp={onboardAppID}`	

SCIM HTTP Methods

The SCIM protocol specifies end points and HTTP methods to manage resources.

The following are the supported HTTP methods:

HTTP Method	SCIM Usage
GET	Retrieve a resource.
POST	Create a new resource.
DELETE	Deletes a resource.

SCIM API Resource and Versions

The resource and endpoint supported in the SCIM APIs are **Device** and **/Devices** respectively.

The URL path covers the base URL and version identifier as a segment. The SCIM APIs support **v2** as the version identifier.

/scim/v2/Devices are the SCIM API resource and version supported for HTTP POST, GET, or DELETE.

SCIM Schema

SCIM Core Device Schema

The SCIM core device schema supports the following attributes:

Attributes	Description	Sample

schemas	The schemas section of the SCIM APIs cover the list of schemas part of the API requests.
	
	The following are the supported schemas:
	
	• Core device schema
	
	• BLE device extension schema
	
	• Endpoint application extension schema
		`"schemas": [`
		`"urn:ietf:params:scim:schemas:core:2.0:Device",`
		`"urn:ietf:params:scim:schemas:extension:ble:2.0:Device",`
		`"urn:ietf:params:scim:schemas:extension:endpointapps:2.0:Device"`
		`]`

deviceDisplayName	The attribute is of "string" type and provides a human-readable name for a device.	`"deviceDisplayName": "BLE Heart Monitor",`
adminState	The attribute is of "Boolean" type and is a mutable attribute. If **adminState** is set to TRUE, connect, disconnect, and subscribe commands that control app sends to the controller for the devices will be processed by the application. If **adminState** is set to FALSE, any command coming from the control app for the device will be rejected by the application.	`"adminState": true,`

BLE Device Extension Schema

The SCIM device extension schema supports the following attributes:

Attributes	Description	Sample
DeviceMacAddress	• Is a string value that represents a public MAC address assigned by the manufacturer. • It is a unique 48-bit value. • It is required, case-sensitive, mutable, and returned as default. • The following is the regex pattern: ^[0-9A-Fa-f]{2}(:[0-9A-Fa-f]{2}){5}$	`"deviceMacAddress": "CA:2B:5C:EC:95:46",`
isRandom	• Is a Boolean flag. • If set to **FALSE**, the device uses a public MAC address. • If set to **TRUE**, the device uses a static random MAC address. • This attribute is not required, mutable, and returned by default. • The default value is **FALSE**.	`"isRandom": false,`
versionSupport	• Provides all the BLE versions supported by the device in the form of an array. • For example, [4.1, 4.2, 5.0, 5.1, 5.2,5.3]. • This attribute is required, mutable, and returned as default.	`"versionSupport": [ "5.3" ],`
pairingMethods	• Is an array of pairing methods associated with the BLE device. • May require sub-attributes, such as key or password for the device pairing process. • This attribute is required, case-sensitive, mutable, and returned by default.	`"pairingMethods": [` ... (text overlapping/illegible) ... `"key": null }`

Attributes	Description	Sample
mobility	• Is a Boolean flag. • When set to **FALSE**, this feature disables seamless movement between APs, requiring manual intervention for the IoT Orchestrator to handle connections and disconnections. • When set to **TRUE**, this feature allows devices to move between APs seamlessly, with the IoT Orchestrator automatically handling connections and disconnections without manual intervention. • This attribute is not required, mutable, and returned by default. • The default value is FALSE.	`"mobility": true,`

API Example

The following example lists the SCIM object for onboarding the BLE device:

```
{
  "schemas": [
    "urn:ietf:params:scim:schemas:core:2.0:Device",
    "urn:ietf:params:scim:schemas:extension:ble:2.0:Device",
    "urn:ietf:params:scim:schemas:extension:endpointapps:2.0:Device"
  ],
  "deviceDisplayName": "BLE Heart Monitor",
  "adminState": true,
  "urn:ietf:params:scim:schemas:extension:ble:2.0:Device": {
    "versionSupport": [
      "5.3"
    ],
    "deviceMacAddress": "CA:2B:5C:EC:95:46",
    "isRandom": false,
    "mobility": false,
    "pairingMethods": [
      "urn:ietf:params:scim:schemas:extension:pairingNull:2.0:Device",
      "urn:ietf:params:scim:schemas:extension:pairingJustWorks:2.0:Device"
    ],
    "urn:ietf:params:scim:schemas:extension:pairingNull:2.0:Device": null,
    "urn:ietf:params:scim:schemas:extension:pairingJustWorks:2.0:Device": {
      "key": null
    }
  },
```

```
     "urn:ietf:params:scim:schemas:extension:endpointAppsExt:2.0:Device": {
       "onboardingUrl": "onboardApplication",
       "deviceControlUrl": [
         "controlApplication"
       ],
       "dataReceiverUrl": []
     }
   }
```