Control Operations on BLE Devices

Non-IP Control (NIPC) Open API Definition

API	Description
`POST /control/connectivity/connect`	This API is used to connect a BLE device to the network.
`POST /control/data/read`	This API is used to read a value from an attribute in the BLE device.
`POST /control/data/write`	This API is used to write a value to an attribute in the BLE device.
`POST /control/data/discover`	This API is used to discover services in a BLE device.
`POST /control/connectivity/disconnect`	This API is used to disconnect a connected BLE device from the network.

Other Supported API Types

API	Path	Summary
Register Data App	`/registration/registerDataApp`	Register a data application.
Unregister Data App	`/registration/unregisterDataApp`	Unregister a data application.

API	Path	Summary
Register Topic	`/registration/registerTopic`	Register a publish or subscribe topic.
Unregister Topic	`/registration/unregisterTopic`	Unregister a publish or subscribe topic.
Subscribe Topic	`/data/subscribe`	Subscribe to the streaming data from an attribute in the device.
Unsubscribe Topic	`/data/unsubscribe`	Unsubscribe to the streaming data from an attribute in the device.

Connecting to a BLE Device

Connect Request - API Definition

Fields	Description
`location 'https://10.195.78.33:8081/control/connectivity/connect'`	Connect a BLE device to the network.
`header 'x-api-key: 2215dec3718288ad9028d39864f87d4c'`	API key
`header 'Content-Type: application/json'`	Content type is JSON.
`data`	
`technology`	BLE
`id`	Device ID
`serviceID`	Service ID of the BLE device.
`"controlApp": "controlApplication"`	Control application address

Connect Response - API Definition

Fields	Description
status	Status message
id	Device ID
requestID	Request ID
serviceID	Service ID
handle	Handle number

Fields	Description
characteristicID	Characteristic ID
descriptorID	Descriptor ID
flags	Flags

API Example – Connect Request and Connect Response

Connect Request:

```
curl -k --location 'https: //10.195.78.33:8081/control/connectivity/connect' \
--header 'x-api-key: 2215dec3718288ad9028d39864f87d4c' \
--header 'Content-Type: application/json' \
--data '
{
"technology": "ble",
"id": "f837c89a-e1dd-4b90-a446-06016c0d2b75",
"ble": {
"services": [
{
"serviceID": "1800"
},
{
"serviceID": "2022"
},
{
"serviceID": "1822"
},
{
"serviceID": "180F"
}
]
},
"controlApp": "controlApplication"
}
'
```

Connect Response:

```
{
"status": "SUCCESS",
"id": "f837c89a-e1dd-4b90-a446-06016c0d2b75",
"requestID": "75310f89-79c6-4e7b-93cb-f58a8f18fc57",
"services": [
{
"serviceID": "1800",
"characteristics": [
{
"characteristicID": "3443",
"descriptors": [
{
"descriptorID": "9059"
}
],
"flags": [
"read",
```

```
                        "write",
                        "notify"
                        ]
                        }
                        ]
                        },
                        {
                        "serviceID": "2022",
                        "handle": 1,
                        "characteristics": [
                        {
                        "characteristicID": "8065",
                        "descriptors": [
                        {
                        "descriptorID": "9620"
                        }
                        ],
                        "flags": [
                        "read",
                        "write",
                        "notify"
                        ]
                        }
                        ]
                        },
                        {
                        "serviceID": "1822",
                        "handle": 2,
                        "characteristics": [
                        {
                        "characteristicID": "8912",
                        "descriptors": [
                        {
                        "descriptorID": "1554"
                        }
                        ],
                        "flags": [
                        "read",
                        "write",
                        "notify"
                        ]
                        }
                        ]
                        },
                        {
                        "serviceID": "180F",
                        "handle": 3,
                        "characteristics": [
                        {
                        "characteristicID": "2810",
                        "descriptors": [
                        {
                        "descriptorID": "1517"
                        }
                        ],
                        "flags": [
                        "read",
                        "write",
                        "notify"
                        ]
                        }
                        ]
                        }
```

```
                     ]
                     }
```

Reading from a BLE Device

Read Request - API Definition

Fields	Description
location 'https: //10.195.78.33:8081/control/data/read'	Read a value from an attribute in the BLE device.
header 'x-api-key: 2215dec3718288ad9028d39864f87d4c'	API key
header 'Content-Type: application/json'	Content type is JSON.
technology	BLE
id	Device ID
serviceID	Service ID of the BLE device.
characteristicID	Characteristic ID of the BLE device.
"controlApp": "controlApplication"	Control application address.

Read Response - API Definition

Fields	Description
status	Status message
id	Device ID
requestID	Request ID
value	Value

API Example – Read Request and Read Response

Read Request:

```
curl -k --location 'https: //10.195.78.33:8081/control/data/read' \
--header 'x-api-key: 2215dec3718288ad9028d39864f87d4c' \
--header 'Content-Type: application/json' \
--data '
{
"technology": "ble",
"id": "decf0dc6-9e9d-4d39-8c8b-00c541699b6a",
```

```
"ble": {
"serviceID": "1800",
"characteristicID": "2A00"
},
"controlApp": "controlApplication"
}
'
```

Read Response:

```
{
"status": "SUCCESS",
"id": " decf0dc6-9e9d-4d39-8c8b-00c541699b6a",
"requestID": "8ba846aa-6133-4392-b911-9850a90791f2",
"value": "2342432"
}
```

Writing to a BLE Device

Write Request - API Definition

Fields	Description
`location 'https: //10.195.78.33:8081/control/data/write'`	Write a value to an attribute in the BLE device.
`header 'x-api-key: 2215dec3718288ad9028d39864f87d4c'`	API key
`header 'Content-Type: application/json'`	Content type is JSON.
`technology`	BLE
`id`	Device ID
`value`	Value
`serviceID`	Service ID of the BLE device.
`characteristicID`	Characteristic ID of the BLE device.
`"controlApp": "controlApplication"`	Control application address.

Write Response – API Definition

Fields	Description
status	Status message
id	Device ID
requestID	Request ID

Fields	Description
value	Value

Discovering Services from a BLE Device

Service Discovery Request - API Definition

Fields	Description
`location 'https: //10.195.78.33:8081/control/data/discover'`	Discover services in a BLE device.
`header 'x-api-key: 2215dec3718288ad9028d39864f87d4c'`	API key
`header 'Content-Type: application/json'`	Content type is JSON.
`technology`	BLE
`id`	Device ID
`serviceID`	Service ID of the BLE device.
`"controlApp": "controlApplication"`	Control application address

Service Discovery Response - API Definition

Fields	Description
status	Status message
id	Device ID
requestID	Request ID
serviceID	Service ID
handle	Handle
characteristicID	Characteristic ID
descriptorID	Descriptor ID
Flags	Flags: read, write, notify

API Example - Service Discovery Request and Service Discovery Response

Service Discovery Request:

```
curl -k --location 'https: //10.195.78.33:8081/control/data/discover' \
--header 'x-api-key: 2215dec3718288ad9028d39864f87d4c' \
--header 'Content-Type: application/json' \
--data '
{
"technology": "ble",
"id": "f837c89a-e1dd-4b90-a446-06016c0d2b75",
"ble": {
"services": [
{
"serviceID": "1800"
},
{
"serviceID": "2022"
},
{
"serviceID": "1822"
},
{
"serviceID": "180F"
}
]
},
"controlApp": "controlApplication"
}
'
```

Service Discovery Response:

```
{
"status": "SUCCESS",
"id": "f837c89a-e1dd-4b90-a446-06016c0d2b75",
"requestID": "d4a225b1-fc62-478e-ad54-928c8973351d",
"services": [
{
"serviceID": "1800",
"characteristics": [
{
"characteristicID": "1797",
"descriptors": [
{
"descriptorID": "7062"
}
],
"flags": [
"read",
"write",
"notify"
]
}
]
},
{
"serviceID": "2022",
"handle": 1,
"characteristics": [
```

```
{
"characteristicID": "4654",
"descriptors": [
{
"descriptorID": "8815"
}
],
"flags": [
"read",
"write",
"notify"
]
}
]
},
{
"serviceID": "1822",
"handle": 2,
"characteristics": [
{
"characteristicID": "7126",
"descriptors": [
{
"descriptorID": "4823"
}
],
"flags": [
"read",
"write",
"notify"
]
}
]
},
{
"serviceID": "180F",
"handle": 3,
"characteristics": [
{
"characteristicID": "4675",
"descriptors": [
{
"descriptorID": "9631"
}
],
"flags": [
"read",
"write",
"notify"
]
}
]
}
]
}
```

Disconnecting from a BLE Device

Disconnect Request - API Definition

Fields	Description
location 'https: //10.195.78.33:8081/control/connectivity/disconnect'	Disconnect a connected BLE device from the network.
header 'x-api-key: 2215dec3718288ad9028d39864f87d4c'	API key
header 'Content-Type: application/json'	Content type is JSON.
data	
technology	BLE
id	Device ID
"controlApp": "controlApplication"	Control application address

Disconnect Response - API Definition

Fields	Description
status	Status message
id	Device ID
requestID	Request ID

API Example – Disconnect from a BLE Device

Disconnect Request:

```
curl -k --location 'https://10.195.78.33:8081/control/connectivity/disconnect'
\
--header 'x-api-key: 2215dec3718288ad9028d39864f87d4c' \
--header 'Content-Type: application/json' \
--data '
{
"technology": "ble",
"id" : "decf0dc6-9e9d-4d39-8c8b-00c541699b6a",
"controlApp" : "controlApplication"
}
'
```

Disconnect Response:

```
{
"status": "SUCCESS",
"id": "decf0dc6-9e9d-4d39-8c8b-00c541699b6a",
"requestID": "cb838a8d-775b-4e71-874d-1aa22e61f9af"
}
```