

# Anybus<sup>®</sup> Wireless Bolt IoT<sup>™</sup>

REST Commands

## REFERENCE GUIDE

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# Important User Information

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# **1 Preface**

## **1.1 About This Document**

This document describes the available REST commands for Wireless Bolt IoT. The reader of this document is expected to be familiar with the product and have a good knowledge of wireless communication and network technology.

For additional related documentation, file downloads and technical support, please visit the Anybus support website at [www.anybus.com/support](http://www.anybus.com/support).

## **1.2 Trademarks**

Anybus® is a registered trademark of HMS Industrial Networks. All other trademarks mentioned in this document are the property of their respective holders.

## 2 Authentication

All http requests to the REST API need to be authenticated using the "Basic HTTP Authentication Scheme" (RFC7617).

Basic auth is done by adding a header-parameter to the HTTP-request:

`Authorization: Basic <Base64 encoding of user-id:password>`

The user-id is always "admin" and the password is the web password currently in use, either the default password shipped with the product, or if it has been changed, the new password.

Example:

User-id: admin

Password: abc123

String to Base64-encode: admin:abc123

Completed header parameter:

`Authorization: Basic YWRtaW46YWJjMTIz`

## 3 Public REST Commands

### 3.1 Read Configuration

Read information from a configuration tree and present as JSON data.

#### 3.1.1 Syntax

GET <target\_ip>/cgi-bin/readconfigtree.cgi?path=<tree\_path>

#### 3.1.2 Query Parameters

Name	Description
target_ip	IP address of the Bolt IoT device, e.g. 192.168.0.98
tree_path	A path to the configuration tree or node to read

#### 3.1.3 Return Values

A JSON structure with the requested data.

#### 3.1.4 Examples

Read a single configuration node:

Query:

GET http://192.168.0.98/cgi-bin/readconfigtree.cgi?path=web:/settings/lock

Response:

```
{"name": "lock", "type": "bool", "value": true}
```

Read a configuration tree:

Query:

GET http://192.168.0.98/cgi-bin/readconfigtree.cgi?path=web:

Response:

```
{"name": "", "type": "tree", "children":  
  [{"name": "settings", "type": "stem", "children":  
    [{"name": "lock", "type": "bool", "value": true}]}]}
```

### 3.2 Write Configuration

Write information to a configuration tree.

#### 3.2.1 Syntax

GET <target\_ip>/cgi-bin/writeconfigtree.cgi?path=<tree\_path>&value=<new\_value>&type=<type>

### 3.2.2 Query Parameters

Name	Description
target_ip	IP address of the Bolt IoT device, e.g. 192.168.0.98
tree_path	A path to the tree and node to operate on
new_value	A value to write to the config tree
type	Must be one of bool, int, float, or string

Note: if type is bool, then new\_value must be either true or false.

### 3.2.3 Configuration Paths

The following configuration paths can be modified by the user:

Path	Type	Description
router:/settings/ipAddr	string	IP address
router:/settings/netMask	string	Subnet mask
router:/settings/dhcpEnable	bool	Enable internal DHCP server: true or false
router:/settings/auth	bool	Enable APN authentication: true or false
router:/settings/authUser	string	APN authentication: user
router:/settings/authPass	string	APN authentication: password
router:/settings/dhcpRangeStart	string	DHCP start address: 1..254
router:/settings/dhcpRangeStop	string	DHCP stop address: dhcpRangeStart..254
router:/settings/apn	string	Access Point Name (APN)
router:/settings/rat	string	Radio Access Technology (RAT): auto, lte-m1, lte-nb1 or gsm
web:/settings/lock	bool	Configuration lock: true or false
web:/settings/password	string	Web and REST API password (valid characters a-z, A-Z, 0-9, - and _)

### 3.2.4 Return Values

```
{"success":<value>}
```

Value	Description
true	Request completed successfully.
false	Request failed or validation error or config locked.

### 3.2.5 Example

Query:

```
GET http://192.168.0.98/cgi-bin/writeconfigtree.cgi?path=router:/settings/apn&value=my_apn.company.com&type=string
```

Response:

```
{"success":true}
```



### 3.3 Backup Configuration

Create and return a file with a backup of all settings in the device.

#### 3.3.1 Syntax

GET <target\_ip>/cgi-bin/backup.cgi

#### 3.3.2 Query Parameters

None

#### 3.3.3 Examples

Query:  
GET http://192.168.0.98/cgi-bin/backup.cgi  
Response:  
<octet stream containing the backup>

### 3.4 Restore Configuration

Restore all settings in the device from a file.

#### 3.4.1 Syntax

POST <target\_ip>/cgi-bin/restore.cgi

#### 3.4.2 Query Parameters

None

#### 3.4.3 Post Data

The backup file contents.

#### 3.4.4 Return Values

```
{"success":<value>}
```

Value	Description
true	Request completed successfully.
false	Request failed or validation error or config locked.

#### 3.4.5 Examples

Query:  
POST http://192.168.0.98/cgi-bin/restore.cgi  
Response:  
{"success":true}

### 3.5 Factory Reset

Restore all settings in the device to factory default values.

### 3.5.1 Syntax

GET <target\_ip>/cgi-bin/factoryreset.cgi

### 3.5.2 Query Parameters

None

### 3.5.3 Return Values

```
{"success":<value>}
```

Value	Description
true	Request completed successfully.
false	Request failed or config locked.

### 3.5.4 Examples

Query:

GET http://192.168.0.98/cgi-bin/factoryreset.cgi

Response:

```
{"success":true}
```

## 3.6 Info

Get runtime information.

### 3.6.1 Syntax

GET <target\_ip>/cgi-bin/info.cgi

### 3.6.2 Query Parameters

None

### 3.6.3 Return Values

A JSON structure with the following information.

Value	Description
uptime	Device uptime in seconds
time	System time (UTC)
radio_power	Radio module power state
	0: Off
	1: On
sim	SIM card status
signal_quality	Signal quality (0..5)
signal_strength	Signal strength (dBm)
cell_id	Serving Cell Identifier
lac	Location Area Code of the serving cell
tac	Tracking Area Code of the serving cell (LTE only)
rat	Currently used Radio Access Technology
	0: Unknown
	1: GSM

Value	Description
	4: LTE
operator	Currently used operator
status	Network registration status
	0: Not registered and not searching
	1: Registered to home network
	2: Searching for new operator
	3: Registration denied
	4: Registered to roaming network
	5: Unknown state
amplifier_temp	Amplifier temperature in degrees Celcius
controller_temp	Controller temperature in degrees Celcius
connection_state	Data session state
	0: Disconnected
	1: Authenticating
	2: Connected
	3: Suspending
	4: Incoming (MT-PDP context request)
voltage	Voltage (mV)
iotbolt_version	Bolt IoT version
modem_version	Modem FW version
pri	Carrier name and version
apn	Currently used APN
rat_specific	Access technology of the serving cell
	0: GSM
	7: CAT-M1
	9: NB-IoT
imsi	International Mobile Subscriber Identity
imei	International Mobile Equipment Identity

### 3.6.4 Examples

Query:

```
GET http://192.168.0.98/cgi-bin/info.cgi
```

Response:

```
{
  "uptime": "4287",
  "time": "2019-11-19 13:35:48",
  "radio_power": "1",
  "sim": "2",
  "signal_quality": "1",
  "signal_strength": "-109",
  "cell_id": "26269452",
  "lac": "4294967295",
  "tac": "0x85",
  "rat": "4",
  "operator": "TELIA S",
  "status": "4",
  "amplifier_temp": "35",
  "controller_temp": "35",
  "connection_state": "2",
  "voltage": "3807",
  "iotbolt_version": "1.00.20-dev",
  "modem_version": "SWI9X06Y_02.16.06.00",
  "pri": "GENERIC_001.028_001",
  "apn": "",
  "rat_specific": "9",
  "imsi": "238208700452254",
  "imei": "352653090129735"
}
```

## 3.7 Log

Get system log.

### 3.7.1 Syntax

```
GET <target_ip>/cgi-bin/log.cgi
```

### 3.7.2 Query Parameters

None

### 3.7.3 Return Values

Plain text log file.

### 3.7.4 Examples

```
Query:
GET http://192.168.0.98/cgi-bin/log.cgi
Response:
Oct 9 10:03:18 Legato: INFO | Version: 1.00.18-dev
Oct 9 10:03:18 Legato: INFO | Boot reason: Power-on
Jan 6 00:00:23 Legato: INFO | eth0 IP address: 192.168.0.98 - netmask:
255.255.254.0
Jan 6 00:00:23 Legato: INFO | eth0 DHCP server: on
Jan 6 00:00:23 Legato: INFO | APN auth is: off
Jan 6 00:00:23 Legato: INFO | DHCP range start - stop: 192.168.0.100 -
192.168.0.200
Jan 6 00:00:24 Legato: INFO | IP address/netmask set to: 192.168.0.98/
255.255.254.0
Jan 6 00:00:24 Legato: INFO | Setting no auth for APN
Jan 6 00:00:24 Legato: INFO | Setting configured RAT: "gsm": 0x01
Jan 6 00:00:24 Legato: INFO | Data connection requested
Oct 17 12:02:43 Legato: INFO | Data connected, interface 'rmnet_data0'
Oct 17 12:02:43 Legato: INFO | Restarting DHCP/DNS services
```

## 3.8 SysLogInfo

Create and return an archive of all system logs.

### 3.8.1 Syntax

```
GET <target_ip>/cgi-bin/sysloginfo.cgi
```

### 3.8.2 Query Parameters

None

### 3.8.3 Examples

```
Query:
GET http://192.168.0.98/cgi-bin/sysloginfo.cgi
Response:
<octet stream containing the archive>
```

## 3.9 Reboot

Reboot the device.

### 3.9.1 Syntax

GET <target\_ip>/cgi-bin/reboot.cgi

### 3.9.2 Query Parameters

None

### 3.9.3 Return Values

```
{"success":<value>}
```

Value	Description
true	Request completed successfully.
false	Request failed

### 3.9.4 Examples

Query:

```
GET http://192.168.0.98/cgi-bin/reboot.cgi
```

Response:

```
{"success":true}
```

## 3.10 Ultra Low Power Mode

Put the device in Ultra Low Power Mode for a specified duration.

### 3.10.1 Syntax

GET <target\_ip>/cgi-bin/ulpm.cgi?duration=<time in seconds>

### 3.10.2 Query Parameters

Name	Description
duration	Number of seconds (60-86400) to remain in ULPM before waking up again

### 3.10.3 Return Values

```
{"success":<value>,"message":"<additional info>"}
```

Value	Description
true	Request completed successfully.
false	Request failed or validation error

### 3.10.4 Examples

Enter ULPM and sleep for 300 seconds (5 minutes):

Query:

```
GET http://192.168.0.98/cgi-bin/ulpm.cgi?duration=300
```

Response:

```
{"success":true,"message":"sleeping for 300 s"}
```

## 3.11 Firmware Update

Update the device firmware.

### 3.11.1 Syntax

POST <target\_ip>/cgi-bin/update.cgi

### 3.11.2 Query Parameters

None

### 3.11.3 Post Data

The contents of a firmware (.fws) file.

### 3.11.4 Return Values

Raw HTML output of the firmware update process. Searching this for the strings "SUCCESS" or "FAILED" will give the result.

### 3.11.5 Examples

Query:  
POST http://192.168.0.98/cgi-bin/update.cgi  
Response:  
Trying to update...  
Unpacking: 0%  
FAILED: error code 2

## 3.12 DHCP Leases

Return a list of active DHCP leases.

### 3.12.1 Syntax

GET <target\_ip>/cgi-bin/dhcpleases.cgi

### 3.12.2 Query Parameters

None

## 3.13 Return Values

Raw text output with DHCP leases in dnsmasq.leases format.

### 3.13.1 Examples

Query:  
GET http://192.168.0.98/cgi-bin/dhcpleases.cgi  
Response:  
1573275080 00:e0:4c:34:92:e9 192.168.0.168 LT-5Q1XWT2 01:00:  
e0:4c:34:92:e9

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