



Weight Scale / Body Composition Analyzer APIs

Candidate Version 1.0 – 19 Apr 2016

Open Mobile Alliance
OMA-TS-Weight_Scale_Body_Composition_Analyzer_APIs-V1_0-20
160419-C

Use of this document is subject to all of the terms and conditions of the Use Agreement located at <http://www.openmobilealliance.org/UseAgreement.html>.

Unless this document is clearly designated as an approved specification, this document is a work in process, is not an approved Open Mobile Alliance™ specification, and is subject to revision or removal without notice.

You may use this document or any part of the document for internal or educational purposes only, provided you do not modify, edit or take out of context the information in this document in any manner. Information contained in this document may be used, at your sole risk, for any purposes. You may not use this document in any other manner without the prior written permission of the Open Mobile Alliance. The Open Mobile Alliance authorizes you to copy this document, provided that you retain all copyright and other proprietary notices contained in the original materials on any copies of the materials and that you comply strictly with these terms. This copyright permission does not constitute an endorsement of the products or services. The Open Mobile Alliance assumes no responsibility for errors or omissions in this document.

Each Open Mobile Alliance member has agreed to use reasonable endeavors to inform the Open Mobile Alliance in a timely manner of Essential IPR as it becomes aware that the Essential IPR is related to the prepared or published specification. However, the members do not have an obligation to conduct IPR searches. The declared Essential IPR is publicly available to members and non-members of the Open Mobile Alliance and may be found on the “OMA IPR Declarations” list at <http://www.openmobilealliance.org/ipr.html>. The Open Mobile Alliance has not conducted an independent IPR review of this document and the information contained herein, and makes no representations or warranties regarding third party IPR, including without limitation patents, copyrights or trade secret rights. This document may contain inventions for which you must obtain licenses from third parties before making, using or selling the inventions. Defined terms above are set forth in the schedule to the Open Mobile Alliance Application Form.

NO REPRESENTATIONS OR WARRANTIES (WHETHER EXPRESS OR IMPLIED) ARE MADE BY THE OPEN MOBILE ALLIANCE OR ANY OPEN MOBILE ALLIANCE MEMBER OR ITS AFFILIATES REGARDING ANY OF THE IPR'S REPRESENTED ON THE “OMA IPR DECLARATIONS” LIST, INCLUDING, BUT NOT LIMITED TO THE ACCURACY, COMPLETENESS, VALIDITY OR RELEVANCE OF THE INFORMATION OR WHETHER OR NOT SUCH RIGHTS ARE ESSENTIAL OR NON-ESSENTIAL.

THE OPEN MOBILE ALLIANCE IS NOT LIABLE FOR AND HEREBY DISCLAIMS ANY DIRECT, INDIRECT, PUNITIVE, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES ARISING OUT OF OR IN CONNECTION WITH THE USE OF DOCUMENTS AND THE INFORMATION CONTAINED IN THE DOCUMENTS.

© 2016 Open Mobile Alliance Ltd. All Rights Reserved.

Used with the permission of the Open Mobile Alliance Ltd. under the terms set forth above.

Contents

- 1. SCOPE.....4
- 2. REFERENCES5
 - 2.1 NORMATIVE REFERENCES.....5
 - 2.2 INFORMATIVE REFERENCES.....5
- 3. TERMINOLOGY AND CONVENTIONS6
 - 3.1 CONVENTIONS.....6
 - 3.2 ABBREVIATIONS.....7
- 4. INTRODUCTION8
 - 4.1 VERSION 1.08
- 5. TECHNICAL SPECIFICATIONS9
 - 5.1 THE SERVICE DISCOVERY ON THE GOTAPI-4 INTERFACE.....9
 - 5.2 ONE-SHOT MEASURING API11
 - 5.2.1 Request for one-shot measuring on the GotAPI-1 Interface12
 - 5.2.2 Request for one-shot measuring on the GotAPI-4 Interface12
 - 5.2.3 Response for one-shot measuring on the GotAPI-4 Interface.....14
 - 5.2.4 Response for one-shot measuring on the GotAPI-1 Interface.....30
 - 5.3 ASYNCHRONOUS MESSAGING API.....40
 - 5.3.1 Request for asynchronous messaging on the GotAPI-1 Interface.....41
 - 5.3.2 Request for asynchronous messaging on the GotAPI-4 Interface.....42
 - 5.3.3 Response for asynchronous messaging on the GotAPI-4 Interface43
 - 5.3.4 Response for asynchronous messaging on the GotAPI-1 Interface46
 - 5.3.5 Asynchronous message from the Plug-In to the GotAPI Server on the GotAPI-4 Interface47
 - 5.3.6 Asynchronous message from the GotAPI Server to the application on the GotAPI-5 Interface.....63
 - 5.3.7 Stop request from the application to the GotAPI Server on the GotAPI-1 Interface72
 - 5.3.8 Stop request from the GotAPI Server to the Plug-In on the GotAPI-4 Interface72
 - 5.3.9 Stop response from the Plug-In to the GotAPI Server on the GotAPI-4 Interface.....74
 - 5.3.10 Stop response from the GotAPI Server to the application on the GotAPI-1 Interface.....75
- APPENDIX A. CHANGE HISTORY (INFORMATIVE).....76
 - A.1 APPROVED VERSION HISTORY76
 - A.2 DRAFT/CANDIDATE VERSION 1.0 HISTORY76

Figures

- Figure 1: Message flow of the Service Discovery9
- Figure 2: Message flow of the One-shot measuring API12
- Figure 3: Message Flow of the Asynchronous messaging API.....41

Tables

No table of figures entries found.

1. Scope

Body weight is one of the essential vital signs health measurements. Body composition is also important in assessing health.

The GotAPI provides a multi-purpose web-based framework to enable interwork of applications and external devices such as weight scales. The GotAPI consist of the GotAPI Server and the Extension Plug-Ins. A smartphone application communicates with a specified Extension Plug-In through the GotAPI Server using Web technologies

In the GotAPI framework, Extension Plug-Ins interact with Weight Scales and/or Body Composition Analyzers, and expose interfaces to the GotAPI Server. Thanks to the Extension Plug-Ins, smartphone applications can interact with many kinds of Weight Scales and/or Body Composition Analyzers using the consistent APIs specified in this specification.

This is the technical specification part of the Weight Scale and/or Body Composition Analyzer Device WebAPIs whose requirements and architecture are defined in a separate document [DWAPI-PCH].

2. References

2.1 Normative References

| | |
|---------------|--|
| [DWAPI-PCH] | Device WebAPI-PCH OMA-ER-Device_WebAPIs-V1_0-20160419-C URL:http://www.openmobilealliance.org/ |
| [EventSource] | “Server-Sent Events”, Worldwide Web Consortium (W3C), URL:http://dev.w3.org/html5/eventsource/ (latest working draft) |
| [GotAPI 1.1] | Generic Open Terminal API Framework (GotAPI), Candidate Version 1.1 – 15 Dec 2015 URL:http://www.openmobilealliance.org/ |
| [HTTP/1.1] | “Hypertext Transfer Protocol -- HTTP/1.1”, Internet Engineering Task Force (IETF), URL:http://tools.ietf.org/search/rfc2616 |
| [HTTP/2.0] | “Hypertext Transfer Protocol version 2.0”, Internet Engineering Task Force (IETF), URL:http://tools.ietf.org/search/draft-ietf-httpbis-http2-09 (latest working draft) |
| [JSON-RPC] | “JSON-RPC 2.0 Specification”, JSON-RPC Working Group, URL:http://www.jsonrpc.org/specification |
| [RFC2119] | “Key words for use in RFCs to Indicate Requirement Levels”, S. Bradner, March 1997, URL:http://www.ietf.org/rfc/rfc2119.txt |
| [SCRRULES] | “SCR Rules and Procedures”, Open Mobile Alliance™, OMA-ORG-SCR_Rules_and_Procedures, URL:http://www.openmobilealliance.org/ |
| [WebSocket] | “The WebSocket API, Worldwide Web Consortium (W3C), URL:http://dev.w3.org/html5/websockets/ (latest working draft) |

2.2 Informative References

| | |
|-----------|--|
| [OMADICT] | “Dictionary for OMA Specifications”, Version 2.9, Open Mobile Alliance™, OMA-ORG-Dictionary-V2.9, URL:http://www.openmobilealliance.org/ |
| [OMNA] | “OMA Naming Authority”. Open Mobile Alliance™. URL:http://www.openmobilealliance.org/tech/omna.aspx |

3. Terminology and Conventions

3.1 Conventions

The key words “MUST”, “MUST NOT”, “REQUIRED”, “SHALL”, “SHALL NOT”, “SHOULD”, “SHOULD NOT”, “RECOMMENDED”, “MAY”, and “OPTIONAL” in this document are to be interpreted as described in [RFC2119].

All sections and appendixes, except “Scope” and “Introduction”, are normative, unless they are explicitly indicated to be informative.

| | |
|------------------------------------|--|
| Agent | A node that collects and transmits personal health data to an associated manager. |
| API Patterns | Design guidelines and requirements for definition of APIs |
| Body Composition Analyzer | An agent for measuring the fundamental constituents of the human body that consists of water, protein, mineral, and fat. |
| Browser Context | Web applications executing under a Web browser as Web runtime environment. |
| Datagram | An API providing access to UDP protocol based networking. |
| Device | A physical device implementing either an Agent or manager role. |
| ECMAScript | Use definition from [OMADICT]. |
| Hybrid Native/Web App | An application designed to execute under the native OS / middleware environment of a device, and that use native APIs for the execution of web content in addition to native code. |
| JavaScript | Use definition from [OMADICT]. |
| Manager | A node receiving data from one or more agent systems. Examples of managers include a cellular phone, health appliance, set top box, or computer system. |
| Native App | An application designed to execute under the native OS / middleware environment of a device. |
| Personal Health Device | A device used in personal health applications. |
| Socket | An API providing access to TCP protocol based networking. |
| Uniform Resource Identifier | Use definition from [OMADICT]. |
| User Agent | Use definition from [OMADICT]. |
| Web | The World Wide Web, a content and application framework based upon hypertext and related technologies, e.g. XML, JavaScript/ECMAScript, CSS, etc. |
| Web Application | An application designed using Web technologies (e.g. HTML, CSS, and Javascript). |
| Web IDL | An IDL language for Web application APIs |
| Web Runtime Application | A client-side Web application that is executed in Web runtime environments. |
| Web Runtime Environment | Client software that supports the execution of Web applications (e.g. browsers or widget engines). |
| WebSocket | An API providing networking services per the WebSocket standard [WebSocket]. |
| Weight | The force that results from the exertion of gravity on an object. The weight is directly proportional to the mass of the object. However, in the health care domain the term body weight is typically used to denote the body mass of a person. This notation applies also to this standard. |
| Weight Scale | Devices for measuring weight |

| | |
|-----------------------|---|
| Widget Context | Web applications installed and executing under a W3C Widget [W3C-Widgets] engine as Web runtime environment. |
| Widget Engine | Software which supports the execution of Web applications running outside a browser context, e.g. with the same functional capabilities as browsers but without the user interface functions provided by a browser, including window frames, menus, toolbars and scroll bars. |

3.2 Abbreviations

| | |
|--------------------|--|
| API | Application Programming Interface |
| EventSource | The EventSource API (Server-Sent Events) |
| HTTP | HyperText Transfer Protocol |
| IDL | Interface Definition Language |
| JSON | JavaScript Object Notation |
| MIME | Multipurpose Internet Mail Extensions |
| OMA | Open Mobile Alliance |
| REST | REpresentational State Transfer |
| RPC | Remote Procedure Call |
| SCR | Static Conformance Requirements |
| TS | Technical Specification |
| UA | User Agent |
| UE | User Equipment |
| URI | Uniform Resource Identifier |
| URL | Uniform Resource Locator |
| W3C | World Wide Web Consortium |
| WRAPI | The OMA Web Runtime API enabler |
| XML | eXtensible Markup Language |
| XSD | XML Schema Definition |

4. Introduction

This is the technical specification part of the Weight Scale / Body Composition Analyzer Device WebAPIs whose requirements and architecture are defined in a separate document [DWAPI-PCH]. The architectural aspects of these APIs are defined in the AD section of [DWAPI-PCH]. This specification must adhere to the GotAPI 1.1 specification. APIs for Weight Scale and/or Body Composition Analyzer (BCA) Plug-Ins are specified together in this specification.

- Weight Scales supported by the Plug-Ins in this specification are expected to be able to report body mass and optionally body length (height) and body mass index (BMI). The descriptions of the measurements reported by the Weight Scale Plug-Ins follow the IEEE 11073-10415 specialization specification.
- Body Composition Analyzers (BCAs) report body fat, body mass, body length, and may support several other related measurements such as muscle mass, body water, fat free mass, soft lean mass, and BMI as specified in IEEE 11073-10420.

Given the fact that a BCA is essentially a Weight Scale with additional measurements, a BCA will support all the Weight Scale specifications in addition to those that are specific to BCAs. The only exception is that the IEEE BCA (IEEE11073-10420) mandates body length but it is optional in the IEEE11073-10415 Weight Scales. Thus if a Plug-In supporting BCAs does not receive a body length measurement from the device that is connected to the Plug-In, then it will not report such a measurement data through the APIs.

Weight Scales and/or BCAs are typically accessed by one-shot messages, where measurement data is transferred from a Weight Scale and/or a BCA to an application in one transaction. Some Weight Scales and/or BCAs are capable of storing data and they may transfer multiple data in a 1-shot message. The number of data stored in Weight Scales and/or BCAs is typically less than 25. However, some Weight Scales and/or BCAs may be able to persistently store data and may transfer a larger number of data than 25.

The descriptions of the measurement of Weight Scales and/or BCAs reported by the Weight Scale and/or BCA Plug-Ins follow the IEEE 11073-10415 Weight Scale specialization specification and the IEEE 11073-10420 Body Composition Analyzer specialization specification, respectively. Nonetheless, this does not mean that Weight Scales and/or BCAs that want to use the APIs must follow the IEEE 11073-10415 and the IEEE 11073-10420 specifications. The Weight Scale and/or BCA WebAPIs specified in this document can be used for Weight Scales and/or BCAs that support IEEE 11073-10415 and IEEE 11073-10420 as well as those that do not support the IEEE 11073-10415 and the IEEE 11073-10420. In the latter case, however, the Weight Scales and/or BCAs must provide to the Plug-Ins the necessary information such that the Plug-Ins can fulfil their reporting requirements as specified in this document.

This document defines Weight Scale / Body Composition Analyzer (BCA) Device WebAPI specifications for

- Service Discovery
- One-short measuring API
- Asynchronous measuring API

The architectural aspects of these APIs are defined in the AD section of [DWAPI-PCH]. This specification must adhere to the GotAPI 1.1 specification.

4.1 Version 1.0

Weight Scale / Body Composition Analyzer Device WebAPIs version 1.0 includes the functionality:

- Device WebAPI specifications for DWAPI-PCH, with device classes from IEEE 11073-10415 Weight Scale and IEEE 11073-10420 Body Composition Analyzer specialization based on the GotAPI 1.1 framework
- Device WebAPIs for Service Discovery, One-short measuring API and asynchronous measuring
- Requirements and architecture documents [DWAPI-PCH]

5. Technical Specifications

This specification must adhere to the GotAPI 1.1 specification. This document specifies certain aspect of GotAPI 1.1 as the basis and introduces new elements that are necessary for Weight Scale/Body Composition Analyzer devices supporting the IEEE 11073-10415 Weight Scale and IEEE 11073-10420 Body Composition Analyzer specializations.

In order to increase readability, the specification described below uses the same tables as defined in GotAPI 1.1, describing the necessary features including those of the general procedures of any GotAPI 1.1 uses as well as those specific to the Weight Scale/Body Composition Analyzer APIs. Those specifications that are specific to the Weight Scale/Body Composition Analyzer APIs are colored in green in the following tables, in order to increase readability, to make identiy distinction easily. Those rows that are not colored in green are merely copies from the GotAPI 1.1 specification [GotAPI 1.1]

5.1 The Service Discovery on the GotAPI-4 Interface

Service Discovery API enables applications to discover available services as define in the Section 7.2.1[DWAPI-PCH]. Service Discovery API specification adheres to that of GotAPI 1.1.

Here is the Service Discovery based on what is defined in GotAPI 1.1. After the application obtains authorization for access to GotAPI-based APIs using the GotAPI-2 Interface, the application sends the Service Discovery request to the GotAPI Server. Then the GotAPI Server sends the Service Discovery request to all of the installed Extension Plug-Ins. The message flow of the Service Discovery is shown in Fig. 1.

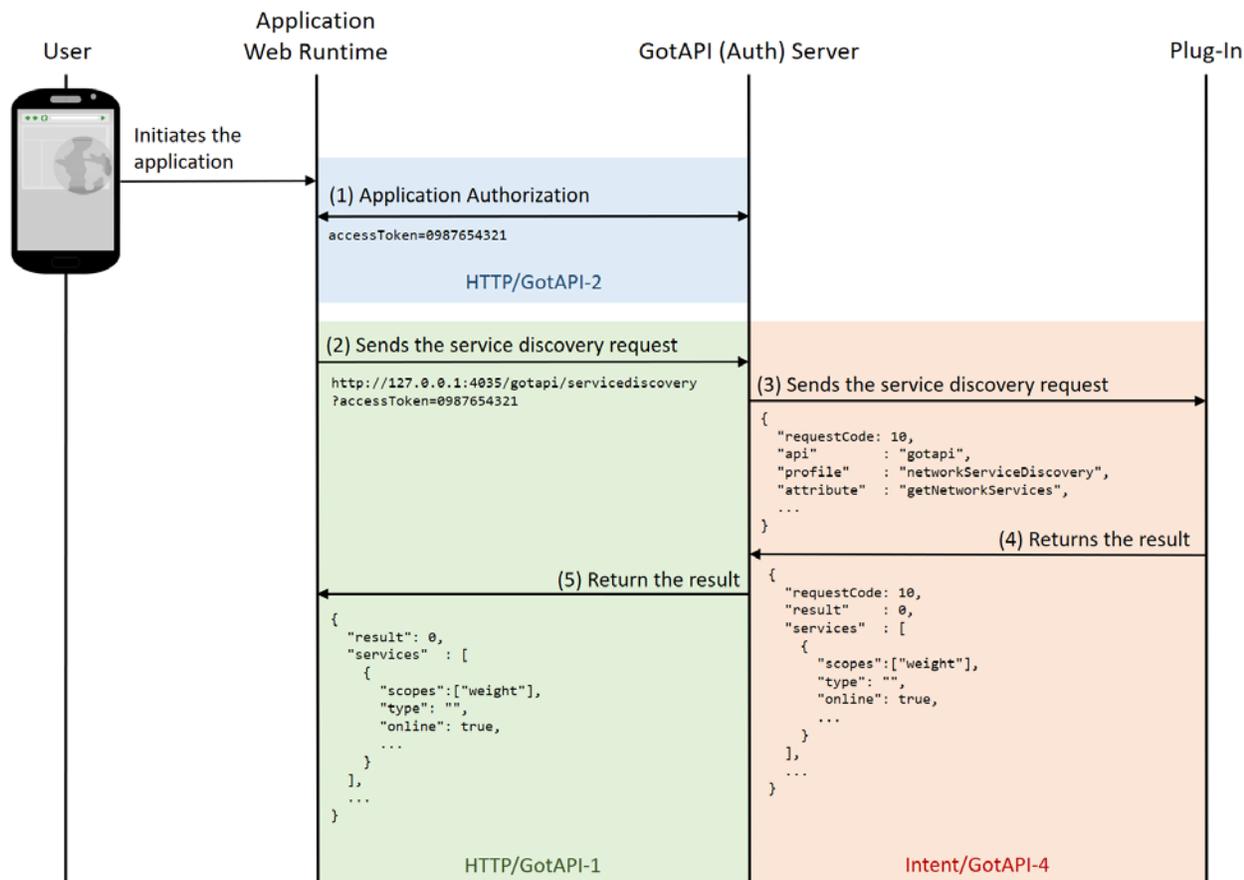


Figure 1: Message flow of the Service Discovery

The specific data in the message flows labelled (4) in the figure above are defined as follows. The other message flows SHALL be consistent to what are defined in the GotAPI 1.1 specification:

When the GotAPI Server receives the request of the Service Discovery API from an application, the GotAPI Server sends the Plug-In discovery request to the installed Plug-Ins as defined in the GotAPI specification. When the Plug-In receives the Plug-In discovery request from the GotAPI Server, the Plug-In SHALL return the message as follows:

Definition of the data object for the Plug-In discovery response

| Name | Sub name | Type | Definition of value | Mandatory/Optional |
|-------------|--------------|---------|---|--------------------|
| requestCode | | int | The request code coming from the GotAPI Server. | Mandatory |
| result | | int | If success, the value is 0, otherwise an integer other than 0, which indicates an error code. This specification doesn't define error codes. | Mandatory |
| services | | Array | | Mandatory |
| | serviceId | String | The service identifier. The id could be "com.example.plugin". | Mandatory |
| | name | String | The name of the targeted device. | Mandatory |
| | manufacturer | String | The manufacturer of the targeted device. | Optional |
| | version | String | The version of the targeted device. | Optional |
| | type | String | This value represents the type of the network used to connect to the device. The value must be any one of "WiFi", "BLE", "NFC", "Bluetooth" or "USB". | Optional |
| | online | Boolean | If the service is available, this value SHALL be true. Otherwise (e.g. the Plug-In has not yet detected any devices or the Plug-In is not allowed to access to any devices), this value SHALL be false. | Mandatory |
| | scopes | Array | This value SHALL be an array including a string "bca" as an array element (["weight", ...]). | Mandatory |

The Plug-In MAY append additional data in the data object as needed.

This data object is sent to the Plug-Ins in an OS specific mechanism, e.g., Intents for Android.

Requirements for OS-specific response channel and data container

| OS | Description |
|---------|--|
| Android | The GotAPI Server must use Explicit Intents for the response. The data object must be mapped to the Extra directly. |

Example of the data object of the Android Explicit Intents

| Name | Example of value | Note |
|-----------|-------------------------------------|--|
| Action | "org.deviceconnect.action.RESPONSE" | This value is defined by the GotAPI Server application. |
| Component | "org.deviceconnect" | This value is the package name of the GotAPI Server application. |
| Extra | | |
| | requestCode | 1 |

| | | | |
|--|----------|-------------------------|---|
| | result | ∅ | |
| | services | [Array Object] | <p>This value is an example. Note that this is "not" a JSON string. This value must be an Array object whose content is the same as the following JSON example:</p> <pre>[{ "id": "org.example.plugin.12345", "name": "Coolest Weight Scale", "manufacturer": "ABC Health Care Inc.", "version": "3.0", "type": "Bluetooth", "online": true, "scopes": ["weight"] }, ...]</pre> |
| | config | "additional parameters" | <i>This name-value pair is an additional data which is not defined by this specification.</i> |

5.2 One-shot measuring API

One-shot API enables applications to receive measured data from targeted devices by one HTTP request/response transaction as define in the Section 7.2.2 [DWAPI-PCH]. One-shot measuring API specification adheres to that of GotAPI 1.1.

As defined by GotAPI 1.1, after the application obtains authorization to access GotAPI-based APIs using the GotAPI-2 Interface and completes the Service Discovery, the application can use the service (so called "One-shot measuring API") provided by the Plug-In through the GotAPI Server.

The One-shot measuring API offers a measurement result reported by the targeted device in response to a request. The message flow of this API is as shown blow.

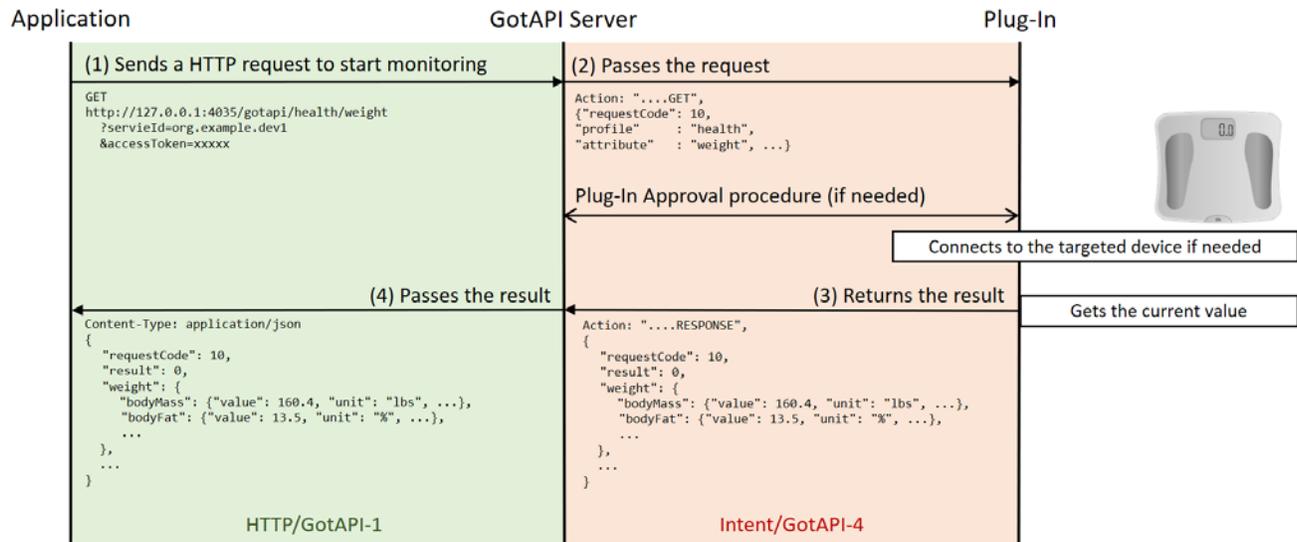


Figure 2: Message flow of the One-shot measuring API

This section defines the data object for all the message flows described in the figure above.

5.2.1 Request for one-shot measuring on the GotAPI-1 Interface

When the application uses the one-shot measuring it sends a request to the GotAPI Server on the GotAPI-1 Interface as follows:

Definition of the HTTP request

| Definitions | |
|-------------|---|
| Method | HTTP PUT |
| Request URL | http://127.0.0.1:4035/gotapi/health/weight https://127.0.0.1:4036/gotapi/health/weight |

Definition of the request parameters

| Parameter name | Definition of value | Mandatory/Optional |
|----------------|---|--------------------|
| serviceId | The identifier of the targeted service. This value is available from the Service Discovery API on the GotAPI-1 Interface. | Mandatory |
| accessToken | The access token obtained from the GotAPI Auth Server through the GotAPI-2 Interface. | Mandatory |
| nonce | A nonce generated by the application, which is described in the section "7.3.3.3 HMAC server authentication using trusted Application ID for the Server spoofing attack" in the GotAPI specification. | Optional |

Example of the request URL

http://127.0.0.1:4035/gotapi/health/weight?serviceId=abcdefg123&accessToken=0987654321&nonce=93b3a219347

5.2.2 Request for one-shot measuring on the GotAPI-4 Interface

When an application sends a request to the GotAPI Server on the GotAPI-1 Interface, the GotAPI Server passes the request to the Plug-In on the GotAPI-4 Interface. The request includes the data object as follows:

Definition of the data object for request

| Name | Type | Definition of value | Mandatory/Optional |
|-------------|--------|---|---|
| method | String | This value SHALL be "GET". | Mandatory if the OS is not Android. Otherwise, optional. If the OS is Android, the "Action" value SHALL include this information as described below. |
| receiver | String | The address of the GotAPI Server application used by Plug-Ins. Generally, it is the application ID recognized by the OS, such as a package name. | Mandatory |
| requestCode | int | A request code identifying the request. This value could be any number but must MUST be an integer greater than 0, and unique for each open request, to ensure responses can be correlated. | Mandatory |
| serviceId | String | The identifier of the targeted Service. This value is provided by the application over the GotAPI-1 Interface. | Mandatory |
| api | String | The value must be "gotapi". | Mandatory |
| profile | String | The value must be "health". | Mandatory |
| attribute | String | The value must be "weight" | Mandatory |
| clientId | String | The identifier of the application, which is generated by the Plug-In when the Plug-In Approval procedure defined in the GotAPI specification. | Mandatory |
| accessToken | String | The access token for the application, which is generated by the Plug-In when the Plug-In Approval procedure defined in the GotAPI specification. | Mandatory |

This data object is sent to the Plug-Ins in an OS specific mechanism, e.g., Intents for Android.

Requirements for OS-specific request channel and data container

| OS | Description |
|---------|---|
| Android | The GotAPI Server must use Explicit Intents for the request. The data object must be mapped to the Extra directly. |

Example of the data object of the Android Explicit Intents

| Name | Example of value | Note |
|-----------|------------------------------|---|
| Action | org.deviceconnect.action.GET | This value is defined by the GotAPI Server application. But the last part SHALL be "GET". |
| Component | org.example.plugin | This value is the package name of the Plug-In application. |
| Extra | | |
| | receiver | org.deviceconnect |
| | requestCode | 10 |
| | servcieId | dev1.example.org |

| | | | |
|--|-------------|------------|--|
| | api | gotapi | |
| | profile | health | |
| | attribute | weight | |
| | clientId | 1234567890 | |
| | accessToken | 0987654321 | |

5.2.3 Response for one-shot measuring on the GotAPI-4 Interface

When the Plug-In receives the request, it SHALL respond to the GotAPI Server as follows:

Definition of the data object for the response

| Name | Type | Definition of value | Mandatory/Optional | |
|-------------|------------------|---|---|-----------|
| method | String | This value SHALL be "RESPONSE". | Mandatory if the OS is not Android. Otherwise, optional. If the OS is Android, the "Action" value SHALL include this information as described below. | |
| requestCode | int | The request code coming from the GotAPI Server. | Mandatory | |
| result | int | If success, the value is 0, otherwise an integer greater than 0, which indicates an error code. This specification doesn't define error codes. | Mandatory | |
| weight | | | Mandatory | |
| device | Object | | Mandatory | |
| | productName | String | The product name of the targeted device. If the Plug-In cannot obtain this information from the targeted device, it SHALL create a name for the device using an arbitrary algorithm. The algorithm is up to the Plug-In implementation, and this specification does not define any algorithms. | Mandatory |
| | manufacturerName | String | The manufacturer name of the targeted device. If the Plug-In cannot obtain this information from the targeted device, this value SHALL be an empty string. | Mandatory |

| | | | | | |
|--|--|------------------|--------|--|-----------|
| | | modelName | String | The model number of the targeted device. If the Plug-In cannot obtain this information from the targeted device, this value SHALL be an empty string. | Mandatory |
| | | firmwareRevision | String | The firmware revision of the targeted device. If the Plug-In cannot obtain this information from the targeted device, this value SHALL be an empty string. | Mandatory |
| | | serialNumber | String | The serial number of the targeted device. If the Plug-In cannot obtain this information from the targeted device, this value SHALL be an empty string. | Mandatory |
| | | softwareRevision | String | The software revision of the targeted device. If the Plug-In cannot obtain this information from the targeted device, this value SHALL be an empty string. | Mandatory |
| | | hardwareRevision | String | The hardware revision of the targeted device. If the Plug-In cannot obtain this information from the targeted device, this value SHALL be an empty string. | Mandatory |
| | | partNumber | String | The part number of the targeted device. If the Plug-In cannot obtain this information from the targeted device, this value SHALL be an empty string. | Mandatory |
| | | protocolRevision | String | The protocol revision of the targeted device. If the Plug-In cannot obtain this information from the targeted device, this value SHALL be an empty string. | Mandatory |
| | | systemId | String | The system id of the targeted device. This value SHALL be a 16-character HEX string without a '0x' prefix (e.g. "ABCDEF0123456789"). If the Plug-In cannot obtain this information from the targeted device, this value SHALL be "0000000000000000" (a string of 16 '0' characters). | Mandatory |

| | | | | | |
|--|----------|--------------|--------|---|-----------|
| | | batteryLevel | Float | <p>The battery level of the targeted device. This value must be a float number in a range from 0.0 to 1.0.</p> <p>The value 0.0 represents that the targeted device is completely out of charge. The value 1.0 represents that the targeted device is fully charged.</p> <p>Even if the targeted device reports this value in percent in a range from 1 to 100, the Plug-In SHALL convert it to a float number in a range from 0.0 to 1.0.</p> <p>If the Plug-In can't obtain battery level from the targeted device, this value SHALL be -1.0.</p> | Mandatory |
| | bodyMass | | | | Mandatory |
| | | value | Float | This value represents the body mass measured by the targeted device. | Mandatory |
| | | mderFloat | String | This value represents the body mass measured by the targeted device, which is a hexadecimal string of an MDER FLOAT, such as "FF00644", which means 160.4 lbs if the value of "unit" is "lbs". | Mandatory |
| | | type | String | <p>This value represents the TYPE attribute as a human readable string and as its 32-bit MDC code such as "Body Mass".</p> <p>If the Plug-In can't obtain the type, this value SHALL be an empty string.</p> | Mandatory |
| | | typeCode | String | <p>This value represents the TYPE attribute, which is expressed by a code such as "188740" (This code means "Body Mass").</p> <p>If the Plug-In can't obtain the type, this value SHALL be an empty string.</p> | Mandatory |
| | | unit | String | This value represents the unit of the reported SpO ₂ , which is expressed by a human readable string such as "lbs". | Mandatory |
| | | unitCode | String | This value represents the unit of the reported weight scale, which is expressed by a code such as "263904" (This code means "lbs"). | Mandatory |
| | | timeStamp | int | This value represents the measurement time when the measurement was done. If the measurement time is reported from the targeted device, the Plug-In SHALL convert it to a unix time stamp in millisecond. Otherwise, the Plug-In set this value to the unix time when the Plug-In receives the measurement value from the Plug-In based on the clock of the underlying operating system. | Mandatory |

| | | | | | |
|--|------------|-----------------|--------|--|---|
| | | timeStampString | String | This value represents the same time stamp as "timeStamp". The format is "YYYYMMDDHHMMSS.sss+/-HHMM", such as "20150504135813.220-0400" | Mandatory |
| | bodyLength | | | | Mandatory if the device reports body length. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value represents the body length measured by the targeted device. | Mandatory |
| | | mderFloat | String | This value represents the body length measured by the targeted device, which is a hexadecimal string of an MDER FLOAT, such as "FF002AD", which means 68.5 inches if the value of "unit" is "inches". | Mandatory |
| | | type | String | This value represents the TYPE attribute as a human readable string and as its 32-bit MDC code such as "Body Length". If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | typeCode | String | This value represents the TYPE attribute, which is expressed by a code such as "188744" (This code means "Body Length"). If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | unit | String | This value represents the unit of the reported body length, which is expressed by a human readable string such as "inches". | Mandatory |
| | | unitCode | String | This value represents the unit of the reported weight scale, which is expressed by a code such as "263520" (This code means "inches"). | Mandatory |
| | | timeStamp | int | This value represents the measurement time when the measurement was done. If the measurement time is reported from the targeted device, the Plug-In SHALL convert it to a unix time stamp in millisecond. Otherwise, the Plug-In set this value to the unix time when the Plug-In receives the measurement value from the Plug-In based on the clock of the underlying operating system. | Mandatory |
| | | timeStampString | String | This value represents the same time stamp as "timeStamp". The format is "YYYYMMDDHHMMSS.sss+/-HHMM", such as "20150504135813.220-0400" | Mandatory |

| | | | | | |
|--|---------|-----------------|--------|--|--|
| | bmi | | | | Mandatory if the device reports BMI. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value represents the Body Mass Index (BMI) measured by the targeted device. | Mandatory |
| | | mderFloat | String | This value represents the BMI measured by the targeted device, which is a hexadecimal string of an MDER FLOAT, such as "FE00096A", which means 24.10 kg/m ² if the value of "unit" is "kg/m ² ". | Mandatory |
| | | type | String | This value represents the TYPE attribute as a human readable string and as its 32-bit MDC code such as "BMI". If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | typeCode | String | This value represents the TYPE attribute, which is expressed by a code such as "188752" (This code means "BMI"). If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | unit | String | This value represents the unit of the reported BMI, which is expressed by a human readable string such as "kg/m ² ". | Mandatory |
| | | unitCode | String | This value represents the unit of the reported BMI, which is expressed by a code such as "264096" (This code means "kg/m ² "). | Mandatory |
| | | timeStamp | int | This value represents the measurement time when the measurement was done. If the measurement time is reported from the targeted device, the Plug-In SHALL convert it to a unix time stamp in millisecond. Otherwise, the Plug-In set this value to the unix time when the Plug-In receives the measurement value from the Plug-In based on the clock of the underlying operating system. | Mandatory |
| | | timeStampString | String | This value represents the same time stamp as "timeStamp". The format is "YYYYMMDDHHMMSS.sss+/-HHMM", such as "20150504135813.220-0400" | Mandatory |
| | bodyFat | | Object | | Mandatory if the device reports body fat. Otherwise, this SHALL NOT exist. |

| | | | | | |
|--|-------------|-----------------|--------|--|---|
| | | value | Float | This value represents the body fat measured by the targeted device. | Mandatory |
| | | mderFloat | String | This value represents the body fat measured by the targeted device, which is a hexadecimal string of an MDER FLOAT, such as "FF000087", which means 13.5 % if the value of "unit" is "%". | Mandatory |
| | | type | String | This value represents the TYPE attribute as a human readable string and as its 32-bit MDC code such as "Body Fat". If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | typeCode | String | This value represents the TYPE attribute, which is expressed by a code such as "188748" (This code means "Body Fat"). If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | unit | String | This value represents the unit of the reported body fat, which is expressed by a human readable string such as "%". | Mandatory |
| | | unitCode | String | This value represents the unit of the reported body fat, which is expressed by a code such as "262688" (This code means "%"). | Mandatory |
| | | timeStamp | int | This value represents the measurement time when the measurement was done. If the measurement time is reported from the targeted device, the Plug-In SHALL convert it to a unix time stamp in millisecond. Otherwise, the Plug-In set this value to the unix time when the Plug-In receives the measurement value from the Plug-In based on the clock of the underlying operating system. | Mandatory |
| | | timeStampString | String | This value represents the same time stamp as "timeStamp". The format is "YYYYMMDDHHMMSS.sss+/-HHMM", such as "20150504135813.220-0400" | Mandatory |
| | fatFreeMass | | Object | | Mandatory if the device reports fat free mass. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value represents the fat free mass measured by the targeted device. | Mandatory |
| | | mderFloat | String | This value represents the fat free mass measured by the targeted device, which is a hexadecimal string of an MDER FLOAT, such as "FF00056C", which means 138.8 lbs if the value of "unit" is "lbs". | Mandatory |

| | | | | | |
|--|--------------|-----------------|--------|--|--|
| | | type | String | This value represents the TYPE attribute as a human readable string and as its 32-bit MDC code such as "Fat Free Mass". If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | typeCode | String | This value represents the TYPE attribute, which is expressed by a code such as "188756" (This code means "Fat Free Mass"). If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | unit | String | This value represents the unit of the reported fat free mass, which is expressed by a human readable string such as "lbs". | Mandatory |
| | | unitCode | String | This value represents the unit of the reported fat free mass, which is expressed by a code such as "263904" (This code means "lbs"). | Mandatory |
| | | timeStamp | int | This value represents the measurement time when the measurement was done. If the measurement time is reported from the targeted device, the Plug-In SHALL convert it to a unix time stamp in millisecond. Otherwise, the Plug-In set this value to the unix time when the Plug-In receives the measurement value from the Plug-In based on the clock of the underlying operating system. | Mandatory |
| | | timeStampString | String | This value represents the same time stamp as "timeStamp". The format is "YYYYMMDDHHMMSS.sss+/-HHMM", such as "20150504135813.220-0400" | Mandatory |
| | softLeanMass | | Object | | Mandatory if the device reports soft lean mass. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value represents the soft lean mass measured by the targeted device. | Mandatory |
| | | mderFloat | String | This value represents the soft lean mass measured by the targeted device, which is a hexadecimal string of an MDER FLOAT, such as "FF00024C", which means 58.8 kg if the value of "unit" is "kg". | Mandatory |
| | | type | String | This value represents the TYPE attribute as a human readable string and as its 32-bit MDC code such as "Soft Lean Mass". If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |

| | | | | | |
|--|-----------|-----------------|--------|--|--|
| | | typeCode | String | This value represents the TYPE attribute, which is expressed by a code such as "188760" (This code means "Soft Lean Mass"). If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | unit | String | This value represents the unit of the reported soft lean mass, which is expressed by a human readable string such as "kg". | Mandatory |
| | | unitCode | String | This value represents the unit of the reported soft lean mass, which is expressed by a code such as "263875" (This code means "kg"). | Mandatory |
| | | timeStamp | int | This value represents the measurement time when the measurement was done. If the measurement time is reported from the targeted device, the Plug-In SHALL convert it to a unix time stamp in millisecond. Otherwise, the Plug-In set this value to the unix time when the Plug-In receives the measurement value from the Plug-In based on the clock of the underlying operating system. | Mandatory |
| | | timeStampString | String | This value represents the same time stamp as "timeStamp". The format is "YYYYMMDDHHMMSS.sss+/-HHMM", such as "20150504135813.220-0400" | Mandatory |
| | bodyWater | | Object | | Mandatory if the device reports body water. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value represents the body water measured by the targeted device. | Mandatory |
| | | mdrFloat | String | This value represents the body water measured by the targeted device, which is a hexadecimal string of an MDER FLOAT, such as "00000040", which means 64 % if the value of "unit" is "%". | Mandatory |
| | | type | String | This value represents the TYPE attribute as a human readable string and as its 32-bit MDC code such as "Body water". If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | typeCode | String | This value represents the TYPE attribute, which is expressed by a code such as "188760" (This code means "Body water"). If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |

| | | | | | |
|--|------------|-----------------|--------|--|---|
| | | unit | String | This value represents the unit of the reported body water, which is expressed by a human readable string such as "%". | Mandatory |
| | | unitCode | String | This value represents the unit of the reported body water, which is expressed by a code such as "262688" (This code means "%"). | Mandatory |
| | | timeStamp | int | This value represents the measurement time when the measurement was done. If the measurement time is reported from the targeted device, the Plug-In SHALL convert it to a unix time stamp in millisecond. Otherwise, the Plug-In set this value to the unix time when the Plug-In receives the measurement value from the Plug-In based on the clock of the underlying operating system. | Mandatory |
| | | timeStampString | String | This value represents the same time stamp as "timeStamp". The format is "YYYYMMDDHHMMSS.sss+/-HHMM", such as "20150504135813.220-0400" | Mandatory |
| | muscleMass | | Object | | Mandatory if the device reports muscle mass. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value represents the muscle mass measured by the targeted device. | Mandatory |
| | | mderFloat | String | This value represents the muscle mass measured by the targeted device, which is a hexadecimal string of an MDER FLOAT, such as "000002B", which means 43 kg if the value of "unit" is "kg". | Mandatory |
| | | type | String | This value represents the TYPE attribute as a human readable string and as its 32-bit MDC code such as "Muscle Mass". If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | typeCode | String | This value represents the TYPE attribute, which is expressed by a code such as "188776" (This code means "Muscle Mass"). If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | unit | String | This value represents the unit of the reported muscle mass, which is expressed by a human readable string such as "kg". | Mandatory |
| | | unitCode | String | This value represents the unit of the reported muscle mass, which is expressed by a code such as "263875" (This code means "kg"). | Mandatory |

| | | | | | |
|--|------------------|-----------------|--------|--|---|
| | | timeStamp | int | This value represents the measurement time when the measurement was done. If the measurement time is reported from the targeted device, the Plug-In SHALL convert it to a unix time stamp in millisecond. Otherwise, the Plug-In set this value to the unix time when the Plug-In receives the measurement value from the Plug-In based on the clock of the underlying operating system. | Mandatory |
| | | timeStampString | String | This value represents the same time stamp as "timeStamp". The format is "YYYYMMDDHHMMSS.sss+/-HHMM", such as "20150504135813.220-0400" | Mandatory |
| | musclePercentage | | Object | | Mandatory if the device reports muscle percentage. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value represents the muscle percentage measured by the targeted device. | Mandatory |
| | | mdrFloat | String | This value represents the muscle percentage measured by the targeted device, which is a hexadecimal string of an MDER FLOAT, such as "0000003B", which means 59 % if the value of "unit" is "%". | Mandatory |
| | | type | String | This value represents the TYPE attribute as a human readable string and as its 32-bit MDC code such as "Muscle Percentage". If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | typeCode | String | This value represents the TYPE attribute, which is expressed by a code such as "188772" (This code means "Muscle Percentage"). If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | unit | String | This value represents the unit of the reported muscle percentage, which is expressed by a human readable string such as "%". | Mandatory |
| | | unitCode | String | This value represents the unit of the reported muscle percentage, which is expressed by a code such as "262688" (This code means "%"). | Mandatory |

| | | | | | |
|--|-----------------|-----------------|--------|--|--|
| | | timeStamp | int | This value represents the measurement time when the measurement was done. If the measurement time is reported from the targeted device, the Plug-In SHALL convert it to a unix time stamp in millisecond. Otherwise, the Plug-In set this value to the unix time when the Plug-In receives the measurement value from the Plug-In based on the clock of the underlying operating system. | Mandatory |
| | | timeStampString | String | This value represents the same time stamp as "timeStamp". The format is "YYYYMMDDHHMMSS.sss+/-HHMM", such as "20150504135813.220-0400" | Mandatory |
| | basalMetabolism | | Object | | Mandatory if the device reports basal metabolism. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value represents the basal metabolism measured by the targeted device. | Mandatory |
| | | mdrFloat | String | This value represents the basal metabolism measured by the targeted device, which is a hexadecimal string of an MDER FLOAT, such as "030004BE", which means 1214000 joules if the value of "unit" is "joules". | Mandatory |
| | | type | String | This value represents the TYPE attribute as a human readable string and as its 32-bit MDC code such as "Basal Metabolism". If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | typeCode | String | This value represents the TYPE attribute, which is expressed by a code such as "188768" (This code means "Basal Metabolism"). If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | unit | String | This value represents the unit of the reported basal metabolism, which is expressed by a human readable string such as "joules". | Mandatory |
| | | unitCode | String | This value represents the unit of the reported basal metabolism, which is expressed by a code such as "266112" (This code means "joules"). | Mandatory |

| | | | | | |
|--|-----------|-----------------|--------|--|---|
| | | timeStamp | int | This value represents the measurement time when the measurement was done. If the measurement time is reported from the targeted device, the Plug-In SHALL convert it to a unix time stamp in millisecond. Otherwise, the Plug-In set this value to the unix time when the Plug-In receives the measurement value from the Plug-In based on the clock of the underlying operating system. | Mandatory |
| | | timeStampString | String | This value represents the same time stamp as "timeStamp". The format is "YYYYMMDDHHMSS.sss+/-HHMM", such as "20150504135813.220-0400" | Mandatory |
| | impedance | | Object | | Mandatory if the device reports impedance. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value represents the impedance measured by the targeted device. | Mandatory |
| | | mderFloat | String | This value represents the impedance measured by the targeted device, which is a hexadecimal string of an MDER FLOAT, such as "FF00B26E", which means 4567.8 ohms if the value of "unit" is "ohms". | Mandatory |
| | | type | String | This value represents the TYPE attribute as a human readable string and as its 32-bit MDC code such as "Impedance". If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | typeCode | String | This value represents the TYPE attribute, which is expressed by a code such as "188780" (This code means "Impedance"). If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | unit | String | This value represents the unit of the reported impedance, which is expressed by a human readable string such as "ohms". | Mandatory |
| | | unitCode | String | This value represents the unit of the reported impedance, which is expressed by a code such as "266432" (This code means "ohms"). | Mandatory |

| | | | | | |
|--|--|-----------------|--------|--|-----------|
| | | timeStamp | int | This value represents the measurement time when the measurement was done. If the measurement time is reported from the targeted device, the Plug-In SHALL convert it to a unix time stamp in millisecond. Otherwise, the Plug-In set this value to the unix time when the Plug-In receives the measurement value from the Plug-In based on the clock of the underlying operating system. | Mandatory |
| | | timeStampString | String | This value represents the same time stamp as "timeStamp". The format is "YYYYMMDDHHMMSS.sss+/-HHMM", such as "20150504135813.220-0400" | Mandatory |

The Plug-In MAY append additional data in the data object as needed.

This data object is sent to the GotAPI Server in an OS specific mechanism, e.g., Intents for Android.

Requirements for OS-specific response channel and data container

| OS | Description |
|---------|---|
| Android | The GotAPI Server must use Explicit Intents for the request. The data object must be mapped to the Extra directly. |

Example of the data object of the Android Intents

| Name | Example of value | | | Note |
|-----------|------------------|------------------|-----------------------------------|--|
| Action | | | org.deviceconnect.action.RESPONSE | This value is defined by the GotAPI Server application. But the last part SHALL be "RESPONSE". |
| Component | | | org.deviceconnect | This value is the package name of the GotAPI Server application. |
| Extra | | | | |
| | requestCode | | 10 | |
| | result | | 0 | |
| | weight | | | |
| | device | | | |
| | | productName | ABC Pulse Weight Scale Pro | |
| | | manufacturerName | ABC Inc. | |
| | | modelName | TP-001 | |
| | | firmwareRevision | rev.1.001.003 | |
| | | serialNumber | 01234-5678-9ABCD-EF01 | |
| | | softwareRevision | rev.2.000.000 | |

| | | | | | |
|--|--|------------|------------------|-------------------------|--|
| | | | hardwareRevision | rev.1.0 | |
| | | | partNumber | 002 | |
| | | | protocolRevision | rev.3.1 | |
| | | | systemId | ABCDEF0123456789 | |
| | | | batteryLevel | 0.5 | |
| | | bodyMass | | | |
| | | | value | 160.4 | |
| | | | mdcrFloat | FF00644 | |
| | | | type | Body Mass | |
| | | | typeCode | 188740 | |
| | | | unit | lbs | |
| | | | unitCode | 263904 | |
| | | | timeStamp | 1431856940275 | |
| | | | timeStampString | 20150517100220.000-0000 | |
| | | bodyLength | | | |
| | | | value | 68.5 | |
| | | | mdcrFloat | FF002AD | |
| | | | type | Body Length | |
| | | | typeCode | 188744 | |
| | | | unit | inches | |
| | | | unitCode | 263520 | |
| | | | timeStamp | 1431856940275 | |
| | | | timeStampString | 20150517100220.000-0000 | |
| | | bmi | | | |
| | | | value | 24.10 | |
| | | | mdcrFloat | FE00096A | |
| | | | type | BMI | |
| | | | typeCode | 188752 | |
| | | | unit | kg/m2 | |
| | | | unitCode | 264096 | |
| | | | timeStamp | 1431856940275 | |
| | | | timeStampString | 20150517100220.000-0000 | |
| | | bodyFat | | | |
| | | | value | 13.5 | |

| | | | | | |
|--|--|--------------|-----------------|-------------------------|--|
| | | | mdrFloat | FF00087 | |
| | | | type | Body Fat | |
| | | | typeCode | 188748 | |
| | | | unit | % | |
| | | | unitCode | 262688 | |
| | | | timeStamp | 1431856940275 | |
| | | | timeStampString | 20150517100220.000-0000 | |
| | | fatFreeMass | | | |
| | | | value | 138.8 | |
| | | | mdrFloat | FF00056C | |
| | | | type | Fat Free Mass | |
| | | | typeCode | 188756 | |
| | | | unit | lbs | |
| | | | unitCode | 263904 | |
| | | | timeStamp | 1431856940275 | |
| | | | timeStampString | 20150517100220.000-0000 | |
| | | softLeanMass | | | |
| | | | value | 58.8 | |
| | | | mdrFloat | FF00024C | |
| | | | type | Soft Lean Mass | |
| | | | typeCode | 188760 | |
| | | | unit | kg | |
| | | | unitCode | 263875 | |
| | | | timeStamp | 1431856940275 | |
| | | | timeStampString | 20150517100220.000-0000 | |
| | | bodyWater | | | |
| | | | value | 64 | |
| | | | mdrFloat | 00000040 | |
| | | | type | Body water | |
| | | | typeCode | 188760 | |
| | | | unit | % | |
| | | | unitCode | 262688 | |
| | | | timeStamp | 1431856940275 | |
| | | | timeStampString | 20150517100220.000-0000 | |
| | | muscleMass | | | |

| | | | | | |
|--|--|------------------|-----------------|-------------------------|--|
| | | | value | 43 | |
| | | | mdrFloat | 0000002B | |
| | | | type | Muscle Mass | |
| | | | typeCode | 188776 | |
| | | | unit | kg | |
| | | | unitCode | 263875 | |
| | | | timeStamp | 1431856940275 | |
| | | | timeStampString | 20150517100220.000-0000 | |
| | | musclePercentage | | | |
| | | | value | 59 | |
| | | | mdrFloat | 0000003B | |
| | | | type | Muscle Percentage | |
| | | | typeCode | 188772 | |
| | | | unit | % | |
| | | | unitCode | 262688 | |
| | | | timeStamp | 1431856940275 | |
| | | | timeStampString | 20150517100220.000-0000 | |
| | | basalMetabolism | | | |
| | | | value | 1214000 | |
| | | | mdrFloat | 030004BE | |
| | | | type | Basal Metabolism | |
| | | | typeCode | 188768 | |
| | | | unit | joules | |
| | | | unitCode | 266112 | |
| | | | timeStamp | 1431856940275 | |
| | | | timeStampString | 20150517100220.000-0000 | |
| | | impedance | | | |
| | | | value | 4567.8 | |
| | | | mdrFloat | FF00B26E | |
| | | | type | Impedance | |
| | | | typeCode | 188780 | |
| | | | unit | ohms | |
| | | | unitCode | 266432 | |
| | | | timeStamp | 1431856940275 | |
| | | | timeStampString | 20150517100220.000-0000 | |

Editor's note:

The extra data of Android is just a key-value structure. How should such structured data above be expressed? JSON string?

5.2.4 Response for one-shot measuring on the GotAPI-1 Interface

When GotAPI Server receives the response from the Plug-In, the GotAPI Server passes it to the application as follows:

Definition of the HTTP response

| Definitions | |
|-------------|------------------|
| MIME-Type | application/json |
| HTTP status | 200 OK |

Definition of the data object for the response

| Name | Type | Definition of value | Mandatory/Optional | | |
|---------|--------|---|--------------------|---|-----------|
| product | String | The name of the GotAPI Server (e.g. "ABConnect") | Mandatory | | |
| version | String | The version of the GotAPI Server (e.g. "1.0"). | Mandatory | | |
| result | Number | If success, the value is 0, otherwise an integer greater than 0, which indicates an error code. This specification doesn't define error codes. | Mandatory | | |
| weight | | | Mandatory | | |
| | device | Object | Mandatory | | |
| | | productName | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | manufacturerName | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | modelName | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | firmwareRevision | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | serialNumber | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | softwareRevision | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |

| | | | | | |
|--|------------|------------------|--------|---|--|
| | | hardwareRevision | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | partNumber | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | protocolRevision | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | systemId | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | batteryLevel | Number | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | bodyMass | | Object | | Mandatory |
| | | value | Float | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | mderFloat | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | type | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | typeCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unit | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unitCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStamp | int | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStampString | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | bodyLength | | Object | | Mandatory if the Plug-In reports this data set. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | mderFloat | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |

| | | | | | |
|--|---------|-----------------|--------|---|--|
| | | type | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | typeCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unit | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unitCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStamp | int | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStampString | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | bmi | | Object | | Mandatory if the Plug-In reports this data set. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | mderFloat | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | type | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | typeCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unit | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unitCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStamp | int | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStampString | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | bodyFat | | Object | | Mandatory if the Plug-In reports this data set. Otherwise, this SHALL NOT exist. |

| | | | | | |
|--|-------------|-----------------|--------|---|--|
| | | value | Float | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | mderFloat | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | type | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | typeCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unit | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unitCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStamp | int | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStampString | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | fatFreeMass | | Object | | Mandatory if the Plug-In reports this data set. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | mderFloat | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | type | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | typeCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unit | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unitCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStamp | int | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStampString | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |

| | | | | | |
|--|--------------|-----------------|--------|---|--|
| | softLeanMass | | Object | | Mandatory if the Plug-In reports this data set. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | mderFloat | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | type | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | typeCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unit | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unitCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStamp | int | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStampString | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | bodyWater | | Object | | Mandatory if the Plug-In reports this data set. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | mderFloat | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | type | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | typeCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unit | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unitCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |

| | | | | | |
|--|------------------|-----------------|--------|---|--|
| | | timeStamp | int | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStampString | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | muscleMass | | Object | | Mandatory if the Plug-In reports this data set. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | mderFloat | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | type | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | typeCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unit | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unitCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStamp | int | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStampString | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | musclePercentage | | Object | | Mandatory if the Plug-In reports this data set. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | mderFloat | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | type | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | typeCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |

| | | | | | |
|--|-----------------|-----------------|--------|---|--|
| | | unit | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unitCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStamp | int | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStampString | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | basalMetabolism | | Object | | Mandatory if the Plug-In reports this data set. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | mderFloat | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | type | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | typeCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unit | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unitCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStamp | int | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStampString | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | impedance | | Object | | Mandatory if the Plug-In reports this data set. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | mderFloat | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |

| | | | | | |
|------|--|-----------------|--------|--|---|
| | | type | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | typeCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unit | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unitCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStamp | int | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStampString | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| hmac | | | String | An HMAC generated for the counter measure against the GotAPI Server spoofing attack. If the application includes a key for HMAC calculation in the API request, the GotAPI Server adds this value in the API response. Evaluating whether the HMAC is identical to the result of calculation of HMAC from the key, the application can ensure that the response is genuine. | Mandatory if the application provide a key to the GotAPI Server |

The GotAPI Server SHALL serialize the data structure above as a JSON formatted stream (i.e. JSON string).

Example of the response

```
{
  "product"       : "ABCConnect",
  "version"       : "1.0",
  "requestCode"   : 10,
  "result"        : 0,
  "weight"        : {
    "device": {
      "productName"   : "ABC Weight Scale Pro",
      "manufacturerName" : "ABC Inc.",
      "modelNumber"    : "TP-001",
      "firmwareRevision" : "rev.1.001.003",
      "serialNumber"    : "01234-5678-9ABCD-EF01",
      "softwareRevision" : "rev.2.000.000",
      "hardwareRevision" : "rev.1.0",
      "partNumber"      : "002",
      "protocolRevision" : "rev.3.1",
      "systemId"        : "ABCDEF0123456789",
      "batteryLevel"    : 0.5
    },
    "bodyMass": {
      "value"          : 160.4,
    }
  }
}
```

```

    "mderFloat"      : "FF00644",
    "type"           : "Body Mass",
    "typeCode"      : "188740",
    "unit"           : "lbs",
    "unitCode"      : "263904",
    "timeStamp"     : 1431856940275,
    "timeStampString" : "20150517100220.000-0000"
  },
  "bodyLength": {
    "value"         : 68.5,
    "mderFloat"    : "FF002AD",
    "type"          : "Body Length",
    "typeCode"     : "188744",
    "unit"          : "inches",
    "unitCode"     : "263520",
    "timeStamp"    : 1431856940275,
    "timeStampString" : "20150517100220.000-0000"
  },
  "bmi": {
    "value"         : 24.10,
    "mderFloat"    : "FE00096A",
    "type"          : "BMI",
    "typeCode"     : "188752",
    "unit"          : "kg/m2",
    "unitCode"     : "264096",
    "timeStamp"    : 1431856940275,
    "timeStampString" : "20150517100220.000-0000"
  },
  "bodyFat": {
    "value"         : 13.5,
    "mderFloat"    : "FF000087",
    "type"          : "Body Fat",
    "typeCode"     : "188748",
    "unit"          : "%",
    "unitCode"     : "262688",
    "timeStamp"    : 1431856940275,
    "timeStampString" : "20150517100220.000-0000"
  },
  "fatFreeMass": {
    "value"         : 138.8,
    "mderFloat"    : "FF00056C",
    "type"          : "Fat Free Mass",
    "typeCode"     : "188756",
    "unit"          : "lbs",
    "unitCode"     : "263904",
    "timeStamp"    : 1431856940275,
    "timeStampString" : "20150517100220.000-0000"
  },
  "softLeanMass": {
    "value"         : 58.8,
    "mderFloat"    : "FF00024C",
    "type"          : "Soft Lean Mass",
    "typeCode"     : "188760",

```

```
"unit"          : "kg",
"unitCode"     : "263875",
"timeStamp"    : 1431856940275,
"timeStampString" : "20150517100220.000-0000"
},
"bodyWater": {
  "value"       : 64,
  "mderFloat"   : "00000040",
  "type"        : "Body water",
  "typeCode"    : "188760",
  "unit"        : "%",
  "unitCode"    : "262688",
  "timeStamp"   : 1431856940275,
  "timeStampString" : "20150517100220.000-0000"
},
"muscleMass": {
  "value"       : 43,
  "mderFloat"   : "0000002B",
  "type"        : "Muscle Mass",
  "typeCode"    : "188776",
  "unit"        : "kg",
  "unitCode"    : "263875",
  "timeStamp"   : 1431856940275,
  "timeStampString" : "20150517100220.000-0000"
},
"musclePercentage": {
  "value"       : 59,
  "mderFloat"   : "0000003B",
  "type"        : "Muscle Percentage",
  "typeCode"    : "188772",
  "unit"        : "%",
  "unitCode"    : "262688",
  "timeStamp"   : 1431856940275,
  "timeStampString" : "20150517100220.000-0000"
},
"basalMetabolism": {
  "value"       : 1214000,
  "mderFloat"   : "030004BE",
  "type"        : "Basal Metabolism",
  "typeCode"    : "188768",
  "unit"        : "joules",
  "unitCode"    : "266112",
  "timeStamp"   : 1431856940275,
  "timeStampString" : "20150517100220.000-0000"
},
"impedance": {
  "value"       : 4567.8,
  "mderFloat"   : "FF00B26E",
  "type"        : "Impedance",
  "typeCode"    : "188780",
  "unit"        : "ohms",
  "unitCode"    : "266432",
  "timeStamp"   : 1431856940275,
```

```

    "timeStampString" : "20150517100220.000-0000"
  }
},
"hmac" : "0123456789"
}

```

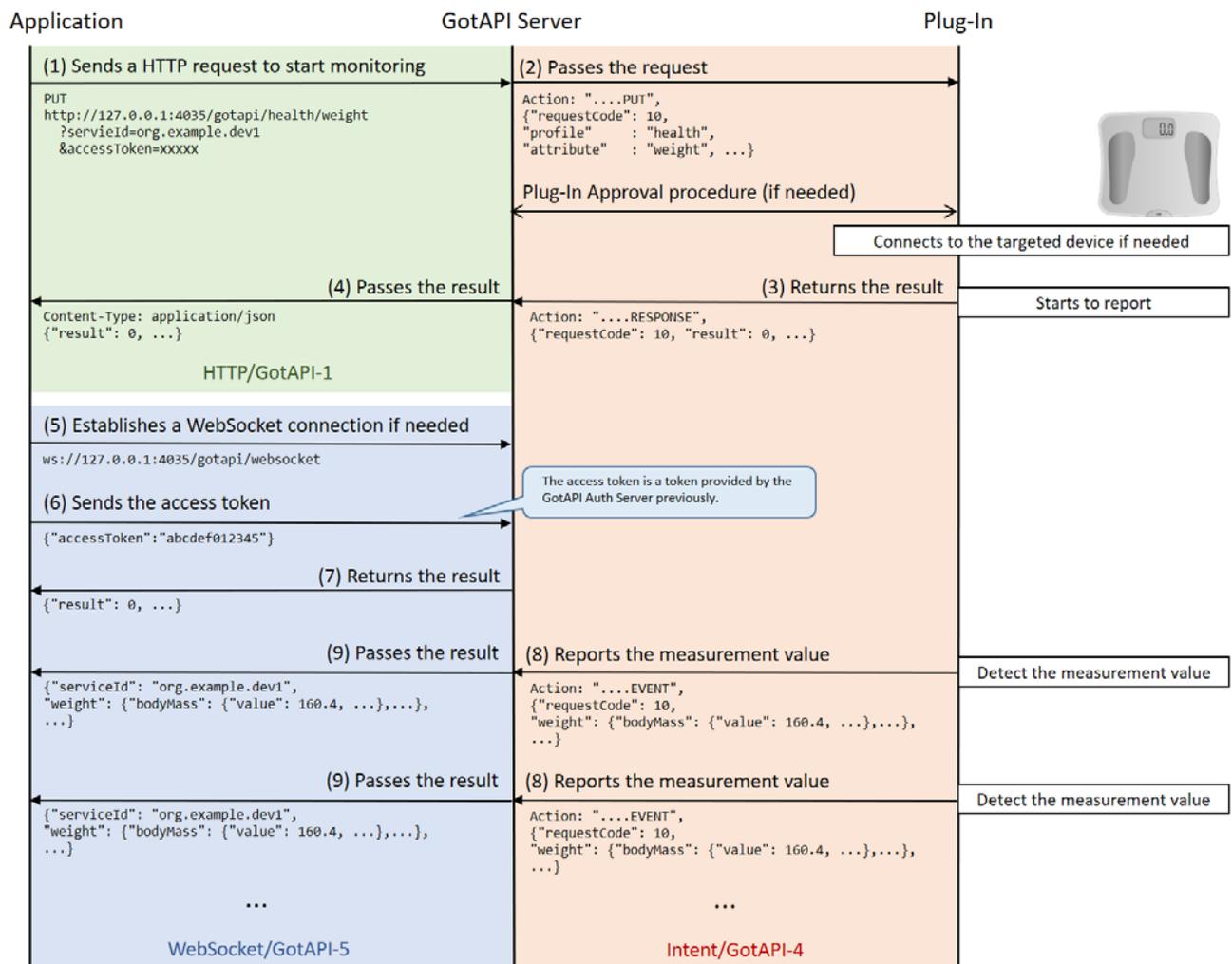
5.3 Asynchronous messaging API

Asynchronous messaging API enables applications to receive measured data from the targeted device asynchronously using WebSocket as define in the Section 7.2.3 [DWAPI-PCH]. Asynchronous messaging API specification adheres to that of GotAPI 1.1.

As defined by GotAPI 1.1, after the application obtains authorization to access GotAPI-based APIs using the GotAPI-2 Interface and completes the Service Discovery, the application can use the service (so called "Asynchronous messaging API") provided by the Plug-In through the GotAPI Server.

The asynchronous messaging API offers a series of measurement values reported by the targeted device to an application in real time as the measurement values become available. The timing when and the reasons why such measurement values become available is determined by the Plug-Ins and connected devices, and is out of the scope of this specification.

This API uses WebSocket protocol to handle asynchronous event messages. The message flow of this API is shown blow:



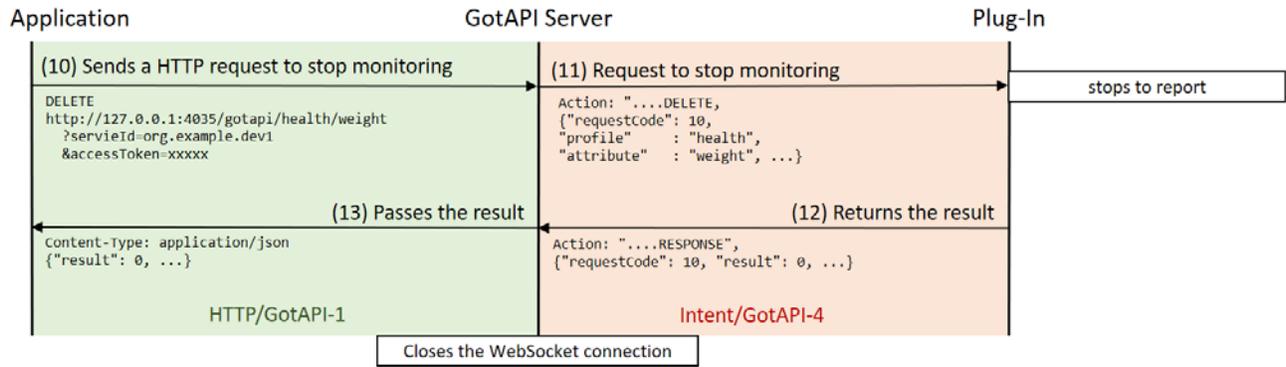


Figure 3: Message Flow of the Asynchronous messaging API

This section defines the data object for the message flows labelled from (1) to (4) and from (8) to (13) described in the figure above.

5.3.1 Request for asynchronous messaging on the GotAPI-1 Interface

When the application uses the API in order to receive asynchronous messages, it sends a request to the GotAPI Server on the GotAPI-1 Interface as follows:

Definition of the HTTP request

| Definitions | |
|-------------|---|
| Method | HTTP PUT |
| Request URL | http://127.0.0.1:4035/gotapi/health/weight https://127.0.0.1:4036/gotapi/health/weight |

Definition of the request parameters

| Parameter name | Definition of value | Mandatory/Optional |
|----------------|---|--------------------|
| serviceId | The identifier of the targeted service. This value is available from the Service Discovery API on the GotAPI-1 Interface. | Mandatory |
| accessToken | The access token obtained from the GotAPI Auth Server through the GotAPI-2 Interface. | Mandatory |
| nonce | A nonce generated by the application, which is described in the section "7.3.3.3 HMAC server authentication using trusted Application ID for the Server spoofing attack" in the GotAPI specification. | Optional |

Example of the request URL

http://127.0.0.1:4035/gotapi/health/weight?serviceId=abcdefg123&accessToken=0987654321&nonce=93b3a219347

5.3.2 Request for asynchronous messaging on the GotAPI-4 Interface

When an application sends a request to the GotAPI Server on the GotAPI-1 Interface, the GotAPI Server passes the request to the Plug-In on the GotAPI-4 Interface. The request includes the data object as follows:

Definition of the data object for request

| Name | Type | Definition of value | Mandatory/Optional |
|-------------|--------|---|---|
| method | String | This value SHALL be "PUT". | Mandatory if the OS is not Android. Otherwise, optional. If the OS is Android, the "Action" value SHALL include this information as described below. |
| receiver | String | The address of the GotAPI Server application used by Plug-Ins. Generally, it is the application ID recognized by the OS, such as a package name. | Mandatory |
| requestCode | int | A request code identifying the request. This value could be any number but must MUST be an integer greater than 0, and unique for each open request, to ensure responses can be correlated. | Mandatory |
| serviceId | String | The identifier of the targeted Service. This value is provided by the application over the GotAPI-1 Interface. | Mandatory |
| api | String | The value must be "gotapi". | Mandatory |
| profile | String | The value must be "health". | Mandatory |
| attribute | String | The value must be "weight" | Mandatory |
| clientId | String | The identifier of the application, which is generated by the Plug-In when the Plug-In Approval procedure defined in the GotAPI specification. | Mandatory |
| accessToken | String | The access token for the application, which is generated by the Plug-In when the Plug-In Approval procedure defined in the GotAPI specification. | Mandatory |

This data object is sent to the Plug-Ins in an OS specific mechanism, e.g., Intents for Android.

Requirements for OS-specific request channel and data container

| OS | Description |
|---------|---|
| Android | The GotAPI Server must use Explicit Intents for the request. The data object must be mapped to the Extra directly. |

Example of the data object of the Android Explicit Intents

| Name | Example of value | Note |
|-----------|------------------------------|---|
| Action | org.deviceconnect.action.PUT | This value is defined by the GotAPI Server application. But the last part SHALL be "PUT". |
| Component | org.example.plugin | This value is the package name of the Plug-In application. |

| | | | |
|-------|-------------|-------------------|--|
| Extra | | | |
| | receiver | org.deviceconnect | |
| | requestCode | 10 | |
| | servcieId | dev1.example.org | |
| | api | gotapi | |
| | profile | health | |
| | attribute | weight | |
| | clientId | 1234567890 | |
| | accessToken | 0987654321 | |

5.3.3 Response for asynchronous messaging on the GotAPI-4 Interface

When the Plug-In receives the request, it SHALL respond to the GotAPI Server as follows:

Definition of the data object for the response

| Name | Type | Definition of value | Mandatory/Optional | | |
|-------------|--------|---|---|---|-----------|
| method | String | This value SHALL be "RESPONSE". | Mandatory if the OS is not Android. Otherwise, optional. If the OS is Android, the "Action" value SHALL include this information as described below. | | |
| requestCode | Number | The request code coming from the GotAPI Server. | Mandatory | | |
| result | Number | If success, the value is 0, otherwise an integer greater than 0, which indicates an error code. This specification doesn't define error codes. | Mandatory | | |
| weight | | | Mandatory | | |
| | device | Object | Mandatory | | |
| | | productName | String | The product name of the targeted device. If the Plug-In cannot obtain this information from the targeted device, it SHALL create a name for the device using an arbitrary algorithm. The algorithm is up to the Plug-In implementation, and this specification does not define any algorithms. | Mandatory |

| | | | | | |
|--|--|------------------|--------|--|-----------|
| | | manufacturerName | String | The manufacturer name of the targeted device. If the Plug-In cannot obtain this information from the targeted device, this value SHALL be an empty string. | Mandatory |
| | | modelName | String | The model number of the targeted device. If the Plug-In cannot obtain this information from the targeted device, this value SHALL be an empty string. | Mandatory |
| | | firmwareRevision | String | The firmware revision of the targeted device. If the Plug-In cannot obtain this information from the targeted device, this value SHALL be an empty string. | Mandatory |
| | | serialNumber | String | The serial number of the targeted device. If the Plug-In cannot obtain this information from the targeted device, this value SHALL be an empty string. | Mandatory |
| | | softwareRevision | String | The software revision of the targeted device. If the Plug-In cannot obtain this information from the targeted device, this value SHALL be an empty string. | Mandatory |
| | | hardwareRevision | String | The hardware revision of the targeted device. If the Plug-In cannot obtain this information from the targeted device, this value SHALL be an empty string. | Mandatory |
| | | partNumber | String | The part number of the targeted device. If the Plug-In cannot obtain this information from the targeted device, this value SHALL be an empty string. | Mandatory |
| | | protocolRevision | String | The protocol revision of the targeted device. If the Plug-In cannot obtain this information from the targeted device, this value SHALL be an empty string. | Mandatory |
| | | systemId | String | The system id of the targeted device. This value SHALL be a 16-character HEX string without a '0x' prefix (e.g. "ABCDEF0123456789"). If the Plug-In cannot obtain this information from the targeted device, this value SHALL be "0000000000000000" (a string of 16 '0' characters). | Mandatory |

The Plug-In MAY append additional data in the data object as needed.

This data object is sent to the GotAPI Server in an OS specific mechanism, e.g., Intents for Android.

Requirements for OS-specific response channel and data container

| OS | Description |
|---------|---|
| Android | The GotAPI Server must use Explicit Intents for the request. The data object must be mapped to the Extra directly. |

Example of the data object of the Android Intents

| Name | Example of value | | | Note |
|-----------|------------------|------------------|-----------------------------------|--|
| Action | | | org.deviceconnect.action.RESPONSE | This value is defined by the GotAPI Server application. But the last part SHALL be "RESPONSE". |
| Component | | | org.deviceconnect | This value is the package name of the GotAPI Server application. |
| Extra | | | | |
| | requestCode | | 10 | |
| | result | | 0 | |
| | weight | | | |
| | | device | | |
| | | productName | ABC Weight Scale Pro | |
| | | manufacturerName | ABC Inc. | |
| | | modelName | TP-001 | |
| | | firmwareRevision | rev.1.001.003 | |
| | | serialNumber | 01234-5678-9ABCD-EF01 | |
| | | softwareRevision | rev.2.000.000 | |
| | | hardwareRevision | rev.1.0 | |
| | | partNumber | 002 | |
| | | protocolRevision | rev.3.1 | |
| | | systemId | ABCDEF0123456789 | |

Editor's note:

The extra data of Android is just a key-value structure. How should such structured data above be expressed? JSON string?

```
intent.putExtra ("weight", "{\"deviceProductName\":\"ABC Weight Scale Pro\", ...}");
```

5.3.4 Response for asynchronous messaging on the GotAPI-1 Interface

When GotAPI Server receives the response from the Plug-In, the GotAPI Server passes it to the application as follows:

Definition of the HTTP response

| Definitions | |
|-------------|------------------|
| MIME-Type | application/json |
| HTTP status | 200 OK |

Definition of the data object for the response

| Name | Type | Definition of value | Mandatory/Optional |
|---------|------------------|---|--------------------|
| product | String | The name of the GotAPI Server (e.g. "ABCConnect") | Mandatory |
| version | String | The version of the GotAPI Server (e.g. "1.0"). | Mandatory |
| result | Number | If success, the value is 0, otherwise an integer greater than 0, which indicates an error code. This specification doesn't define error codes. | Mandatory |
| weight | Object | | Mandatory |
| | device | | Mandatory |
| | productName | String This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | manufacturerName | String This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | modelName | String This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | firmwareRevision | String This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | serialNumber | String This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | softwareRevision | String This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | hardwareRevision | String This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | partNumber | String This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | protocolRevision | String This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | systemId | String This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |

| | | | | | |
|------|--|--|--------|---|---|
| hmac | | | String | <p>An HMAC generated for the counter measure against the GotAPI Server spoofing attack.</p> <p>If the application includes a key for HMAC calculation in the API request, the GotAPI Server adds this value in the API response. Evaluating whether the HMAC is identical to the result of calculation of HMAC from the key, the application can ensure that the response is genuine.</p> | Mandatory if the application provide a key to the GotAPI Server |
|------|--|--|--------|---|---|

The GotAPI Server SHALL serialize the data structure above as a JSON formatted stream (i.e. JSON string).

Example of the response

```
{
  "product" : "ABCConnect",
  "version" : "1.0",
  "requestCode" : 10,
  "result" : 0,
  "weight" : {
    "device": {
      "productName" : "ABC Weight Scale Pro",
      "manufacturerName" : "ABC Inc.",
      "modelName" : "TP-001",
      "firmwareRevision" : "rev.1.001.003",
      "serialNumber" : "01234-5678-9ABCD-EF01",
      "softwareRevision" : "rev.2.000.000",
      "hardwareRevision" : "rev.1.0",
      "partNumber" : "002",
      "protocolRevision" : "rev.3.1",
      "systemId" : "ABCDEF0123456789"
    }
  },
  "hmac" : "0123456789"
}
```

5.3.5 Asynchronous message from the Plug-In to the GotAPI Server on the GotAPI-4 Interface

The Plug-In sends an asynchronous message as follows:

Definition of the data object for request

| Name | Type | Definition of value | Mandatory/Optional |
|-------------|--------|---|--|
| method | String | This value SHALL be "EVENT". | <p>Mandatory if the OS is not Android. Otherwise, optional.</p> <p>If the OS is Android, the "Action" value SHALL include this information as described below.</p> |
| requestCode | int | The request code coming from the GotAPI Server. | Mandatory |

| | | | | | |
|--------|----------|--------------|--------|--|-----------|
| result | | | Number | If success, the value is 0, otherwise an integer greater than 0, which indicates an error code. This specification doesn't define error codes. | Mandatory |
| weight | | | Object | | Mandatory |
| | device | | Object | | Mandatory |
| | | batteryLevel | Float | The battery level of the targeted device. This value must be a float number in a range from 0.0 to 1.0. The value 0.0 represents that the targeted device is completely out of charge. The value 1.0 represents that the targeted device is fully charged. Even if the targeted device reports this value in percent in a range from 1 to 100, the Plug-In SHALL convert it to a float number in a range from 0.0 to 1.0. If the Plug-In can't obtain battery level from the targeted device, this value SHALL be -1.0. | Mandatory |
| | bodyMass | | | | Mandatory |
| | | value | Float | This value represents the body mass measured by the targeted device. | Mandatory |
| | | mdrFloat | String | This value represents the body mass measured by the targeted device, which is a hexadecimal string of an MDER FLOAT, such as "FF00644", which means 160.4 lbs if the value of "unit" is "lbs". | Mandatory |
| | | type | String | This value represents the TYPE attribute as a human readable string and as its 32-bit MDC code such as "Body Mass". If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | typeCode | String | This value represents the TYPE attribute, which is expressed by a code such as "188740" (This code means "Body Mass"). If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | unit | String | This value represents the unit of the reported SpO ₂ , which is expressed by a human readable string such as "lbs". | Mandatory |

| | | | | | |
|--|------------|-----------------|--------|--|---|
| | | unitCode | String | This value represents the unit of the reported weight scale, which is expressed by a code such as "263904" (This code means "lbs"). | Mandatory |
| | | timeStamp | int | This value represents the measurement time when the measurement was done. If the measurement time is reported from the targeted device, the Plug-In SHALL convert it to a unix time stamp in millisecond. Otherwise, the Plug-In set this value to the unix time when the Plug-In receives the measurement value from the Plug-In based on the clock of the underlying operating system. | Mandatory |
| | | timeStampString | String | This value represents the same time stamp as "timeStamp". The format is "YYYYMMDDHHMMSS.sss+/-HHMM", such as "20150504135813.220-0400" | Mandatory |
| | bodyLength | | | | Mandatory if the device reports body length. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value represents the body length measured by the targeted device. | Mandatory |
| | | mdrFloat | String | This value represents the body length measured by the targeted device, which is a hexadecimal string of an MDER FLOAT, such as "FF002AD", which means 68.5 inches if the value of "unit" is "inches". | Mandatory |
| | | type | String | This value represents the TYPE attribute as a human readable string and as its 32-bit MDC code such as "Body Length". If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | typeCode | String | This value represents the TYPE attribute, which is expressed by a code such as "188744" (This code means "Body Length"). If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | unit | String | This value represents the unit of the reported body length, which is expressed by a human readable string such as "inches". | Mandatory |
| | | unitCode | String | This value represents the unit of the reported weight scale, which is expressed by a code such as "263520" (This code means "inches"). | Mandatory |

| | | | | | |
|--|-----|-----------------|--------|--|---|
| | | timeStamp | int | This value represents the measurement time when the measurement was done. If the measurement time is reported from the targeted device, the Plug-In SHALL convert it to a unix time stamp in millisecond. Otherwise, the Plug-In set this value to the unix time when the Plug-In receives the measurement value from the Plug-In based on the clock of the underlying operating system. | Mandatory |
| | | timeStampString | String | This value represents the same time stamp as "timeStamp". The format is "YYYYMMDDHHMMSS.sss+/-HHMM", such as "20150504135813.220-0400" | Mandatory |
| | bmi | | | | Mandatory if the device reports BMI. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value represents the Body Mass Index (BMI) measured by the targeted device. | Mandatory |
| | | mderFloat | String | This value represents the BMI measured by the targeted device, which is a hexadecimal string of an MDER FLOAT, such as "FE00096A", which means 24.10 kg/m ² if the value of "unit" is "kg/m2". | Mandatory |
| | | type | String | This value represents the TYPE attribute as a human readable string and as its 32-bit MDC code such as "BMI". If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | typeCode | String | This value represents the TYPE attribute, which is expressed by a code such as "188752" (This code means "BMI"). If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | unit | String | This value represents the unit of the reported BMI, which is expressed by a human readable string such as "kg/m2". | Mandatory |
| | | unitCode | String | This value represents the unit of the reported BMI, which is expressed by a code such as "264096" (This code means "kg/m ² "). | Mandatory |

| | | | | | |
|--|---------|-----------------|--------|--|--|
| | | timeStamp | int | This value represents the measurement time when the measurement was done. If the measurement time is reported from the targeted device, the Plug-In SHALL convert it to a unix time stamp in millisecond. Otherwise, the Plug-In set this value to the unix time when the Plug-In receives the measurement value from the Plug-In based on the clock of the underlying operating system. | Mandatory |
| | | timeStampString | String | This value represents the same time stamp as "timeStamp". The format is "YYYYMMDDHHMMSS.sss+/-HHMM", such as "20150504135813.220-0400" | Mandatory |
| | bodyFat | | Object | | Mandatory if the device reports body fat. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value represents the body fat measured by the targeted device. | Mandatory |
| | | mderFloat | String | This value represents the body fat measured by the targeted device, which is a hexadecimal string of an MDER FLOAT, such as "FF000087", which means 13.5 % if the value of "unit" is "%". | Mandatory |
| | | type | String | This value represents the TYPE attribute as a human readable string and as its 32-bit MDC code such as "Body Fat". If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | typeCode | String | This value represents the TYPE attribute, which is expressed by a code such as "188748" (This code means "Body Fat"). If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | unit | String | This value represents the unit of the reported body fat, which is expressed by a human readable string such as "%". | Mandatory |
| | | unitCode | String | This value represents the unit of the reported body fat, which is expressed by a code such as "262688" (This code means "%"). | Mandatory |

| | | | | | |
|--|-------------|-----------------|--------|--|---|
| | | timeStamp | int | This value represents the measurement time when the measurement was done. If the measurement time is reported from the targeted device, the Plug-In SHALL convert it to a unix time stamp in millisecond. Otherwise, the Plug-In set this value to the unix time when the Plug-In receives the measurement value from the Plug-In based on the clock of the underlying operating system. | Mandatory |
| | | timeStampString | String | This value represents the same time stamp as "timeStamp". The format is "YYYYMMDDHHMMSS.sss+/-HHMM", such as "20150504135813.220-0400" | Mandatory |
| | fatFreeMass | | Object | | Mandatory if the device reports fat free mass. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value represents the fat free mass measured by the targeted device. | Mandatory |
| | | mdrFloat | String | This value represents the fat free mass measured by the targeted device, which is a hexadecimal string of an MDER FLOAT, such as "FF00056C", which means 138.8 lbs if the value of "unit" is "lbs". | Mandatory |
| | | type | String | This value represents the TYPE attribute as a human readable string and as its 32-bit MDC code such as "Fat Free Mass". If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | typeCode | String | This value represents the TYPE attribute, which is expressed by a code such as "188756" (This code means "Fat Free Mass"). If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | unit | String | This value represents the unit of the reported fat free mass, which is expressed by a human readable string such as "lbs". | Mandatory |
| | | unitCode | String | This value represents the unit of the reported fat free mass, which is expressed by a code such as "263904" (This code means "lbs"). | Mandatory |

| | | | | | |
|--|--------------|-----------------|--------|--|--|
| | | timeStamp | int | This value represents the measurement time when the measurement was done. If the measurement time is reported from the targeted device, the Plug-In SHALL convert it to a unix time stamp in millisecond. Otherwise, the Plug-In set this value to the unix time when the Plug-In receives the measurement value from the Plug-In based on the clock of the underlying operating system. | Mandatory |
| | | timeStampString | String | This value represents the same time stamp as "timeStamp". The format is "YYYYMMDDHHMMSS.sss+/-HHMM", such as "20150504135813.220-0400" | Mandatory |
| | softLeanMass | | Object | | Mandatory if the device reports soft lean mass. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value represents the soft lean mass measured by the targeted device. | Mandatory |
| | | mdrFloat | String | This value represents the soft lean mass measured by the targeted device, which is a hexadecimal string of an MDER FLOAT, such as "FF00024C", which means 58.8 kg if the value of "unit" is "kg". | Mandatory |
| | | type | String | This value represents the TYPE attribute as a human readable string and as its 32-bit MDC code such as "Soft Lean Mass". If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | typeCode | String | This value represents the TYPE attribute, which is expressed by a code such as "188760" (This code means "Soft Lean Mass"). If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | unit | String | This value represents the unit of the reported soft lean mass, which is expressed by a human readable string such as "kg". | Mandatory |
| | | unitCode | String | This value represents the unit of the reported soft lean mass, which is expressed by a code such as "263875" (This code means "kg"). | Mandatory |

| | | | | | |
|--|-----------|-----------------|--------|--|--|
| | | timeStamp | int | This value represents the measurement time when the measurement was done. If the measurement time is reported from the targeted device, the Plug-In SHALL convert it to a unix time stamp in millisecond. Otherwise, the Plug-In set this value to the unix time when the Plug-In receives the measurement value from the Plug-In based on the clock of the underlying operating system. | Mandatory |
| | | timeStampString | String | This value represents the same time stamp as "timeStamp". The format is "YYYYMMDDHHMMSS.sss+/-HHMM", such as "20150504135813.220-0400" | Mandatory |
| | bodyWater | | Object | | Mandatory if the device reports body water. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value represents the body water measured by the targeted device. | Mandatory |
| | | mdrFloat | String | This value represents the body water measured by the targeted device, which is a hexadecimal string of an MDER FLOAT, such as "00000040", which means 64 % if the value of "unit" is "%". | Mandatory |
| | | type | String | This value represents the TYPE attribute as a human readable string and as its 32-bit MDC code such as "Body water". If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | typeCode | String | This value represents the TYPE attribute, which is expressed by a code such as "188760" (This code means "Body water"). If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | unit | String | This value represents the unit of the reported body water, which is expressed by a human readable string such as "%". | Mandatory |
| | | unitCode | String | This value represents the unit of the reported body water, which is expressed by a code such as "262688" (This code means "%"). | Mandatory |

| | | | | | |
|--|------------|-----------------|--------|--|---|
| | | timeStamp | int | This value represents the measurement time when the measurement was done. If the measurement time is reported from the targeted device, the Plug-In SHALL convert it to a unix time stamp in millisecond. Otherwise, the Plug-In set this value to the unix time when the Plug-In receives the measurement value from the Plug-In based on the clock of the underlying operating system. | Mandatory |
| | | timeStampString | String | This value represents the same time stamp as "timeStamp". The format is "YYYYMMDDHHMMSS.sss+/-HHMM", such as "20150504135813.220-0400" | Mandatory |
| | muscleMass | | Object | | Mandatory if the device reports muscle mass. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value represents the muscle mass measured by the targeted device. | Mandatory |
| | | mdrFloat | String | This value represents the muscle mass measured by the targeted device, which is a hexadecimal string of an MDER FLOAT, such as "000002B", which means 43 kg if the value of "unit" is "kg". | Mandatory |
| | | type | String | This value represents the TYPE attribute as a human readable string and as its 32-bit MDC code such as "Muscle Mass". If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | typeCode | String | This value represents the TYPE attribute, which is expressed by a code such as "188776" (This code means "Muscle Mass"). If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | unit | String | This value represents the unit of the reported muscle mass, which is expressed by a human readable string such as "kg". | Mandatory |
| | | unitCode | String | This value represents the unit of the reported muscle mass, which is expressed by a code such as "263875" (This code means "kg"). | Mandatory |

| | | | | | |
|--|------------------|-----------------|--------|--|---|
| | | timeStamp | int | This value represents the measurement time when the measurement was done. If the measurement time is reported from the targeted device, the Plug-In SHALL convert it to a unix time stamp in millisecond. Otherwise, the Plug-In set this value to the unix time when the Plug-In receives the measurement value from the Plug-In based on the clock of the underlying operating system. | Mandatory |
| | | timeStampString | String | This value represents the same time stamp as "timeStamp". The format is "YYYYMMDDHHMMSS.sss+/-HHMM", such as "20150504135813.220-0400" | Mandatory |
| | musclePercentage | | Object | | Mandatory if the device reports muscle percentage. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value represents the muscle percentage measured by the targeted device. | Mandatory |
| | | mderFloat | String | This value represents the muscle percentage measured by the targeted device, which is a hexadecimal string of an MDER FLOAT, such as "000003B", which means 59 % if the value of "unit" is "%". | Mandatory |
| | | type | String | This value represents the TYPE attribute as a human readable string and as its 32-bit MDC code such as "Muscle Percentage". If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | typeCode | String | This value represents the TYPE attribute, which is expressed by a code such as "188772" (This code means "Muscle Percentage"). If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | unit | String | This value represents the unit of the reported muscle percentage, which is expressed by a human readable string such as "%". | Mandatory |
| | | unitCode | String | This value represents the unit of the reported muscle percentage, which is expressed by a code such as "262688" (This code means "%"). | Mandatory |

| | | | | | |
|--|-----------------|-----------------|--------|--|--|
| | | timeStamp | int | This value represents the measurement time when the measurement was done. If the measurement time is reported from the targeted device, the Plug-In SHALL convert it to a unix time stamp in millisecond. Otherwise, the Plug-In set this value to the unix time when the Plug-In receives the measurement value from the Plug-In based on the clock of the underlying operating system. | Mandatory |
| | | timeStampString | String | This value represents the same time stamp as "timeStamp". The format is "YYYYMMDDHHMMSS.sss+/-HHMM", such as "20150504135813.220-0400" | Mandatory |
| | basalMetabolism | | Object | | Mandatory if the device reports basal metabolism. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value represents the basal metabolism measured by the targeted device. | Mandatory |
| | | mderFloat | String | This value represents the basal metabolism measured by the targeted device, which is a hexadecimal string of an MDER FLOAT, such as "030004BE", which means 1214000 joules if the value of "unit" is "joules". | Mandatory |
| | | type | String | This value represents the TYPE attribute as a human readable string and as its 32-bit MDC code such as "Basal Metabolism". If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | typeCode | String | This value represents the TYPE attribute, which is expressed by a code such as "188768" (This code means "Basal Metabolism"). If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | unit | String | This value represents the unit of the reported basal metabolism, which is expressed by a human readable string such as "joules". | Mandatory |
| | | unitCode | String | This value represents the unit of the reported basal metabolism, which is expressed by a code such as "266112" (This code means "joules"). | Mandatory |

| | | | | | |
|--|-----------|-----------------|--------|--|---|
| | | timeStamp | int | This value represents the measurement time when the measurement was done. If the measurement time is reported from the targeted device, the Plug-In SHALL convert it to a unix time stamp in millisecond. Otherwise, the Plug-In set this value to the unix time when the Plug-In receives the measurement value from the Plug-In based on the clock of the underlying operating system. | Mandatory |
| | | timeStampString | String | This value represents the same time stamp as "timeStamp". The format is "YYYYMMDDHHMMSS.sss+/-HHMM", such as "20150504135813.220-0400" | Mandatory |
| | impedance | | Object | | Mandatory if the device reports impedance. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value represents the impedance measured by the targeted device. | Mandatory |
| | | mderFloat | String | This value represents the impedance measured by the targeted device, which is a hexadecimal string of an MDER FLOAT, such as "FF00B26E", which means 4567.8 ohms if the value of "unit" is "ohms". | Mandatory |
| | | type | String | This value represents the TYPE attribute as a human readable string and as its 32-bit MDC code such as "Impedance". If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | typeCode | String | This value represents the TYPE attribute, which is expressed by a code such as "188780" (This code means "Impedance"). If the Plug-In can't obtain the type, this value SHALL be an empty string. | Mandatory |
| | | unit | String | This value represents the unit of the reported impedance, which is expressed by a human readable string such as "ohms". | Mandatory |
| | | unitCode | String | This value represents the unit of the reported impedance, which is expressed by a code such as "266432" (This code means "ohms"). | Mandatory |

| | | | | | |
|--|--|-----------------|--------|--|-----------|
| | | timeStamp | int | This value represents the measurement time when the measurement was done. If the measurement time is reported from the targeted device, the Plug-In SHALL convert it to a unix time stamp in millisecond. Otherwise, the Plug-In set this value to the unix time when the Plug-In receives the measurement value from the Plug-In based on the clock of the underlying operating system. | Mandatory |
| | | timeStampString | String | This value represents the same time stamp as "timeStamp". The format is "YYYYMMDDHHMMSS.sss+/-HHMM", such as "20150504135813.220-0400" | Mandatory |

The Plug-In MAY append additional data in the data object as needed.

This data object is sent to the Plug-Ins in an OS specific mechanism, e.g., Intents for Android.

Requirements for OS-specific request channel and data container

| OS | Description |
|---------|---|
| Android | The GotAPI Server must use Explicit Intents for the request. The data object must be mapped to the Extra directly. |

Example of the data object of the Android Explicit Intents

| Name | Extra key name | Example of value | Note |
|-----------|----------------|------------------------------------|---|
| Action | | org.deviceconnect.action.EVE NT | This value is defined by the GotAPI Server application. But the last part SHALL be "EVENT". |
| Component | | org.example.plugin | This value is the package name of the Plug-In application. |
| Extra | | | |
| | requestCode | 10 | |
| | result | 0 | |
| | weight | | |
| | device | | |
| | | deviceBatteryLevel | 0.5 |
| | bodyMass | | |
| | | value | 160.4 |
| | | mderFloat | FF00644 |
| | | type | Body Mass |
| | | typeCode | 188740 |
| | | unit | lbs |
| | | unitCode | 263904 |

| | | | | |
|--|--|-------------|-----------------|-------------------------|
| | | | timeStamp | 1431856940275 |
| | | | timeStampString | 20150517100220.000-0000 |
| | | bodyLength | | |
| | | | value | 68.5 |
| | | | mderFloat | FF002AD |
| | | | type | Body Length |
| | | | typeCode | 188744 |
| | | | unit | inches |
| | | | unitCode | 263520 |
| | | | timeStamp | 1431856940275 |
| | | | timeStampString | 20150517100220.000-0000 |
| | | bmi | | |
| | | | value | 24.10 |
| | | | mderFloat | FE00096A |
| | | | type | BMI |
| | | | typeCode | 188752 |
| | | | unit | kg/m2 |
| | | | unitCode | 264096 |
| | | | timeStamp | 1431856940275 |
| | | | timeStampString | 20150517100220.000-0000 |
| | | bodyFat | | |
| | | | value | 13.5 |
| | | | mderFloat | FF000087 |
| | | | type | Body Fat |
| | | | typeCode | 188748 |
| | | | unit | % |
| | | | unitCode | 262688 |
| | | | timeStamp | 1431856940275 |
| | | | timeStampString | 20150517100220.000-0000 |
| | | fatFreeMass | | |
| | | | value | 138.8 |
| | | | mderFloat | FF00056C |
| | | | type | Fat Free Mass |
| | | | typeCode | 188756 |
| | | | unit | lbs |

| | | | | |
|--|--|------------------|-----------------|-------------------------|
| | | | unitCode | 263904 |
| | | | timeStamp | 1431856940275 |
| | | | timeStampString | 20150517100220.000-0000 |
| | | softLeanMass | | |
| | | | value | 58.8 |
| | | | mderFloat | FF00024C |
| | | | type | Soft Lean Mass |
| | | | typeCode | 188760 |
| | | | unit | kg |
| | | | unitCode | 263875 |
| | | | timeStamp | 1431856940275 |
| | | | timeStampString | 20150517100220.000-0000 |
| | | bodyWater | | |
| | | | value | 64 |
| | | | mderFloat | 00000040 |
| | | | type | Body water |
| | | | typeCode | 188760 |
| | | | unit | % |
| | | | unitCode | 262688 |
| | | | timeStamp | 1431856940275 |
| | | | timeStampString | 20150517100220.000-0000 |
| | | muscleMass | | |
| | | | value | 43 |
| | | | mderFloat | 0000002B |
| | | | type | Muscle Mass |
| | | | typeCode | 188776 |
| | | | unit | kg |
| | | | unitCode | 263875 |
| | | | timeStamp | 1431856940275 |
| | | | timeStampString | 20150517100220.000-0000 |
| | | musclePercentage | | |
| | | | value | 59 |
| | | | mderFloat | 0000003B |
| | | | type | Muscle Percentage |

| | | | | |
|--|--|-----------------|-----------------|-------------------------|
| | | | typeCode | 188772 |
| | | | unit | % |
| | | | unitCode | 262688 |
| | | | timeStamp | 1431856940275 |
| | | | timeStampString | 20150517100220.000-0000 |
| | | basalMetabolism | | |
| | | | value | 1214000 |
| | | | mderFloat | 030004BE |
| | | | type | Basal Metabolism |
| | | | typeCode | 188768 |
| | | | unit | joules |
| | | | unitCode | 266112 |
| | | | timeStamp | 1431856940275 |
| | | | timeStampString | 20150517100220.000-0000 |
| | | impedance | | |
| | | | value | 4567.8 |
| | | | mderFloat | FF00B26E |
| | | | type | Impedance |
| | | | typeCode | 188780 |
| | | | unit | ohms |
| | | | unitCode | 266432 |
| | | | timeStamp | 1431856940275 |
| | | | timeStampString | 20150517100220.000-0000 |

Editor's note:

The extra data of Android is just a key-value structure. How should such structured data above be expressed? JSON string?

```
intent.putExtra ("weight", "{\"deviceProductName\": \"ABC Weight Scale Pro\", ...}");
```

5.3.6 Asynchronous message from the GotAPI Server to the application on the GotAPI-5 Interface

When the GotAPI Server receives an asynchronous message from the Plug-In, the GotAPI Server passes it to the application on the GotAPI-5 Interface. The format of the data is a JSON string as follows:

Definition of the data object

| Name | Sub name | | Type | Definition of value | Mandatory/Optional |
|-----------|------------|-----------------|--------|---|--|
| serviceId | | | String | The identifier of the targeted Service. This value is provided by the application when the application send the originated API request on the GotAPI-1 Interface. | Mandatory |
| weight | | | Object | | Mandatory |
| | device | | Object | | Mandatory |
| | | batteryLevel | Number | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | bodyMass | | Object | | Mandatory |
| | | value | Float | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | mderFloat | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | type | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | typeCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unit | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unitCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStamp | int | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStampString | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | bodyLength | | Object | | Mandatory if the Plug-In reports this data set. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |

| | | | | | |
|--|-----|-----------------|--------|---|--|
| | | mderFloat | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | type | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | typeCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unit | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unitCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStamp | int | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStampString | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | bmi | | Object | | Mandatory if the Plug-In reports this data set. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | mderFloat | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | type | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | typeCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unit | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unitCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStamp | int | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStampString | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |

| | | | | | |
|--|-------------|-----------------|--------|---|--|
| | bodyFat | | Object | | Mandatory if the Plug-In reports this data set. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | mderFloat | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | type | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | typeCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unit | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unitCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStamp | int | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStampString | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | fatFreeMass | | Object | | Mandatory if the Plug-In reports this data set. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | mderFloat | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | type | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | typeCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unit | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unitCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |

| | | | | | |
|--|--------------|-----------------|--------|---|--|
| | | timeStamp | int | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStampString | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | softLeanMass | | Object | | Mandatory if the Plug-In reports this data set. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | mderFloat | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | type | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | typeCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unit | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unitCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStamp | int | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStampString | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | bodyWater | | Object | | Mandatory if the Plug-In reports this data set. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | mderFloat | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | type | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | typeCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |

| | | | | | |
|--|------------------|-----------------|--------|---|--|
| | | unit | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unitCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStamp | int | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStampString | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | muscleMass | | Object | | Mandatory if the Plug-In reports this data set. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | mderFloat | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | type | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | typeCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unit | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unitCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStamp | int | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStampString | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | musclePercentage | | Object | | Mandatory if the Plug-In reports this data set. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | mderFloat | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |

| | | | | | |
|--|-----------------|-----------------|--------|---|--|
| | | type | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | typeCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unit | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unitCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStamp | int | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStampString | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | basalMetabolism | | Object | | Mandatory if the Plug-In reports this data set. Otherwise, this SHALL NOT exist. |
| | | value | Float | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | mderFloat | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | type | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | typeCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unit | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unitCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStamp | int | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStampString | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | impedance | | Object | | Mandatory if the Plug-In reports this data set. Otherwise, this SHALL NOT exist. |

| | | | | | |
|------|--|-----------------|--------|--|---|
| | | value | Float | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | mderFloat | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | type | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | typeCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unit | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | unitCode | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStamp | int | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| | | timeStampString | String | This value SHALL be the same as what the GotAPI Server received from the Plug-In. | Mandatory |
| hmac | | | String | An HMAC generated for the counter measure against the GotAPI Server spoofing attack. If the application includes a key for HMAC calculation in the API request, the GotAPI Server adds this value in the API response. Evaluating whether the HMAC is identical to the result of calculation of HMAC from the key, the application can ensure that the response is genuine. | Mandatory if the application provide a key to the GotAPI Server |

Example of the JSON string

```
{
  "serviceId" : 0,
  "weight" : {
    "device": {
      "batteryLevel"      : 0.5
    },
    "bodyMass": {
      "value"             : 160.4,
      "mderFloat"         : "FF00644",
      "type"              : "Body Mass",
      "typeCode"          : "188740",
      "unit"              : "lbs",
      "unitCode"          : "263904",
      "timeStamp"         : 1431856940275,
      "timeStampString"   : "20150517100220.000-0000"
    },
    "bodyLength": {
```

```
"value"           : 68.5,
"mderFloat"       : "FF002AD",
"type"            : "Body Length",
"typeCode"        : "188744",
"unit"            : "inches",
"unitCode"        : "263520",
"timestamp"       : 1431856940275,
"timestampString" : "20150517100220.000-0000"
},
"bmi": {
  "value"           : 24.10
  "mderFloat"       : "FE00096A",
  "type"            : "BMI",
  "typeCode"        : "188752",
  "unit"            : "kg/m2",
  "unitCode"        : "264096",
  "timestamp"       : 1431856940275,
  "timestampString" : "20150517100220.000-0000"
},
"bodyFat": {
  "value"           : 13.5,
  "mderFloat"       : "FF000087",
  "type"            : "Body Fat",
  "typeCode"        : "188748",
  "unit"            : "%",
  "unitCode"        : "262688",
  "timestamp"       : 1431856940275,
  "timestampString" : "20150517100220.000-0000"
},
"fatFreeMass": {
  "value"           : 138.8,
  "mderFloat"       : "FF00056C",
  "type"            : "Fat Free Mass",
  "typeCode"        : "188756",
  "unit"            : "lbs",
  "unitCode"        : "263904",
  "timestamp"       : 1431856940275,
  "timestampString" : "20150517100220.000-0000"
},
"softLeanMass": {
  "value"           : 58.8,
  "mderFloat"       : "FF00024C",
  "type"            : "Soft Lean Mass",
  "typeCode"        : "188760",
  "unit"            : "kg",
  "unitCode"        : "263875",
  "timestamp"       : 1431856940275,
  "timestampString" : "20150517100220.000-0000"
},
"bodyWater": {
  "value"           : 64,
  "mderFloat"       : "00000040",
  "type"            : "Body water",
```

```
"typeCode"      : "188760",
"unit"          : "%",
"unitCode"     : "262688",
"timeStamp"    : 1431856940275,
"timeStampString" : "20150517100220.000-0000"
},
"muscleMass": {
  "value"       : 43,
  "mderFloat"   : "0000002B",
  "type"        : "Muscle Mass",
  "typeCode"    : "188776",
  "unit"        : "kg",
  "unitCode"    : "263875",
  "timeStamp"   : 1431856940275,
  "timeStampString" : "20150517100220.000-0000"
},
"musclePercentage": {
  "value"       : 59,
  "mderFloat"   : "0000003B",
  "type"        : "Muscle Percentage",
  "typeCode"    : "188772",
  "unit"        : "%",
  "unitCode"    : "262688",
  "timeStamp"   : 1431856940275,
  "timeStampString" : "20150517100220.000-0000"
},
"basalMetabolism": {
  "value"       : 1214000,
  "mderFloat"   : "030004BE",
  "type"        : "Basal Metabolism",
  "typeCode"    : "188768",
  "unit"        : "joules",
  "unitCode"    : "266112",
  "timeStamp"   : 1431856940275,
  "timeStampString" : "20150517100220.000-0000"
},
"impedance": {
  "value"       : 4567.8,
  "mderFloat"   : "FF00B26E",
  "type"        : "Impedance",
  "typeCode"    : "188780",
  "unit"        : "ohms",
  "unitCode"    : "266432",
  "timeStamp"   : 1431856940275,
  "timeStampString" : "20150517100220.000-0000"
}
},
"hmac"         : "0123456789"
}
```

5.3.7 Stop request from the application to the GotAPI Server on the GotAPI-1 Interface

When the application wants to stop receiving asynchronous messages, it sends a request to the GotAPI Server on the GotAPI-1 Interface as follows:

Definition of the HTTP request

| Definitions | |
|-------------|---|
| Method | HTTP DELETE |
| Request URL | http://127.0.0.1:4035/gotapi/health/weight https://127.0.0.1:4036/gotapi/health/weight |

Definition of the request parameters

| Parameter name | Definition of value | Mandatory/Optional |
|----------------|---|--------------------|
| serviceId | The identifier of the targeted service. This value is available from the Service Discovery API on the GotAPI-1 Interface. | Mandatory |
| accessToken | The access token obtained from the GotAPI Auth Server through the GotAPI-2 Interface. | Mandatory |
| nonce | A nonce generated by the application, which is described in the section "7.3.3.3 HMAC server authentication using trusted Application ID for the Server spoofing attack" in the GotAPI specification. | Optional |

Example of the request URL

```
http://127.0.0.1:4035/gotapi/health/weight?serviceId=abcdefg123&accessToken=0987654321&nonce=93b3a219347
```

5.3.8 Stop request from the GotAPI Server to the Plug-In on the GotAPI-4 Interface

When the GotAPI Server receives a stop request from the application on the GotAPI-1 Interface, the GotAPI Server sends a stop request to the Plug-in on the GotAPI-4 Interface. The request includes the data object as follows:

Definition of the data object for request

| Name | Type | Definition of value | Mandatory/Optional |
|-------------|--------|---|---|
| method | String | This value SHALL be "DELETE". | Mandatory if the OS is not Android. Otherwise, optional. If the OS is Android, the "Action" value SHALL include this information as described below. |
| receiver | String | The address of the GotAPI Server application used by Plug-Ins. Generally, it is the application ID recognized by the OS, such as a package name. | Mandatory |
| requestCode | int | A request code identifying the request. This value could be any number but must MUST be an integer greater than 0, and unique for each open request, to ensure responses can be correlated. | Mandatory |

| | | | | |
|-------------|--|--------|--|-----------|
| serviceId | | String | The identifier of the targeted Service. This value is provided by the application over the GotAPI-1 Interface. | Mandatory |
| api | | String | The value must be "gotapi". | Mandatory |
| profile | | String | The value must be "health". | Mandatory |
| attribute | | String | The value must be "weight" | Mandatory |
| clientId | | String | The identifier of the application, which is generated by the Plug-In when the Plug-In Approval procedure defined in the GotAPI specification. | Mandatory |
| accessToken | | String | The access token for the application, which is generated by the Plug-In when the Plug-In Approval procedure defined in the GotAPI specification. | Mandatory |

This data object is sent to the Plug-Ins in an OS specific mechanism, e.g., Intents for Android.

Requirements for OS-specific request channel and data container

| OS | Description |
|---------|---|
| Android | The GotAPI Server must use Explicit Intents for the request. The data object must be mapped to the Extra directly. |

Example of the data object of the Android Explicit Intents

| Name | Example of value | Note |
|-----------|---------------------------------|--|
| Action | org.deviceconnect.action.DELETE | This value is defined by the GotAPI Server application. But the last part SHALL be "DELETE". |
| Component | org.example.plugin | This value is the package name of the Plug-In application. |
| Extra | | |
| | receiver | org.deviceconnect |
| | requestCode | 10 |
| | servcieId | dev1.example.org |
| | api | gotapi |
| | profile | health |
| | attribute | weight |
| | clientId | 1234567890 |
| | accessToken | 0987654321 |

5.3.9 Stop response from the Plug-In to the GotAPI Server on the GotAPI-4 Interface

When the Plug-In receives the stop request, it SHALL respond as follows:

Definition of the data object for the response

| Name | Type | Definition of value | Mandatory/Optional |
|-------------|--------|---|---|
| method | String | This value SHALL be "RESPONSE". | Mandatory if the OS is not Android. Otherwise, optional. If the OS is Android, the "Action" value SHALL include this information as described below. |
| requestCode | Number | The request code coming from the GotAPI Server. | Mandatory |
| result | Number | If success, the value is 0, otherwise an integer greater than 0, which indicates an error code. This specification doesn't define error codes. | Mandatory |

The Plug-In MAY append additional data in the data object as needed.

This data object is sent to the GotAPI Server in an OS specific mechanism, e.g., Intents for Android.

Requirements for OS-specific response channel and data container

| OS | Description |
|---------|---|
| Android | The GotAPI Server must use Explicit Intents for the request. The data object must be mapped to the Extra directly. |

Example of the data object of the Android Intents

| Name | Sub name | Example of value | Note |
|-----------|-------------|-----------------------------------|--|
| Action | | org.deviceconnect.action.RESPONSE | This value is defined by the GotAPI Server application. But the last part SHALL be "RESPONSE". |
| Component | | org.deviceconnect | This value is the package name of the GotAPI Server application. |
| Extra | | | |
| | requestCode | 10 | |
| | result | 0 | |

5.3.10 Stop response from the GotAPI Server to the application on the GotAPI-1 Interface

When the GotAPI Server receives the stop response, the GotAPI Server passes the response to the application follows:

Definition of the HTTP response

| Definitions | |
|-------------|------------------|
| MIME-Type | application/json |
| HTTP status | 200 OK |

Definition of the data object for the response

| Name | Type | Definition of value | Mandatory/Optional |
|---------|--------|--|---|
| product | String | The name of the GotAPI Server (e.g. "ABConnect") | Mandatory |
| version | String | The version of the GotAPI Server (e.g. "1.0"). | Mandatory |
| result | Number | If success, the value is 0, otherwise an integer greater than 0, which indicates an error code. This specification doesn't define error codes. | Mandatory |
| hmac | String | An HMAC generated for the counter measure against the GotAPI Server spoofing attack. If the application includes a key for HMAC calculation in the API request, the GotAPI Server adds this value in the API response. Evaluating whether the HMAC is identical to the result of calculation of HMAC from the key, the application can ensure that the response is genuine. | Mandatory if the application provide a key to the GotAPI Server |

The GotAPI Server SHALL serialize the data structure above as a JSON formatted stream (i.e. JSON string), then send it to the originating application on the GotAPI-5 (WebSocket connection).

Example of the response

```
{
  "product": "ABConnect",
  "version": "1.0",
  "result" : 0,
  "hmac"   : "0123456789"
}
```

Appendix A. Change History (Informative)

A.1 Approved Version History

| Reference | Date | Description |
|-----------|------|------------------|
| n/a | n/a | No prior version |

A.2 Draft/Candidate Version 1.0 History

| Document Identifier | Date | Sections | Description |
|--|-------------|--|---|
| Draft Versions OMA-TS- Weight_Scale_Body_Composition_Analy zer_APIs-V1_0 | 26 Aug 2015 | All | First Draft |
| | 04 Nov 2015 | 1, 4, 5.2.3, 5.2.4, 5.3.5, 5.3.6 | Incorporated CR: OMA-CD-DWAPI-2015-0039R03- CR_Weight_Scale_Body_Composition_Analyzer_APIs_TS_Base_Line |
| Candidate Version OMA-TS- Weight_Scale_Body_Composition_Analy zer_APIs-V1_0 | 19 Apr 2016 | n/a | Status changed to Candidate by TP TP Ref # OMA-TP-2016-0057- INP_DWAPI_V1_0_ERP_for_Candidate_approval |