Device Information Service

***Bluetooth*® Service Specification**

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Abstract:

This service exposes manufacturer and/or vendor information about a device.

Version History

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1 Introduction

The Device Information Service exposes manufacturer and/or vendor information about a device.

1.1 Conformance

Each capability of this specification shall be supported in the specified manner. This specification may provide options for design flexibility, because, for example, some products do not implement every portion of the specification. For each implementation option that is supported, it shall be supported as specified.

1.2 Service dependency

This service is not dependent upon any other services.

1.3 Bluetooth specification release compatibility

This service is compatible with any Bluetooth Core Specification host [1] that includes the Generic Attribute Profile (GATT).

1.4 GATT sub-procedure requirements

This service does not require any additional GATT sub-procedures beyond those required by all GATT Servers.

1.5 Transport dependencies

This service uses GATT and therefore has no additional transport dependencies.

1.6 Error codes

This service does not define any application error codes.

1.7 Change History

This section summarizes changes at a moderate level of detail and should not be considered representative of every change made.

1.7.1 New and updated features

Feature Name	Description	Location
Unique Device Identifier for Medical Devices	Addition of the UDI for Medical Devices and related metadata as a new characteristic.	Section 3 Section 3.10 Section 6
Multiple Instances	Changes so that a GATT Server can support multiple instances of the DIS Service.	Section 2

Table 1.1: New and/or updated features

1.7.2 Removed features

No features were removed in this version.

1.7.3 Errata incorporated in v1.2

Section	Errata
Front Matter	E18793, E22608
Disclaimer	E18774
Global	E22608
Section 1.1	E18795
Section 1.4	E19230
Section 1.5	E19229
Section 2	E23096
Section 3.10	E6237, E6238
Section 4	E16573
Section 5	E23029, E23103

Table 1.2: New and/or updated features

1.8 Language

1.8.1 Language conventions

In the development of a specification, the Bluetooth SIG has established the following conventions for use of the terms *"shall"*, *"shall not"*, *"should"*, *"should not"*, *"may"*, *"must"*, and *"can"*. In this Bluetooth specification, the terms in Table 1.3 have the specific meanings given in that table, irrespective of other meanings that exist.

Term	Definition
shall	—used to express what is required by the specification and is to be implemented exactly as written without deviation
shall not	—used to express what is forbidden by the specification
should	—used to express what is recommended by the specification without forbidding anything
should not	—used to indicate that something is discouraged but not forbidden by the specification
may	—used to indicate something that is permissible within the limits of the specification

Term	Definition
must	—used to indicate either: 1. an indisputable statement of fact that is always true regardless of the circumstances 2. an implication or natural consequence if a separately-stated requirement is followed
can	—used to express a statement of possibility or capability

Table 1.3: Language conventions terms and definitions

1.8.1.1 Implementation alternatives

When specification content indicates that there are multiple alternatives to satisfy specification requirements, if one alternative is explained or illustrated in an example it is not intended to limit other alternatives that the specification requirements permit.

1.8.1.2 Discrepancies

It is the goal of Bluetooth SIG that specifications are clear, unambiguous, and do not contain discrepancies. However, members can report any perceived discrepancy by filing an erratum and can request a test case waiver as appropriate.

1.8.2 Reserved for Future Use

Where a field in a packet, Protocol Data Unit (PDU), or other data structure is described as "Reserved for Future Use" (irrespective of whether in uppercase or lowercase), the device creating the structure shall set its value to zero unless otherwise specified. Any device receiving or interpreting the structure shall ignore that field; in particular, it shall not reject the structure because of the value of the field.

Where a field, parameter, or other variable object can take a range of values, and some values are described as "Reserved for Future Use," a device sending the object shall not set the object to those values. A device receiving an object with such a value should reject it, and any data structure containing it, as being erroneous; however, this does not apply in a context where the object is described as being ignored or it is specified to ignore unrecognized values.

When a field value is a bit field, unassigned bits can be marked as Reserved for Future Use and shall be set to 0. Implementations that receive a message that contains a Reserved for Future Use bit that is set to 1 shall process the message as if that bit was set to 0, except where specified otherwise.

The acronym RFU is equivalent to Reserved for Future Use.

1.8.3 Prohibited

When a field value is an enumeration, unassigned values can be marked as “Prohibited.” These values shall never be used by an implementation, and any message received that includes a Prohibited value shall be ignored and shall not be processed and shall not be responded to.

Where a field, parameter, or other variable object can take a range of values, and some values are described as “Prohibited,” devices shall not set the object to any of those Prohibited values. A device receiving an object with such a value should reject it, and any data structure containing it, as being erroneous.

“Prohibited” is never abbreviated.

2 Service declaration

No more than one instance of the Device Information Service may be exposed as a «Primary Service» on a device. One or more instances of the Device Information Service may be exposed as a «Secondary Service» on the same device.

A Device Information Service instance that is exposed as a «Primary Service» shall represent the information that corresponds to the device itself. A Device Information Service instance that is exposed as a «Secondary Service» must be included in another service (see [Vol 3] Part G, Section 2.6.3 in [1]). The specification of the including service defines the device that the characteristics of the included Device Information Service represent.

The service UUID shall be set to «Device Information». The UUID value assigned to «Device Information» is defined in [2].

3 Service characteristics

The Device Information Service may expose one or more of the characteristics shown in Table 3.1. It is possible that none of the characteristics below are included. Unless otherwise specified, only one instance of each characteristic shall be present.

Characteristic Name	Characteristic Qualifier	Mandatory Properties	Optional Properties	Security Permissions
Manufacturer Name String	O	Read		None
Model Number String	O	Read		None
Serial Number String	O	Read		None
Hardware Revision String	O	Read		None
Firmware Revision String	O	Read		None
Software Revision String	O	Read		None
System ID	O	Read		None
IEEE 11073-20601 Regulatory Certification Data List	O	Read		None
PnP ID	O	Read		None
UDI for Medical Devices	O	Read		None

Table 3.1: Device Information Service characteristics

Notes:

- Security Permissions of “None” means that this service does not impose any requirements.
- Properties not listed as Mandatory or Optional are Excluded.
- The structure of these characteristics is defined in the GATT Specification Supplement [4].
- The connection should be authenticated if Serial Number String, System ID, or UDI for Medical Devices is present because any fixed and unique number can be considered Personally Identifiable Information (PII).

3.1 Manufacturer Name String

The Manufacturer Name String characteristic shall represent the name of the manufacturer of the device.

3.1.1 Characteristic behavior

The Manufacturer Name String characteristic returns its value when read using the GATT Characteristic Value Read procedure.

3.2 Model Number String

The Model Number String characteristic shall represent the model number that is assigned by the device vendor.

3.2.1 Characteristic behavior

The Model Number String characteristic returns its value when read using the GATT Characteristic Value Read procedure.

3.3 Serial Number String

The Serial Number String characteristic shall represent the serial number for a particular instance of the device.

3.3.1 Characteristic behavior

The Serial Number String characteristic returns its value when read using the GATT Characteristic Value Read procedure.

3.4 Hardware Revision String

The Hardware Revision String characteristic shall represent the hardware revision for the hardware within the device.

3.4.1 Characteristic behavior

The Hardware Revision String characteristic returns its value when read using the GATT Characteristic Value Read procedure.

3.5 Firmware Revision String

The Firmware Revision String characteristic shall represent the firmware revision for the firmware within the device.

3.5.1 Characteristic behavior

The Firmware Revision String characteristic returns its value when read using the GATT Characteristic Value Read procedure.

3.6 Software Revision String

The Software Revision String characteristic shall represent the software revision for the software within the device.

3.6.1 Characteristic behavior

The Software Revision String characteristic returns its value when read using the GATT Characteristic Value Read procedure.

3.7 System ID

The System ID characteristic shall represent a structure containing an Organizationally Unique Identifier (OUI) followed by a manufacturer-defined identifier and is unique for each individual instance of the product.

3.7.1 Characteristic behavior

The System ID characteristic returns its value when read using the GATT Characteristic Value Read procedure.

3.8 IEEE 11073-20601 Regulatory Certification Data List

The IEEE 11073-20601 Regulatory Certification Data List characteristic shall represent regulatory and certification information for the product in a list defined in IEEE 11073-20601 [3].

3.8.1 Characteristic behavior

The IEEE 11073-20601 Regulatory Certification Data List characteristic returns its value when read using the GATT Characteristic Value Read procedure.

3.9 PnP ID

The PnP_ID characteristic is a set of values that is used to identify all devices of a given type/model/version. Included in the characteristic are a Vendor ID source field, a Vendor ID field, a Product ID field, and a Product Version field.

The fields in this characteristic shall be packed into the characteristic in the following order:

- Vendor ID source
- Vendor ID
- Product ID
- Product Version

The Vendor ID, Product ID, and Product Version fields shall be packed into the characteristic in little-endian format. The Vendor ID source field shall start at the Least Significant Octet of the characteristic and the Product Version field shall end at the Most Significant Octet.

3.9.1 Characteristic behavior

The PnP_ID characteristic returns its value when read using the GATT Characteristic Value Read procedure.

3.9.1.1 Vendor ID Source field

The Vendor ID Source field designates which organization assigned the value used in the Vendor ID field value.

The possible values are defined in Table 3.2.

Value	Description
0x01	Bluetooth SIG-assigned Device ID Vendor ID value from the Assigned Numbers document [2]
0x02	USB Implementer's Forum assigned Vendor ID value
0x00, 0x03 to 0xFF	Reserved for future use

Table 3.2: Vendor ID source field values

3.9.1.2 Vendor ID field

The Vendor ID field is intended to uniquely identify the vendor of the device. This field is used in conjunction with Vendor ID Source field, which determines which organization assigned the Vendor ID field value.

Note: The Bluetooth Special Interest Group assigns Device ID Vendor ID, and the USB Implementer's Forum assigns Vendor IDs, either of which can be used for the Vendor ID field value. Device providers should procure the Vendor ID from the USB Implementer's Forum or the Company Identifier from the Bluetooth SIG.

3.9.1.3 Product ID field

The Product ID field is intended to distinguish between different products made by the vendor identified with the Vendor ID field.

The vendors themselves manage Product ID field values.

3.9.1.4 Product Version field

The Product Version field is a numeric expression identifying the device release number in Binary-Coded Decimal. This is a vendor-assigned value that defines the version of the product identified by the Vendor ID and Product ID fields. This field is intended to differentiate between versions of products with identical Vendor IDs and Product IDs. The value of the field value is 0xJJMN for version JJ.M.N (JJ – major version number, M – minor version number, N – sub-minor version number); e.g., version 2.1.3 is represented with a value of 0x0213 and version 2.0.0 is represented with a value of 0x0200. When upward-compatible changes are made to the device, it is recommended that the minor version number be incremented. If incompatible changes are made to the device, it is recommended that the major version number be incremented. The sub-minor version is incremented for bug fixes.

The vendors themselves manage Product Version field values.

3.10 UDI for Medical Devices

The UDI for Medical Devices characteristic is a structure that contains the Unique Device Identifier (UDI) as assigned to the medical device. When the device has a label representing the UDI, the UDI for Medical Devices characteristic shall represent the same value.

The UDI of a personal medical device is seen as Protected Health Information.

3.10.1 Characteristic behavior

The UDI for Medical Devices characteristic returns its value when read using the GATT Characteristic Value Read procedure.

4 SDP interoperability

If this service is exposed over BR/EDR then it shall have the following SDP record.

Item	Definition	Type	Value	Status
Service Class ID List				M
Service Class #0		UUID	«Device Information»	M
Protocol Descriptor List				M
Protocol #0		UUID	L2CAP	M
Parameter #0 for Protocol #0	PSM	Uint16	PSM = ATT	M
Protocol #1		UUID	ATT	M
BrowseGroupList			PublicBrowseRoot*	M

Table 4.1: SDP record

* PublicBrowseRoot shall be present; however, other browse UUIDs may also be included in the list.

5 Acronyms and abbreviations

Acronyms and Abbreviations	Meaning
ATT	Attribute Protocol
BR/EDR	Basic Rate / Enhanced Data Rate
GATT	Generic Attribute Profile
LE	Low Energy
OUI	Organizationally Unique Identifier
PnP	Plug and Play
UDI	Unique Device Identifier
UUID	Universally Unique Identifier

Table 5.1: Acronyms and abbreviations

6 References

[1] Bluetooth Core Specification, Version 4.2 or later

[2] Bluetooth Assigned Numbers, https://www.bluetooth.com/specifications/assigned-numbers/

[3] IEEE Std 11073-20601™- 2008 Health Informatics - Personal Health Device Communication - Application Profile - Optimized Exchange Protocol - version 1.0 or later

[4] GATT Specification Supplement, v8 or later