

TAG IDENTIFICATION METHOD AND APPARATUS

TECHNICAL FIELD

[0001] The present invention relates to the field of communications technologies, and in particular, to a tag identification method and apparatus.

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BACKGROUND

[0002] Near Field Communication (~~Near Field Communication~~, NFC) is a short-distance wireless connection technology, which can implement communication between electronic devices at a close distance by means of magnetic field induction, where two devices implement data exchange by approaching or colliding.

10 [0003] In the prior art, after an NFC terminal detects an NFC tag, a Near Field Communication controller (Near Field Communication Controller, NFC controller) of the NFC terminal reads entire content of the NFC tag, and then sends the entire content of the NFC tag to a device host (~~Device Host~~, ~~device host~~) of the NFC terminal; the device host processes the NFC tag. Generally, the device host determines, according to the entire content
15 of the NFC tag, whether a format of the NFC tag is in conformity with an NFC data exchange format (NFC Data Exchange Format, NDEF).

[0004] However, in the prior art, the device host can determine the format of the NFC tag only by acquiring the entire content of the NFC tag, which causes the device host to read a large amount of data of the NFC tag and perform relatively complex operations.

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SUMMARY

[0005] Embodiments of the present invention provide a tag identification method and apparatus, which can implement reducing steps of determining a format of a tag by a device
host in an NFC terminal, so that ~~the~~an NFC tag can be processed.

[0006] According to a first aspect, an embodiment of the present invention provides a tag identification method, including:

reading, by a Near Field Communication ₁NFC₁ controller, a type of a tag;

determining, by the NFC controller, whether a format of the tag is an NFC data

5 exchange format ₁NDEF₁ according to the type of the tag; and

sending, by the NFC controller, a notification message to a device host when the NFC controller determines that the format of the tag is the NDEF, where the notification message includes that the format of the tag is the NDEF.

[0007] In a first possible embodiment, with reference to the first aspect, before the reading, 10 by the Near Field Communication-₁NFC₁ controller, the type of the tag, the method further includes:

receiving, by the NFC controller, a configuration command sent by the device host, where the configuration command is used to indicate whether the NFC controller performs NDEF detection on the tag.

15 [0008] In a second possible embodiment, with reference to the first aspect or the first possible embodiment of the first aspect, the determining, by the NFC controller, whether the format of the tag is the NFC data exchange format NDEF according to the type of the tag includes:

when the type of the tag is Type 1, determining, by the NFC controller, whether 20 the format of the tag is the NDEF according to header read-only memory HR0 in the tag;

when the type of the tag is Type 2, determining, by the NFC controller, whether the format of the tag is the NDEF according to a capability container CC in the tag;

when the type of the tag is Type 3, determining, by the NFC controller, whether the format of the tag is the NDEF according to system code System Code in the tag; and

25 when the type of the tag is Type 4, determining, by the NFC controller, whether the format in the tag is the NDEF according to a file identifier of a capability container CC file in the tag.

[0009] In a third possible embodiment, with reference to the first aspect or either of the foregoing possible embodiments of the first aspect, before the receiving, by the NFC 30 controller, the configuration command sent by the device host, the method further includes:

according to header read-only memory HR0 in the tag; when the type of the tag is Type 2, determine whether the format of the tag is the NDEF according to a capability container CC in the tag; when the type of the tag is Type 3, determine whether the format of the tag is the NDEF according to system code System Code in the tag; and when the type of the tag is Type 4, determine whether the format of the tag is the NDEF according to a file identifier of a capability container CC file in the tag.

[0023] In a third possible embodiment, with reference to the third aspect or either of the foregoing possible embodiments of the third aspect, the NFC controller is further configured to send a format function message to the device host, where the format function message carries information about whether the NFC controller has a capability of performing the NDEF detection on the tag.

[0024] In a fourth possible embodiment, with reference to the third possible embodiment of the third aspect, the device host is further configured to send an initialization command to the NFC controller; and

the NFC controller is further configured to send an initialization response to the device host after receiving the initialization command sent by the device host, where the initialization response carries the information about whether the NFC controller has a capability of performing the NDEF detection on the tag.

[0025] In a fifth possible embodiment, with reference to the first possible embodiment of the third aspect, the configuration command is further used to indicate that the NFC controller performs data type detection on the tag.

[0026] In a sixth possible embodiment, with reference to the third aspect or any one of the foregoing possible embodiments of the third aspect, the device host is further configured to establish an NDEF radio frequency interface for performing data transmission with the NFC controller after receiving the notification message sent by the NFC controller.

[0027] In a seventh possible embodiment, with reference to the sixth possible embodiment of the ~~second~~third aspect, the device host is further configured to send, by using the NDEF radio frequency interface, a read/write command to the NFC controller; and

the NFC controller is further configured to receive, by using the NDEF radio frequency interface, the read/write command sent by the device host; convert the read/write

command into an NDEF read/write command; and perform data reading/writing on the tag according to the NDEF read/write command.

[0028] According to the tag identification method and apparatus provided in the embodiments of the present invention, an NFC controller reads a type of a tag; and determines whether a format of the tag is an NFC data exchange format according to the type of the tag; and the NFC controller sends a notification message to a device host when the NFC controller determines that the format of the tag is the NFC data exchange format, where the notification message includes information that the format of the tag is the NFC data exchange format. Compared with the prior art in which a device host can determine a format of an NFC tag only by acquiring entire content of the NFC tag, which causes the device host to read a large amount of data of the NFC tag and perform relatively complex operations, the embodiments of the present invention can implement reducing steps of determining a format of a tag by a device host in an NFC terminal, so that the NFC tag can be processed.

BRIEF DESCRIPTION OF DRAWINGS

[0029] To describe the technical solutions in the embodiments of the present invention or in the prior art more clearly, the following briefly introduces the accompanying drawings required for describing the embodiments or the prior art. Apparently, the accompanying drawings in the following description show merely some embodiments of the present invention, and a person of ordinary skill in the art may still derive other drawings from these accompanying drawings without creative efforts.

[0030] FIG. 1 is a flowchart of a tag identification method according to an embodiment of the present invention;

[0031] FIG. 2 is a flowchart of another tag identification method according to an embodiment of the present invention;

[0032] FIG. 3 is a schematic diagram of a transmission structure, between a device host and an NFC controller and between the NFC controller and a tag, in a tag identification method according to an embodiment of the present invention;

[0033] FIG. 4 is a schematic structural diagram of a tag identification apparatus according

reference may be made to the NFC Forum Analog standard, the NFC Forum Digit standard, and the NFC Forum Activity standard. The attribute of the tag may include a format of the tag, a data type of the tag, a function supported by the tag, and the like. The function supported by the tag herein refers to a capability that is required in a process of establishing communication between the NFC controller and the tag.

[0042] 102: The NFC controller determines whether a format of the tag is an NDEF according to the type of the tag.

[0043] The NDEF defines an encapsulation format of information during information exchange, where the information is transmitted between NFC terminals or between an NFC terminal and an NFC tag. The NDEF may be a lightweight binary message format, and it can be used to encapsulate one or more user-defined data of any type and any size.

[0044] When the type of the tag is Type 1, the NFC controller determines whether the format of the tag is the NDEF according to header read-only memory (Header Read-Only Memory, HR)0 in the tag. Specifically, a length of HR0 is one byte, and when four high order bits of HR0 is 0001b, the NFC controller determines that the format of the tag is the NDEF. When the type of the tag is Type 2, the NFC controller determines whether the format of the tag is the NDEF according to a capability container (Capability Container, CC) in the tag. Specifically, a length of the CC is four bytes, and when a value of the first byte is E1h (where E1 is in hexadecimal format), the NFC controller determines that the format of the tag is the NDEF. When the type of the tag is Type 3, the NFC controller determines whether the format of the tag is the NDEF according to ~~system code~~ System Code in the tag. Specifically, a length of the System Code is two bytes, and when a value of the System Code is 12FCh (where 12FC is in hexadecimal format), the NFC controller determines that the format of the tag is the NDEF. When the type of the tag is Type 4, the NFC controller determines whether the format of the tag is the NDEF according to a file identifier of a capability container (Capability Container, CC) file in the tag. Specifically, a length of the file identifier of the CC file is two bytes, and when a value of the file identifier of the CC file is E103h (where E103 is in hexadecimal format), the NFC controller determines that the format of the tag is the NDEF.

[0045] Optionally, when the NFC controller determines that the format of the tag is the NDEF, the NFC controller may further determine a data type of the tag. The tag has eight data

types. Specifically, the NFC controller acquires data type information from a TNF field of the tag (Type_1, Type_2, Type_3, and Type_4), and determines the data type of the tag according to content of the data type information. A value of the TNF field may be 0x00, 0x01, 0x02, 0x03, 0x04, 0x05, 0x06, or 0x07, and the NFC controller may determine the data type information of the tag according to the value of the TNF field. The data type of the tag is specifically a type of an NDEF message. 0x00 represents that the NDEF message is an empty message; 0x01 represents that the NDEF message stores an internal data type defined in the RTD (Record Type Define) standard by the NFC Forum standards organization; 0x02 represents that the NDEF message stores a media type defined in the RFC (Request For Comments) 2046 standard, such as a picture and voice; 0x03 represents that the NDEF message stores a uniform resource identifier (Uniform Resource Identifier, URI) defined in the RFC 3986 standard; 0x04 represents that the NDEF message stores an external data type defined in the RTD (Record Type Define) standard by the NFC Forum standards organization; 0x05 represents that the NDEF message stores one piece of data of an unknown type; 0x06 represents that the NDEF message is an intermediate tag among a series of consecutive NDEF tags, where a data type of the tag is the same as that of a previous NDEF tag; and 0x07 represents that the NDEF message is reserved and not in use temporarily.

[0046] 103: The NFC controller sends a notification message to a device host when the NFC controller determines that the format of the tag is the NDEF, where the notification message includes information that the format of the tag is the NDEF.

[0047] The device host is responsible for managing a running environment of the NFC terminal and a peripheral, including managing the NFC controller, such as initialization, configuration and power management. In the example of a mobile phone having an NFC function, the device host may refer to a CPU of the mobile phone.

[0048] In this embodiment, for example, the NFC controller sends the notification message to the device host; for example, the notification message is a radio frequency discovery notification RF_DISCOVER_NFT. A specific form of RF_DISCOVER_NFT is shown in Table 1.

RF_DISCOVER_NTF

feeds back CORE_INIT_RSP (an initialization response) to the device host after receiving CORE_INIT_CMD. In the CORE_INIT_RSP response, when a supported radio frequency discovery interface-Supported RF Interface field includes 0x04, that is, NDEF Access RF Interface, it indicates that the NFC controller has a capability of detecting the NDEF.

5 [0059] Manner 2: The device host sends a format query command to the NFC controller; the NFC controller sends an format query response to the device host after receiving the format query command, that is, the format function message is specifically the format query response. For example, the device host sends FORMAT_INQ_CMD (a format query command) to the NFC controller, and then the NFC controller feeds back FORMAT_INQ
10 _RSP (a format query response) to the device host after receiving FORMAT_INQ_CMD.

[0060] Certainly, this embodiment is not limited to the foregoing two manners that are used as examples. The NFC controller may further add, to a message sent to the device host, information about whether the NFC controller has a capability of performing NDEF detection on the tag.

15 [0061] 202: The device host sends a configuration command to the NFC controller, where the configuration command is used to indicate whether the NFC controller performs NDEF detection on the tag.

[0062] For example, the device host sends a CORE_SET_CONFIG_CMD command to the NFC controller, where the CORE_SET_CONFIG_CMD command includes a format
20 parameter. A specific form of the format parameter is shown in Table 3.

CORE_SET_CONFIG_CMD				
Parameter 1	3 Octets	ID	1 Octet	0xA0
		Len	1 Octet	1
		Val	1 Octet	Zero indicates that NDEF detection is not performed, and a nonzero value indicates that the NDEF detection is performed

Table 3

[0063] In Table 3, examples of meanings or values indicated by fields are as follows:

Parameter 1 indicates a format parameter, and the format parameter has three bytes

reference may still be made to step 102 in FIG. 1.

[0082] 208: The NFC controller sends a notification message to the device host.

[0083] For detailed descriptions of the notification message, reference may be made to step 103 in FIG. 1.

5 [0084] 209: When the format of the tag is the NDEF, the device host establishes an NDEF radio frequency interface.

[0085] The NDEF radio frequency interface is an interface between the device host and the NFC controller. The NFC controller sends data transmitted between the NFC controller and the tag (where the format of the tag is the NDEF) to the device host by using the NDEF
10 radio frequency interface; or the device host first sends, to the NFC controller by using the NDEF radio frequency interface, data to be sent to the tag, and then the NFC controller forwards the data to the tag.

[0086] Specifically, the device host sends RF_DISCOVER_SELECT_CMD (a radio frequency discovery select command) to the NFC controller, where the
15 RF_DISCOVER_SELECT_CMD includes information that the device host has established the NDEF radio frequency interface. A specific form of RF_DISCOVER_SELECT_CMD is shown in Table 6.

RF_DISCOVER_SELECT_CMD	
RF Discovery ID	XX
RF Protocol	Tag Protocol
RF Interface	NDEF RF Interface

Table 6

[0087] In Table 6, examples of meanings or values indicated by fields are as follows:

20 RF Discovery ID indicates a radio frequency discovery identifier, and is used to identify a tag corresponding to radio frequency discovery;

XX indicates an identifier of the tag;

RF Protocol indicates a manner of communication between the NFC controller and
the tag (for example, the Tag Protocol Tag Protocol); and

25 RF Interface indicates an interface between the device host and the NFC controller

(for example, the NDEF radio frequency interface ~~NDEF RF Interface~~).

[0088] After the NDEF radio frequency interface is established between the device host and the NFC controller, and after the NFC controller receives the data sent by the device host, the NFC controller may convert the data into data in a format that can be received by the tag.

5 The tag is a tag that is identified by an RF Discover ID corresponding to the NDEF radio frequency interface.

[0089] It can be understood that, in step 201 to step 209, an interface used by the NFC controller to perform interaction with the device host may be an NFC controller interface (NFC controller Interface, NCI). The NCI is a logical interface between the device host and
10 the NFC controller, and the NCI is configured to transmit various commands between the device host and the NFC controller.

[0090] 210: The device host sends a read/write command to the NFC controller by using the NDEF radio frequency interface.

[0091] The read/write command is used to acquire the data in the tag, or the read/write
15 command is used to modify the data in the tag.

[0092] 211: The NFC controller converts the read/write command into an NDEF read/write command, and then performs data reading/writing on the tag according to the NDEF read/write command.

[0093] Content of read/write commands received by different types of NFC tags is
20 different. For example, a read/write command received by Type1 is Read, and a read/write command received by Type2 is R. The NFC controller converts, by using the NDEF radio frequency interface, the read/write command sent by the device host into NDEF read/write commands corresponding to different types of tags. The NDEF read/write command may be an NDEF read command, or may be an NDEF write command.

25 [0094] For example, the NFC controller sends an NDEF read command to the tag, where the NDEF read command instructs the NFC tag to send data in the tag. After receiving the NDEF read command, the NFC tag sends the data in the tag to the NFC controller.

[0095] 212: The NFC controller sends the data in the tag to the device host.

[0096] 213: The device host sends the received data in the tag to an NFC application.

30 [0097] It should be noted that, before step 213, the device host may receive a registration

transmission interface between a device host and an NFC controller is clearly described. As shown in FIG. 3, before the device host ~~does not receives~~ a notification message sent by the NFC controller (that is, before the device host ~~does not establishes~~ an NDEF radio frequency interface), command transmission between the device host and the NFC controller is performed by using an NCI; and after the device host receives the notification message sent by the NFC controller, the device host establishes the NDEF radio frequency interface, and NDEF data transmission between the device host and the NFC controller is performed by using the NDEF radio frequency interface.

[0102] As shown in FIG. 4, an embodiment of the present invention provides a tag identification apparatus 40, including: a reading module 401, a determining module 402, and a sending module 403. The apparatus may be a unit of an NFC terminal, for example, an NFC controller.

[0103] The reading module 401 is configured to read a type of a tag.

[0104] The determining module 402 is configured to determine whether a format of the tag is an NDEF according to the type of the tag, and send a result of the determining to the sending module 403.

[0105] The sending module 403 is configured to send a notification message to a device host when the determining module 402 determines that the format of the tag is the NDEF, where the notification message includes that the format of the tag is the NDEF.

[0106] For detailed descriptions of the notification message, reference may be made to step 103 in FIG. 1.

[0107] Further, as shown in FIG. 5, in a tag identification apparatus 50, the tag identification apparatus 50 further includes: a receiving module 404, a converting module 405, a processing module 406.

[0108] Specifically, before the reading module 401 reads the type of the tag, the sending module 403 sends a format function message to the device host, where the format function message carries information about whether the NFC controller has a capability of performing NDEF detection on the tag. Specifically, the format function message may be an initialization response. For example, the receiving module 404 receives an initialization command sent by the device host; then the sending module 403 sends the initialization response to the NFC

CLAIMS

What is claimed is:

1. A tag identification method, comprising:

reading, by a Near Field Communication NFC controller, a type of a tag;

5 determining, by the NFC controller, whether a format of the tag is an NFC data exchange format NDEF according to the type of the tag; and

sending, by the NFC controller, a notification message to a device host when the NFC controller determines that the format of the tag is the NDEF, wherein the notification message comprises that the format of the tag is the NDEF.

10 2. The method according to claim 1, wherein before the reading, by the Near Field Communication NFC controller, the type of the tag, the method further comprises:

receiving, by the NFC controller, a configuration command sent by the device host, wherein the configuration command is used to indicate whether the NFC controller performs NDEF detection on the tag.

15 3. The method according to claim 1 or 2, wherein the determining, by the NFC controller, whether the format of the tag is the NFC data exchange format NDEF according to the type of the tag comprises:

when the type of the tag is Type 1, determining, by the NFC controller, whether the format of the tag is the NDEF according to header read-only memory HR0 in the tag;

20 when the type of the tag is Type 2, determining, by the NFC controller, whether the format of the tag is the NDEF according to a capability container CC in the tag;

when the type of the tag is Type 3, determining, by the NFC controller, whether the format of the tag is the NDEF according to system code System Code in the tag; and

25 when the type of the tag is Type 4, determining, by the NFC controller, whether the format in the tag is the NDEF according to a file identifier of a capability container CC file in the tag.

4. The method according to any one of claims 1 to 3, wherein before the receiving, by the NFC controller, the configuration command sent by the device host, the method further

comprises:

sending, by the NFC controller, a format function message to the device host, wherein the format function message carries information about whether the NFC controller has a capability of performing the NDEF detection on the tag.

5 5. The method according to claim 4, wherein before the sending, by the NFC controller, the format function message to the device host, the method further comprises:

receiving, by the NFC controller, an initialization command sent by the device host; and
the sending, by the NFC controller, the format function message to the device host
comprises:

10 sending, by the NFC controller, an initialization response to the device host, wherein the initialization response carries the information about whether the NFC controller has a capability of performing the NDEF detection on the tag.

6. The method according to claim 2, wherein the configuration command is further used to indicate that the NFC controller performs data type detection on the tag.

15 7. The method according to any one of claims 1 to 6, wherein after the sending, by the NFC controller, the notification message to the device host, the method further comprises:

receiving, by the NFC controller by using an NDEF radio frequency interface, a read/write command sent by the device host;

20 converting, by the NFC controller, the read/write command into an NDEF read/write command; and

performing, by the NFC controller, data reading/writing on the tag according to the NDEF read/write command.

8. A tag identification apparatus, comprising:

a reading module, configured to read a type of a tag;

25 a determining module, configured to determine whether a format of the tag is an NFC data exchange format NDEF according to the type of the tag; and

the sending module, configured to send a notification message to a device host when the determining module determines that the format of the tag is the NDEF, wherein the notification message comprises that the format of the tag is the NDEF.

30 9. The apparatus according to claim 8, wherein the apparatus further comprises:

a receiving module, configured to receive a configuration command sent by the device host, wherein the configuration command is used to indicate whether the NFC controller performs the NDEF detection on the tag.

10. The apparatus according to claim 8 or 9, wherein the determining module is specifically configured to:

when the type of the tag is Type 1, determine whether the format of the tag is the NDEF according to header read-only memory HR0 in the tag; when the type of the tag is Type 2, determine whether the format of the tag is the NDEF according to a capability container CC in the tag; when the type of the tag is Type 3, determine whether the format of the tag is the NDEF according to system code System Code in the tag; and when the type of the tag is Type 4, determine whether the format of the tag is the NDEF according to a file identifier of a capability container CC file in the tag.

11. The apparatus according to any one of claims 8 to 10, wherein:

the sending module is further configured to send a format function message to the device host, wherein the format function message carries information about whether the NFC controller has a capability of performing the NDEF detection on the tag.

12. The apparatus according to claim 11, wherein:

the receiving module is further configured to receive an initialization command sent by the device host; and

the sending module is further configured to send an initialization response to the NFC controller, wherein the initialization response carries the information about whether the NFC controller has a capability of performing the NDEF detection on the tag.

13. The apparatus according to claim 9, wherein the configuration command is further used to indicate that the NFC controller performs data type detection on the tag.

14. The apparatus according to any one of claims 8 to 13, wherein:

the receiving module is further configured to receive, by using an NDEF radio frequency interface, a read/write command sent by the device host; and

the apparatus further comprises:

a converting module, configured to convert the read/write command into an NDEF read/write command; and

a processing module, configured to perform data reading/writing on the tag according to the NDEF read/write command.

15. A tag identification apparatus, wherein the apparatus comprises a Near Field Communication NFC controller and a device host, and the NFC controller is connected to the device host, wherein:

the NFC controller is configured to read a type of a tag; and determine whether a format of the tag is an NFC data exchange format NDEF according to the type of the tag; and wherein the NFC controller sends a notification message to the device host when the NFC controller determines that the format of the tag is the NDEF, wherein the notification message comprises that the format of the tag is the NDEF; and

the device host is configured to receive the notification message sent by the NFC controller.

16. The apparatus according to claim 15, wherein:

the device host is further configured to send a configuration command to the NFC controller, wherein the configuration command is used to indicate whether the NFC controller performs the NDEF detection on the tag; and

the NFC controller is further configured to receive the configuration command sent by the device host.

17. The apparatus according to claim 15 or 16, wherein:

the NFC controller is specifically configured to: when the type of the tag is Type 1, determine whether the format of the tag is the NDEF according to header read-only memory HR0 in the tag; when the type of the tag is Type 2, determine whether the format of the tag is the NDEF according to a capability container CC in the tag; when the type of the tag is Type 3, determine whether the format of the tag is the NDEF according to system code System Code in the tag; and when the type of the tag is Type 4, determine whether the format of the tag is the NDEF according to a file identifier of a capability container CC file in the tag.

18. The apparatus according to any one of claims 15 to 17, wherein:

the NFC controller is further configured to send a format function message to the device host, wherein the format function message carries information about whether the NFC controller has a capability of performing the NDEF detection on the tag.

19. The apparatus according to claim 18, wherein:

the device host is further configured to send an initialization command to the NFC controller; and

the NFC controller is further configured to send an initialization response to the device host after receiving the initialization command sent by the device host, wherein the initialization response carries the information about whether the NFC controller has a capability of performing the NDEF detection on the tag.

20. The apparatus according to claim 16, wherein the configuration command is further used to indicate that the NFC controller performs data type detection on the tag.

21. The apparatus according to any one of claims 15 to 20, wherein:

the device host is further configured to establish an NDEF radio frequency interface for performing data transmission with the NFC controller after receiving the notification message sent by the NFC controller.

22. The apparatus according to claim 21, wherein:

the device host is further configured to send, by using the NDEF radio frequency interface, a read/write command to the NFC controller; and

the NFC controller is further configured to receive, by using the NDEF radio frequency interface, the read/write command sent by the device host; convert the read/write command into an NDEF read/write command; and perform data reading/writing on the tag according to the NDEF read/write command.

CLAIMS

1. A tag identification method, comprising:

reading, by a Near Field Communication, NFC, controller, a type of a tag;

performing, by the NFC controller, NFC data exchange format, NDEF, detection on the tag according to the type of the tag; and

sending, by the NFC controller, a notification message to a device host when a result of the NDEF detection is that a format of the tag is an NDEF , wherein the notification message comprises that the format of the tag is the NDEF.

2. The method according to claim 1, wherein before the reading, by the Near Field Communication ,NFC, controller, the type of the tag, the method further comprises:

receiving, by the NFC controller, a configuration command sent by the device host, wherein the configuration command is used to indicate whether the NFC controller performs the NDEF detection on the tag.

3. The method according to claim 1 or 2, wherein the performing, by the NFC controller, the NDEF detection on the tag according to the type of the tag comprises:

when the type of the tag is Type 1, performing, by the NFC controller, the NDEF detection on the tag according to header read-only memory HR0 in the tag;

when the type of the tag is Type 2, performing, by the NFC controller, the NDEF detection on the tag according to a capability container CC in the tag;

when the type of the tag is Type 3, performing, by the NFC controller, the NDEF detection on the tag according to system code System Code in the tag; and

when the type of the tag is Type 4, performing, by the NFC controller, the NDEF detection on the tag according to a file identifier of a capability container CC file in the tag.

4. The method according to any one of claims 1 to 3, wherein before the receiving, by the NFC controller, the configuration command sent by the device host, the method further comprises:

sending, by the NFC controller, a format function message to the device host, wherein the format function message carries information about whether the NFC controller has a

capability of performing the NDEF detection on the tag.

5. The method according to claim 4, wherein before the sending, by the NFC controller, the format function message to the device host, the method further comprises:

receiving, by the NFC controller, an initialization command sent by the device host; and

5 the sending, by the NFC controller, the format function message to the device host comprises:

sending, by the NFC controller, an initialization response to the device host, wherein the initialization response carries the information about whether the NFC controller has the capability of performing the NDEF detection on the tag.

10 6. The method according to claim 2, wherein the configuration command is further used to indicate that the NFC controller performs data type detection on the tag.

7. The method according to any one of claims 1 to 6, wherein after the sending, by the NFC controller, the notification message to the device host, the method further comprises:

15 receiving, by the NFC controller by using an NDEF radio frequency interface, a read/write command sent by the device host;

converting, by the NFC controller, the read/write command into an NDEF read/write command; and

performing, by the NFC controller, data reading/writing on the tag according to the NDEF read/write command.

20 8. A tag identification apparatus, wherein the apparatus comprises a Near Field Communication ,NFC, controller and a device host, and the NFC controller is connected to the device host, wherein:

the NFC controller is configured to:

25 read a type of a tag;

perform NFC data exchange format ,NDEF, detection on the tag according to the type of the tag; and

send a notification message to the device host when a result of the NDEF detection is that a format of the tag is an NDEF, wherein the notification message comprises that the
30 format of the tag is the NDEF; and

the device host is configured to receive the notification message sent by the NFC controller.

9. The apparatus according to claim 8, wherein:

the device host is further configured to send a configuration command to the NFC controller, wherein the configuration command is used to indicate whether the NFC controller performs the NDEF detection on the tag; and

the NFC controller is further configured to receive the configuration command sent by the device host.

10. The apparatus according to claim 8 or 9, wherein:

the NFC controller is configured to:

when the type of the tag is Type 1, perform the NDEF detection on the tag according to header read-only memory HR0 in the tag;

when the type of the tag is Type 2, perform the NDEF detection on the tag according to a capability container CC in the tag;

when the type of the tag is Type 3, perform the NDEF detection on the tag according to system code System Code in the tag; and

when the type of the tag is Type 4, perform the NDEF detection on the tag according to a file identifier of a capability container CC file in the tag.

11. The apparatus according to any one of claims 8 to 10, wherein:

the NFC controller is further configured to send a format function message to the device host, wherein the format function message carries information about whether the NFC controller has a capability of performing the NDEF detection on the tag.

12. The apparatus according to claim 11, wherein:

the device host is further configured to send an initialization command to the NFC controller; and

the NFC controller is further configured to send an initialization response to the device host after receiving the initialization command sent by the device host, wherein the initialization response carries the information about whether the NFC controller has the capability of performing the NDEF detection on the tag.

13. The apparatus according to claim 9, wherein the configuration command is further

used to indicate that the NFC controller performs data type detection on the tag.

14. The apparatus according to any one of claims 8 to 13, wherein:

the device host is further configured to establish an NDEF radio frequency interface for performing data transmission with the NFC controller after receiving the notification message sent by the NFC controller.

15. The apparatus according to claim 8 or 14, wherein:

the device host is further configured to send, by using an NDEF radio frequency interface, a read/write command to the NFC controller; and

the NFC controller is further configured to:

receive, by using the NDEF radio frequency interface, the read/write command sent by the device host;

convert the read/write command into an NDEF read/write command; and

perform data reading/writing on the tag according to the NDEF read/write command.