[0005] The reissue process can also be expensive from the perspective of the card issuer, which often absorbs the cost of generating and mailing the new cards. Depending on the quality of the card stock, it may cost between $2 and $30 to create a new card. If the cards need to be reissued on an expedited basis, the additional processing costs may run to $10 per card. When several million card numbers have been compromised, the resulting reissue cost can run to tens of millions of dollars.

SUMMARY

[0005a] According to a first aspect, there is provided a contactless card, including: a processor circuit; a memory coupled with the processor circuit, the memory configured to store: a first applet configured to maintain a first account number for the contactless card in the memory, the first account number identifying an account associated with the contactless card to perform transactions; a second applet distinct from the first applet, the second applet configured to communicate with an application of a device, wherein the second applet to: receive, from the device, an instruction to change the first account number; communicate a command to change the first account number to a second account number to the first applet; and the first applet, in response to the command, change the first account number to the second account number.

[0005b] According to a second aspect, there is provided a computer-implemented method to change account numbers on a contactless card using secure applets, including: maintaining, by a first applet of the contactless card, a first account number in a memory of the contactless card, the first account number configured to identify an account associated with the contactless card to perform transactions; receiving, by a second applet of the contactless card from a device, an instruction to change the first account number, wherein the second applet is distinct from the first applet; communicating, by the second applet, a command to change the first account number to a second account number; and changing, by the first applet and in response to the command, the first account number to the second account number.

[0005c] According to a third aspect, there is provided a contactless card, including: a processor circuit; a memory coupled with the processor circuit, the memory configured to store: a first applet configured to maintain a first account number for the contactless card in the memory,

the first account number identifying an account associated with the contactless card to perform transactions; a second applet distinct from the first applet, the second applet configured to communicate with an application of a device, wherein the second applet to: determine, based on a predefined pattern of operations performed with the application of the device, to change the first account number; communicate a command to change the first account number to a second account number to the first applet; and the first applet, in response to the command, change the first account number to the second account number.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] FIG. 1A depicts an environment suitable for use with exemplary embodiments.

[0007] FIG. 1B depicts an example of a contactless card having a physical token.

[0008] FIG. 1C depicts the structure of an exemplary physical token.

[0009] FIG. 2A depicts an exemplary interface for a mobile application associated with an owner of a contactless card.

[0010] FIG. 2B depicts an exemplary interface when the physical token is read by a reader on the owner's mobile device.

[0011] FIG. 2C depicts an example of data exchange between a contactless card and a client device.

[0012] FIG. 2D depicts an exemplary data structure suitable for use with exemplary embodiments.

[0013] FIG. 3 is a flowchart illustrating key operations according to an example embodiment.

[0014] FIG. 4 is a diagram of a key system according to an example embodiment.

[0015] FIG. 5 is a flowchart of a method of generating a cryptogram according to an example embodiment.

[0016] FIG. 6A is a flowchart illustrating a process of key diversification according to an example embodiment.

CLAIMS

1. A contactless card, comprising:

a processor circuit;

a memory coupled with the processor circuit, the memory configured to store:

a first applet configured to maintain a first account number for the contactless card in the memory, the first account number identifying an account associated with the contactless card to perform transactions;

a second applet distinct from the first applet, the second applet configured to communicate with an application of a device, wherein the second applet to:

receive, from the device, an instruction to change the first account number;

communicate a command to change the first account number to a second account number to the first applet; and

the first applet, in response to the command, change the first account number to the second account number.

2. The contactless card of claim 1, wherein the first applet to set the second account number to perform transactions in place of the first account number.

3. The contactless card of claim 1, wherein the first applet to select the second account number from a plurality of account numbers in the memory.

4. The contactless card of claim 1, wherein the first applet to generate the second account number as a new account number.

5. The contactless card of claim 1, wherein the instruction to change the first account number are received from the device via a near field communication (NFC) communication.

6. The contactless card of claim 5, the processor circuit to establish an NFC connection with the device via an NFC exchange initiated in response to the contactless card coming within an NFC communication range of the device.

7. The contactless card of claim 1, comprising a display, and the processor circuit configured to cause the display to display an identifying number derived from the first account number.

8. The contactless card of claim 7, the processor circuit to update the display with a second identifying number derived from the second account number in response to changing the first account number to the second account number.

9. A computer-implemented method to change account numbers on a contactless card using secure applets, comprising:

maintaining, by a first applet of the contactless card, a first account number in a memory of the contactless card, the first account number configured to identify an account associated with the contactless card to perform transactions;

receiving, by a second applet of the contactless card from a device, an instruction to change the first account number, wherein the second applet is distinct from the first applet;

communicating, by the second applet, a command to change the first account number to a second account number; and

changing, by the first applet and in response to the command, the first account number to the second account number.

10. The computer-implemented method of claim 9, comprising setting, by the first applet, the second account number to perform the transactions to replace the first account number.

11. The computer-implemented method of claim 10, comprising selecting, by the first applet, the second account number from a plurality of account numbers to set the second account number to perform the transactions.

12. The computer-implemented method of claim 10, generating, by the first applet, the second account number as a new account number and to set the second number to perform the transactions.

13. The computer-implemented method of claim 9, comprising:

establishing, by the second applet, an NFC communication channel with a mobile device via an NFC exchange initiated in response to the contactless card coming within an NFC communication range of the device, and wherein the instruction to change the first account number received from the device via a near field communication (NFC) communication via the NFC communication channel.

14. The computer-implemented method of claim 9, comprising displaying, on a display of the contactless card, an identifying number derived from the first account number.

15. The computer-implemented method of claim 14, comprising updating the display with a second identifying number derived from the second account number in response to changing the first account number to the second account number.

16. A contactless card, comprising:

a processor circuit;

a memory coupled with the processor circuit, the memory configured to store:

a first applet configured to maintain a first account number for the contactless card in the memory, the first account number identifying an account associated with the contactless card to perform transactions;

a second applet distinct from the first applet, the second applet configured to communicate with an application of a device, wherein the second applet to:

determine, based on a predefined pattern of operations performed with the application of the device, to change the first account number;

communicate a command to change the first account number to a second account number to the first applet; and

the first applet, in response to the command, change the first account number to the second account number.

17. The contactless card of claim 16, wherein the first applet to set the second account number to perform transactions in place of the first account number.

18. The contactless card of claim 16, wherein the predefined pattern of operations is based on a number of taps of the contactless card on the device within a predefined time limit.

19. The contactless card of claim 16, wherein the predefined pattern of operation is based on a rate of a number of taps of the contactless card on the device.

20. The contactless card of claim 16, wherein the predefined pattern of operations is based on a near-field communications exchanges with the device to perform authentication operations, encryption operations, or a combination thereof.