SYSTEM AND METHOD FOR TOKEN DOMAIN CONTROL

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application is a non-provisional application of and claims the benefit of the filing date of U.S. Provisional Application No. 61/988,815, filed on May 5, 2014, which is herein incorporated by reference in its entirety for all purposes.

BACKGROUND

[0002] Current implementations of token systems could be improved. For example, in some cases, there may be an insufficient amount of possible unique token values. This may be an issue when multiple tokens are issued for one user account. A unique token may be issued for each domain in which the payment account is used, and tokens may be regularly refreshed (e.g., one-time use tokens). Current token formats only allow a certain amount of variation, so eventually all possible unique values may be exhausted.

[0003] Another issue is that users have historically been recognized by various entities through their primary account numbers. User activity tracking, loyalty programs, activity analysis, and other programs have been based on PAN usage. When the PAN is replaced with multiple tokens, each token may appear to be a different account to certain entities (e.g., acquirers), and thus these entities may not be able to determine the total activity for a given account. Accordingly, using tokens instead of primary account numbers can be disruptive.

[0004] Embodiments of the invention address these and other problems, individually and collectively.

SUMMARY

[0005] According to a first aspect of the present invention, there is provided a method comprising: receiving, by a processor in a token service computer, a first token request from a first token requestor computer, wherein the first token request includes a value credential and a first domain identifier; identifying, by the processor in the token service computer, a value token associated with the value credential; generating, by the processor in the token service computer, a first token code associated with the value token; assigning, by the processor in the token service computer, the value token and the first token code to the first domain identifier; providing, by the processor in the token service computer, the value token and the first token code to the first token requestor computer, wherein the first token requestor computer subsequently uses the value token for an interaction, wherein the first token requestor computer's subsequent use of the value token is valid if the value token is accompanied by the first token code, and wherein the first token code is domain specific; receiving a first value credential request including the value token, the first token code, and the first domain identifier; and sending a first value credential response including the value credential.

[0005a] According to a second aspect of the present invention, there is provided a token service computer comprising: a processor; and a computer readable medium, the computer readable medium comprising code, executable by the processor, for implementing a method comprising: receiving a first token request from a first token requestor computer, wherein the first token request includes a value credential and a first domain identifier; identifying a value token associated

with the value credential; generating a first token code associated with the value token; assigning the value token and the first token code to the first domain identifier; providing the value token and the first token code to the first token requestor computer, wherein the first token requestor computer subsequently uses the value token for an interaction, wherein the first token requestor computer's subsequent use of the value token is valid if the value token is accompanied by the first token code, and wherein the first token code is domain specific; receiving a first value credential request including the value token, the first token code, and the first domain identifier; and sending a first value credential response including the value credential.

[0006] In another embodiment, the method further comprises receiving a second token request from a second token requestor computer, the second token request including the value credential and a second domain identifier. The method also comprises identifying the value token associated with the value credential generating a second token code associated with the value token assigning the value token and the second token code to the second domain identifier, and transmitting the value token and the second token code to the second token requestor computer. The second token requestor subsequently uses the value token for an interaction, and the second token requestor's subsequent use of the value token is valid if the value token is accompanied by the second token code.

[0007] Another embodiment of the invention is directed to a token service computer configured to perform the above-described method.

[0008] According to a third aspect of the present invention, there is provided a method comprising: receiving, by a transaction processing network computer, a first authorization request message including a value token, a first token code, and a first domain identifier; sending, by the transaction processing network computer, a first value credential request to a token service computer, the first value credential request including the value token, the first token code, and the first domain identifier, wherein the token service computer determines that the first token code is associated with the value token, determines that the value token and the first token code are assigned to the first domain identifier, and identifies a value credential associated with the value token; receiving, by the transaction processing network computer, a first value credential response including the value credential; adding, by the transaction processing network computer, the value credential to the first authorization request message; sending, by the transaction processing network computer, the first authorization request message to an authorizing entity computer; receiving, by the transaction processing network computer, a first authorization response message including the value credential from the authorizing entity computer; replacing, by the transaction processing network computer, the value credential with the value token and the first token code in the first authorization response message; and forwarding, by the transaction processing network computer, the first authorization response message.

[0008a] According to a fourth aspect of the present invention, there is provided a token service system comprising: a token service computer comprising a first processor and a first computer readable medium, the first computer readable medium comprising code, executable by the first processor to implement a method comprising: receiving a first value credential request from a transaction processing network computer, the first value credential request including a value token, a first token code, and a first domain identifier; determining that the first token code is

associated with the value token; determining that the value token and the first token code are assigned to the first domain identifier, wherein the first token code is domain specific; identifying a value credential associated with the value token; and sending a first value credential response including the value credential to the transaction processing network computer; and a transaction processing network computer in communication with the token service computer, the transaction processing network computer comprising a second processor and a second computer readable medium, the second computer readable medium comprising code, executable by the second processor for implementing a method comprising: receiving a first authorization request message including the value token, the first token code, and the first domain identifier; sending the first value credential request to the token service computer, the first value credential request including the value token, the first token code, and the first domain identifier; receiving the first value credential response including the value credential associated with the value token from the token service computer; adding the value credential to the first authorization request message; sending the first authorization request message to an authorizing entity computer; receiving a first authorization response message including the value credential from the authorizing entity computer; replacing the value credential with the value token and the first token code in the first authorization response message; and forwarding the first authorization response message.

[0009] In another embodiment, the method further comprises receiving, by the token service system, a second authorization request message including a value token, a second token code, and a second domain identifier. The method also comprises determining that the second token code is associated with the value token, determining that the value token and the second token code are assigned to the second domain identifier, identifying a value credential associated with the value token, adding the value credential to the second authorization request message, sending the second authorization request message to the authorizing entity computer, receiving a second authorization response message including the value credential from the authorizing entity computer, replacing the value credential with the value token and the second token code in the authorization response message, and forwarding the authorization response message.

[0010] Another embodiment of the invention is directed to a token service system configured to perform the above-described method.

[0011] Further details regarding embodiments of the invention can be found in the Detailed Description and the Figures.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] FIG. 1 shows a block diagram of a system according to an embodiment of the invention.

[0013] FIG. 2 shows a block diagram of a token vault computer according to an embodiment of the invention.

[0014] FIG. 3 shows a block diagram of an exemplary mobile device according to an embodiment of the invention.

[0015] FIG. 4 shows a block diagram of a merchant computer according to an embodiment of the invention.

CLAIMS:

1. A method comprising:

receiving, by a processor in a token service computer, a first token request from a first token requestor computer, wherein the first token request includes a value credential and a first domain identifier;

identifying, by the processor in the token service computer, a value token associated with the value credential;

generating, by the processor in the token service computer, a first token code associated with the value token;

assigning, by the processor in the token service computer, the value token and the first token code to the first domain identifier;

providing, by the processor in the token service computer, the value token and the first token code to the first token requestor computer, wherein the first token requestor computer subsequently uses the value token for an interaction, wherein the first token requestor computer's subsequent use of the value token is valid if the value token is accompanied by the first token code, and wherein the first token code is domain specific;

receiving a first value credential request including the value token, the first token code, and the first domain identifier; and

sending a first value credential response including the value credential.

2. The method of claim 1, further comprising:

receiving, by the processor in the token service computer, a second token request from a second token requestor computer, wherein the second token request includes the value credential and a second domain identifier;

identifying, by the processor in the token service computer, the value token associated with the value credential;

generating, by the processor in the token service computer, a second token code associated with the value token, wherein the second token code is different than the first token code;

assigning, by the processor in the token service computer, the value token and the second token code to the second domain identifier; and

providing, by the processor in the token service computer, the value token and the second token code to the second token requestor computer, wherein the second token requestor computer subsequently uses the value token for an interaction, wherein the second token requestor computer's subsequent use of the value token is valid if the value token is accompanied by the second token code, and wherein the second token code is domain specific.

3. The method of claim 2, wherein the first token code is a first hexadecimal value and the second token code is a second hexadecimal value.

4. The method of claim 2, wherein the first token code is specific to a first domain, wherein the second token code is specific to a second domain, and wherein the first domain is different than the second domain.

5. The method of claim 4, wherein the first domain includes e-commerce interactions and wherein the second domain includes in-person interactions.

6. A token service computer comprising:

a processor; and

a computer readable medium, the computer readable medium comprising code, executable by the processor, for implementing a method comprising:

receiving a first token request from a first token requestor computer, wherein the first token request includes a value credential and a first domain identifier;

identifying a value token associated with the value credential;

generating a first token code associated with the value token;

assigning the value token and the first token code to the first domain identifier;

providing the value token and the first token code to the first token requestor computer, wherein the first token requestor computer subsequently uses the value token for an interaction, wherein the first token requestor computer's subsequent use of the value token is valid if the value token is accompanied by the first token code, and wherein the first token code is domain specific;

receiving a first value credential request including the value token, the first token code, and the first domain identifier; and

sending a first value credential response including the value credential.

7. The token service computer of claim 6, wherein the method further comprises:

receiving a second token request from a second token requestor computer, wherein the second token request includes the value credential and a second domain identifier;

identifying the value token associated with the value credential;

generating a second token code associated with the value token, wherein the second token code is different than the first token code;

assigning the value token and the second token code to the second domain identifier; and

providing the value token and the second token code to the second token requestor computer, wherein the second token requestor computer subsequently uses the value token for an interaction, wherein the second token requestor computer's subsequent use of the value token is valid if the value token is accompanied by the second token code, and wherein the first token code is domain specific.

8. The token service computer of claim 7, wherein the first token code is a first hexadecimal value and the second token code is a second hexadecimal value.

9. The token service computer of claim 7, wherein the first token code is specific to a first domain, wherein the second token code is specific to a second domain, and wherein the first domain is different than the second domain.

10. The token service computer of claim 9, wherein the first domain includes e-commerce interactions and wherein the second domain includes in-person interactions.

11. A method comprising:

receiving, by a transaction processing network computer, a first authorization request message including a value token, a first token code, and a first domain identifier;

sending, by the transaction processing network computer, a first value credential request to a token service computer, the first value credential request including the value token, the first token code, and the first domain identifier,

wherein the token service computer determines that the first token code is associated with the value token, determines that the value token and the first token code are assigned to the first domain identifier, and identifies a value credential associated with the value token;

receiving, by the transaction processing network computer, a first value credential response including the value credential;

adding, by the transaction processing network computer, the value credential to the first authorization request message;

sending, by the transaction processing network computer, the first authorization request message to an authorizing entity computer;

receiving, by the transaction processing network computer, a first authorization response message including the value credential from the authorizing entity computer;

replacing, by the transaction processing network computer, the value credential with the value token and the first token code in the first authorization response message; and

forwarding, by the transaction processing network computer, the first authorization response message.

12. The method of claim 11, further comprising:

receiving, by the transaction processing network computer, a second authorization request message including a value token, a second token code, and a second domain identifier;

sending, by the transaction processing network computer, a second value credential request to the token service computer, the second value credential request including the value token, the second token code, and the second domain identifier,

wherein the token service computer determines that the second token code is associated with the value token, determines that the value token and the second token code are assigned to the second domain identifier, wherein the second token code is different than the first token code, and and identifies a value credential associated with the value token;

receiving, by the transaction processing network computer, a second value credential response including the value credential;

adding, by the transaction processing network computer, the value credential to the second authorization request message;

sending, by the transaction processing network computer, the second authorization request message to the authorizing entity computer;

receiving, by the transaction processing network computer, a second authorization response message including the value credential from the authorizing entity computer;

replacing, by the transaction processing network computer, the value credential with the value token and the second token code in the second authorization response message; and

forwarding, by the transaction processing network computer, the second authorization response message.

13. The method of claim 11 wherein a token service system comprises the token service computer and the transaction processing network computer.

14. The method of claim 12, wherein the first token code is specific to a first domain, wherein the second token code is specific to a second domain, and wherein the first domain is different than the second domain.

15. The method of claim 14, wherein the first domain includes e-commerce interactions and wherein the second domain includes in-person interactions.

16. A token service system comprising:

a token service computer comprising a first processor and a first computer readable medium, the first computer readable medium comprising code, executable by the first processor to implement a method comprising:

receiving a first value credential request from a transaction processing network computer, the first value credential request including a value token, a first token code, and a first domain identifier;

determining that the first token code is associated with the value token;

determining that the value token and the first token code are assigned to the first domain identifier, wherein the first token code is domain specific;

identifying a value credential associated with the value token; and

sending a first value credential response including the value credential to the transaction processing network computer; and

a transaction processing network computer in communication with the token service computer, the transaction processing network computer comprising a second processor and a second computer readable medium, the second computer readable medium comprising code, executable by the second processor for implementing a method comprising:

receiving a first authorization request message including the value token, the first token code, and the first domain identifier;

sending the first value credential request to the token service computer, the first value credential request including the value token, the first token code, and the first domain identifier;

receiving the first value credential response including the value credential associated with the value token from the token service computer;

adding the value credential to the first authorization request message;

sending the first authorization request message to an authorizing entity computer;

receiving a first authorization response message including the value credential from the authorizing entity computer;

replacing the value credential with the value token and the first token code in the first authorization response message; and

forwarding the first authorization response message.

17. The token service system of claim 16, wherein the method implemented by the first processor further comprises:

receiving a second value credential request from a transaction processing network computer, the second value credential request including the value token, a second token code, and a second domain identifier;

determining that the second token code is associated with the value token;

determining that the value token and the second token code are assigned to the second domain identifier, wherein the second token code is different than the first token code, and wherein the second token code is domain specific;

identifying the value credential associated with the value token; and

sending a second value credential response including the value credential to the transaction processing network computer; and

wherein the method implemented by the second processor further comprises:

receiving a second authorization request message including the value token, the second token code, and the second domain identifier;

sending the second value credential request to the token service computer, the second value credential request including the value token, the second token code, and the second domain identifier;

receiving the second value credential response including the value credential associated with the value token from the token service computer;

adding the value credential to the second authorization request message;

sending the second authorization request message to an authorizing entity computer;

receiving a second authorization response message including the value credential from the authorizing entity computer;

replacing the value credential with the value token and the second token code in the second authorization response message; and

forwarding the second authorization response message.

18. The token service system of claim 17, wherein the first token code is a first hexadecimal value and the second token code is a second hexadecimal value.

19. The token service system of claim 17, wherein the first token code is specific to a first domain, wherein the second token code is specific to a second domain, and wherein the first domain is different than the second domain.

20. The token service system of claim 19, wherein the first domain includes e-commerce interactions and wherein the second domain includes in-person interactions.