According to one aspect, there is provided a method for providing online cardholder authentication services on-behalf-of issuer financial institutions, comprising: receiving, by an on-behalf-of (OBO) issuer service computer from one of a merchant server computer or an access control server (ACS) computer, an authentication message comprising an authentication value and transaction data; storing, by the OBO issuer service computer, the authentication message in a transaction database; receiving, by the OBO issuer service computer from a payment network, a purchase transaction authorization request message; determining, by the OBO issuer service computer, that an authentication value in a universal cardholder authentication field (UCAF) of the purchase transaction authorization request message matches the authentication value of the stored authentication message; calculating, by the OBO issuer service computer, a time difference value between a time and date of an online purchase transaction stored in the transaction database and the time and date of the purchase transaction authorization request message; determining, by the OBO issuer service computer, that the time difference value is within a predetermined time range; storing, by the OBO issuer service computer in the transaction database, a record of the match; and transmitting, by the OBO issuer service computer, the purchase transaction authorization request to the payment network for purchase authorization processing.

According to another aspect, there is provided a system for providing online cardholder authentication services on-behalf-of issuer financial institutions, comprising: an On-Behalf-Of (OBO) issuer service computer comprising a storage device and an OBO issuer service processor; a merchant server computer operably connected to the OBO issuer service computer; an access control server (ACS) computer operably connected to the OBO issuer service computer; and a payment network operably connected to the OBO issuer service computer; wherein the storage device stores instructions configured to cause the OBO issuer service processor to: receive an authentication message comprising an authentication value and transaction data from one of the merchant server computer or the ACS computer; store the authentication message in the storage device; receive a purchase transaction authorization request message from the payment network; determine that an authentication value in a universal cardholder authentication field (UCAF) of the purchase transaction authorization request message matches the authentication value of the stored authentication message; calculate a time difference value between a time and date of an online purchase transaction stored in the transaction database and the time and date of the purchase transaction authorization request message; determine that the time difference value is within a

predetermined time range; store a record of the match in the storage device; and transmit the purchase transaction authorization request to the payment network for purchase authorization processing.

According to a further aspect, there is provided a method for providing online cardholder authentication services on-behalf-of issuer financial institutions, comprising: receiving, by an on-behalf-of (OBO) issuer service computer from a payment network, a purchase transaction authorization request message; transmitting, by the OBO issuer service computer to a directory service server computer, a request for an authentication result message associated with the purchase transaction that is the subject of the purchase transaction authorization request message; receiving, by the OBO issuer service computer from the directory service server computer, the authentication result message; matching, by the OBO issuer service computer, the authentication result message with data of the purchase transaction authorization request message; generating, by the OBO issuer service computer, a time difference value equal to the difference between a stored time and date of the purchase transaction and a time and date of receipt of the purchase transaction authorization request message by the payment network; determining, by the OBO issuer service computer, that the time difference value is within a predetermined time range; storing, by the OBO issuer service computer in a transaction database, a record of the match; and transmitting, by the OBO issuer service computer, the purchase transaction authorization request to the payment network for purchase transaction authorization processing.

According to an additional aspect, there is provided a system for providing online cardholder authentication services on-behalf-of issuer financial institutions, comprising: an On-Behalf-Of (OBO) issuer service computer comprising a storage device and an OBO issuer service processor; a directory service server computer operably connected to the OBO issuer service computer; and a payment network operably connected to the OBO issuer service computer; wherein the storage device stores instructions configured to cause the OBO issuer service processor to: receive a purchase transaction authorization request message from the payment network; transmit to a directory service server computer, a request for an authentication result message associated with the purchase transaction that is the subject of the purchase transaction authorization request message; receive the authentication result message from the directory service server computer; match the authentication result message with data of the purchase transaction authorization request message; generate a time difference value equal to the difference between a stored time and date of the purchase

transaction and a time and date of receipt of the purchase transaction authorization request message by the payment network; determine that the time difference value is within a predetermined time range; store a record of the match in the storage device; and transmit the purchase transaction authorization request to the payment network for purchase authorization processing.

BRIEF DESCRIPTION OF THE DRAWINGS

Features and advantages of some embodiments of the present invention, and the manner in which the same are accomplished, will become more readily apparent upon consideration of the following detailed description of the invention taken in conjunction with the accompanying drawings, which illustrate exemplary embodiments and which are not necessarily drawn to scale, wherein:

FIG. 1 is a block diagram of a transaction system to illustrate a conventional 3-D Secure authentication process;

FIG. 2 is a block diagram of a transaction system to illustrate examples of 3-D Secure on-behalf-of ("OBO") issuer interception and validation processes in accordance with some embodiments of the disclosure;

FIG. 3 is a block diagram of an embodiment of an 3-D Secure OBO issuer service computer according to an embodiment of the disclosure;

FIG. 4 is a flowchart of an online cardholder authentication services on-behalf-of (OBO) issuer financial institutions (FIs) process according to some embodiments of the disclosure; and

FIG. 5 is a flowchart of an online cardholder authentication services on-behalf-of (OBO) issuer financial institutions (FIs) process according to some further embodiments of the disclosure.

DETAILED DESCRIPTION

Reference will now be made in detail to various embodiments according to the present disclosure. Examples of these embodiments are illustrated in the accompanying drawings, and it should be understood that the drawings and descriptions thereof are not intended to limit the invention to any particular embodiment(s). On the contrary, the descriptions provided herein are intended to cover alternatives, modifications, and equivalents thereof. In the following description, numerous specific details are set forth in order to provide a thorough understanding of the various embodiments, but some or all of

WHAT IS CLAIMED IS:

1. A method for providing online cardholder authentication services on-behalf-of issuer financial institutions, comprising:

receiving, by an on-behalf-of (OBO) issuer service computer from one of a merchant server computer or an access control server (ACS) computer, an authentication message comprising an authentication value and transaction data;

storing, by the OBO issuer service computer, the authentication message in a transaction database;

receiving, by the OBO issuer service computer from a payment network, a purchase transaction authorization request message;

determining, by the OBO issuer service computer, that an authentication value in a universal cardholder authentication field (UCAF) of the purchase transaction authorization request message matches the authentication value of the stored authentication message;

calculating, by the OBO issuer service computer, a time difference value between a time and date of an online purchase transaction stored in the transaction database and the time and date of the purchase transaction authorization request message;

determining, by the OBO issuer service computer, that the time difference value is within a predetermined time range;storing, by the OBO issuer service computer in the transaction database, a record of the match; and

transmitting, by the OBO issuer service computer, the purchase transaction authorization request to the payment network for purchase authorization processing.

2. The method of claim 1, wherein the authentication message comprises a positive Payer Authentication Response (PARes) message.

3. The method of claim 1, wherein the authentication message comprises fields comprising at least two of a cardholder's Primary Account Number (PAN), an acquirer

identifier, a merchant identifier, a date and time of the transaction, the transaction amount, a Universal Cardholder Authentication Field (UCAF) and a transaction identifier.

4. The method of claim 1, wherein the authentication value is a Universal Cardholder Authentication Field (UCAF).

5. The method of claim 1, further comprising, subsequent to

calculating the time difference value determining, by the OBO issuer service computer, that the time difference value falls outside the predetermined time range; and

declining, by the OBO issuer service computer, the purchase transaction authorization request.

6. The method of claim 5, further comprising:

storing, by the OBO issuer service computer in the transaction database, a response code that corresponds to a decline outcome for the purchase transaction authorization request message; and

transmitting, by the OBO issuer service computer, a decline advice message to an issuer financial institution (FI) computer to notify the cardholder's issuer FI of the declined purchase transaction authorization request.

7. The method of claim 1, further comprising, subsequent to receiving the purchase transaction authorization request message:

determining, by the OBO issuer service computer, that an authentication value in the universal cardholder authentication field (UCAF) of the purchase transaction authorization request message does not match the authentication value of the stored authentication massage; and

declining, by the OBO issuer service computer, the purchase transaction authorization request.

8. The method of claim 7, further comprising:

storing, by the OBO issuer service computer in the transaction database, an indication of the decline outcome; and

transmitting, by the OBO issuer service computer, a decline advice message to an issuer financial institution (FI) computer to notify the cardholder's issuer FI of the declined purchase transaction authorization request.

9. A system for providing online cardholder authentication services on-behalf-of issuer financial institutions, comprising:

an On-Behalf-Of (OBO) issuer service computer comprising a storage device and an OBO issuer service processor;

a merchant server computer operably connected to the OBO issuer service computer;

an access control server (ACS) computer operably connected to the OBO issuer service computer; and

a payment network operably connected to the OBO issuer service computer;

wherein the storage device stores instructions configured to cause the OBO issuer service processor to:

receive an authentication message comprising an authentication value and transaction data from one of the merchant server computer or the ACS computer;

store the authentication message in the storage device;

receive a purchase transaction authorization request message from the payment network;

determine that an authentication value in a universal cardholder authentication field (UCAF) of the purchase transaction authorization request message matches the authentication value of the stored authentication message;

calculate a time difference value between a time and date of an online purchase transaction stored in the transaction database and the time and date of the purchase transaction authorization request message;

determine that the time difference value is within a predetermined time range;

store a record of the match in the storage device; and

transmit the purchase transaction authorization request to the payment network for purchase authorization processing.

10. The system of claim 9, wherein the storage device stores further instructions, subsequent to the instructions for calculating the time difference value, configured to cause the OBO issuer service processor to:

determine that the time difference value falls outside the predetermined time range provided by the cardholder's issuer financial institution; and

decline the purchase transaction authorization request.

11. The system of claim 10, wherein the storage device stores further instructions configured to cause the OBO issuer service processor to:

store a response code that corresponds to a decline outcome for the purchase transaction authorization request message in the storage device; and

transmit a decline advice message to an issuer financial institution (FI) computer to notify the cardholder's issuer FI of the declined purchase transaction authorization request.

12. The system of claim 9, wherein the storage device stores further instructions, subsequent to the instructions for receiving the purchase transaction authorization request message from the payment network, configured to cause the OBO issuer service processor to:

determine that an authentication value in the universal cardholder authentication field (UCAF) of the purchase transaction authorization request message does not match the authentication value of the stored authentication massage; and

decline the purchase transaction authorization request.

13. The system of claim 12, wherein the storage device stores further instructions configured to cause the OBO issuer service processor to:

store an indication of the decline outcome in the storage device; and

transmit a decline advice message to an issuer financial institution (FI) computer to notify the cardholder's issuer FI of the declined purchase transaction authorization request.

14. A method for providing online cardholder authentication services on-behalf-of issuer financial institutions, comprising:

receiving, by an on-behalf-of (OBO) issuer service computer from a payment network, a purchase transaction authorization request message;

transmitting, by the OBO issuer service computer to a directory service server computer, a request for an authentication result message associated with the purchase transaction that is the subject of the purchase transaction authorization request message;

receiving, by the OBO issuer service computer from the directory service server computer, the authentication result message;

matching, by the OBO issuer service computer, the authentication result message with data of the purchase transaction authorization request message;

generating, by the OBO issuer service computer, a time difference value equal to the difference between a stored time and date of the purchase transaction and a time and date of receipt of the purchase transaction authorization request message by the payment network;

determining, by the OBO issuer service computer, that the time difference value is within a predetermined time range;

storing, by the OBO issuer service computer in a transaction database, a record of the match; and

transmitting, by the OBO issuer service computer, the purchase transaction authorization request to the payment network for purchase transaction authorization processing.

15. The method of claim 14, wherein the authentication result message comprises a Payer Authentication Response (PARes) message.

16. The method of claim 14, wherein the OBO issuer service computer receives, along with the purchase transaction authorization request message, a request for 3-D secure processing.

17. The method of claim 14, wherein the authentication result message comprises fields comprising at least two of a cardholder's Primary Account Number (PAN), an acquirer identifier, a merchant identifier, a date and time of the transaction, the transaction amount, a Universal Cardholder Authentication Field (UCAF) and a transaction identifier.

18. The method of claim 14 further comprising, subsequent to:

calculating, the time difference value determining, by the OBO issuer service computer, that the time difference value falls outside the predetermined time range; and

declining, by the OBO issuer service computer, the purchase transaction authorization request.

19. The method of claim 18, further comprising:

storing, by the OBO issuer service computer in the transaction database, a response code that corresponds to a decline outcome for the purchase transaction authorization request message; and

transmitting, by the OBO issuer service computer, a decline advice message to an issuer financial institution (FI) computer to notify the cardholder's issuer FI of the declined purchase transaction authorization request.

20. The method of claim 14, further comprising, subsequent to receiving the authentication result message from the directory service server computer:

determining, by the OBO issuer service computer, that a mismatch occurred between data of the PARes message and data of the purchase transaction authorization request message; and

declining, by the OBO issuer service computer, the purchase transaction authorization request.

21. The method of claim 20, further comprising:

storing, by the OBO issuer service computer in the transaction database, a response code that corresponds to a decline outcome for the purchase transaction authorization request message; and

transmitting, by the OBO issuer service computer, a decline advice message to an issuer financial institution (FI) computer to notify the cardholder's issuer FI of the declined purchase transaction authorization request.

22. A system for providing online cardholder authentication services on-behalf-of issuer financial institutions, comprising:

an On-Behalf-Of (OBO) issuer service computer comprising a storage device and an OBO issuer service processor;

a directory service server computer operably connected to the OBO issuer service computer; and

a payment network operably connected to the OBO issuer service computer;

wherein the storage device stores instructions configured to cause the OBO issuer service processor to:

receive a purchase transaction authorization request message from the payment network;

transmit to a directory service server computer, a request for an authentication result message associated with the purchase transaction that is the subject of the purchase transaction authorization request message;

receive the authentication result message from the directory service server computer;

match the authentication result message with data of the purchase transaction authorization request message;

generate a time difference value equal to the difference between a stored time and date of the purchase transaction and a time and date of receipt of the purchase transaction authorization request message by the payment network;

determine that the time difference value is within a predetermined time range;

store a record of the match in the storage device; and

transmit the purchase transaction authorization request to the payment network for purchase authorization processing.

23. The system of claim 22, wherein the storage device stores further instructions, subsequent to the instructions for calculating a time difference value, configured to cause the OBO issuer service processor to:

determine that the time difference value falls outside the predetermined time range; and

decline the purchase transaction authorization request.

24. The system of claim 23, wherein the storage device stores further instructions configured to cause the OBO issuer service processor to:

store a response code that corresponds to a decline outcome for the purchase transaction authorization request message in the storage device; and

transmit a decline advice message to an issuer financial institution (FI) computer to notify the cardholder's issuer FI of the declined purchase transaction authorization request.

25. The system of claim 22, wherein the storage device stores further instructions, subsequent to the instructions for receiving the authentication result message from the directory service server computer, configured to cause the OBO issuer service processor to:

determine that a mismatch occurred between data of the authentication result message and data of the purchase transaction authorization request message; and

decline the purchase transaction authorization request.

26. The system of claim 25, wherein the storage device stores further instructions configured to cause the OBO issuer service processor to:

store a response code that corresponds to a decline outcome for the purchase transaction authorization request message; and

transmit a decline advice message to an issuer financial institution (FI) computer to notify the cardholder's issuer FI of the declined purchase transaction authorization request.