information to the card issuer to authenticate the card account to be used in the transaction. In this way, the participating merchant establishes an authentication session to confirm if the client is the rightful holder of the account. However, merchants may prefer not to subscribe to such authentication services to avoid card abandonments and improved user experience.

In view of the above, it would be desirable to authenticate a transaction without requiring the transacting merchant to first subscribe to an authentication service.

SUMMARY

According to an aspect, the present disclosure refers to a method comprising: receiving a payment request message at a proxy server from a merchant computing device, the proxy server communicating between the merchant computing device and an issuer computing device, the payment request message relating to a transaction between a customer and a merchant, the payment request message comprising customer data and merchant data, the customer data identifying an account associated with the customer in the transaction, the merchant data indicating that the merchant does not have a subscription to an authentication service that would allow the merchant to obtain results of an authentication of the customer; determining, at the proxy server, i) that the is merchant does not have a subscription to the authentication service based on merchant data, ii) that the transaction is an online transaction, and iii) that an issuer associated with the issuer computing device does have a subscription to the authentication service; generating an authentication request message at the proxy server based on the determination i) that the merchant does not have a subscription to the authentication service, ii) that the transaction is an online transaction, and iii) that the issuer does have a" subscription to the authentication service, the authentication request message requesting confirmation that a holder of the account is the customer; holding the payment request message at the proxy server based on the generation of the authentication request message; sending the authentication request message from the proxy server to the issuer computing device while the payment request message is

held at the proxy server; receiving an authentication response message from the issuer computing device at the proxy server in response to sending the authentication request message, the authentication response message comprising an indication of whether the holder of the account is the customer and including a certificate that establishes that the indication is authentic; modifying, at the proxy server, based upon the receipt of the authentication response message, the held payment request message to generate a modified payment request message that includes the certificate and the indication of whether the holder of the account is the customer; and transmitting the modified payment request message from the proxy server to the issuer computing device to cause the issuer computing device to analyze the certificate and the indication included in the modified payment request message to determine whether to authorize the transaction.

According to another aspect, the present disclosure refers to a proxy server comprising: at least one processor; and at least one memory including computer program code that when executed by the at least one processor, causes the at least one processor to perform the steps of: receiving a payment request message from a merchant computing device, the payment request message relating to a transaction between a customer and a merchant, the payment request message comprising customer data and merchant data, the customer data identifying an account associated with the customer in the transaction, the merchant data indicating that is merchant does not have a subscription to an authentication service that would allow the merchant to obtain results of an authentication of the customer; determining i) that the merchant does not have a subscription to the authentication service based on the merchant data, ii) that the transaction is an online transaction, and iii) that an issuer associated with an issuer computing device does have a subscription to the authentication service; generating an authentication request message based on the determination i) that the merchant does not have a subscription to the authentication service, ii) that the transaction is an online transaction, and iii) that the issuer does have a subscription to the authentication service, the authentication request message requesting confirmation that a holder of the account is the customer; holding the payment request message at the proxy server

based on the generation of the authentication request message; sending the authentication request message from the proxy server to the issuer computing device while the payment request message is held at the proxy server; receiving an authentication response message from the issuer computing device in response to sending the authentication request message, the authentication response message comprising an indication of whether the holder of the account is the customer and including a certificate that establishes that the indication is authentic; modifying, at the proxy server, based upon the receipt of the authentication response message, the held payment request message to generate a modified payment request message that includes the certificate and the indication of whether the holder of the account is the customer; and transmitting the modified payment request message from the proxy server to the issuer computing device to cause the issuer computing device to analyze the certificate and the indication included in the modified payment request message to determine whether to authorize the transaction.

According to another aspect, the present disclosure refers to a system comprising: a proxy server comprising: at least one processor; and at least one memory including computer program code that when executed by the at least one processor, causes the at least one processor to perform the steps of: receiving a payment request message from a merchant computing device, the payment request message relating to a transaction between a customer and a merchant, the payment request message comprising customer data and merchant data, the customer data identifying an account to be used by the customer in the transaction, the merchant data indicating that the merchant does not have a subscription to an authentication service that would allow the merchant to obtain results of an authentication of the customer; determining i) that the merchant does not have a subscription to the authentication service based on the merchant data, ii) that the transaction is an online transaction, and iii) that an issuer associated with an issuer computing device does have a subscription to the authentication service; generating an authentication request message based on the determination i) that the merchant does not have a subscription to the authentication service, ii) that the transaction is an online transaction, and iii) that the issuer does have

a subscription to the authentication service, the authentication request message requesting confirmation that a holder of the account is the customer; holding the payment request message at the proxy server based on the generation of the authentication request message; sending the authentication request message to the issuer computing device while the payment request message is held at the proxy server; receiving an authentication response message from the issuer computing device in response to sending the authentication request message, the authentication response message comprising an indication of whether the holder of the account is the customer and including a certificate that establishes that the indication is authentic; modifying, at the proxy server, based upon the receipt of the authentication response message, the held payment request message to generate a modified payment request message that includes the certificate and the indication of whether the holder of the account is the customer; and transmitting the modified payment request message from the proxy server to issuer computing device to cause the issuer computing device to analyze the certificate and the indication included in the modified payment request message to determine whether to authorize the transaction; and a customer computing device associated with the customer, wherein the customer computing device comprises a customer computing device memory including computer program code that, when executed by a customer computing device processor, causes the customer computing device processor to perform the step of generating a transaction request message comprising the customer data.

According to another aspect, the present disclosure refers to a non-transitory computer-readable storage media having computer-executable instructions embodied thereon, wherein, when executed by at least one processor, the computer-executable instructions cause the processor to perform the steps of: receiving a payment request message from a merchant computing device, the payment request message relating to a transaction between a customer and a merchant, the payment request message comprising customer data and merchant data, the customer data identifying an account associated with the customer in the transaction, the merchant data indicating that the merchant does not have a subscription to an authentication service that would allow the

merchant to obtain results of an authentication of the customer; determining i) that the merchant does not have a subscription to the authentication service based on the merchant data, ii) that the transaction is an online transaction, and iii) that an issuer associated with the issuer computing device does have a subscription to the authentication service; generating an authentication request message at the proxy server based on the determination i) that the merchant does not have a subscription to the authentication service, ii) that the transaction is an online transaction, and iii) that the issuer does have a subscription to the authentication service, the authentication request message requesting confirmation that a holder of the account is the customer; holding the payment request message based on the generation of the authentication request message; sending the authentication request message to an issuer computing device while the payment request message is held at the proxy server; receiving an authentication response message from the external server issuer computing device in response to sending the authentication request message, the authentication response message comprising an indication of whether the holder of the account is the customer and including a certificate that establishes that the indication is authentic; modifying, at the proxy server, based upon the receipt of the authentication response message, the held payment request message to generate a modified payment request message that includes the certificate and the indication of whether the holder of the account is the customer; and transmitting the modified payment request message from the proxy server to the issuer computing device to cause the issuer computing device to analyze the certificate and the indication included in the modified payment request message to determine whether to authorize the transaction.

Various examples provide a method comprising receiving a request message at a proxy server, the request message relating to a transaction between a first client and a second client, the request message comprising first client data and second client data, the first client data identifying an account to be used by the first client in the transaction, the second client data indicating if the second client is subscribed to a service; determining if the second client is subscribed to the service based on the second client data at the proxy server; generating an authentication request message at the proxy

server if it is determined that the second client is not subscribed to the service, the authentication request message requesting confirmation that a holder of the account is the first client; sending the authentication request message from the proxy server to an external server; and receiving an authentication response message from the external server at the proxy server in response to sending the authentication request message, the authentication response message comprising an indication of whether the holder of the account is the first client.

In an example, the request message indicates a type of the transaction and the authentication request message is generated only if the type is a predetermined type.

In an example, the first client data indicates if the holder of the account is subscribed to the service and the authentication request message is generated if the first client data indicates that the holder of the account is subscribed to the service.

In an example, the method further comprises holding the request message at the proxy server for a preset time period if the authentication request message is generated.

In an example, the method further comprises generating a transaction request message at a first client device associated with the first client, the transaction request message comprising the first client data.

In an example, the method further comprises sending the transaction request message from the first client device to a second client device associated with the second client to initiate the transaction.

In an example, the method further comprises generating the request message at the second client device based on the transaction request message and sending the request message from the second client device to the proxy server.

In an example, the external server is an issuer server associated with an issuer of the account, the authentication request message further comprising the account data from the request message.

In an example, the method further comprises generating a verification request message at the issuer server based on verification data stored in association with the first client data by the issuer server, the verification data identifying a verification device of the holder of the account, the verification request message requesting password data for verification.

In an example, the method further comprises sending the verification request from the issuer server to the verification device and outputting a password request message for the password data from the verification device to a user of the verification device.

In an example, the method further comprises receiving an input at the verification device from the user of the verification device and sending the input from the verification device to the issuer server.

In an example, the method further comprises generating the authentication response message at the issuer server and sending the authentication response message from the issuer server to the proxy server, wherein the indication in the authentication response message is based on a comparison between the input and a password identified in the verification data.

In an example, the method further comprises modifying the request message to include the indication at the proxy server to form a modified request message.

In an example, the method further comprises sending the modified request message from the proxy server to the issuer server.

In an example, the method further comprises authorizing the transaction at the issuer server based on the indication in the modified request message.

In an example, the method further comprises generating a receipt message at the issuer server, the receipt message indicating whether or not the transaction has been authorized.

In an example, the proxy server is an acquirer server associated with an acquirer. the acquirer being an administrator of a second client account to be used by the second client in the transaction.

In an example, each message exchanged between the acquirer server and the issuer server is exchanged via a payment network server.

In an example, the proxy server is a payment network server, the payment network server being configured to communicate with an acquirer server associated with an acquirer, the acquirer being an administrator of a second client account to be used by the second client in the transaction.

In an example, the request message is sent from the second client device to the payment network server via the acquirer server.

In an example, the second client is a merchant and the first client is a customer who initiates the transaction with the merchant.

In an example, the transaction is a payment transaction between the first client and the second client.

Various examples provide a proxy server comprising at least one processor; and at least one memory including computer program code; the at least one memory and the computer program code configured to, with the at least one processor, cause the proxy server at least to: receive a request message, the request message relating to a transaction between a first client and a second client, the request message comprising first client data and second client data, the first client data identifying an account to be used by the first client in the transaction, the second client data indicating if the second client is subscribed to a service; determine if the second client is subscribed to the service based on the second client data; generate an authentication request message if it is determined that the second client is not subscribed to the service, the authentication request message requesting confirmation that a holder of the account is the first client; send the authentication request message to an external server; and receive an authentication response message from the external server in response to sending the authentication request message, the authentication response message comprising an indication of whether the holder of the account is the first client.

In an example, the request message indicates a type of the transaction and the authentication request message is generated only if the type is a predetermined type.

In an example, the first client data indicates if the holder of the account is subscribed to the service and the authentication request message is generated if the first client data indicates that the holder of the account is subscribed to the service.

In an example, the at least one memory and the computer program code is further configured with the at least one processor to cause the proxy server to hold the request message at the proxy server for a preset time period if the authentication request message is generated.

In an example, the second client is a merchant and the first client is a customer who initiates the transaction with the merchant.

In an example, the transaction is a payment transaction between the first client and the second client.

Various examples provide a system comprising a proxy server in an embodiment; and a first client device associated with the first client, wherein the first client device is configured to generate a transaction request message comprising the first client data.

In an example, the system further comprises a second client device associated with the second client, wherein the first client device is configured to send the transaction request message to the second client device and the second client device is configured to receive the transaction request message from the first client device to initiate the transaction.

In an example, the second client device is further configured to generate the request message based on the transaction request message and to send the request message to the proxy server.

In an example, wherein the external server is an issuer server associated with an issuer of the account, and wherein the issuer server is configured to receive the authentication request message from the proxy server, the authentication request message further comprising the first client data from the request message.

In an example, the issuer server is further configured to store verification data in association with the first client data and to generate a verification request message based on the verification data, the verification request requesting password data for verification.

In an example, the system further comprising a verification device of the holder of the account, the verification data identifying the verification device, wherein the issuer server is configured to send the verification request message to the verification device, and wherein the verification device is configured to output a password request message for the password data from the verification device to a user of the verification device.

In an example, the verification device is further configured to receive an input from the user of the verification device and to send the input from the verification device to the issuer server.

In an example, the issuer server is further configured to generate the authentication response message and to send the authentication response message to the proxy server, and wherein the issuer server generates the indication in the authentication response message based on a comparison between the input and a password identified in the verification data.

In an example, the proxy server is further configured to modify the request message to include the indication to form a modified request message.

In an example, the proxy server is further configured to send the modified request message to the issuer server.

In an example, the issuer server is further configured to authorize the transaction based on the indication in the modified request message.

In an example, the issuer server is further configured to generate a receipt message, the receipt message indicating whether or not the transaction has been authorized.

In an example, the proxy server is an acquirer server associated with an acquirer, the acquirer being an administrator of a merchant account to be used by the merchant in the transaction.

In an example, the system is configured such that each message exchanged between the acquirer server and the issuer server is exchanged via a payment network server.

In an example, the proxy server is a payment network server, the payment network server being configured to communicate with an acquirer server associated with an acquirer, the acquirer being an issuer of a second client account to be used by the second client in the transaction.

In an example, the system is configured such that the request message is sent from the second client device to the payment network server via the acquirer server.

In an example, the second client is a merchant and the first client is a customer who initiates the transaction with the merchant.

In an example, the transaction is a payment transaction between the first client and the second client.

Various examples provide a proxy server comprising means for receiving a request message, the request message relating to a transaction between a first client and a second client, the request message comprising first client data and second client data, the first client data identifying an account to be used by the client in the transaction, the second client data indicating if the second client is subscribed to a service; means for determining if the second client is subscribed to the service based on the second client data; means for generating an authentication request message if it is determined that the second client is not subscribed to the service, the authentication request message requesting confirmation that a holder of the account is the first client; means for sending the authentication request message to an external server; and means for receiving an authentication response message from the external server in response to sending the authentication request message, the authentication response message comprising an indication of whether the holder of the account is the first client.

Various examples provide a computer-readable storage medium having stored thereon computer program code which when executed by a computer causes the computer to execute a method in accordance with an example.

Various examples provide a computer program comprising software code adapted to perform a method in accordance with an example.

BRIEF DESCRIPTION OF THE DRAWINGS

Embodiments will be better understood and readily apparent to one of ordinary skill in the art from the following written description, by way of example only, and in conjunction with the drawings, wherein like reference signs relate to like components, in which:

FIG 1 is a block diagram of a system in accordance with a first and a second embodiment of the present invention;