PAYMENT PROCESSING

Background of the Invention

[0001] The present invention relates to a method and system for processing a payment, and in one example, to a method and system for processing a payment such as an electronic payment.

Description of the Prior Art

[0002] The reference in this specification to any prior publication (or information derived from it), or to any matter which is known, is not, and should not be taken as an acknowledgment or admission or any form of suggestion that the prior publication (or information derived from it) or known matter forms part of the common general knowledge in the field of endeavour to which this specification relates.

[0003] When payment card (for example, credit card, debit card or prepaid card) transactions are performed, for example between a merchant and customer, the payments are processed by an acquirer and an issuer. The issuer is the entity (typically a bank or other financial institution) that issues the card to the customer, and acts to debit an account of the customer, transferring funds to the acquirer, who then allocates these to the merchant. As part of this process, an interchange fee is allocated to the issuer, whilst a merchant services fee is charged to the merchant by the acquirer. In a four-party or “open loop” payment scheme, a payment network (such as MasterCard) acts as a switch to route transactions between the acquirer and issuer. Alternatively, in a three party or "closed loop" payment scheme, the issuer and acquirer is the same entity.

[0004] With existing payment processes, details of the transaction are passed from the merchant to the acquirer, and then from the acquirer to the issuer, as part of batch processes, typically performed on a daily basis. Once the issuer receives details of the transaction, they debit funds from the user, subtracting the interchange fee and passing these funds on to the acquirer. Only once the funds are cleared in the acquirer’s account does the acquirer credit

the merchant's account, meaning there is typically a significant delay between the transaction occurring and the merchant receiving funds.

[0005] Additionally, the merchant service fee is typically set by the acquirer in advance of transactions occurring, and is charged as a percentage value of the transaction amount, either as a flat rate or a value as per a portfolio of cards accepted by acquirer. As the acquirer does not know the level of interchange fee that will apply, the merchant service fee is typically set to ensure that it is greater than the maximum interchange fee possible to ensure the acquirer's costs are covered by the merchant service fee. This in turn results in higher than necessary fees for the merchant.

[0006] As a result of these issues, the merchant sometimes delineates from accepting cards and prefers alternative payment methods. However this can be inconvenient to the customer.

Summary of the Present Invention

[0007] In a first aspect, there is provided a payment processing system for processing electronic payments on behalf of a merchant, the system including one or more acquirer processing devices configured to: (a) determine transaction details indicative of a transaction between the merchant and a customer, the transaction details including: (i) a transaction amount; and, (ii) at least one transaction parameter; (b) determine an interchange fee associated with the transaction at least partially in accordance with the at least one transaction parameter, the interchange fee being determined from a fee database; (c) calculate a merchant service fee amount at least partially in accordance with the interchange fee; and, (d) cause a merchant payment to be provided to the merchant in accordance with the merchant service fee amount and the transaction amount.

[0008] Preferably, the merchant payment is for the transaction amount less the merchant service fee amount.

[0009] It is preferable that the one or more acquirer processing devices is or are configured to: (a) determine an interchange fee amount at least partially in accordance with the transaction amount and the interchange fee; and, calculate the merchant service fee amount

using the interchange fee amount. It is preferable that the one or more acquirer processing devices is or are configured to calculate the merchant service fee amount using the at least one transaction parameter. The one or more acquirer processing devices is or are preferably configured to cause the merchant payment to be made from an acquirer account to a merchant account. The one or more acquirer processing devices is or are able to be configured to cause the merchant payment to be made prior to an acquirer payment being received by the acquirer. The one or more acquirer processing devices is or are preferably configured to cause an acquirer payment to be provided to the acquirer in accordance with an interchange fee amount and the transaction amount.

[0010] It is also preferable that the one or more acquirer processing devices is or are configured to: (a) generate a payment file indicative of the transaction details; and, (b) transfer the payment file to an issuer via one or more provider processing devices, the issuer being responsive to the payment file to cause an acquirer payment to be made from an issuer account to an acquirer account.

[0011] Preferably, the payment files are generated on either a periodic basis or hourly.

[0012] It is preferable that the transaction parameter includes at least one of: (a) a transaction location; (b) a transaction type; and, (c) a merchant identity.

[0013] The fee database can be updated with interchange fee data from one or more provider processing devices. The interchange fee data can be pushed to the fee database, at least partially in response to changes in interchange fees.

[0014] Preferably, the one or more acquirer processing devices is or are in communication with a fee module that determines an interchange fee associated with the transaction from the fee database. The fee module can be configured to determine the merchant service fee amount in accordance with the at least one transaction parameter. The fee module can also be configured with merchant fee data defining merchant service fee amounts for different transaction parameters and to determine the merchant service fee amount using the merchant fee data and the at least one transaction parameter. It is preferable that the merchant fee data is defined by the acquirer.

[0015] Preferably, the one or more acquirer processing devices is or are configured to receive the transaction details from a merchant device via a communications network and to determine the transaction details from at least one of a transaction authorisation message and a payment message.

[0016] In a second aspect, there is provided a payment processing system for processing electronic payments on behalf of a merchant, the system including one or more provider processing devices configured to: (a) determine interchange fee data indicative of interchange fees for different transaction parameters; and, (b) use the interchange fee data to update a fee database, the fee database being used by one or more acquirer processing devices to: (i) determine an interchange fee associated with the transaction at least partially in accordance with the at least one transaction parameter, the interchange fee being determined from a fee database; (ii) calculate a merchant service fee amount at least partially in accordance with the interchange fee; and, (iii) cause a merchant payment to be provided to the merchant in accordance with the merchant service fee amount and the transaction amount.

[0017] It is preferable that the one or more provider processing devices is or are configured to: (a) determine changes in interchange fees; (b) update the fee database in response to the changes in interchange fees; and (c) push changes in interchange fees to the fee database.

[0018] In a third aspect, there is provided a payment processing system for processing electronic payments on behalf of a merchant, the system including a fee database and a fee module, the fee module being executable by one or more acquirer processing devices that in use: (a) determine transaction details indicative of a transaction between the merchant and a customer, the transaction details including: (i) a transaction amount; and, (ii) at least one transaction parameter; (b) use the fee module and fee database to determine an interchange fee associated with the transaction at least partially in accordance with the at least one transaction parameter; (c) calculate a merchant service fee amount at least partially in accordance with the interchange fee; and, (d) cause a merchant payment to be provided to the merchant in accordance with the merchant service fee amount and the transaction amount.

[0019] It is preferable that the fee module is configured: to determine the merchant service fee amount in accordance with the at least one transaction parameter, with merchant fee data defining merchant service fee amounts for different transaction parameters, and to determine the merchant service fee amount using the merchant fee data and the at least one transaction parameter. Preferably, the merchant fee data is defined by the acquirer.

[0020] Preferably, the fee database includes interchange fee data indicative of interchange fees, and the interchange fee data is updated by a service provider.

[0021] There is also provided a payment processing system for processing electronic payments on behalf of a merchant, the system including: (a) a merchant payment device; (b) one or more acquirer processing devices in communication with the merchant payment device via a communications network, and wherein the system is adapted to: (i) transfer transaction details indicative of a transaction between the merchant and a customer from the merchant device to the one or more acquirer processing devices, the transaction details including: (1) a transaction amount; and, (2) at least one transaction parameter; (ii) in the one or more acquirer processing devices: (1) determine an interchange fee associated with the transaction at least partially in accordance with the at least one transaction parameter, the interchange fee being determined from a fee database; (2) calculate a merchant service fee amount at least partially in accordance with the interchange fee; and, (3) cause a merchant payment to be provided to the merchant in accordance with the merchant service fee amount and the transaction amount.

[0022] In yet another aspect, there is provided a method for processing electronic payments on behalf of a merchant, the method including having an acquirer: (a) determine transaction details indicative of a transaction between the merchant and a customer, the transaction details including: (i) a transaction amount; and, (ii) at least one transaction parameter; (b) determine an interchange fee for the transaction at least partially in accordance with the transaction details; (c) calculate a merchant service fee amount at least partially in accordance with the interchange fee; and, (d) cause a payment to be provided to the merchant in accordance with the transaction amount and the merchant service fee amount.

[0023] In a final aspect, there is provided a method for processing payment electronic payments on behalf of a merchant, the method including having a service provider: (a) determine interchange fee data indicative of interchange fees for different transaction parameters; and, (b) use the interchange fee data to update a fee database, the fee database being used by an acquirer to: (i) determine an interchange fee for the transaction at least partially in accordance with transaction details; (ii) calculate a merchant service fee amount at least partially in accordance with the interchange fee; and, (iii) cause a payment to be provided to the merchant in accordance with the transaction amount and the merchant service fee amount.

[0024] It will be appreciated that the broad forms of the invention and their respective features can be used in conjunction, interchangeably and/or independently, and reference to separate broad forms is not intended to be limiting.

Brief Description of the Drawings

[0025] An example of the present invention will now be described with reference to the accompanying drawings, in which: -

[0026] Figure 1A is a flow chart of an example of a method of processing payment card payments on behalf of a merchant;

[0027] Figure 1B is a flow chart of an example of a method of updating a fee database;

[0028] Figure 2 is a schematic diagram of an example of a distributed computer architecture;

[0029] Figure 3 is a schematic diagram of an example of a base station processing system;

[0030] Figure 4 is a schematic diagram of an example of a merchant device of Figure 2;

[0031] Figure 5 is a schematic diagram of an example of the interactions involved in a traditional approach to processing payment card payments;

[0032] Figure 6 is a flowchart of an example of a traditional approach to processing payment card payments;

[0033] Figure 7 is a schematic diagram of an example of the interactions involved in an example of a method of processing payment card payments;

[0034] Figure 8 is a flowchart of an example of a method of processing payment card payments; and,

[0035] Figure 9 is a flow chart of an example of a method of configuring and using a fee module and fee database.

Detailed Description of the Preferred Embodiments

[0036] An example of a process for processing a payment associated with a payment card (for example, credit card, debit card or prepaid card) transaction will now be described with reference to Figures 1A.

[0037] As used herein, the term “payment card” or “payment device” refers to any suitable cashless payment device, such as a credit card, a debit card, a prepaid card, a charge card, a membership card, a promotional card, a frequent flyer card, an identification card, a gift card, and/or any other device that may hold payment account information, such as mobile phones, smartphones, personal digital assistants (PDAs), key fobs, transponder devices, NFC-enabled devices, tablets and/or computers.

[0038] For the purpose of illustration, it is assumed that the process is performed at least in part using one or more electronic processing devices forming part of one or more processing systems, such as servers, which are in turn connected to one or more merchant devices, such as mobile phones, portable computers or the like, via a network architecture, as will be described in more detail below.

[0039] For the purpose of the example of Figure 1A, it is assumed that the processing devices are utilised by an acquirer in order to allow payments to be processed on behalf of a merchant, and these will therefore be referred to as one or more acquirer processing devices. In this regard, the acquirer is typically an entity such as a financial institution, bank or the like, that processes and settles a merchant's electronic transactions with the help of a card issuer.

[0040] Throughout the following, whilst specific reference to made to a merchant, it should be understood that the term illustrative only and is not intended to be limiting. Accordingly, it will be appreciated that techniques could be applied to payments made to any payee. Similarly, whilst reference is made to payment card payments in particular, the techniques

could be used when payment is performed using other similar mechanisms, such as when using virtual wallets, contactless payment solutions, or the like.

[0041] In this example, at step 100, the one or more acquirer processing devices determine transaction details indicative of a transaction between the merchant and a customer. The transaction details are of any appropriate form, but typically include at least a transaction amount and at least one transaction parameter, such as a transaction location, a transaction type or a merchant identity.

[0042] The transaction details can be determined in any suitable manner, depending on the preferred implementation. Typically, these are received from a merchant device, such as a POS (Point of Sales) terminal, either as part of an authorisation message or payment message. However, this is not essential, and the transaction details could be determined in any suitable manner, such as retrieving these from a database, or the like.

[0043] At step 110, an interchange fee associated with the transaction is determined at least partially in accordance the at least one transaction parameter. The interchange fee is typically determined from a fee database, either by having the one or more acquirer processing devices retrieve this directly, or by having it retrieved and provided to the acquirer processing devices by a database management system, software module or the like.

[0044] A merchant service fee (MSF) amount is then calculated at step 120, at least partially in accordance with the interchange fee. In this regard, the MSF amount can be a relative amount, defined for example as a percentage amount of the interchange fee and/or transaction amount, or could be an absolute amount based on the relative size of the interchange fee. The MSF amount may also vary depending on other factors, such as the transaction parameters, as will be described in more detail below.

[0045] At step 140, once the MSF amount has been calculated, the one or more acquirer processing devices can cause a merchant payment to be provided to the merchant in accordance with the MSF amount and the transaction amount. This can be achieved in any suitable manner, for example by debiting an account of the acquirer and crediting an account of the merchant.

[0046] In the above described example, in contrast to traditional arrangements, the acquirer is made aware of the interchange fee. This has two main impacts. Firstly, it allows the acquirer to dynamically calculate a MSF, based on the interchange fee that will be applied to the respective transaction. This enables the acquirer to minimise the MSF, whilst ensuring the interchange fee will be covered, thereby avoiding a loss in revenue. Secondly, this allows the acquirer to provide funds to the merchant in a shorter time frame, for example before clearance is completed, thereby improving cash flow for merchants.

[0047] In order for the above described process to work in an optimal manner, it is desirable for the fee database to be maintained, and an example of the process for updating the fee database will now be described with reference to Figure 1B.~~.~~

[0048] For the purpose of this example of Figure 1B, it is assumed that the processing devices are utilised by a provider, and in one particular example to a service provider operating a payment card network for facilitating electronic payments and these will therefore be referred to as one or more provider processing devices.

[0049] In this example, at step 150, the one or more provider processing devices determine interchange fee data indicative of interchange fees for different transaction parameters. The interchange fee data can be determined in any appropriate manner, but this typically involves monitoring for changes in details of published interchange fees. The interchange fee data is then used to update a fee database. The fee database is typically provided at the acquirer, with the fee data being pushed to the fee database, so that the fee database reflects the latest interchange fees that will apply to transactions.

[0050] Accordingly, it will be appreciated that this allows acquirers to ensure calculated MSF amounts are correct and reflect the interchange fees that will be applied when the transaction is processed.

[0051] A number of further features will now be described.

[0052] In one example, the merchant payment may be the acquirer is for the transaction amount less the MSF amount, although it will be appreciated that the merchant payment

could be for a different amount depending on the circumstances in which the process is implemented, and the manner in which fees are applied. For instance, in the current example, the MSF amount is calculated to accommodate the interchange fee, but alternatively, the MSF amount could be calculated as additional to the interchange fee.

[0053] The one or more acquirer processing devices typically determine an interchange fee amount at least partially in accordance with the transaction amount and an interchange fee rate and then use this to calculate the merchant service fee amount using the interchange fee amount. Thus, the interchange fee could be expressed as a percentage rate of the transaction amount, with an interchange fee amount being calculated based on the transaction amount, with this being used to calculate the MSF so that the MSF is based on the magnitude of the interchange fee. However, alternatively, the interchange fee and MSF could be determined based on percentage rates, with the magnitude of the MSF percentage rate being selected based on the interchange fee rate and/or other transaction parameters.

[0054] As previously mentioned, the one or more acquirer processing devices can calculate the merchant service fee amount using the at least one transaction parameter. Thus, this allows the acquirer to calculate different MSF amounts for different transactions depending on factors such as an identity of the merchant, location for the transaction, transaction type, or the like. This allows the acquirer to offer reduced MSF rates to preferred customers, or for particular types of transactions, or conversely higher rates for international transactions, or the like.

[0055] The one or more acquirer processing devices typically cause the merchant payment to be made from an acquirer account to a merchant account. In one particular example, as the interchange fee is known before cleared funds are provided to the acquirer, this can be performed prior to an acquirer payment being received by the acquirer, from an issuer, thereby reducing the time between the transaction occurring and the merchant receiving cleared funds, which is attractive to merchants from a cash flow perspective.

[0056] The one or more acquirer processing devices typically cause an acquirer payment to be provided to the acquirer in accordance with an interchange fee amount and the transaction

amount. This is generally achieved by having the acquirer processing devices generate a payment file indicative of the transaction details and transfer the payment file to an issuer via one or more provider processing devices, with the issuer being responsive to the payment file to cause an acquirer payment to be made from an issuer account to an acquirer account. Thus, it will be appreciated that this can occur in accordance with standard processes. However, additionally, as transaction details could be received outside of typical batch processing, this could be performed more frequently than is traditionally the case. For example, this could be performed on an hourly basis or the like, depending on the preferred implementation. Again, this can assist in reducing overall transaction times.

[0057] The transaction parameters can be of any appropriate form and can include any information forming part of the transaction details. Typically, the transaction parameters include a transaction location, and in particular an indication of whether the transaction is local, regional, inter-regional or international, a transaction type, such as whether the transaction is a pre-paid transaction and a merchant identity. However, it will be appreciated that this is not intended to be limiting and other transaction information could be used.

[0058] As previously discussed, the fee database is typically updated with interchange fee data from one or more provider processing devices, with the interchange fee data being pushed to the fee database, for example in response to changes in interchange fees.

[0059] In order to provide the above described implementation, the one or more acquirer processing devices form part of a system implementing an acquirer switch that determines the transaction details, and also optionally performs other tasks such as generating and processing payment files, as well as a fee module that determines an interchange fee associated with the transaction from the fee database. In particular, the fee modules acts as an interface between the acquirer switch and the database, allowing the interchange fee to be determined and optionally an MSF amount to be calculated.

[0060] In this regard, the fee module can determine the MSF amount in accordance with the at least one transaction parameter. To achieve this, the fee modules can be configured with merchant fee data defining MSF amounts for different transaction parameters, using this to

determine the MSF amount using the merchant fee data and the at least one transaction parameter. The merchant fee data can be defined by the acquirer, allowing the acquirer to control the charging of merchants, for example allowing different MSF levels to be set for different merchants or groups of merchants, or the like.

[0061] The one or more acquirer processing devices typically receive the transaction details from a merchant device, such as a POS terminal, via a communications network. This can be as part of a transaction authorisation message or a payment message, depending on the preferred implementation.

[0062] In one broad form a payment processing system is provided for processing electronic payments on behalf of a merchant, the system including a fee database and a fee module, the fee module being executed by one or more acquirer processing devices that in use determine transaction details indicative of a transaction between the merchant and a customer, use the fee module and fee database to determine an interchange fee associated with the transaction at least partially in accordance the at least one transaction parameter, calculate a merchant service fee amount at least partially in accordance with the interchange fee and cause a merchant payment to be provided to the merchant in accordance with the merchant service fee amount and the transaction amount.

[0063] In another broad form a payment processing system is provided for processing electronic payments on behalf of a merchant, the system including a merchant payment device and one or more acquirer processing devices in communication with the merchant payment device via a communications network.

[0064] In another broad form a method for processing electronic payments on behalf of a merchant includes having an acquirer determine transaction details indicative of a transaction between the merchant and a customer, determine an interchange fee for the transaction at least partially in accordance with the transaction details, calculate a merchant service fee amount at least partially in accordance with the interchange fee and cause a payment to be provided to the merchant in accordance with the transaction amount and the merchant service fee amount.

[0065] In another broad form a method for processing electronic payments on behalf of a merchant includes determining interchange fee data indicative of interchange fees for different transaction parameters and using the interchange fee data to update a fee database.

[0066] In one example, the process is performed by one or more processing systems operating as part of a distributed architecture, an example of which will now be described with reference to Figure 2.

[0067] In this example, a number of processing systems 210 are provided coupled to one or more merchant devices 220, via one or more communications networks 230, such as the Internet, and/or a number of local area networks (LANs). The processing devices are typically operated by parties, such as acquirers, service providers and issuers, and it will therefore be appreciated that any number of processing systems and any number of merchant devices 220 could be provided, and the current representation is for the purpose of illustration only. The configuration of the networks 230 is also for the purpose of example only, and in practice the processing systems 210 and merchant devices 220 can communicate via any appropriate mechanism, such as via wired or wireless connections, including, but not limited to mobile networks, private networks, such as an 802.11 networks, the Internet, LANs, WANs, or the like, as well as via direct or point-to-point connections, such as Bluetooth, or the like.

[0068] In use, the processing systems 210, are adapted to be perform various data processing tasks forming part of a payment process, and the particular functionality will vary depending on the particular requirements. For example, the processing systems can be adapted to determine transaction details, determine interchange fees, maintain fee data, implement payment services, perform payments, or cause further payment systems (not shown), such as servers of financial institutions, payment gateways or the like, to perform payments, as will be appreciated by persons skilled in the art.

[0069] Whilst the processing systems 210 are shown as single entities, it will be appreciated they could include a number of processing systems distributed over a number of geographically separate locations, for example as part of a cloud based environment. Thus,

the above described arrangements are not essential and other suitable configurations could be used.

[0070] An example of a suitable processing system 210 is shown in Figure 3. In this example, the processing system 210 includes at least one microprocessor 300, a memory 301, an optional input/output device 302, such as a keyboard and/or display, and an external interface 303, interconnected via a bus 304 as shown. In this example the external interface 303 can be utilised for connecting the processing system 210 to peripheral devices, such as the communications networks 230, databases 211, other storage devices, or the like. Although a single external interface 303 is shown, this is for the purpose of example only, and in practice multiple interfaces using various methods (eg. Ethernet, serial, USB, wireless or the like) may be provided.

[0071] In use, the microprocessor 300 executes instructions in the form of applications software stored in the memory 301 to allow the required processes to be performed. The applications software may include one or more software modules, and may be executed in a suitable execution environment, such as an operating system environment, or the like.

[0072] Accordingly, it will be appreciated that the processing system 210 may be formed from any suitable processing system, such as a suitably programmed merchant device, PC, web server, network server, or the like. In one particular example, the processing system 210 is a standard processing system such as an Intel Architecture based processing system, which executes software applications stored on non-volatile (e.g., hard disk) storage, although this is not essential. However, it will also be understood that the processing system could be any electronic processing device such as a microprocessor, microchip processor, logic gate configuration, firmware optionally associated with implementing logic such as an FPGA (Field Programmable Gate Array), or any other electronic device, system or arrangement.

[0073] As shown in Figure 4, in one example, the merchant device 220 includes at least one microprocessor 400, a memory 401, an input/output device 402, such as a keyboard and/or display, an external interface 403, and typically a card reader 404, interconnected via a bus 405 as shown. In this example the external interface 403 can be utilised for connecting the

merchant device 220 to peripheral devices, such as the communications networks 230 databases, other storage devices, or the like. Although a single external interface 403 is shown, this is for the purpose of example only, and in practice multiple interfaces using various methods (eg. Ethernet, serial, USB, wireless or the like) may be provided. The card reader 404 can be of any suitable form and could include a magnetic card reader, or contactless reader for reading smartcards, or the like.

[0074] In use, the microprocessor 400 executes instructions in the form of applications software stored in the memory 401, and to allow communication with one of the processing systems 210.

[0075] Accordingly, it will be appreciated that the merchant devices 220 may be formed from any suitable processing system, such as a suitably programmed PC, Internet terminal, lap-top, or hand-held PC, and in one preferred example is either a POS terminal, or a tablet, or smart phone, with integrated or connected card reading capabilities. However, it will also be understood that the merchant devices 220 can be any electronic processing device such as a microprocessor, microchip processor, logic gate configuration, firmware optionally associated with implementing logic such as an FPGA (Field Programmable Gate Array), or any other electronic device, system or arrangement.

[0076] Examples of the processes for processing payments will now be described in further detail. For the purpose of these examples it is assumed that one or more respective processing systems 210 are servers that provide functionality required of the acquirer, the issuer and the card services provider, and will be referred to respectively as acquirer, issuer and provider servers. The servers 210 typically execute processing device software, allowing relevant actions to be performed, with actions performed by the server 210 being performed by the processor 300 in accordance with instructions stored as applications software in the memory 301 and/or input commands received from a user via the I/O device 302. It will also be assumed that actions performed by the merchant device 220, are performed by the processor 400 in accordance with instructions stored as applications software in the memory 401 and/or input commands received from a user via the I/O device 402.

[0077] However, it will be appreciated that the above described configuration assumed for the purpose of the following examples is not essential, and numerous other configurations may be used. It will also be appreciated that the partitioning of functionality between the different processing systems 210 may vary, depending on the particular implementation.

[0078] To provide context for the invention, a traditional payment process will now be described with reference to Figures 5 and 6.

[0079] In this example, the parties involved include a merchant 500, an acquirer 510, a service provider in the form of a payment network 520, an issuer 530 and a customer 540. The acquirer 510 is a bank that processes and settles a merchant's payment card transactions with the help of a card issuer 530, which is a financial institution, bank, credit union or company that issues or helps issue cards to cardholders, such as customers. The payment network 520 is typically a card network, such as Visa, MasterCard or other similar network that act as an intermediary between the acquirer and the issuer to authorize payment card transactions.

[0080] It will be appreciated that the merchant will utilise a merchant terminal 220, whilst the acquirer 510, a payment services provider network 520 and issuer 530, will each have a number of typically networked processing systems, in the form of respective servers 210. For the purpose of the following explanation, it will be assumed that actions performed by each of the parties are performed at least in part by the relevant terminal or server.

[0081] An example transaction process typically commences with the merchant 510 and customer 540 agreeing on a transaction, with the merchant entering details into the merchant terminal 220, before reading the customer’s payment card. At this point, an authorisation process is performed at step 600, with an authorisation request being transferred from the merchant terminal 220, via the acquirer 510 and payment network 520 to the issuer 530. Assuming the transaction meets relevant criteria, the issuer returns an authorisation code to the merchant terminal, via the payment network 520 and acquirer 510, allowing the transaction to proceed.

[0082] Once approved, the transaction is performed, with details of the completed transaction being added to a payment batch, which in general is processed on a daily basis at step 610. The batch is forwarded to the acquirer 510, which then generates payment files at step 620, for each of the respective card issuers. The payment files are transferred to the respective issuer 530, via the card network 520, allowing the acquirer to determine a differential MSF rate in accordance with interchange rates at step 640. The differential MSF rate also differs in accordance with the merchant profile. During step 640, the issuer calculates the interchange fee and pays the acquirer the transaction amount less the interchange fee, transferring the relevant funds to the acquirer's account.

[0083] Once the payment has cleared at step 650, the acquirer then pays the merchant at step 660 by crediting the merchant account the transaction amount less the merchant services fee.

[0084] A specific example of this process will now be described. In this example, a merchant 500 is running a POS terminal 220 which accepts a suitable branded payment card. The acquirer 510 signs an agreement with the merchant 500 for a fix MSF rate of say 5% for all the transactions for the respective cards. In the event a transaction is performed, the POS terminal includes a transaction of $100, with the authorization message containing a value in field DE 4 of $100. The amount of $100 is authorized by the issuing bank 530 in conjunction with the payment network 520, and the customer's account is debited.

[0085] The merchant 500 batches such transactions daily, and at the end of the day submits the transactions to the acquirer 510 via settling from the POS terminal 220, using a "0500" message. A batch file is created by an acquirer switch and posted to the card network 520 via an IPM file format for receipt of funds in settlement account of the acquirer 510.

[0086] The card network 520 performs the settlement between the issuer 530 and the acquirer 510 and credits the settlement account of the acquirer 510. In doing this, the issuer 530 calculates the interchange in accordance with card network rules and returns the remaining to the acquirer 510 in settlement. For example, for a $100 transaction, if the swiped card carries an interchange of 0.5%, the value of 50 cents is kept and the amount of $99.50 is returned in the settlement to acquirer 510.

[0087] Once amount received by the acquirer 510 in the settlement account, the merchant has to be paid. If, for example, the acquirer charges an MSF of 5%, then the amount to be returned to the merchant is $95, with the acquirer 510 taking $4.50, returning the $95 to the merchant via TTUM credit. The Bank runs a TTUM file entry to the Core Banking system of the acquiring bank which shall debit the acquirer's settlement account and credit the merchant account with the respective merchant payment.

[0088] An alternative approach to settling transactions will now be described with reference to Figures 7 and 8.

[0089] Figure 7 shows the parties involved in the transaction, which again includes a merchant 500, an acquirer 510, a service provider in the form of a payment network 520, an issuer 530 and a customer 540. In this example, the acquirer 510 runs a switch 511, for processing payments, as well as a fee module 712, which in communication with a fee database 713. In use the fee database is updated by the payment network 520, as will be described in more detail below.

[0090] An example transaction process will now be described with reference to Figure 8.

[0091] In this example, at step 800, a transaction authorisation process is performed in a manner substantially similar to that described above with respect to step 600 of Figure 6, and this will not therefore be described in further detail.

[0092] At step 810, the acquirer 510, and in particular the acquirer switch 711 determines payment details. This information can be captured from a message supplied by the merchant terminal 220, including the authorisation message or a separate payment message. The transaction details include the transaction amount and one or more other transaction parameters, including an identity of the merchant, a transaction location, an MCC, a PAN and institution details.

[0093] At step 820, the transaction details are provided to the fee module 712, which uses the details to query the database and retrieve an indication of the interchange fee at step 830.

The fee module can use MSF fee data in order to determine the MSF for the respective merchant, based on the interchange fee and other transaction parameters, at step 840.

[0094] At step 850, the MSF is passed back to the acquirer switch 711, allowing the acquirer switch 711 to create payment files, such as TTUM (Core banking) files. Files are provided to the issuer at step 860, allowing the issuer to debit the customer account and credit the acquirer the transaction amount, less the interchange fee, in the normal way. In parallel with this process, the acquirer 510 can credit the merchant account the transaction amount less the MSF, allowing the merchant to be paid based on a more realistic MSF and potentially prior to funds being cleared with the acquirer 510, thereby reducing payment delays for the merchant.

[0095] An example of the operation of the fee database and fee module will now be described in more detail with reference to Figure 9.

[0096] In this regard, the fee database is maintained to ensure interchange fee rates are up to date. To achieve this, the payment network provider determines changes in interchange fee rates at step 900. The provider uses this to generate fee data, which is pushed to the fee database, thereby updating fee information in the fee database at step 910. Steps 900 and 910 can be performed on an ongoing basis, so that the fee database is maintained with the latest interchange fees.

[0097] In addition to this the acquirer can use the fee module and fee database in order to allow the MSF to be dynamically calculated for each transaction. To achieve this, at step 920, the acquirer determines fee settings. In this regard, the acquirer will define different fee rates for different combinations of transaction parameters, for example defining lower fee rates for preferred merchants. This information is then used to update the fee module at step 930, with respective merchant fee data being optionally stored in the fee database.

[0098] In use, at step 940 the acquirer switch determines the transaction parameters and then passed these to the fee module at step 950. The fee module then retrieves relevant interchange fees for the respective transaction parameters at step 950, before calculating the interchange fee amount at step 970, based on the transaction amount and fee rate. The MSF is then calculated at step 980, using the rates relevant to the respective transaction parameters

and the interchange fee, with the calculated MSF being returned to the acquirer switch 711 at step 960, allowing the merchant payment to be performed.

[0099] Accordingly, the above described arrangement provides a product for an acquirer, which allows the acquirer to manage interchange rates and hence use this to more effectively calculate appropriate MSF in a timely manner. In one example, the product incorporates a database derived from an interchange calculation engine, utilised by the payment network to calculate interchanger fees, thereby allowing the acquirer to be updated with receive latest interchange rates.

[00100] The MSF mark-up which the acquirer applies to transactions can then be minimised based on the interchange fees that apply to the respective transaction, providing a far more effective mechanism of managing MSFs than the traditional way of charging flat rates to merchants. This ensure the acquirer is competitive and reduces costs for merchants, whilst also preventing the acquirer losing money on transactions due to high interchange rates.

[00101] The interchange rate for any transaction is typically derived from intraregional interchange rates, interregional interchange criterion, intra country interchange rates and intra country interchange criterion. The system can utilise all or some of these parameters to calculate the MSF to be charged to the merchant, as well as allowing the MSF to increase or decrease, or vary between merchants. Using this approach, the acquirer is able to optimise the MSF, whilst avoiding losses due to interchange rates.

[00102] For example, in traditional approaches, say the acquirer charges an MSF of 2% to the merchant (flat) for a business card profile. The acquirer shall have to pay $98 to the merchant in case of a purchase of $100 from his terminal. However, if the interchange for a specific transaction is 4%, for example if this is an international transaction, when the data is staged to the issuer, the issuer charges 4%, to the amount, so the amount provided to the acquirer is $96 only. Consequently, under such a traditional arrangement, there is a loss of 2% by the acquirer, which could be mitigated by the above described process.

[00103] Accordingly, the above described technique is able to create payment files for triggering payments with interchange rates (as applicable), and thus the acquirer may integrate it into their system to charge their merchant with an MSF calculated to provide the best possible rates.

[00104] To achieve this, the system can use a fee database updated with information regarding current interchange values, through appropriate interchange reports. These interchange reports can provide seamless integration with a fee module, which can be implemented by the acquirer allowing the MSF to be calculated based on the interchange rates specified in the reports, but also based on their own criteria.

[00105] Such an arrangement can be provided on a licensed model or a Software as a Service model to acquirers serving the merchant market, and is applicable to web merchants and POS merchants.

[00106] Further example details of specific aspects of the above described arrangement will now be described.

[00107] The fee database is typically hosted at the acquirer end, populated by fee data supplied by the payment network provider, and has in one example, has a format similar to that shown below:

5411	Prepaid	5413	Credit MC	5415	MC Debit
Y (Intra)	--	--	Y(Inter)	---	Y(Inter)
5233	Credit MC	1124	Debit MC	4532	Credit MC
Y (Intra)	--	--	Y(Inter)	---	Y(Inter)
2456		3456		6543	
Y (Intra)	--		Y(Inter)	---	Y(Inter)

[00108] For example, if a transaction follows (MCC: 5411, Type: Prepaid, Location: Intraregional) the following trend, it will fall in block 1 for calculation of interchange: MCC: 5411, Type: Prepaid, Location: Intraregional. This will provide an indication of specific interchange rate in a look-up table, such as 4%.

[00109] Regular updates to the fee database are provided by the payment network. These updates refresh and populate the database at the acquirer switch level. In order to ensure accurate interchange rates are used, conditions can be applied to updates, such as

requiring that the updates are at regular intervals and that the database is continuously synchronised to the acquirer switch.

[00110] In use, when a transaction is initiated at the POS terminal, it is forwarded to the issuer for authorization in the normal way. The transaction is also moved to the fee module in the acquirer switch, allowing certain transaction parameters to be captured from the transactions, such as MCC (DE 26), PAN (DE 2) and Institution details (DE 94/95).

[00111] The fee module is then linked to the fee database, which is regularly updated by the payment network provided, allowing the fee module to extract interchange rates from a table in the database. The fee module acts as an interface with the acquirer, allowing the acquirer to access the interchange rates and determine the interchange rate that will be applied to the transaction in question.

[00112] Additionally, the fee module allows the acquirer to configure the module to allow the module to perform additional activities, including determining special interchange or MSF rates for particular merchants, setting upper and lower limits for MSF as per merchant group, managing interchange rates, or the like.

[00113] Merchant payments are typically handled using TTUM entry, with the acquirer creating a TTUM file (core banking) file and providing this to the issuer bank. The acquirer bank at regular intervals will run this file, such as every hour, allowing the merchant account to be credited more frequently. Using this solution, the merchant payment can be performed hourly reducing payment times for the merchant.

[00114] Thus, whereas with traditional approaches the merchant receives the settlement amount at time t+1, after the clearing from the acquirer has taken place, meaning if the clearing of funds is delayed, so is the merchant payment. Additionally the MSF applied to the merchant is fixed, and does not vary depending on the type or location of the transaction being performed.

[00115] In contrast, with the above described solution, the merchant can be paid as soon as the TTUM file is run, for example within an hour of the transaction occurring, and

without the need to wait for a clearing file. Furthermore, the MSF can be applied on a per merchant basis, and calculated based on the type of transaction being performed, making this more equitable for merchants. Additionally, any change in interchange rates is immediately propagated to the acquirers, allowing them to take this into account when setting the MSF, without requiring input from the acquirer side.

[00116] Throughout this specification and claims which follow, unless the context requires otherwise, the word “comprise”, and variations such as “comprises” or “comprising”, will be understood to imply the inclusion of a stated integer or group of integers or steps but not the exclusion of any other integer or group of integers.

[00117] Persons skilled in the art will appreciate that numerous variations and modifications will become apparent. All such variations and modifications which become apparent to persons skilled in the art, should be considered to fall within the spirit and scope that the invention broadly appearing before described.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1) A payment processing system for processing electronic payments on behalf of a merchant, the system including one or more acquirer processing devices configured to:
   a) determine transaction details indicative of a transaction between the merchant and a customer, the transaction details including:
      i) a transaction amount; and,
      ii) at least one transaction parameter;
   b) determine an interchange fee associated with the transaction at least partially in accordance with the at least one transaction parameter, the interchange fee being determined from a fee database;
   c) calculate a merchant service fee amount at least partially in accordance with the interchange fee; and,
   d) cause a merchant payment to be provided to the merchant in accordance with the merchant service fee amount and the transaction amount.
2) A system according to claim 1, wherein the merchant payment is for the transaction amount less the merchant service fee amount.
3) A system according to claim 1 or claim 2, wherein the one or more acquirer processing devices is or are configured to:
   a) determine an interchange fee amount at least partially in accordance with the transaction amount and the interchange fee; and,
   b) calculate the merchant service fee amount using the interchange fee amount.
4) A system according to any one of the claims 1 to 3, wherein the one or more acquirer processing devices is or are configured to calculate the merchant service fee amount using the at least one transaction parameter.
5) A system according to any one of the claims 1 to 4, wherein the one or more acquirer processing devices is or are configured to cause the merchant payment to be made from an acquirer account to a merchant account.
6) A system according to claim 5, wherein the one or more acquirer processing devices is or are configured to cause the merchant payment to be made prior to an acquirer payment being received by the acquirer.

7) A system according to claim 5 or claim 6, wherein the one or more acquirer processing devices is or are configured to cause an acquirer payment to be provided to the acquirer in accordance with an interchange fee amount and the transaction amount.
8) A system according to any one of the claims 1 to 7, wherein the one or more acquirer processing devices is or are configured to:
    a) generate a payment file indicative of the transaction details; and,
    b) transfer the payment file to an issuer via one or more provider processing devices, the issuer being responsive to the payment file to cause an acquirer payment to be made from an issuer account to an acquirer account.
9) A system according to claim 8, wherein payment files are generated on a periodic basis.
10) A system according to claim 9, wherein payment files are generated hourly.
11) A system according to any one of the claims 1 to 10, wherein the transaction parameter includes at least one of:
    a) a transaction location;
    b) a transaction type; and,
    c) a merchant identity.
12) A system according to any one of the claims 1 to 11, wherein the fee database is updated with interchange fee data from one or more provider processing devices.
13) A system according to claim 12, wherein interchange fee data is pushed to the fee database.
14) A system according to claim 13, wherein interchange fee data is pushed to the fee database at least partially in response to changes in interchange fees.
15) A system according to any one of the claims 1 to 14, wherein the one or more acquirer processing devices is or are in communication with a fee module that determines an interchange fee associated with the transaction from the fee database.
16) A system according to claim 15, wherein the fee module is configured to determine the merchant service fee amount in accordance with the at least one transaction parameter.
17) A system according to claim 16, wherein the fee module is configured with merchant fee data defining merchant service fee amounts for different transaction parameters and wherein the fee module is configured to determine the merchant service fee amount using the merchant fee data and the at least one transaction parameter.

18) A system according to claim 17, wherein the merchant fee data is defined by the acquirer.

19) A system according to any one of the claims 1 to 18, wherein the one or more acquirer processing devices is or are configured to receive the transaction details from a merchant device via a communications network.

20) A system according to claim 19, wherein the one or more acquirer processing devices is or are configure to determine the transaction details from at least one of a transaction authorisation message and a payment message.

21) A payment processing system for processing electronic payments on behalf of a merchant, the system including one or more provider processing devices configured to:

a) determine interchange fee data indicative of interchange fees for different transaction parameters; and,

b) use the interchange fee data to update a fee database, the fee database being used by one or more acquirer processing devices to:

i) determine an interchange fee associated with the transaction at least partially in accordance with the at least one transaction parameter, the interchange fee being determined from a fee database;

ii) calculate a merchant service fee amount at least partially in accordance with the interchange fee; and,

iii) cause a merchant payment to be provided to the merchant in accordance with the merchant service fee amount and the transaction amount.

22) A system according to claim 21, wherein the one or more provider processing devices is or are configured to:

a) determine changes in interchange fees; and,

b) update the fee database in response to the changes in interchange fees.

23) A system according to claim 22, wherein the one or more provider processing devices is or are configured to push changes in interchange fees to the fee database.

24) A payment processing system for processing electronic payments on behalf of a merchant, the system including a fee database and a fee module, the fee module being executable by one or more acquirer processing devices that in use:

a) determine transaction details indicative of a transaction between the merchant and a customer, the transaction details including:

i) a transaction amount; and,

ii) at least one transaction parameter;

b) use the fee module and fee database to determine an interchange fee associated with the transaction at least partially in accordance with the at least one transaction parameter;

c) calculate a merchant service fee amount at least partially in accordance with the interchange fee; and,

d) cause a merchant payment to be provided to the merchant in accordance with the merchant service fee amount and the transaction amount.

25) A system according to claim 24, wherein the fee module is configured to determine the merchant service fee amount in accordance with the at least one transaction parameter.

26) A system according to claim 25, wherein the fee module is configured with merchant fee data defining merchant service fee amounts for different transaction parameters and wherein the fee module is configured to determine the merchant service fee amount using the merchant fee data and the at least one transaction parameter.

27) A system according to claim 26, wherein the merchant fee data is defined by the acquirer.

28) A system according to any one of the claims 24 to 27, wherein the fee database includes interchange fee data indicative of interchange fees, and wherein the interchange fee data is updated by a service provider.

29) A payment processing system for processing electronic payments on behalf of a merchant, the system including:

a) a merchant payment device;

b) one or more acquirer processing devices in communication with the merchant payment device via a communications network, and wherein the system is adapted to:

i) transfer transaction details indicative of a transaction between the merchant and a customer from the merchant device to the one or more acquirer processing devices, the transaction details including:

(1) a transaction amount; and,

(2) at least one transaction parameter;

ii) in the one or more acquirer processing devices:

(1) determine an interchange fee associated with the transaction at least partially in accordance with the at least one transaction parameter, the interchange fee being determined from a fee database;

(2) calculate a merchant service fee amount at least partially in accordance with the interchange fee; and,

(3) cause a merchant payment to be provided to the merchant in accordance with the merchant service fee amount and the transaction amount.

30) A method for processing electronic payments on behalf of a merchant, the method including having an acquirer:

a) determine transaction details indicative of a transaction between the merchant and a customer, the transaction details including:

i) a transaction amount; and,

ii) at least one transaction parameter;

b) determine an interchange fee for the transaction at least partially in accordance with the transaction details;

c) calculate a merchant service fee amount at least partially in accordance with the interchange fee; and,

d) cause a payment to be provided to the merchant in accordance with the transaction amount and the merchant service fee amount.

31) A method for processing electronic payments on behalf of a merchant, the method including having a service provider:

a) determine interchange fee data indicative of interchange fees for different transaction parameters; and,

b) use the interchange fee data to update a fee database, the fee database being used by an acquirer to:

i) determine an interchange fee for the transaction at least partially in accordance with transaction details;

ii) calculate a merchant service fee amount at least partially in accordance with the interchange fee; and,

iii) cause a payment to be provided to the merchant in accordance with the transaction amount and the merchant service fee amount.