BT Buynet

Integration handbook – Release 3D v 1.07

1   *In this handbook*

1.1 Intended readership

BT Buynet is a secure online payment card transaction processing system. This document provides the procedures required to integrate the BT Buynet service into your own web-enabled platform. This document provides a complete picture of the Buynet service and can be used by:

- Companies who are looking to enable their application for use with the BT Buynet service. If your web presence is hosted by a third party (ISP), you will need to involve your ISP in this process.

- ISPs who are intending to install BT Buynet on their platform for use by their customers.

If you are unsure, please contact the BT Buynet Integration helpdesk:

call 0845 601 0569 (calls charged at a local rate) or e-mail: btbuynetsupport@bt.com

1.2 Handbook structure

This handbook is a complete guide to the BT Buynet Service. It contains details of how to install, set-up and operate the service. The sections are as follows:

- Section 2, aimed at commercial/marketing personnel, provides an overview of the system to help you understand how it can best be applied to your business.

- Section 3, aimed at System Integrators, provides step-by-step instructions on how to install and configure the service for the most common configuration scenarios.

- Section 4 provides troubleshooting information.

- Section 5, aimed at support staff, provides step-by-step operating procedures for the day-to-day use of the BT Buynet service.

- Section 6 provides sources of assistance in the unlikely event you should encounter any problems with BT Buynet.

- Sections 7, 8, 9 and 10 provide technical reference to help with the integration process.

- Section 11 provides an explanation of some of the more specialist terms used in this handbook.

1.3 Conventions used in this guide

The following conventions are used in this document:

Procedures to perform a particular action are presented as sequentially numbered steps.

'Click' means to move your mouse cursor over the item described and then press the left-hand mouse button.

'Check' means to click on a radio option button on a form with your left mouse button such that it becomes highlighted or 'checked' to indicate its selection.

Form field items are presented in italic text e.g. type the first name or initials in the *First Name* field.

Form buttons are presented in emboldened text e.g. click on the **Settle** button.

2   *An introduction to BT Buynet*

BT Buynet helps turn a web site into a hard working, real-time sales channel with automated card payment processes. Integrated into your web site, catalogue, call centre or other application, it offers a secure method for managing on-line payment transactions.

2.1   What is BT Buynet?

BT Buynet is a secure online payment service, enabling merchants to accept a wide range of payment cards for their goods and services, whilst benefiting from increased levels of efficiency in their order handling process and improved cash flow. BT Buynet removes the need for re-keying card details by providing real-time card authentication and authorisation and reducing the timescales for merchant payment.   A block diagram is given in Figure 1, showing the relationship between BT Buynet, the internet and the banking network.
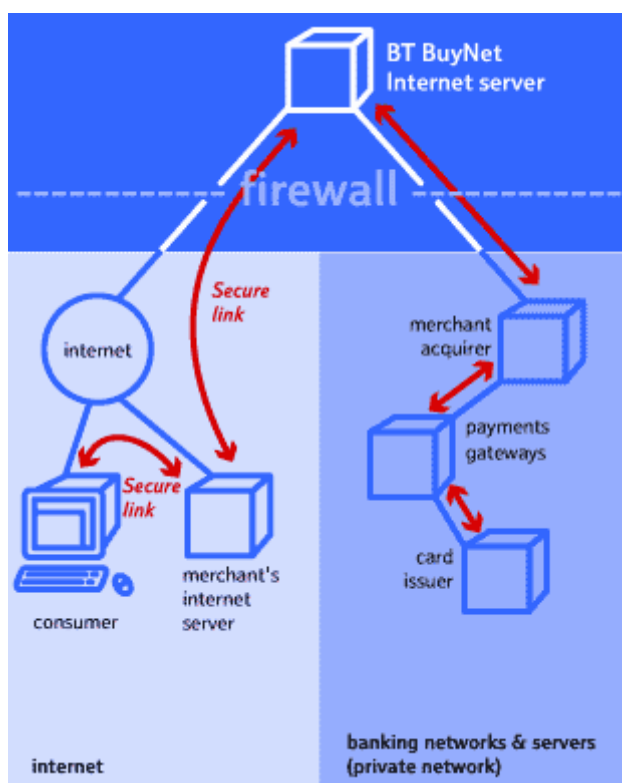
Figure 1   BT Buynet block diagram

As well as the client-side software BT Buynet provides a secure merchant services website which allows the merchant to carry out customer service functions such as reclaims and enquires on transactions. Access is granted once merchants are registered with the BT Buynet service.

2.2   The benefits of using BT Buynet

Your web site can generate revenues for your company 24-hours a day, 7-days a week - securely and efficiently. It helps improve your cash flow by automatically sending instructions for the movement of your revenue each day - no waiting for someone to go to your bank in person.

BT Buynet reduces the cost of developing your trading web site. You do not need to spend time and money learning the complexities of the banking system, nor do you need to stay abreast as the banking rules change – we will do that for you.

The automation of the payment process reduces human error and frees your staff's time for higher value activity. It removes the risks attached to running your own on-line trading system, with an exceptional level of security and resilience – including server duplication, a range of digital ID and password checks as well as encryption of the data at all stages of communication.

- Improves cash flow;

- Stream lines order processing;

- Improves the accuracy of transactions;

- Reduces the opportunity for charge-backs;

- A wide choice of payment options for your customers;

- Multiple platforms supported.

2.3   Commercial information

2.3.1 Is Buynet PCI Compliant?

Yes, BT Buynet is fully compliant with the Payment Card Industry Data Security Standards (PCI DSS) backed by the major card schemes and banking institutions. Please see http://www.visaeurope.com/documents/ais/visa_europe_ais_certified_service_providers_02012008.pdf for Buynet's PCI status.

The following processes and procedures ensure an exceptional level of security.

Server and transmission security

Your customer's credit card details are encrypted and transferred to the BT Buynet service, they are not stored at your web hosting company or at your offices. The BT Buynet servers are housed in

secure buildings that use staff retina-analysis to restrict physical access. All data transfers to and from the Buynet servers are encrypted. Once we have the data, your computers will communicate with BT Buynet using a BT Buynet transaction ID, so no credit card details will be sent back and forth again.

Server and data resilience

All information is fully backed-up through secondary data storage facilities at our server farms. That means every transaction has been recorded and stored - no information is lost. The BT Buynet service is run on multiple servers, with automatic switching, should one of them fail. The transaction database is held on a separate machine that provides data mirroring, for extra data security. All card data is encrypted on the Buynet Server using DES3 Encryption.

In addition to the production platform at the primary data centre BT Buynet also operates a secondary disaster recovery (DR) platform at a second remote data centre which is continually being synchronised with the production platform. In the case of a major failure at the primary site, operations can be quickly switched to the secondary platform to ensure that service can be resumed as soon as possible.

As part of our commitment to provide a secondary site that is always available, we will periodically (at least once a year) switch over to the DR site for a period of one week, using our DNS address - **bis.btbuynet.bt.com** to route to the DR site.

Note - In order for the DNS switchover to work, it is advised that you ensure you use DNS and not IP addressing in your merchant.properties file – our helpdesk can advise on this. At least 30 days notice will be provided before the switchover and technical support/advice will be available, prior to the switch, to ensure that you will be able to communicate with the DR site.

The Buynet servers are subject to independent vulnerability scans at least quarterly to ensure that all known platform security vulnerabilities are eliminated.

Encryption

Your communications with customers must be protected by SSL (secure sockets layer) technology - your web designer can do this on your behalf. You can see when SSL is being used because the domain name of a site will begin with https://. This encryption method ensures the integrity of communications even though they are taking place over the public access internet. BT Buynet employs stringent encryption technology for the link between your server and BT Buynet.

Audit integrity

BT Buynet is a fully accounted system that meets BT's stringent internal audit and integrity requirements. Every second of every on-line transaction is recorded so the flow of information and funds is clear - nothing can 'disappear' from the system and all transactions can be reconstructed.

Real time data backup and software status monitoring provides stringent audit and data integrity for all your transactions. Encrypted communications provide data security.

BT Buynet is audited annually by an independent Qualified Security Assessor, as required by PCI DSS.

2.3.2 Which banks and payment card companies are supported?

Supported merchant acquiring institutions:

- American Express
- Halifax Bank of Scotland
- Barclays Merchant Services
- Diners Club
- Alliance and Leicester
- HSBC (Midland)
- JCB
- Lloyds TSB
- National Westminster / RBS Streamline

Payment cards accepted include American Express, Diners Club, JCB, MasterCard, Style and VISA (credit/charge cards); and, Maestro, Solo, VISA Delta and VISA Electron. (debit cards).

For eCommerce payments, BT Buynet supports both of the 3D Secure Payer Authentication schemes, Verified by VISA and MasterCard SecureCode.

BT is working to bring other institutions online, if your bank is not in the list above, contact the Buynet Merchant helpdesk at support@btbuynet.com or call them on 0845 601 0569 (calls charged at local rate).

2.3.3 How do I monitor the transactions on my Web site?

BT Buynet Client Software records all details of transactions through your site, which are stored in log files. You can use these log files to report on transaction throughput. The log files are automatically cycled on a daily basis and contain the transaction details pertaining to that day. You can also check on transactions using the Merchant Services Website (MSW) where you can run reports or trace individual transactions using the Buynet reference or your own Client reference.

2.3.4 How long does a transaction take?

It happens in real time, taking just a few seconds and completed while the customer is within **your** web site. On average, transactions should take no longer than six seconds, although times may vary as the internet is being used to make the link. This means that merchants can make commercial decisions with the knowledge that the transaction has been authorised, in real time.

2.3.5 What if I experience a problem with my BT Buynet enabled Web site?

The BT Buynet platform is designed to provide service 24/7 and is monitored at all times. Should you experience a problem affecting **all** transactions, the Fault Reporting helpdesk (0845 601 0569) is available at all times for service affecting problems.

The Integration helpdesk is available from 9 a.m. to 5 p.m. Monday to Friday (excl Bank Holidays) for enquiries and can be contacted on 0845 601 0569.

2.4   What is 3D Secure (Payer Authentication)?

3D Secure, or Payer Authentication, is a new technology solution created by the credit card associations to provide benefits for both retail merchants and online consumers. BT Buynet supports the 3D Secure Protocol for payer authentication, which is marketed as *Verified by Visa* and *MasterCard SecureCode*. These programmes ensure authentication of credit card holders with their issuing bank, eliminating merchant liability for the most common fraud-related charge-backs, and providing confidence to consumers that their cards cannot be used for fraudulent purchases.
Consumers enrol their Visa or MasterCard credit cards in the *Verified by Visa* or *MasterCard SecureCode* programmes at their card issuer's web site. During the enrolment, they choose a password to associate with their card. When they use that card at a merchant enabled for *Verified by Visa* and *MasterCard SecureCode*, they are prompted by their issuing bank to "sign" for the purchase with their password.

2.4.1 How does 3D Secure differ from Authorisation?

The standard BT Buynet transactions such as Authorise and AuthoriseAndSettle make sure that the cardholder has sufficient funds to pay for the transaction and their card has not been blocked for any reason. Once BT Buynet has authorised the transaction via the card issuer the transaction is completed in the normal manner.
3D Secure is an additional step which is the process of checking that the cardholder is genuine. This 3D Secure authentication step is carried out prior to the authorisation of funds. BT Buynet has been designed so that the complex issues of encoding and decoding 3D Secure protocol messages and verifying digitally signed material is carried out on our servers, leaving only a simple integration task to be carried out by the merchant.

2.4.2 What is Card On File?

BT Buynet is able to store the card details for a customer. This means that rather than full card details being sent to BT Buynet during a transaction, a payment reference can be used instead. BT Buynet will use this reference to look up the stored card details. This is an optional service and you may choose to always include full card details with each transaction if you prefer. You must register with the BT Buynet Helpdesk if you wish to make use of Card On File.

2.4.3 How does a Card On File transaction differ from a regular transaction?

For the most part they are identical. The only difference is when using a Card On File transaction you must provide a payment reference instead of card details, along with the normal transaction information (amount, currency, etc).

2.5 How it works

2.5.1 BT Buynet, the Process

BT Buynet is an electronic implementation of the payment card authorisation process and follows the rules and processes outlined by the financial service providers involved. BT Buynet implements the system by providing the following transaction types:

Authorise: The card credentials are validated via your merchant acquirer to the card issuer. This indicates that the card is valid and has not been reported stolen. This transaction also checks the funds available on the card balance and reserves the requested amount, if sufficient funds are available. The funds reservation has a finite time span, typically between 2 and 28 days, depending on the card issuer, card scheme and card type.

Settle: Initiates the transfer of previously authorised funds, as long as the settle request has been initiated within the 'settlement window'. Settlement, once initiated with the bank, typically takes 3 days to complete.

Authorise and Settle: Combines all of the above transactions into one, removing the need for a separate settle transaction. Care must be exercised in the use of this transaction, to stay within the card scheme rules regarding the merchant's ability to fulfil an order before requesting settlement.
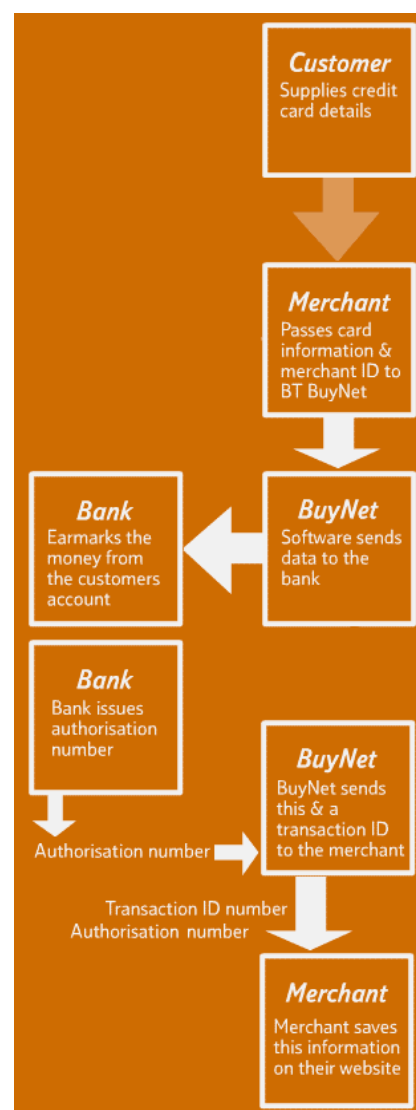
Reclaim (Refund): This transaction allows you to perform a refund to a customer's account for a previously submitted transaction. Note that multiple reclaims can be performed against a previous transaction - the total amount reclaimed must normally be less than or equal to the amount of the original transaction.

Cancel (Reversal): A merchant can decide to cancel a transaction which has been authorised, but not yet settled. This cancels the settle (where the original transaction was an authorise and settle), and sends a reversal message to the bank in order that the cardholder's available funds are restored to their original level. However, some banks do not fully support reversals. In this case, although the settle transaction will be cancelled, the cardholder's available funds will not be immediately restored.

The BT Buynet process utilises these stages as summarised in the flowchart.

To conform to the guidelines given in the credit card scheme rules you may only settle a transaction (for physical goods) once you have dispatched the goods to the customer. To support this, BT Buynet allows you to authorise a transaction and provides you with mechanisms for settling the transaction when you are able to dispatch the order.

Note that the BT Buynet process will, by default, attempt to authorise and settle the transaction simultaneously. You can customise the service to delay the settlement process (if for example settlement is not normally made until goods are shipped).

Your authorisation requests will be sent to your acquiring bank via BT Buynet. If the authorisation is given, then it is important to realise that the acquiring bank will only honour that authorisation for a finite period. This period is typically 2 to 28 days - please check with your bank for definitive information. As you will see later in this document, you will need to take this into account when settling your transactions.

Internet payments - When authorising card transactions originating from the internet, the merchant is recommended to implement 3D Secure as part of their payment authorisation process.

2.5.2 How does 3D Secure work?

The 3D Secure transaction process is carried out in the following manner :

- The cardholder enrols for the Verified by Visa (or MasterCard SecureCode) service at their issuing bank and chooses their Personal Assurance Message and authentication password or PIN.

- The cardholder shops for goods online and enters their payment details into the merchant buy page as normal.

- The merchant passes the transaction data to Buynet including, the purchase details; card details; and that the cardholder should be authenticated using 3D Secure.

- The Buynet servers check with the VISA or MasterCard Directory Server and the card issuer to determine whether the cardholder is enrolled for 3D Secure.

- Provided that the cardholder is enrolled for the service, Buynet responds with the details necessary for the merchant to seek authentication of the cardholder from the cardholders issuing bank (using a browser redirect).

- The cardholder is presented with a web page by their issuing bank that shows the details of the transaction their Personal Assurance Message and is requested to enter their 3-D Secure password or PIN.

- The issuing bank validates the password or PIN against the details the bank has stored for the cardholder at the time of their enrolment.

- The issuer response is returned to the merchant (again by another browser redirect) and the authentication data is extracted by the merchant and sent to Buynet for verification.

- If the cardholder is successfully authenticated, Buynet will proceed with the funds authorisation and return the authentication code to the merchant in the Buynet response message.

2.5.3 How does Card On File work?

The Card On File transaction process is carried out in the following manner:

- To add a card to the Card on File data store you must issue a "Make Payment and Store Card On File" transaction, which completes a regular Buynet transaction (for example, Authorise) this will additionally store the card details for use with Card On File and return a Payment Instrument Reference for the stored card details.
- The merchant assigns a Customer Identifier (partyId) to the card details when requesting the card to be stored – multiple cards may be stored against a Customer Identifier.
- In future transactions, the Merchant can send the Customer Identifier to Buynet to request all associated stored cards – a unique Payment Instrument Reference is returned for each card stored for that customer.
- The Customer/merchant can decide which card to use for the transaction and send Buynet the relevant Payment Instrument Reference for that card.
- The Payment Instrument Reference is passed to the BT Buynet system in a transaction instead of the usual card details.
- BT Buynet looks up the stored card details and proceeds with the transaction using these details as it would in a regular transaction.

2.5.4 BT Buynet, the System

An overview of the system in relation to your own is shown below.

Scenario
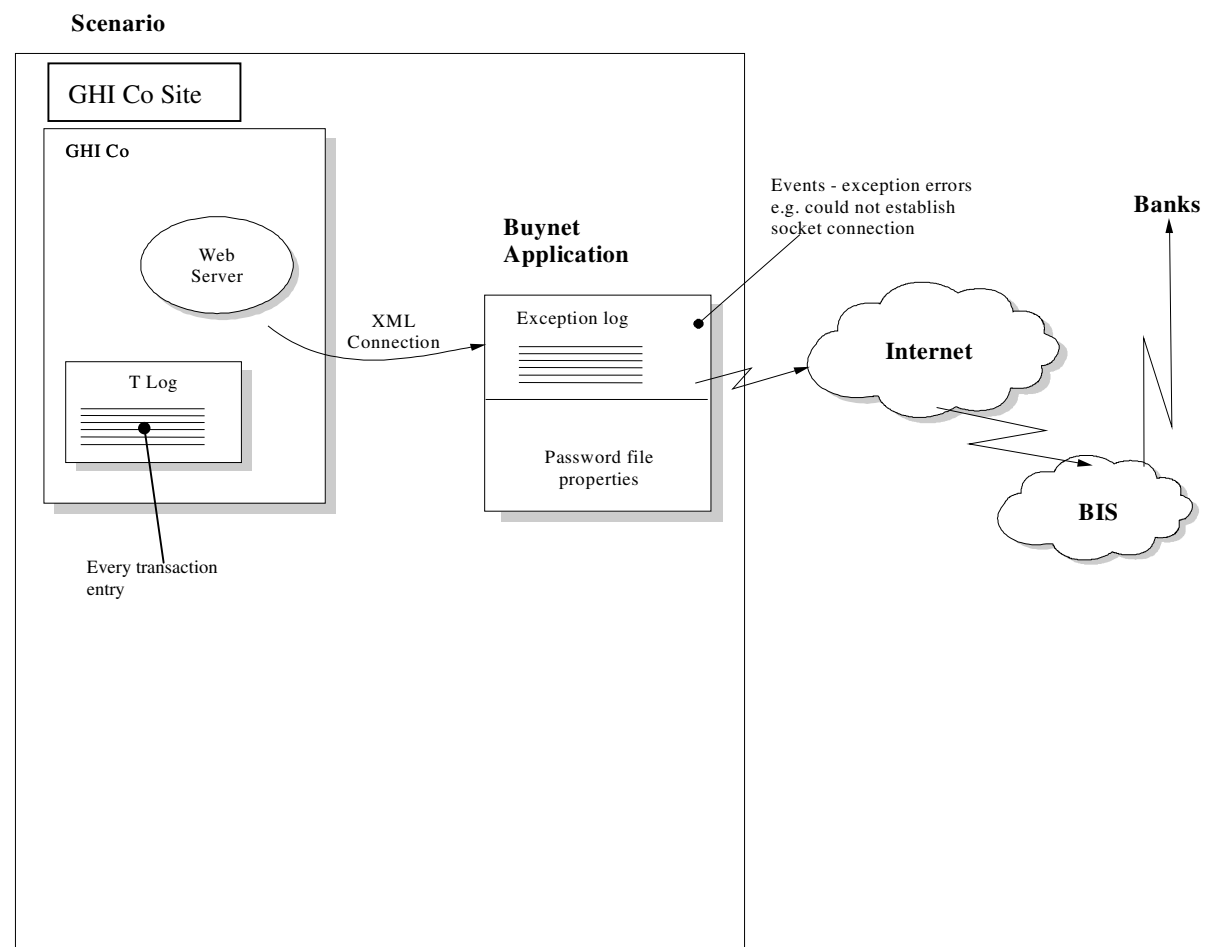
Figure 2 Buynet System

To enable your application (website, call centre system etc) to perform on-line transactions using BT Buynet, you must first integrate the Buynet application into your system. BT Buynet utilises Java technology and XML to achieve platform independence, and is, therefore, a truly open solution that does not tie you to specific hardware. Part of the installation is a Java Virtual Machine (JVM), if you move to a different platform you simply need to obtain the relevant JVM from a java vendor (e.g. Sun

microsystems), install it and BT Buynet will continue to function, it's as simple as that. For further help, please contact the Buynet Integration Helpdesk.

When a transaction is initiated by your application, the transaction details must be passed to the Buynet Client application (the details of this are given later in this handbook). The Buynet Client application then uses an X509 Digital Certificate to create an encrypted link to the Buynet service using the SSL standard.

Each instance of a merchant on the hosting platform must be given an entry in the password file using the Password Management Application provided. This password must be included with each transaction presented by the merchant's application as a form of authentication.

Each instance of a merchant has a transaction log that records details of every transaction sent to BT Buynet.

The exception log provides detailed, technical data on any exceptions occurring within the BT Buynet Client Software. This log is for use by technical support personnel.

If you wish to use 3D Secure (Payer Authentication) for internet transactions, you will also need to extend your web application to handle the browser redirect messages used by the 3D Secure authentication process (the details of this are given later in this handbook).

2.6   How to get set up on BT Buynet
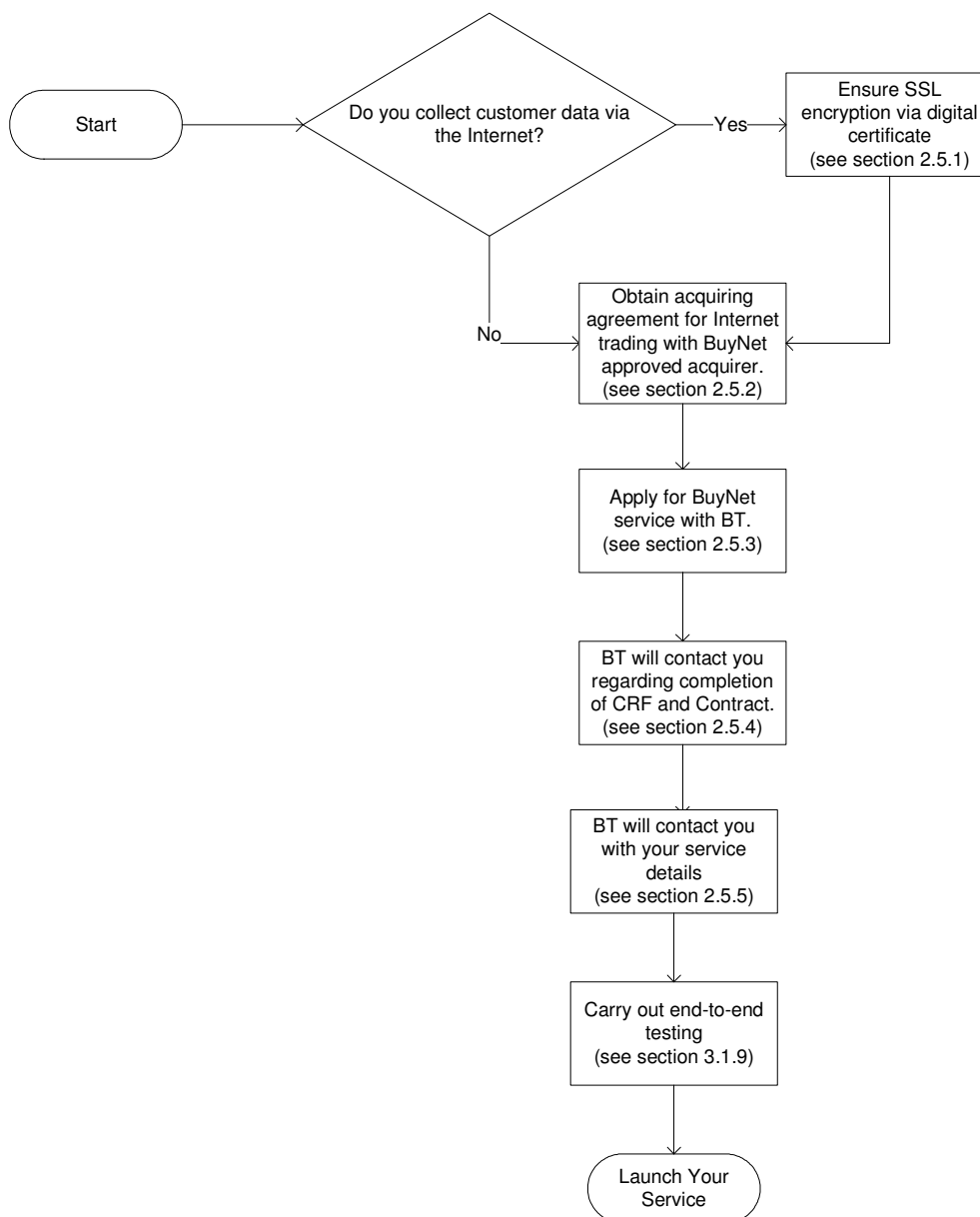
Figure 3: Commercial activities flowchart

2.6.1 Secure Customer Data

If your application captures customer data over the internet, your web presence must have a secure
socket layer (SSL) digital server certificate. You can obtain a suitable secure server SSL digital

certificate from BT TrustWise (http://www.btglobalservices.com/en/products/trustservices). BT recommends a minimum key length of 128 bits.

2.6.2 Obtain a Merchant Acquiring Agreement

Your organisation must have a merchant acquiring agreement for 'Card Not Present' transactions with a BT Buynet supported financial services provider. If your bank is not one of the supported BT Buynet acquiring banks (not all banks are acquiring banks) then they may help you establish a relationship with one that BT Buynet does support. Your acquired money can be transferred to your own bank by the banking network. BT Buynet will be connecting to other acquiring banks and institutions. Please call for the latest list of supported institutions, or check the website http://www.buynet.bt.com/.

To implement 3D Secure, you will also need to get an agreement from your acquiring bank to be able to perform the additional authentication. They will make the necessary arrangements with the Card Issuers (Visa and MasterCard) and issue you with appropriate Merchant IDs and passwords. These details are required by BT Buynet so that the Buynet can identify you to the Visa or MasterCard Servers.

2.6.3 Apply for BT Buynet

You are now ready to purchase the BT Buynet service. Call us on **0845 601 0569** or visit our Web site at http://www.buynet.bt.com/

BT OrderPoint and eSP Partners can also help you to purchase the service, as can your BT Account Manager, if one has been appointed to you.

2.6.4 Complete Sales Forms

When you have indicated that you want to obtain BT Buynet we will contact you and complete the sales process, which will involve asking for specific information, such as banking details and technical information about your computing environment. These details are essential to providing the service and any delay in providing them will delay the provisioning process.

2.6.5 BT Provide Service

Once the sales forms have been completed we will set up your account on the BT Buynet service. BT will contact you with your account details once this is complete. These details will be needed by the people performing the technical integration of your service with BT Buynet before you can launch your service.

2.6.6 Integrating BT Buynet into Your Business

You will need to instruct your web site designers to integrate BT Buynet into your application using the information supplied in this document.

The BT Buynet software can be downloaded from the BT Buynet website at
http://www.buynet.bt.com

A detailed description of the technical activities to achieve integration is included in Section 3 of this document.

2.7   Using BT Buynet day-to-day

BT Buynet provides functionality via a web-based front end, the Merchant Services Website, which allows you to administer your service on a day-to-day basis. The site provides the following functionality:

- Settle transactions;

- View the status of a transaction;

- Provide Reclaims (refunds);

- Cancel transactions (where transaction not settled – normally an authorised transaction will be settled at midnight on the day of the transaction.)

- Authorise a transaction.

- A mechanism to contact support, should you need it.

2.7.1 Reports

A number of reports are available to aid with financial reconciliation and fraud management.   The reports are made available via e-mail and include:

- Total number and value of settlements processed by BT Buynet on your behalf;

- Total number and value of refunds processed by BT Buynet on your behalf;

- Summary Report detailing number and value of all transactions processed by BT Buynet on your behalf;

- Card Summary Report detailing number and value of transactions split by card type.

If you would like to request any of these reports please contact the support helpdesk (call 0845 601 0569 or e-mail: btbuynetsupport@bt.com).

3   *Integrating BT Buynet with your system*

3.1   Step by step integration process

This section contains all the procedural steps required to get your system up and running. Working through the flow chart provided in Figure 4 will help you to identify those paragraphs containing integration procedures relevant to your scenario. Please note that where an ISP hosts your application you will need to involve your ISP in the set-up and integration process.
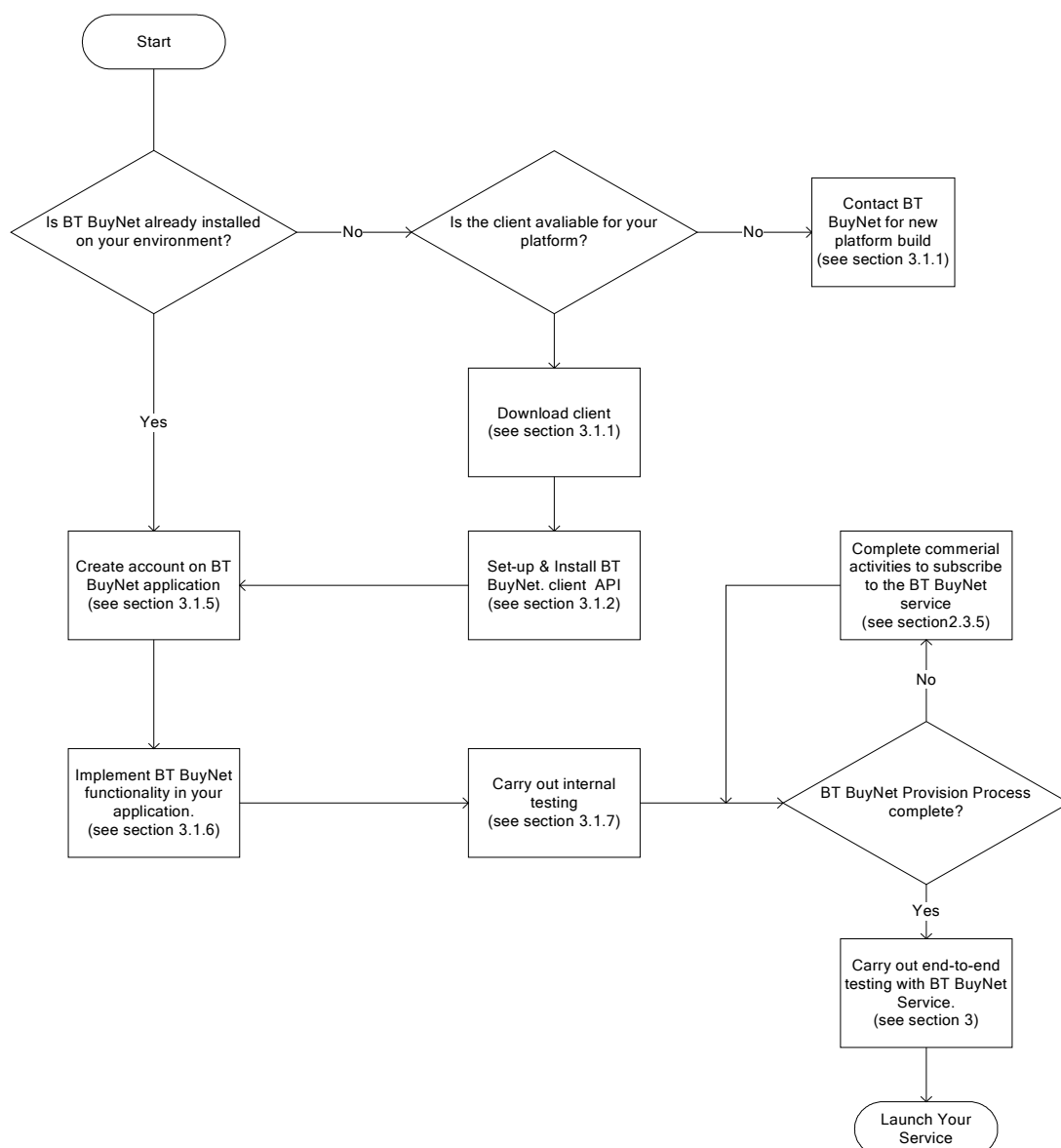
Figure 4   Integration flowchart

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BT Buynet is a transaction gateway platform that acts on transactions received from clients. It is advisable for your system integrators to consider how the customer application should cater for the rare conditions when a transaction response is not received after having been sent. If you need advice or assistance, please contact our Integration Helpdesk on 0845 601 0569 (calls are charged at local rate).

3.1.1 Downloading the BT Buynet Client Software

If the BT Buynet software is not already installed on your platform, you can download it free of charge from the Buynet website at **http://www.buynet.bt.com**.

The software is provided to enable you to integrate the BT Buynet product and to test it with your application whilst you obtain a merchant ID for trading on the internet. You will need to get this ID from one of the BT Buynet supported merchant acquirers (see the BT Buynet website for the latest list of supported acquirers).

Full internal test facilities are provided to allow you to ensure that your website will handle all situations as expected - and a few that aren't!

Two versions of the Buynet software are currently available for download – one for Windows, and the other for UNIX. The UNIX version is supplied by default to run under Solaris and includes a copy of the Java Runtime Environment (JRE) for Solaris. However, Buynet will run successfully on other UNIX systems since it is a pure Java application – you simply need to run the application using the appropriate Java Runtime Environment for your platform. For running on Linux, please see Appendix F or contact the BT Buynet integration helpdesk on 0845 601 0569 or e-mail: **btbuynetsupport@bt.com for advice on using Buynet with other UNIX platforms.**

Note – at the time of writing, the current release of the Buynet Client Software is 3D Version 1.07.

3.1.2 Installing the BT Buynet Client Software

3.1.2.1 What gets installed?

The BT Buynet Client Software consists of three Java applications and a Java Runtime Environment (JRE). Note – it is recommended that you run the client on Java version 1.5 or above.

- A Merchant Application which processes credit card transactions and manages connections to the BT Buynet Servers.

- A Password Management Application which allows an Administrator to set up and manage Users in order to control access to the Merchant Application.

- A Test Harness Application which provides the merchant with sample test messages that can be submitted to the Merchant Application to check for correct installation. This includes an example of each of the main transaction types and should be used to check whether the application is installed and running correctly on your system.

Each of these Applications communicates on a designated port number. Default values for BT Buynet port numbers are as follows:

Merchant Application – 15001

Password Management Application – 16000

If you need to change these default values you can do so after installation, as described in the Installation section below.

You will need to open your firewalls to the following addresses on ports 50120 and 50121

217.140.33.177 – main Site

62.239.2.17 – Disaster Recovery Site (DR)

To assist integration, there are a few example integrations available for download on the Buynet website (**http://www.buynet.bt.com**) to demonstrate how to integrate typical web application technologies with the Buynet Merchant application.

However, these examples are provided on an 'as seen' basis and should be used for guidance only – these example integrations do not form part of the Buynet application and consequently they are not supported software.

3.1.2.2 Installing on Windows

The install process requires a minimum of 64 MB of memory.

Unzip the file 'BUYNET_WIN32_3DV<r_v>.zip' (where 'r' represents the release number and 'v' represents the version number of the BT Buynet software) to C:\Program Files. Afterwards you should have a directory C:\Program Files\BTBuyNet.

- The installation will automatically select default values for the Merchant Application and Password Application port numbers and will not configure any Proxy settings. If you need to change the default port numbers that BT Buynet uses, or configure BT Buynet to make use of a proxy server, you will need to alter BT Buynet's default values (see 3.1.2.4).

    You should only need to change the port numbers if they are already in use by your system. Consult your System or Network Administrator if you are in any doubt.

Note that Buynet requires a minimum of 65 MB of disk space. This does not include disk space for the log files generated by the BT Buynet Client Software, or for the registered clients.

To check that the system can establish a network connection to the BT Buynet Internet servers, execute startMerchant.bat in the C:\Program Files\BTBuyNet\merchant directory. A message should be displayed indicating that the client has been started and that the server has been contacted successfully. However, if the following message appears -

> *!!! Warning: Unable to establish connection with server!!!*

your system cannot establish a network connection to the BT Buynet Internet Servers. Please check your local network configuration. One other way to verify that you are unable to connect to the Buynet service, would be to telnet to us on port 50120.

```
> telnet bis.btbuynet.bt.com 50120
```

If this shows a timeout, then it means that your communication to the Buynet servers is being blocked, probably by a firewall. If, after correcting/opening your firewalls, the problem persists, please contact the BT Buynet Help Desk (0845 601 0569).

To uninstall BT Buynet simply delete the C\Program Files\BTBuynet directory.

The BT Buynet software may be installed to another directory if required. Move the entire BTBuyNet directory and all its contents to the required location. Then edit each of the .bat files within the BTBuyNet\merchant\ directory file to reference the new location. If you wish to use the Test Harness examples, you will also need to edit each of the .bat files in the BTBuyNet\testHarness\ directory and the file paths in each the example XML messages in the sub-directories beneath BTBuyNet\testHarness\testXml.

3.1.2.3 Installing on UNIX

To start the installation process you will need to uncompress the installation file 'BTBUYNET_SOLARIS_3DV <r_v>.tar.Z' (where 'r' represents the release number and 'v' represents the version number of the BT Buynet software).

Copy the installation file to the appropriate directory that you wish to install BT Buynet in. You will need to uncompress the installation file and then 'tar' to extract the BT Buynet Client Software from the archive. For example,

$ uncompress BTBUYNET_SOLARIS_3DV1_07.tar.Z

$ tar xvf BTBUYNET_SOLARIS_3DV1_07.tar

Note that the tar file will create a directory called 'BuyNet' under your chosen installation directory.

You now need to configure BT Buynet. To do this carry out the following:

1. Change into the 'BuyNet' directory

   $ cd BuyNet

2. Change into the Merchant directory

   $ cd merchant

3. Run the BT Buynet set-up script.

   $ btbn_setup

The set-up script will prompt for a number of parameters. In most cases the default parameters should suffice. Please consult your System or Network Administrator if you have any doubts as to what values should be provided.

To accept the defaults shown in the square brackets just hit return. The following table lists the parameters for which you will be prompted.

Parameters to configure	**Defaults provided**
Directory where BT Buynet is installed	<Root installation - Path of directory where is was run from>
Port number you want BT Buynet to listen on	15001
Port number you want BT Buynet to listen on for Password Management	16000
URL for the proxy server	No Proxy
Port number for the proxy server	No Proxy

Name of your password file	<Root installation>/Buynet/merchant/password.properties

3.1.2.4 Altering default values

Changing default BT Buynet properties is a three step process.

1. Stop the BT Buynet Service (see 3.1.4).

2. Edit C:\Program Files\BTBuyNet\merchant\merchant.properties for Windows, or <Root installation>/BuyNet/merchant/merchant.properties for UNIX. This file contains a list of values such as proxy server settings and port numbers that may be changed. Save the changes once editing is complete.

   The parameters PROXY_URL and PROXY_PORT are used for defining a proxy server and port number for Buynet to use. Buynet can be setup to listen for connections on multiple ports - MERCHANT_PORT_1 to MERCHANT_PORT_4 define the ports Buynet will use.

3. Start the BT Buynet Service (see 3.1.3).

3.1.3 Starting the BT Buynet Client Software

3.1.3.1 Windows

• The Buynet Merchant application is started by executing the C:\Program Files\BTBuyNet\merchant\startMerchant.bat file.

• The Buynet Merchant application may be configured to run as a Windows service – see Appendix D for details.

3.1.3.2 Unix

To start the Buynet Merchant application, change to the 'merchant' directory as shown:

   $ cd <Root installation>/Buynet/merchant

Now run the 'startBTBuynet' script as follows:

   $./startBTBuynet

View the 'nohup.out' file to check that BT Buynet start-up has been successful.

NB: The following warning message may appear in the exception log

   !!! Warning: Unable to establish connection with server!!!

This message indicates that your system cannot establish a network connection to the BT Buynet Internet Servers. Please check your local network configuration, if the problem persists, please contact the BT Integration Help Desk (0845 601 0569).

3.1.4 Stopping the BT Buynet Client Software

3.1.4.1 Windows

To stop the Buynet Merchant application running terminate the startMerchant.bat job (from the DOS terminal window press <Ctrl-C> and Y to terminate), or stop the BT Buynet service if running as a Windows service.

3.1.4.2 UNIX

A shell script is provided to stop the Buynet Merchant application. To run the script, carry out the following:

> *$cd <Root installation>/Buynet/merchant*
>
> *$./stopBTBuynet*

If successful the message 'BT Buynet stopped' will be displayed.

3.1.5 Create an account on the BT Buynet Client Software

BT Buynet allows multiple merchants to use a single installation of the software, for instance in an ISP environment. Each merchant must be defined as a client of the Buynet software by the ISP Systems Administrator on the server hosting your application, before that merchant can use the service. Each merchant who has completed their registration with BT to use the BT Buynet service will receive a 'Welcome' letter containing their Client ID. This needs to be registered with the BT Buynet Client Software using the Password Management application provided to the Systems Administrator.

Note that if registration of your account is not yet complete and you wish to test your configuration internally you can use a dummy Client ID. This will need to be changed to the BT issued Client ID once registration to use the Buynet service is complete.

3.1.5.1 Windows

A graphical tool is provided to manage the registration of Client IDs to use the BT Buynet Client Software. The Password Management application allows you to add, delete or amend merchant registrations. Please ensure that the Buynet Merchant application is running *before* using the Client Password Management Utility.
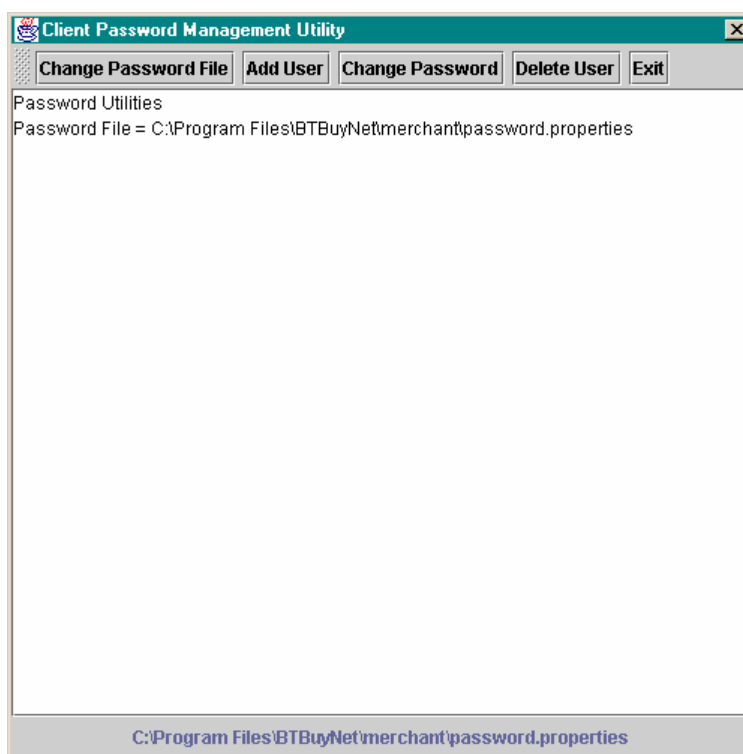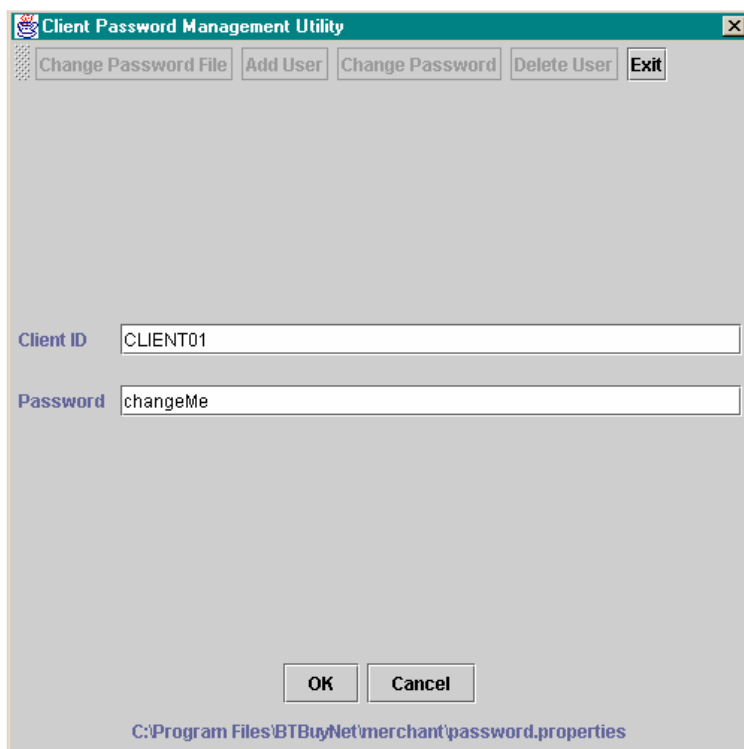
Figure 5   Password Management Application

To manage merchant accounts in Windows run the Password Management application. Go to C:\Program Files\BTBuyNet\merchant directory and double click startPassword.BAT
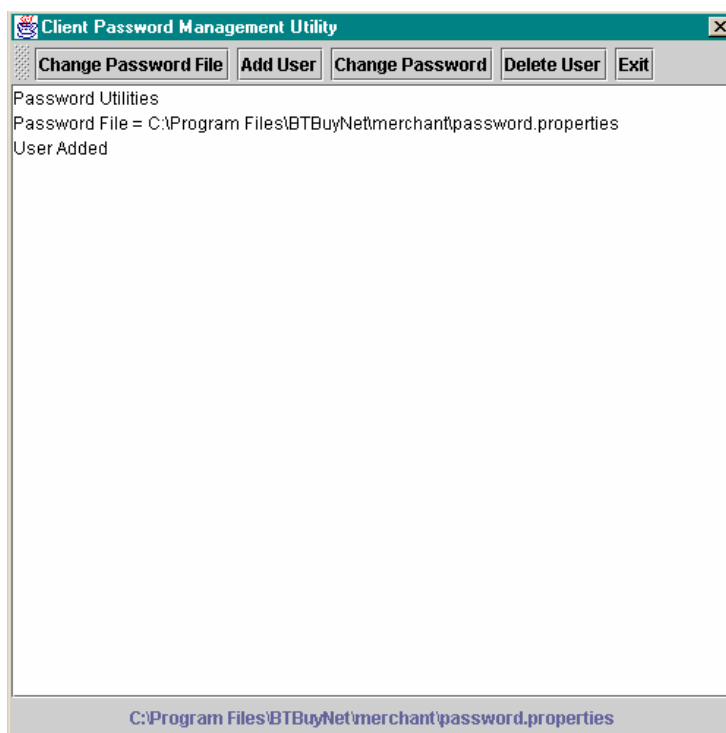
Adding a merchant

- Click on **Add User**

- Enter the Client ID for the merchant.

- Enter a password (note that this password must be presented in the XML for each transaction submitted to the BT Buynet Client Software).

- Click on **OK**

- If the Client ID was added successfully the message 'User Added' will appear in the dialogue box.

<u>**Change Password**</u>

- Click on **Change Password**

- Enter the Client ID for the merchant whose password requires changing.

- Enter a password (note that this password must be presented in the XML for each transaction submitted to the BT Buynet Client Software).

- Click on **OK**

- If the password was changed successfully the message 'Password Changed' will appear in the dialogue box.

<u>**Delete Password**</u>

- Click on **Delete User**

- Enter the Client ID for the merchant that needs deleting.

- Click on **OK**

- If the Client ID was successfully removed the message 'User Deleted' will appear in the dialogue box.

3.1.5.2 UNIX

Shell scripts are provided to help manage the registration of merchants to use the BT Buynet Client Software. The following scripts allow you to add, modify or delete Client IDs. Please ensure that the Buynet Merchant application is running *before* using scripts.

<u>**Adding a merchant**</u>

To register a new merchant with the BT Buynet Client Software you will need to provide a Client ID and password (note that this password must be presented in the XML for each transaction submitted to the BT Buynet Client Software) and carry out the following steps:

> *$ cd <Root installation>/BuyNet/merchant*

> *$ ./adduser <client Id> <password>*

<u>**Modify a merchant password**</u>

To change the password for a registered merchant you will need to provide the Client ID of that merchant and a new password (note that this password must be presented in the XML for each transaction submitted to the BT Buynet Client Software) and carry out the following steps:

> *$ cd <Root installation>/BuyNet/merchant*

> *$ ./moduser <client Id> <password>*

<u>**Removing a merchant**</u>

To delete a registered merchant you will need to provide the Client ID for the registered merchant, carry out the following steps:

> *$ cd <Root installation>/BuyNet/merchant*

> *$./deluser <client Id>*

Launching the Password Management GUI

Systems with an X-Windows environment can also use the graphical version of the Password Management aApplication. A shell script is provided to start the GUI version of the Password Management application. To run the script, carry out the following:

> *$ cd <Root installation>/BuyNet/merchant*

> *$./startpass*

Information on how to use the graphical version of the Password Management application can be found in section **Error! Reference source not found.**.

3.1.6 Implement BT Buynet Functionality

Your BT Buynet Client Software has now been installed successfully; refer to section 3.2 for a description of how BT Buynet is used.

In order to implement BT Buynet functionality in your service, you need to consider the following points:

1. Determine which Buynet functions you want to make use of;

2. Determine how to handle the various response codes returned by Buynet;

3. Program your application to format the necessary XML to pass to Buynet;

4. Program your application to process Buynet responses.

5. Program your application to handle failed transaction instances.

In order to integrate with BT Buynet your application will need to be able to format XML data and pass this to the BT Buynet application over a standard socket connection. By default the BT Buynet Client Software listens for connections on port 15001 but this port number may be changed (see section 3.1.2.4).

Some example XML for each transaction type can be found beneath the testHarness/testXml directory. These are set up as examples to be run by the Buynet Test Harness application. To run the Test Harness and example XML please refer to Appendix B.

To assist integration, there are a few example integrations available for download on the Buynet website (http://www.buynet.bt.com) to demonstrate how to integrate typical web application technologies with the Buynet Merchant application.

However, these examples are provided on an 'as seen' basis and should be used for guidance only – these example integrations do not form part of the Buynet application and consequently they are not supported software.

XML definitions are included in Section 5.

For internet transactions, 3D Secure is a more complex process that may be invoked prior to the authorisation – this will require additional XML messages to be sent to Buynet to complete the authorisation. The additional steps required to implement 3D Secure are detailed in Appendix E.

3.1.7 Internal Testing

Your implementation should be tested internally to check that your XML is formatted correctly and that it can handle all of the response codes successfully.

This is done by including the <test> tag in your XML along with the response codes (auth/decline/refer and CSC/AVS) you wish to get returned. The BuyNet client software will then return a dummy response to your application without actually making a call out to any external system. The format of the test option is specified in the XML definition (see Section 5.2). An example of the XML message is shown in Section 5.3.8.

Note that 3D Secure and Card on File may not be tested by including the <test> tag in your XML. If you are implementing 3D Secure or Card On File, you are recommended to request an integration test slot with **BT Buynet integration helpdesk** once you have completed your initial internal testing. **Please contact the BT Buynet integration helpdesk on** 0845 601 0569 or e-mail: **btbuynetsupport@bt.com – please note integration test slots for 3D Secure and Card On File are subject to availability/scheduling.**

3.1.8 Complete Commercial Activities

Before completing end to end testing and launching your service the provisioning activities must be complete. Only then will you receive a welcome letter from the BT Buynet helpdesk which will contain a valid client id for use in live operation. This client id must be used to create an account on your BT Buynet installation as outlined in Section 3.1.5.

3.1.9 End to End Test

An end-to-end test can only be carried out once you have completed registration with BT Buynet and have created an account on your BT Buynet installation using your live client id. The aim of this test is to ensure that your details have been correctly configured by all parties involved in processing transactions.

All that is required is that a live transaction on a valid card is carried out using your system. This will:

- prove your integration by sending a transaction through to BT Buynet and on to your acquiring bank.

- establish that your merchant acquirer has correctly set-up and configured your credentials.

3.2   What functionality does BT Buynet provide

BT Buynet is a persistent Java application that runs within a Java Virtual Machine on any internet-enabled platform. Applications that wish to use the functionality must establish their right to do so each time they make a request by providing a client ID and password to the application.

3.2.1 Transaction Types

The BT Buynet application accepts transactions passed to it in XML format as a text stream over a standard socket connection. The format for XML requests is included in Section 5 of this document.

It is recommended that you utilise duplicate checking, so that you can be sure that any duplicate transactions that are submitted will not be authorised or settled twice. Speak to the helpdesk when setting up your account, who will advise you how to implement duplicate checking.

A brief description of the different transaction types follows:

- Authorise

Authenticates that a debit/credit card is valid, checks that requested funds are available and reserves those funds against that card. Typically authorisations last between 2 and 28 days depending on the card issuer. This is the payment window during which settlement must be carried out. Authorise requests may also be submitted to invoke 3D Secure for internet based transactions.

- Settle With Transaction Id

Requests money previously reserved by an authorisation to be transferred from the card holder account to the merchant account. The authorisation must have been processed via BT Buynet and this settlement of funds must occur during the payment window.

- Settle With Authorisation Code

This enables merchants to settle transactions even if they have not been authorised using BT Buynet. This can be used for settling transactions where the authorisation attempt resulted in a referral. Following a referral an authorisation code is obtained from the bank manually. This code can then be used in this function to request the transfer of funds.

- Authorise and Settle

This has the effect of doing an Authorise and Settle transaction in one go. First an Authorise is performed and if it is successful a Settle transaction is automatically created which will trigger the transfer of funds from card holder to merchant. Authorise and Settle requests may also be submitted to invoke 3D Secure for internet based transactions.

- Reclaim (Refund)

This transaction allows you to perform a refund to a customer's account for a previously submitted transaction. Note that multiple reclaims can be performed against a previous transaction - the total amount reclaimed must normally be less than or equal to the amount of the original transaction.

- Cancel (Reverse)

If a transaction has been authorised, but not settled, this enables the merchant to cancel a transaction, for instance if the CSC/AVS responses are not to the merchant's satisfaction. The settle is cancelled, and a reversal message is sent to the acquiring bank, where the cardholder's available funds may be restored to the level prior to the transaction, if the bank supports this functionality. Transactions may be cancelled up until the point when the settlement data is passed to the acquiring bank - this normally occurs after midnight, each night. Thus, settled transactions may be cancelled on the day that they are submitted to BT Buynet, provided this is before the midnight cut-off.

3.2.2 Card On File Actions

- Make Payment and Store the Card

Send a regular AuthoriseAndSettle transaction using a credit card and on successful authorisation, add the card details to the Card on File system and return the stored paymentInstrumentReference. If Buynet recognises that the card has already been stored in a previous transaction, it will return the paymentInstrumentReference of the card already stored (Note: you will only have access to cards that you have stored as part of your transactions).

- Get a List of Card Details Stored in the Card on File Store

This action will list card details that are held in the BT Buynet card on file store. You may list all the cards that apply to you, or a single card if you provide its paymentInstrumetRef. Note that the full card number is not returned – the central numbers will be masked with asterisks.

- Get Card Details for Card on File Payment Reference

For a given payment instrument reference, returns the friendly name, masked card number, type, status and expiry date.

- Make Payment Using Card on File Payment Reference

Send a regular AuthoriseAndSettle transaction but use a payment instrument reference instead of a card number. This transaction may also invoke 3D Secure if requested.

- Make Payment Using Card on File Payment Reference and Update Card Details

Send a regular AuthoriseAndSettle transaction and update the card on file details with the credit card details derived from the paymentInstrumentRef along with any changed details from within <card>. Updates the card on file store upon successful authorisation of the card. This is typically invoked when a stored card has expired and the card details need to be updated.

- Settle a Transaction using an External Auth Code and Card on File Payment

Send a regular SettleAuthCode transaction using a payment instrument reference and a bank's Authorisation Code. Would be used in cases where a call agent received a referral request from the issuing bank in response to an AuthoriseAndSetlle request, and obtained the auth code over the phone from the bank.

- Delete Stored Card Using Card on File Payment Reference

This action will remove a card from the BT Buynet card on file store, based on a payment reference you have provided.

There are several detailed examples in section 5 to show you how to do everything possible. Please use these as a reference.

3.3   Log files

There are four types of logging that are produced by the BT Buynet Client Software.

• An exception log which captures application, service and system problems.

• A transaction log which stores the transaction responses.

• A general output log which captures messages from the client.

• A general error log which captures errors.

These logs are further explained below.

3.3.1 Exception Log file

This log contains information about any unexpected responses from the BT Buynet Client Software (i.e. non-transaction related responses) as well as fuller details of any transaction errors. This file is for use by technical support staff in the event of any problem.

The location of this file is determined by the parameter CLIENT_EXCEPTION_LOG specified in the 'merchant properties' file and can be set at installation.

There is only one instance of this file per instance of the BT Buynet application installed within an environment. Any errors or problems detected by the application while it is running will be logged within the exception log.

The format of the exception log is shown in Appendix A, with examples of what output it stores from the BT Buynet Client Software.

3.3.2 Transaction Log Files

Transaction logs are generated for every client registered with the Buynet application, the location of the logfile is specified as part of the XML message for each transaction. The log contains the transaction details and responses from BT Buynet and is defined in Appendix A. This log is rolled over every day by the BT Buynet Client Software. The name format for the transaction logfile name is:

<client_id><yyyy_mm_dd>.log

NB: THE LOG DOES NOT HOLD ANY CARD DETAILS USED IN THE TRANSACTION.

4   *Solving problems*

4.1   For further assistance

BT can provide technical assistance on integrating the Buynet application. Please speak to your account manager for further details.

4.1.1   Visit our website

You can find further details of our service on the BT Buynet website at:

http://www.buynet.bt.com

The frequently asked questions (FAQ) download is a useful resource in resolving possible problems you may be experiencing.

4.1.2   E-mail us

E-mail us at:

btbuynetsupport@bt.com

4.1.3   Call us

Call the Integration support desk on **0845 601 0569**
Support is available for general enquiries between 09:00 and 17:00 Monday through Friday (excluding UK Bank Holidays) and 24/7 for service affecting issues.

5   *References*

5.1   BT Buynet interface

5.1.1   Inputs

The BT Buynet Client Software accepts transactions passed to it in XML format as a text stream over a standard socket connection. The format for XML requests is included later in this section of this document. A brief description of the different transaction types follows:

- Authorise

Authenticates that a debit/credit card is valid, checks that requested funds are available and reserves those funds against that card. Typically authorisations last between 2 and 28 days depending on the card issuer. This is the payment window during which settlement must be carried out. Authorise requests may also be submitted to invoke 3D Secure for internet based transactions.

- Settle With Transaction Id

Requests money previously reserved by an authorisation to be transferred from the card holder account to the merchant account. The authorisation must have been processed via BT Buynet and this settlement of funds must occur during the payment window.

- Settle With Authorisation Code

This enables merchants to settle transactions even if they have not been authorised using BT Buynet. This can be used for settling transactions where the authorisation attempt resulted in a referral. Following a referral an authorisation code can be obtained from the bank manually. This code can then be used in this function to request the transfer of funds.

- Authorise and Settle

This has the effect of doing an Authorise and Settle transaction in one go. First an Authorise is performed and if it is successful a Settle transaction is automatically created which will trigger the transfer of funds from card holder to merchant. Authorise and Settle requests may also be submitted to invoke 3D Secure for internet based transactions.

- Reclaim (Refund)

This transaction allows you to perform a refund to a customer's account for a previously submitted settled transaction. Note that multiple reclaims can be performed against a previous transaction - the

total amount reclaimed must normally be less than or equal to the amount of the original transaction. Before reclaims can be submitted via the Buynet client, an authToken must be set up against the Client ID using the Modify Auth Token facility on the Merchant Services Website (MSW).

- Cancel

Cancel a transaction. The merchant is unable to cancel if the transaction has been settled by the bank, which happens at around midnight on the day the transaction is processed. A cancel must occur on the same day as the original settlement transaction.

If the transaction has already been settled, the merchant must use the Reclaim service.

BT Buynet also handles Card On File actions as part of transactions :

- Add

Add a card to BT Buynet's Card On File store when making a payment.

- Update

Update the card details of an existing card stored in BT Buynet's Card On File store when making a payment.

- Delete

Delete a card's details from the BT Buynet Card On File store.

- List

List the card details stored in BT Buynet's Card On File store associated with the Customer Identifier (partyId).

5.1.2 Outputs

Data sent from the BT Buynet merchant to the client is in the form of a comma separated stream terminated by a new line separator. The stream will normally contain the following items:

Element	Name	Description
1	Response Code	Indicates the status of the transaction. Always Present
2	Response Message	A textual Description of the response code. Always Present
3	Transaction Id	Each transaction sent to BT Buynet has its own unique transaction id allocated by BT. Always Present
4	Auth Code	Authorisation Code returned by the Merchant Acquirer. Only present for successful authorisations
5	Message From	A textual message returned by the acquirer.

	Acquirer	May be blank
6	Referral Number	Number to call in the event of a referral.
		Only present in the case of a referral
7	CSC /AVS Response Code	Details the result of checking address and card security code.
		May be blank if your acquiring bank is not yet supporting this feature.
		See 9.3 CSC/AVS response codes.
8	3D Response Code	Indicates the status of Payer Authentication processing performed. Used for problem diagnosis by the Buynet support team.
		'0' indicates payer authentication processing completed without error .
		'1' indicates payer authentication processing not requested.
		'320' indicates that payer authentication was requested, but the card issuer or card holder is not enrolled in the scheme.
		All other values indicate errors processing the payer authentication (max 3 digits)
		Always present.

However, a responseCode of 300 identifies a special response string containing redirect data for 3D Secure Payer Authentication messages and the response string will contain the following elements –

Element	Name	Description
1	Response Code	300 – indicates Buynet 3D Secure PAReq redirect message
2	n/a	Blank
3	n/a	Blank
4	encodedPAReq	Base-64 encoded representation of the Payer Authentication Request (PAReq) message
5	termURL	The terminating URL for the 3D secure transaction to where the Payer Authentication Response (PARes) form is posted by the ACS (via cardholder redirect).
6	merchantData	The Buynet unique reference number for this 3D Secure transaction
7	acsURL	The URL of the ACS
8	n/a	Blank

The following structure applies for deleting and listing of cards on file, i.e. –

- Delete card on file
- Get a list of payment instruments/payment instrument details

Element	Name	Description
1	Response Code	Indicates the status of the transaction. Always Present
2	Response Message	A textual Description of the response code. Always Present
3	Payment Instrument Reference	If the card details have been successfully stored or updated in the Buynet 'Card on File' store, this element will contain the Payment Instrument Reference for the stored details. Otherwise this element will be blank
4	Number of Payment Instruments in List	Identifies the number of Payment Instruments in the list. Populated when retrieving a list of Payment Instruments or Getting Payment Instrument Details. Zero (0) if no payment instruments listed
5	Payment Instrument List	List of Payment Instruments. Structure is a repeating group of data as follows – Instrument1|Instrument2| …… |InstrumentN Instrument is defined as follows – paymentInstrumentReference~friendlyName~maskedCardNumber~cardType~Status~expiryDate The format of the expiry date is YYMM. The masked card number will display the last four digits of the card number – all previous digits will be replaced with asterisks (e.g. ************0382) When a list of Mandates is retrieved this structure will contain the list of associated Payment Instruments.
6	Unused	Unused
7	Unused	Unused
8	Unused	Unused

5.2   XML definitions

The XML tag definitions are case sensitive. For example, the tag <clientId> must contain an uppercase 'I'.

The merchant application does not support multiple transactions embedded within an XML message. Each XML message must only contain information related to one transaction. The XML must **NOT** contain any new-lines, tabs, carriage returns or control characters. The XML message must exist as one **WHOLE** string. The XML string MUST be terminated by INSERTING a carriage return at the END of the XML string. The XML tag definitions are provided in the following table.

The XML format is specified in an XML data type definition file (dtd). There are five 'dtd' files used by BT Buynet -

- message.dtd – used for Authorise, AuthoriseAndSettle, and SettleWithAuthCode transactions.

- reclaim.dtd – used for Reclaim transactions

- settlewithtransid.dtd – used for SettleWithTransId and Cancel transactions

- 3dparesform.dtd - if you are registered to use 3D Secure, at some point in the authentication process your application will receive an HTML form from an Access Control Server (ACS), containing the fields p*aRes* and m*erchantData.* These must be mapped to Buynet's Payer Authentication Result XML file format, paResForm, and sent to the Buynet client to complete the authentication/authorisation. See Appendix E for more details regarding 3D Secure.

- cardOnFile.dtd – used for card on file transactions.

Note – where a field is mandatory, failure to provide it will result in an error condition and the transaction will NOT be processed.

message.dtd			
XML Tag		**Description**	**Comment**
messages			
test		Indicates the transaction is to be handled in internal test mode	Optional
	responseCode	The response code to be returned	Mandatory if internal test mode is being used.
	CSCAVSResponseCode	The CSC/AVS response code to be returned	Optional
filename		Directory where the log file is to be written	Optional (See note 1)
message			
user			

			clientId	Provided by BT during BT Buynet registration	Mandatory
			password	The clear password given by the client for registration to use the BT Buynet Client Software	Mandatory
		card			
			holder	Name on the credit card	Mandatory for - Authorise, AuthoriseAndSettle, SettleWithAuthCode. Max. length is 30 characters.
			no	Card Number	Mandatory
			expiry	Expiry date on card	Mandatory Format YYMM
			issueNo	Issue Number required for some Maestro cards	Optional (See note 2)
			type	Card type	Mandatory (See note 3)
			cv2	Card verification code	Optional (See note 7)
		transaction			
			amount	Value of transaction in lowest currency denomination – eg 10.00 = 1000	Mandatory
			currency	Currency must be supported by BT Buynet	Mandatory (See note 4)
			service	transaction type	Mandatory (See note 5)
			id	Your own unique transaction id	Optional (strongly advised). Max. length is 20 characters
			authCode	Authorisation code of a previous authorisation being settled	Mandatory for 'SettleWithAuthCode' transactions
			captureMethod	S – Swiped K – Keyed by merchant N – Not present	Mandatory – except for 'SettleWithAuthCode' System defaults to N
			origin	Identifies the source of the transaction.	Mandatory Use 'J' for internet transactions Use '1' for non internet transactions See Appendix C
			terminalType	Specifies characteristics of machine that captures the card details.	Mandatory See Appendix C System defaults to 4101
			occurrence	O – One off S – Subsequent	Mandatory System defaults to O
			postCode	Purchasers postal/zip code	Optional

			House number or name	Optional (See Note 8)
	house		House number or name	Optional (See Note 8)
	threeDSecure			Optional. Required to invoke 3D Secure for internet transactions
		Verify	Indicates if 3D Secure is to be performed	Y or N. If set to Y, 3D Secure processing will be attempted.
		Browser		
			deviceCategory	Indicates type of device used by cardholder to invoke payment.	Must be set to 0
			acceptHeaders	The exact content of the HTTP accept header as sent to the merchant from the card holder's browser (user agent).	Required
			userAgent	The exact content of the HTTP user-agent header as sent to the merchant from the card holder's user agent.	Required
	cardOnFile			Optional
		Action	Identifies the card on file action. Values are - 1. use -- use the payment reference instead of card details. 2. add -- add card details to BT Buynet's card on file store. 3. update -- update card details that exist in BT Buynet's card on file store.	Required for Card on File.
		paymentInstrumentRef	Identifies the unique identifier of the Payment Instrument to be used/updated	Optional. Required for 'use' action.
		friendlyName	Customer's description for the stored card	Optional. Max. length = 30 characters
		partyId	Customer reference value – used by Business to identify customer	Optional. Required for 'add' action. Max. length = 255 characters

settlewithtransid.dtd				
	XML Tag		Description	Comment
messages				
	test		Indicates the transaction is to be handled in internal test mode	Optional
		responseCode	The response code to be returned	Mandatory if internal test mode is being used.
		CSCAVSResponseCode	The CSC/AVS response code to be returned	Optional
	filename		Directory where the log file is to be written	Optional (See note 1)
	message			
		user		
		clientId	Provided by BT during BT Buynet registration	Mandatory
		password	The clear password given by the client for registration to use the BT Buynet Client Software	Mandatory
		transaction		
		amount	Value of transaction in lowest currency denomination Eg – 10.00 = 1000	Optional for 'SettleWithTransId', not used for 'Cancel'. If present, MUST be no more than the original amount authorised. If zero, settlement will be for the amount specified in the original authorisation request.
		currency	Currency must be supported by BT Buynet	Optional for 'SettleWithTransId', not used for 'Cancel'. Mandatory if amount is populated and must be the same currency type as used in the original authorisation. (See note 4)
		service	transaction type	Mandatory (See note 6)
		buynetId	Transaction Id of a previously successful authorisation to be settled or cancelled.	Mandatory for 'SettleWithTransId'. (See note 9)
		id	Your own unique transaction id of the settlement, or the transaction to be cancelled	Optional for 'SettleWithTransId' (strongly advised). (See note 9) Max. Length is 20 characters.

reclaim.dtd			
XML Tag		**Description**	**Comment**
messages			
test		Indicates the transaction is to be handled in internal test mode	Optional
	responseCode	The response code to be returned	Mandatory if internal test mode is being used.
	CSCAVSResponseCode	The CSC/AVS response code to be returned	Optional
filename		Directory where the log file is to be written	Optional (See note 1)
message			
user			
	clientId	Provided by BT during BT Buynet registration	Mandatory
	password	The clear password given by the client for registration to use the BT Buynet Client Software	Mandatory
transaction			
	amount	Value of transaction in lowest currency denomination Eg – 10.00 = 1000	Mandatory
	currency	Currency must be supported by BT Buynet	Mandatory
	service	RECLAIM	Mandatory
	buynetId	Buynet Transaction Id of a previously successful authorisation to be refunded.	Mandatory
	id	Your own unique transaction id for this reclaim transaction	Optional (strongly recommended). Maximum size 20
	authToken	Token used to authenticate the Client ID. Must match the value set up for the Client ID on the Merchant Services Website (MSW) using the Manage Auth Token facility.	Mandatory Minimum size is 5 Maximum size is 10

3dsecure.dtd		
XML Tag	**Description**	**Comment**
paResForm		

	filename	Directory where the log file is to be written	Optional (See note 1)
	pares	The encoded PARes sent from the Access Control Server.	Mandatory
	merchantData	The merchant data sent from the Access Control Server	Mandatory

cardonfile.dtd			
XML Tag		**Description**	**Comment**
cardOnFileMessages			
	Filename	Directory where the log file is to be written	Optional (See note 1)
	cardOnFileMessage		
	User		
	clientId	Provided by BT during BT Buynet registration	Mandatory
	password	The clear password given by the client for registration to use the BT Buynet Client Software	Mandatory
	cardOnFile		Either Card On File or Mandate must be present, but not both.
	action	Identifies the card on file action. Values are – delete list	Mandatory
	paymentInstrumentRef	The payment reference. Identifies the unique identifier of the Payment Instrument to be deleted/listed. Either paymentInstrumentRef or partyId must be supplied when action is 'list'	Optional. Required for 'delete' actions.
	partyId	Customer reference value – used by Business to identify customer. Either paymentInstrumentRef or partyId must be supplied when action is 'list'	Optional. Required 'delete' action. Max. length = 255 characters
	stopReason	Description of reason that Card on File is being stopped. e.g. Customer request	Optional. Required for action of delete. Max. length = 50 characters

Note 1   The <filename> tag specifies the location of the merchant's log file. So only the directory path to the merchants log file should be specified. The path must exist for the BT Buynet Client Software to write to. The name of the log file must be omitted as this is generated by the BT Buynet Client Software.

Note 2   If an issue number is included on the maestro/solo card it must be included in the XML. Otherwise the issueNo element should be omitted.

Note 3   Valid values for Card Type are (all in uppercase):

VISA

MASTERCARD

MAESTRO

DELTA

AMEX

ELECTRON

SOLO

JCB

DINERS

TED BAKER

Note 4   BT Buynet uses ISO 4217:1995 currency codes (GBP for pounds sterling).

Note 5   Valid values for service are:

Authorise

AuthoriseAndSettle

SettleWithAuthCode

Reclaim

Note 6   SettleWithTransId or Cancel

Note 7   This is the 3 digit code after the card number on the reverse of the credit / debit card. (On Amex cards it is 4 digits on the front face). It is also referred to by some entities as CSC or CVC.

Note 8   For an AVS check to be successful, the first five numerics in the cardholder's address, AS IT APPEARS ON THE CARDHOLDER'S CARD BILL, are compared with the numerics in the house number field. So if the address on the bill is, say, 'Flat 23, 45 High Street', then the House number field should contain at least the numbers 2345 in the correct order.

Note 9 For 'Cancel' transactions either buynetId or id must be supplied, but not both. This will be used to identify the transaction to cancel, and therefore must be unique.

5.3   5.3   XML message samples

The XML samples provided here are given to shown the structure of the message and the use of the tags. Please note that tabs, new-line characters, carriage returns and other control characters should **<u>NOT</u>** be included. The whole XML message **<u>MUST</u>** exist as one whole string. See Note 8 in previous section regarding use of the house number field.

5.3.1 Authorise

```xml
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE messages SYSTEM "file:///root/Buynet/merchant/xml/message.dtd">
<messages>
    <filename>/root/Buynet/logs/jbloggs/</filename>
    <message>
        <user>
            <clientId>Joe Bloggs</clientId>
            <password>6y7u8i9o</password>
        </user>
        <card>
            <holder>J.Smith</holder>
            <no>5533431232324516</no>
            <expiry>1401</expiry>
            <issueNo>1</issueNo>
            <type>MAESTRO</type>
            <cv2>806</cv2>
        </card>
        <transaction>
            <amount>1500</amount>
            <currency>GBP</currency>
            <service>Authorise</service>
            <id>102010</id>
            <captureMethod>N</captureMethod>
            <origin>J</origin>
            <terminalType>4109</terminalType>
            <occurrence>O</occurrence>
            <postCode>CF101NT</postCode>
            <house>2345</house>
            <threeDSecure>
                <verify>Y</verify>
<browser>
   <deviceCategory>0</deviceCategory>
   <acceptHeaders>*/*</acceptHeaders>
                <userAgent>Mozilla/4.0 (compatible; MSIE 6.0;Windows
                NT 5.1; BT [build 60A]; SV1; .NET CLR
                1.1.4322)</userAgent>
</browser>
            </threeDSecure>
        </transaction>
    </message>
</messages>
```

5.3.2 AuthoriseAndSettle

```xml
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE messages SYSTEM "file:///root/Buynet/merchant/xml/message.dtd">
<messages>
    <filename>/root/Buynet/logs/ jbloggs /</filename>
    <message>
        <user>
            <clientId>Joe Bloggs</clientId>
            <password>6y7u8i9o</password>
        </user>
        <card>
            <holder>John Smith</holder>
            <no>5533431232324516</no>
            <expiry>1401</expiry>
            <issueNo>1</issueNo>
            <type>MAESTRO</type>
            <cv2>806</cv2>
        </card>
        <transaction>
            <amount>1500</amount>
            <currency>GBP</currency>
            <service>AuthoriseAndSettle</service>
            <id>102010</id>
            <captureMethod>N</captureMethod>
            <origin>J</origin>
            <terminalType>4101</terminalType>
            <occurrence>O</occurrence>
            <postCode>CF2 2XF</postCode>
            <house>2345</house>
            <threeDSecure>
<verify>Y</verify>
<browser>
   <deviceCategory>0</deviceCategory>
   <acceptHeaders>*/*</acceptHeaders>
                <userAgent>Mozilla/4.0 (compatible; MSIE 6.0;Windows
                NT 5.1; BT [build 60A]; SV1; .NET CLR
                1.1.4322)</userAgent>
</browser>
            </threeDSecure>
        </transaction>
    </message>
</messages>
```

5.3.3 SettleWithTransId

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE messages SYSTEM
"file:///root/Buynet/merchant/xml/settletransmessage.dtd">
<messages>
   <filename>/root/Buynet/logs/ jbloggs /</filename>
   <message>
      <user>
         <clientId>Joe Bloggs</clientId>
         <password>6y7u8i9o</password>
      </user>
      <transaction>
         <amount>1500</amount>
         <currency>GBP</currency>
         <buynetId>1001</buynetId>
         <service>SettleWithTransId</service>
         <id>102010</id>
      </transaction>
   </message>
</messages>
```

5.3.4 SettleWithAuthCode

```xml
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE messages SYSTEM "file:///root/BuyNet/merchant/xml/message.dtd">
<messages>
    <filename>/root/BuyNet/logs/jbloggs/</filename>
    <message>
        <user>
          <clientId>Joe Bloggs</clientId>
          <password>6y7u8i9o</password>
        </user>
        <card>
           <holder>J Smith</holder>
           <no>4544206500010382</no>
           <expiry>1401</expiry>
           <type>VISA</type>
           <cv2>806</cv2>
        </card>
        <transaction>
           <amount>1500</amount>
           <currency>GBP</currency>
           <service>SettleWithAuthCode</service>
           <authCode>10277</authCode>
           <origin>J</origin>
           <terminalType>4108</terminalType>
           <occurrence>O</occurrence>
           <postCode>CF2 2XF</postCode>
           <house>2345</house>
        </transaction>
    </message>
</messages>
```

5.3.5 Cancel

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE messages SYSTEM
"file:///root/BuyNet/merchant/xml/settletransmessage.dtd">
<messages>
   <filename>/root/BuyNet/logs/jbloggs/</filename>
   <message>
      <user>
         <clientId>Joe Bloggs</clientId>
         <password>6y7u8i9o</password>
      </user>
      <transaction>
         <buynetId>1001</buynetId>
         <service>Cancel</service>
      </transaction>
   </message>
</messages>
```

5.3.6 Reclaim

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE messages SYSTEM "file:///root/Buynet/merchant/xml/reclaim.dtd">
<messages>
   <filename>/root/Buynet/logs/ jbloggs /</filename>
   <message>
      <user>
         <clientId>Joe Bloggs</clientId>
         <password>6y7u8i9o</password>
      </user>
```

```
        <transaction>
            <amount>1500</amount>
            <currency>GBP</currency>
            <service>Reclaim</service>
            <id>myReference</id>
            <buynetId>1001</buynetId>
            <authToken>4xp157twmq</authToken>
        </transaction>
    </message>
</messages>
```

5.3.7 PaResForm

Note – Insert the PARes into the xml *exactly* as it is returned to you – do not amend it in any way, or this will cause errors with the 3D Secure process.

```xml
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE messages SYSTEM "file:///root/Buynet/merchant/xml/3DSecure.dtd">
<paResForm>
   <filename>/root/Buynet/logs/jbloggs/</filename>
   <paRes>2ei29kskd20932kdsmf92dof984tuoifg834iojsg93gds</paRes>
   <merchantData>101</merchantData>
</paResForm>
```

5.3.8 Test (Authorise)

```xml
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE messages SYSTEM "file:///root/Buynet/client/message.dtd">
<messages>
   <test>
       <responseCode>100</responseCode >
       <CSCAVSResponseCode>111   </CSCAVSResponseCode >
   </test>
   <filename>/root/Buynet/logs/ jbloggs /</filename>
   <message>
      <user>
         <clientId>Joe Bloggs</clientId>
         <password>6y7u8i9o</password>
      </user>
      <card>
         <holder>J Smith</holder>
         <no>4544206500010382</no>
         <expiry>1401</expiry>
         <type>VISA</type>
         <cv2>806</cv2>
      </card>
      <transaction>
         <amount>1500</amount>
         <currency>GBP</currency>
         <service>Authorise</service>
         <id>102010</id>
         <captureMethod>N</captureMethod>
         <origin>J</origin>
         <terminalType>4109</terminalType>
         <occurrence>O</occurrence>
         <postCode>CF101NT</postCode>
         <house>2345</house>
      </transaction>
   </message>
</messages>
```

5.3.9 Make Payment Using Card on File Payment Reference

An example AuthoriseAndSettle using a payment instrument ref instead of a card number. This transaction will also invoke 3D Secure if the cardholder is enrolled.

- Card on File action is **use**.
- If any card values aside from CV2 are supplied the transaction will be rejected with error 554.

```xml
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE messages SYSTEM "file:///root/Buynet/client/message.dtd">
<messages>
   <filename>/root/Buynet/logs/jbloggs/</filename>
   <message>
      <user>
         <clientId>Joe Bloggs</clientId>
         <password>6y7u8i9o</password>
      </user>
      <card>
         <holder></holder>
         <no></no>
         <expiry></expiry>
         <issueNo></issueNo>
         <type></type>
         <cv2>806</cv2>
      </card>
      <transaction>
         <amount>1500</amount>
         <currency>GBP</currency>
         <service>AuthoriseAndSettle</service>
         <id>102010</id>
         <captureMethod>N</captureMethod>
         <origin>J</origin>
         <terminalType>4101</terminalType>
         <occurrence>O</occurrence>
         <postCode>CF2 2XF</postCode>
         <house>2345</house>
         <threeDSecure>
            <verify>Y</verify>
            <browser>
               <deviceCategory>0</deviceCategory>
               <acceptHeaders>*/*</acceptHeaders>
               <userAgent>Mozilla/4.0 (compatible; MSIE 6.0;Windows
               NT 5.1; BT [build 60A]; SV1; .NET CLR
               1.1.4322)</userAgent>
            </browser>
         </threeDSecure>
      </transaction>
      <cardOnFile>
            <action>use</action>
            <paymentInstrumentRef>1004569871</paymentInstrumentRef>
      </cardOnFile>
   </message>
</messages>
```

5.3.10 Make payment and store the card

An example AuthoriseAndSettle using a credit card and on successful authorisation, add the card details to the Card on File system and return the stored paymentInstrumentReference. If Buynet recognises that the card has already been stored in a previous transaction, it will return the paymentInstrumentReference of the card already stored.

- Card on File action is **add**.
- partyId must be supplied – if not a 554 error will be returned.

```xml
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE messages SYSTEM "file:///root/Buynet/client/message.dtd">
<messages>
   <filename>/root/Buynet/logs/jbloggs/</filename>
   <message>
      <user>
         <clientId>Joe Bloggs</clientId>
         <password>6y7u8i9o</password>
      </user>
      <card>
         <holder>ben verwaayen</holder>
         <no>4111111111111111</no>
         <expiry>1002</expiry>
         <issueNo></issueNo>
         <type>Visa</type>
         <cv2>806</cv2>
      </card>
      <transaction>
         <amount>1500</amount>
         <currency>GBP</currency>
         <service>AuthoriseAndSettle</service>
         <id>102012</id>
         <captureMethod>N</captureMethod>
         <origin>J</origin>
         <terminalType>4101</terminalType>
         <occurrence>O</occurrence>
         <postCode>SW2 2XF</postCode>
         <house>2345</house>
         <threeDSecure>
            <verify>Y</verify>
            <browser>
               <deviceCategory>0</deviceCategory>
               <acceptHeaders>*/*</acceptHeaders>
               <userAgent>Mozilla/4.0 (compatible; MSIE 6.0;Windows
               NT 5.1; BT [build 60A]; SV1; .NET CLR
               1.1.4322)</userAgent>
            </browser>
         </threeDSecure>
      </transaction>
      <cardOnFile>
         <action>add</action>
            <friendlyName>BT Corporate Card</friendlyName>
            <partyId>4567123568</partyId>
```

```
        </cardOnFile>
    </message>
</messages>
```

5.3.11 Make Payment using card on file payment reference and update card

details

An example AuthoriseAndSettle and update the card on file details with the credit card details
derived from the paymentInstrumentRef along with any changed details from within <card>.
Updates the card on file store upon successful authorisation of the card. Typically invoked
following an expired card.

- Card on File action is **update**
- If the card number (<no>) is supplied, the expiry date (<expiry>) must also be
  supplied – otherwise a 100 error is returned.
- If the card type (<type>) is supplied a 554 error is returned – these cannot be updated.

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE messages SYSTEM "file:///root/Buynet/client/message.dtd">
<messages>
    <filename>/root/Buynet/logs/jbloggs/</filename>
    <message>
        <user>
            <clientId>Joe Bloggs</clientId>
            <password>6y7u8i9o</password>
        </user>
        <card>
            <holder>ben verwaayen</holder>
            <no></no>
            <expiry>1302</expiry>
            <issueNo></issueNo>
            <type>Visa</type>
            <cv2>806</cv2>
        </card>
        <transaction>
            <amount>1500</amount>
            <currency>GBP</currency>
            <service>AuthoriseAndSettle</service>
            <id>102012</id>
            <captureMethod>N</captureMethod>
            <origin>J</origin>
            <terminalType>4101</terminalType>
            <occurrence>O</occurrence>
            <postCode>SW2 2XF</postCode>
            <house>2345</house>
            <threeDSecure>
                <verify>Y</verify>
                <browser>
                    <deviceCategory>0</deviceCategory>
                    <acceptHeaders>*/*</acceptHeaders>
                    <userAgent>Mozilla/4.0 (compatible; MSIE 6.0;Windows
                    NT 5.1; BT [build 60A]; SV1; .NET CLR
```

```
            1.1.4322)</userAgent>
          </browser>
        </threeDSecure>
      </transaction>
      <cardOnFile>
            <action>update</action>
            <paymentInstrumentRef>554569871</paymentInstrumentRef>
            <friendlyName>myVISACard</friendlyName>
      </cardOnFile>
    </message>
</messages>
```

5.3.12 Settle transaction using external auth code and card on file payment

reference

An example SettleAuthCode using a payment instrument reference. Scenario is that the call agent received a referral request from the issuing bank in response to an AuthoriseAndSetlle request, and obtained the auth code over the phone from the bank.

- Card on File action is **use**
- If any card values (including CV2) are supplied the transaction will be rejected with error 554.

```xml
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE messages SYSTEM "file:///root/Buynet/client/message.dtd">
<messages>
   <filename>/root/Buynet/logs/jbloggs/</filename>
   <message>
      <user>
         <clientId>Joe Bloggs</clientId>
         <password>6y7u8i9o</password>
      </user>
       <card>
         <holder></holder>
         <no></no>
         <expiry></expiry>
         <issueNo></issueNo>
         <type></type>
         <cv2></cv2>
      </card>
      <transaction>
         <amount>8500</amount>
         <currency>GBP</currency>
         <service>SettleWithAuthCode</service>
         <authCode>66677</authCode>
         <id>jaf2604-021_19</id>
         <origin>J</origin>
         <terminalType>4101</terminalType>
         <occurrence>O</occurrence>
         <postCode>CF24 2XF</postCode>
         <house>2345</house>
      </transaction>
      <cardOnFile>
         <action>use</action>
         <paymentInstrumentRef>554569871</paymentInstrumentRef>
      </cardOnFile>
   </message>
</messages>
```

5.3.13 Get a list of card details stored in the Card On File store

Get a list of payment instruments using a partyId. For each payment instrument reference, it returns the instrument reference, friendly name, masked card number, type, status and expiry date.
This could be used by merchant systems to display the choices to the cardholder.

- Card on File action is **list**

```xml
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE messages SYSTEM "file:///root/Buynet/client/cardOnFile.dtd">
<cardOnFileMessages>
   <filename>/root/Buynet/logs/jbloggs/</filename>
   <cardOnFileMessage>
       <user>
           <clientId>Joe Bloggs</clientId>
           <password>6y7u8i9o</password>
       </user>
      <cardOnFile>
        <action>list</action>
        <partyId>4561237894</partyId>
      </cardOnFile>
   </cardOnFileMessage>
</cardOnFileMessages>
```

5.3.14 Get Card Details for Card on File Payment Reference

For a given payment instrument reference, returns the friendly name, masked card number, type, status and expiryDate.

- Card on File action is **list**

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE messages SYSTEM "file:///root/Buynet/client/cardOnFile.dtd">
<cardOnFileMessages>
   <filename>/root/Buynet/logs/jbloggs /</filename>
   <cardOnFileMessage>
       <user>
          <clientId>Joe Bloggs</clientId>
          <password>6y7u8i9o</password>
       </user>
      <cardOnFile>
        <action>list</action>
        <paymentInstrumentRef>554569871</paymentInstrumentRef>
      </cardOnFile>
   </cardOnFileMessage>
</cardOnFileMessage>
```

5.3.1 5.3.15 Delete Stored Card Using Card on File Payment Reference

Deletes the stored card details held in the Buynet Card On File for the given paymentInstrumentRef.

- Card on File action is **delete**
- PaymentInstrumentRef, stopReason and partyId are mandatory – if any of these values are not supplied, return a 554 error.

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE messages SYSTEM "file:///root/Buynet/client/cardOnFile.dtd">
<cardOnFileMessages>
   <filename>/root/Buynet/logs/jbloggs/</filename>
   <cardOnFileMessage>
      <user>
         <clientId>Joe Bloggs</clientId>
         <password>6y7u8i9o</password>
      </user>
      <cardOnFile>
        <action>delete<action>
        <paymentInstrumentRef>4568971</paymentInstrumentRef>
        <partyId>12345678</partyId>
        <stopReason>Customer removed instrument from set</stopReason>
      </cardOnFile>
   </cardOnFileMessage>
</cardOnFileMessages>
```

5.3.2 5.4 Response codes

The following table identifies the possible BT Buynet response codes and their meanings:

Response Code	Response Text	Description & Action
000	Successful	The transaction request was carried out successfully.
001	Authorisation failure - Buynet cannot contact the Bank's validation process. Resubmit this transaction. If this problem persists please contact the Buynet help desk.	Buynet cannot contact the bank. This probably means that the X25 connection is down. Notify the Buynet helpdesk to check X25 lines.
002	Credit card declined	The bank declined the transaction.
100	Invalid Credit Card details were supplied. Please check the card details and retry.	Credit Card number may have failed a Luhn check. Expiry date may have passed. Merchant must correct problem & resubmit.
104	Authorisation failure - amount entered is too large for the bank to process. Please check that the amount is valid and resubmit the transaction.	Each bank has a limit for the maximum value for a single transaction. Merchant must correct problem & resubmit.
105	Authorisation failure - invalid amount. The amount entered was less than or equal to zero. Please enter a valid amount and resubmit the transaction.	Merchant must correct problem & resubmit.
106	Credit card expired	Merchant must correct problem & resubmit.
110	Invalid security data supplied - please check the security data and resubmit	Merchant must correct problem & resubmit
310	3D Secure transaction. Unable to process transaction. Transaction has not been authorised.	Please contact the BT Buynet helpdesk.
311	3D Secure cardholder authentication failed. Transaction is not authorised.	The cardholder's bank failed to authenticate that the cardholder is genuine.
325	3D Secure transaction attempted. However, merchant is not enrolled in 3D Secure. Transaction is not authorised.	Merchant is not enrolled for 3D secure transactions. Please contact the BT Buynet helpdesk.
500	The transaction could not be processed.	If the problem persists please contact the Buynet helpdesk..
541	Invalid merchant ID used	Contact Buynet helpdesk to establish the correct merchant ID.

Response Code	Response Text	Description & Action
550	Payment transaction completed successfully, but unable to store card on file.	This will happen if a normal Buynet transaction has been sent through, with additional data for Card On File (for either an ADD or UPDATE). If the Buynet transaction is successful but the Card On File action unsuccessful, the 550 return code occurs.
551	Payment Instrument not recognised or there is no Party Id registered. Please check the details are correct and resubmit.	For a Card On File transaction, either the payment instrument reference you have provided does not map to any card details in the BT Buynet Card On File store or there is no Party ID registered for this user on a list operation. Please try again and check that you're using the correct reference. If this problem persists, contact the Buynet Helpdesk.
552	Unable to complete card on file action as Client ID is not registered for this service. Please contact the BT Buynet Helpdesk.	Your Client ID must be registered before you are able to use BT Buynet's Card On File services. Contact the Buynet Helpdesk if you wish to register your Client ID.
553	Unexpected error updating card on file. Please try again. If problem persists contact the Buynet Helpdesk.	If the problem persists, please contact the Buynet Helpdesk.
554	Invalid Card on File parameters supplied. Please correct and resubmit.	Each Card On File action requires some parameters in the XML (see section 5 for example of Card On File XML and the parameters required). Please recheck your XML and ensure all the correct parameters are in place, with the correct values.
556	Unable to store card on file – maximum number of instruments reached for customer.	There is a limit to the number of Card on File payment instruments (ie. card details) that can be stored. Once this limit is reached, no further Card on File payment instruments are able to be stored.
558	Card on File not updated - Payment instrument already stored for this Party.	This could happen for a Card On File Update action. The updated card number already exists for an existing payment instrument in your Card On File store.
600	Settlement failure - unknown authorisation referenced in settle transaction. Please check the transaction id of the authorisation you are trying to settle and resubmit.	Occurs when a client is trying to settle a previous authorisation. The transaction id for the previous authorisation does not exist on the database so the settle could not be completed. Merchant must correct fault and resubmit.
601	Unknown transaction. Please check that the correct merchant transaction id or BT Buynet transaction id has been used.	Occurs when an Enquire or Cancel request fails to find a matching record on the BT Buynet database. Either because the transaction id supplied is incorrect or the

Response Code	Response Text	Description & Action
		transaction was never received at the server.
602	Settlement failure - authorisation referenced in settle transaction was for a greater value than the original authorisation. Check the amount of the original authorisation and resubmit.	Occurs when a client is trying to settle a previous authorisation. The amount in the settle request is greater than the original authorisation. Merchant must correct fault and resubmit.
603	Settlement failure - authorisation referenced in settle transaction was in a different currency.	Occurs when a client is trying to settle a previous authorisation. The currency in the settle request is not the same as the original authorisation. Merchant must correct fault. Check the currency of the original authorisation and resubmit.
604	Settlement failure - authorisation referenced in settle transaction was not successfully completed. Check the response code of the original authorisation and resubmit.	Occurs when a client is trying to settle a previous authorisation. The original authorisation was not successful. Merchant must check status of original transaction and take appropriate action.
605	Reclaim failure – reclaim attempted against a transaction that has not been requested to be settled.	The original authorisation has not been settled yet. Check status of transaction on MSW and resubmit the reclaim when the transaction is settled.
606	Non unique transaction -	An attempt was made to enquire or reclaim against a merchant reference id that is not unique. Use the Buynet reference id. In the long term ensure that all transactions have a unique merchant reference id.
607	Reclaim failure – reclaim attempted against a transaction that has not been authorised.	Occurs if you ask for a reclaim to be made when the original transaction failed authorisation. For example the card was declined. Check that the transaction id is correct and resubmit.
608	Reclaim failure – reclaim attempted against a transaction which has not been settled yet.	Check the status of transaction on MSW and resubmit the reclaim when the transaction is settled.
609	Reclaim failure – the transaction has already been reclaimed.	Check that the correct transaction id has been used.
610	Error in updating reclaim	Check that the correct transaction id has been used.
612	Reclaim failure – reclaim attempted against a transaction which itself is a reclaim.	Check that the correct transaction id has been used.
613	Reclaim failure – attempting to reclaim to a different currency.	Reclaims must be made in the same currency as that used in the original transaction. Resubmit with the correct currency.

Response Code	Response Text	Description & Action
614	Reclaim failure – amount exceeds that allowed for reclaim	The amount attempted to be reclaimed exceeds the allowable amount available.
617	Settlement failure – details entered in settle transactions do not match original authorisation. Check data and resubmit.	Occurs when a client is trying to settle a previous authorisation. If the client provides card details in the settlement they must match those in the original authorisation exactly. Merchant must correct fault and resubmit. Note that it is not necessary for clients to provide card details in a settlement. If they are left blank Buynet will pick up the details from the original authorisation.
618	Settlement failure – transaction has already been settled.	Occurs when a client is trying to settle a previous authorisation. The original authorisation referenced in the settle transaction has already been settled.
619	>1 transaction found when checking for duplicates	Cannot submit transaction with existing reference. Please notify the Buynet helpdesk.
620	Database Error – a database error occurred whilst processing your transaction. Do not resubmit this transaction until you have consulted the Buynet helpdesk.	Notify the Buynet helpdesk to check database.
621	Error getting Transaction ID. Please contact Buynet helpdesk before resubmitting this transaction.	The transaction id could not be generated on Buynet. Notify the Buynet helpdesk to check the database.
622	Buynet unable to retrieve routing data. The transaction has not been processed. Contact the Buynet helpdesk.	Buynet could not find bank or merchant data for the client, or currency is not valid for client. Check that the client has been properly configured.
623	Unable to reverse transaction as the transaction has already been settled with the bank	If you want to refund money to the customer then perform a reclaim transaction
625	Transaction was authorised but has been cancelled due to customer's policy	Confirm cv2 / avs details with customer. This transaction will not be settled. Reversal has been submitted to bank.
626	Buynet was unable to set transaction status to cancelled	Please contact the BT Buynet Help Desk. Urgently as transaction may still be settled.
628	Cannot cancel transaction as original transaction was not authorised	Transactions can only be cancelled after they have been authorised
630	Database error - Data missing from CV2_AVS_RESPONSES database table	Please contact the BT Buynet Help Desk.

Response Code	Response Text	Description & Action
631	Error in getting max reclaim amount allowed	Please contact the BT Buynet Help Desk.
632	Transaction has a status of error (Batch Interface)	Transaction has a status of error on batch interface.
633	Reclaim failure – error determining amount already reclaimed.	Check that transaction reference is unique and that original transaction exists and resubmit. If problem persists contact the BT Buynet Helpdesk.
634	Reclaim failure - you are not authorised to process reclaims online (via Buynet client) reclaim not allowed.	Merchant is not set-up for reclaims. Please contact the BT Buynet helpdesk if you wish to perform reclaims via the Buynet client.
635	Invalid or missing auth token, please check your data and resubmit	Check the Auth Token value set up against your Client ID is correct. This can be amended by using the 'Modify Auth Token facility' using the Merchant Services Website (MSW)
636	Euroconex Application Id error	Can't get Euroconex Application Id. Please contact the Helpdesk.
650	Buynet unable to open log files. Contact the Buynet helpdesk before resubmitting this transaction.	Buynet failed to open its log files. Notify the Buynet helpdesk to check file system.
660	Duplicate transaction error	Duplicate checking activated and duplicate txn received but the original txns has been manually cancelled
661	Error in duplicate check.	Contact BT Buynet helpdesk
662	Transaction found on initial stage of duplicate check, but not found in main txn table.	Probability that original transaction is still at bank. Resubmit after a 30 second interval. If status still in process then report to the Buynet Helpdesk.
663	Duplicate check error.	Duplicate check expected a successful Settle but couldn't find one. Please contact Helpdesk.
688	Invalid transaction status	The status of the transaction has either been amended by the BT Buynet service or has been corrupted. Please contact the BT Buynet helpdesk.
689	Indeterminate transaction references supplied	An enquire or reclaim request has been submitted with both a merchant and a BT Buynet transaction id. Resubmit using only one of the transaction ids.
701	Authorisation Referred by Bank.	Transaction was not authorised. look for the

Response Code	Response Text	Description & Action
	Please contact your acquiring bank for an authorisation code.	Referral number in the response from BT Buynet and contact the acquirer.
710	Unknown Client ID encountered	Check that the correct Client ID is being used and has been set-up on buynet. Contact buynet helpdesk.
720	Unable to recognise the type of transaction requested.	Transaction type not recognised by buynet. Contact buynet helpdesk.
800	Could not contact Buynet service. Please resubmit the transaction. If this problem persists contact the Buynet helpdesk.	Either the system is down or there is a problem with connectivity. Check that the client's calling IP address is allowed through the Buynet firewalls. Check that the call is not being blocked by a firewall at the clients end.
801	Timeout – the transaction was submitted to Buynet but there was no response. Check to see if the transaction was successful before resubmitting. Please contact the Buynet helpdesk.	Either the system is down or physical connectivity has been lost. A transaction mat has got through to Buynet but the result was lost. Check on MSW to see if the transaction was successful before resubmitting.
802	Could not open local log file. Check the location of the log file passed to the Buynet application is correct and that Buynet has permission to write to this file.	This error is generated in the Buynet Application when it cannot write to the log file specified by the client. No action by BT.
803	Invalid card type - check valid values for this parameter and try again.	An invalid card type was passed to the Buynet Application. No action by BT.
813	Field in xml is too large or contains invalid characters, for example a 3 digit card issue number.	See Appendix H for full explanation of type and number of allowed characters per input field.
900	Invalid test. The error code supplied in the test option was invalid. Check valid codes and try again.	When clients use the application in test mode they pass in the error code they want returning. This indicates an invalid code was passed. No action by BT.
901	Unknown transaction – Transaction does not exist.	There was no reference for the transaction on BT Buynet.
902	Could not write to local log file. Check the location of the log file passed to the Buynet application is correct and that Buynet has permission to write to this file.	The error is generated in the Buynet Client Application when it cannot write to the log file specified by the client. No action by BT.
903	Unknown error.	An unknown error occurred on the Buynet Application. Contact your local technical support for assistance. Please ensure you have your Buynet log files ready.

Response Code	Response Text	Description & Action
905	Access denied.	Please ensure password in xml is correct, If checked and ok ring Buynet helpdesk for further assistance.
910	HTTP communication error.	An HTTP communication error occurred. The Buynet Client Application did not receive the HTTP 200 OK code. Check internet connectivity to BT Buynet server if problem occurs continuously
911	HTTP server contact error.	Could not establish HTTP communication with server. Check internet connectivity to BT Buynet server if problem occurs continuously
912	HTTP server response error.	Error occurred reading HTTP communication from server. Check internet connectivity to BT Buynet server if problem occurs continuously
913	XML data error.	Error parsing input XML file – check DTD file is present and XML file details are correct.

6 *Appendix A – Log Files*

6.1 Exception log

The exception log reports any problems found within the BT Buynet Client Software, client connectivity with the BT Buynet Internet Servers and any system problems. There is only one exception log per instance of a BT Buynet Client Software. The format of the log is detailed below.

Time stamp:Logfile name *<Time stamp to indicate when the exception was opened>* *<Done once every time the file is first opened>*

Time stamp: *<Timestamp when the exception was logged>* ***Exception:*** *<Exception type>* ***Exception message:*** *<Message indicating problem/concern>*
Sequence: *<List of modules/methods called during the exception>*

13.04.2000|14:43:20|433| Log file [c:\btBuynet\Buynet\merchant\LOGS\exceptionlog13042000_14_43_20.txt] Opened

14.04.2000|01:02:45|865| ===

Exception: com.bt.BTBuynet.merchant.secureConnection.ConnectException

Exception -> Error occurred creating a socket connection with server

===

      at com.bt.BTBuynet.merchant.secureConnection.Connection.logException(Connection.java:233)

      at com.bt.BTBuynet.merchant.secureConnection.HTTPConnection.createConnection(Compiled Code)

      at com.bt.BTBuynet.merchant.secureConnection.HTTPConnection.run(Compiled Code)

14.04.2000|01:08:19|895| ===

Exception: com.bt.BTBuynet.merchant.secureConnection.ConnectException

Exception -> Error occurred reading response from server

==

       at com.bt.BTBuynet.merchant.secureConnection.Connection.logException(Compiled Code)

       at com.bt.BTBuynet.merchant.secureConnection.HTTPConnection.performConnection(Compiled Code)

       at com.bt.BTBuynet.merchant.secureConnection.HTTPConnection.run(Compiled Code)

14.04.2000|01:20:36|755| ==

Exception: com.bt.BTBuynet.merchant.serverConnection.ServerConnectionException

Exception -> [STORE1]Timeout occurred 911,Could not establish HTTP communication with server

==

       at com.bt.BTBuynet.merchant.serverConnection.ServerConnectionManager.logException(ServerConnectionManager.java:325)

       at
com.bt.BTBuynet.merchant.serverConnection.ServerConnectionManager.timeoutOccurred(ServerConnectionManager.java:278)

       at com.bt.BTBuynet.merchant.serverConnection.ServerConnectionTimer.run(Compiled Code)

Transaction log

Transaction logs are generated for each client registered to use the BT Buynet Client Software. The transaction log file location is specified by the client within the XML information they send to the BT Buynet Client Software. The location that the client set within the XML must exist for the BT Buynet Client Software to be able to write to the location. The filename is generated by the BT Buynet Client Software, and is composed of the client Id sent and the current date (i.e. <CLIENT_ID>YYYY_MM_YY.log)

e.g. STORE12008_04_13.log

The client's log file will be rolled over everyday. The format of the log file is detailed below.

Logfile Opened   *<Name and location of log file opened>*
Client id:<value>,Message type: <value>,Transaction id: <value>,Time stamp dispatched: <value>,Amount: <value>,Transaction type: <value>,Card holder: <value>,Merchant id: <value>,Time stamp returned: <value>,Response code<value>,CSC AVS Response codes<value>   *<A comma separated list of name value pairs>*

Logfile Closed

<Name and location of log file closed>

Log file [c:\\btBuynet\\Buynet\\merchant\\logs\\STORE12000_04_13.log] Opened

ClientID:VINOT,Message Type:response,txID:"",13.04.2000|17:03:50|235|,Amount:"1234",Transaction Type:"SettleAndAuthorise"Card Holder:"Joe.Bloggs"Merchant ID:"110011",13.04.2000|17:03:50|836|, Response Code:"Local Response Code = [0]","CSC/AVS Response Code = [224 4]"

Log file [c:\\btBuynet\\Buynet\\merchant\\logs\\STORE12000_04_13.log] Closed

Log file [c:\\btBuynet\\Buynet\\merchant\\logs\\STORE12000_04_13.log] Opened

ClientID:VINOT,Message Type:response,txID:"",13.04.2000|17:07:55|628|,Amount:"1234",Transaction Type:"SettleAndAuthorise"Card Holder:"Joe.Bloggs"Merchant ID:"110011",13.04.2000|17:07:56|139|, Response Code:"Local Response Code = [910]" ,"CSC/AVS Response Code = [   ]"

Log file [c:\\btBuynet\\Buynet\\merchant\\logs\\STORE12000_04_13.log] Closed

Log file [c:\\btBuynet\\Buynet\\merchant\\logs\\STORE12000_04_13.log] Opened

ClientID:VINOT,Message Type:response,txID:"",13.04.2000|17:10:56|448|,Amount:"1234",Transaction Type:"SettleAndAuthorise"Card Holder:"Joe.Bloggs"Merchant ID:"110011",13.04.2000|17:10:57|499|, Response Code:"Local Response Code = [720]", "CSC/AVS Response Code = [   ]"

Log file [c:\\btBuynet\\Buynet\\merchant\\logs\\STORE12000_04_13.log] Closed

7   *Appendix B – Using the Test Harness*

7.1   Overview of the Buynet Test Harness

The Buynet Client installation includes a Test Harness application that can be used to submit Buynet XML files to the Buynet Merchant Application. Sample XML files are included with the Test Harness application for each of the transaction types that Buynet supports. Most of these sample XML messages use the <test> element so that the transaction is not submitted to the Buynet Internet Servers, but is simply looped back within the Buynet Merchant application with the specified response.

7.2   Windows - Running the Test Harness

For Windows applications, go to the top level testHarness directory. There are specific .BAT files in this directory that will submit the corresponding test XML file when clicked. These will spawn a DOS window and you will see the test results there.

The test XML files are located in the appropriate sub-directory beneath the testHarness\testXml directory as specified in each .BAT file.

The test output is also written to log files within the testHarness\testResults directory.

Note – the path to the application is assumed to be C:\Program Files\BTBuyNet – if this is not the case, then the header of each test xml file will need to be modified to reflect the path to the application.

7.3   Unix - Running the Test Harness

For Unix applications, go to the ~/BuyNet/testHarness/testXml directory and run the required test shell script. This will submit the corresponding test XML file to the Buynet Merchant application – the results will be shown on the command line.

The test XML files are located in the appropriate sub-directory beneath the testHarness/testXml directory as specified in each shell script.

The test output is also written to log files within the testHarness/testResults directory.

7.4   Sample XML messages

The sample XML messages all implement test tags (i.e <test> </test>). These tags will stop the test transaction from actually reaching the live system and simply loop back within the Merchant application.

There are no test tags for 3D Secure or Card on File.   To test 3D secure, you will need to book a test slot with the Buynet Helpdesk 0845 601 0569 or **btbuynetsupport@bt.com**

Each XML file contains sample XML that will be submitted to the Buynet Merchant application when the following .BAT or .sh files are executed:

Authorise - to run double click on testAuthorise.BAT (Windows) or run ./testAuthorise.sh (Unix). This will return a response code 0 (RC:0

Cancel - to run double click on testCancel.BAT (Windows) or run ./testCancel.sh (Unix). This will return a response code of 0 (RC:0)

Reclaim - to run double click on testReclaim.BAT (Windows) or run ./testReclaim.sh (Unix). This will return a response code of 0 (RC:0)

Authorise & Settle - to run double click on testAuthAndSettle.BAT (Windows) or run ./testAuthAndSettle.sh (Unix) This will return a response code 0 (RC:0) and a CSCAVSResponseCode response of 222.

Settle with Auth Code - to run double click on testSettleAuthCode.BAT (Windows) or run ./testSettleAuthCode.sh (Unix). This will return a response code of 0 (RC:0)

Settle with Trans ID - to run double click on testSettleTransId.BAT (Windows) or run ./testSettleTransId.sh (Unix). This will return a response code of 0 (RC:0)

Connection Test – to run, double click on testConnection.BAT (Windows) or execute ./testConnection.sh (Unix).   This sample does not use the <test> XML element and will actually attempt to send the transaction to the Buynet Internet Servers. This will enable you to check that you can contact the live server from your host.
If you have successfully connected to the Buynet Internet Servers, you will get a return code of (RC) 541 – Client Unknown. (This is because the test sample client ID (TH01) is not registered on the Buynet Internet Servers, but proves that a connection can be made.)
If you are unable to connect to the Buynet Internet Servers, you will get a return code of (RC) 911 – Unable to Connect. You will need to consult your network administrators to check that you have permission to connect to the Buynet Internet Servers from your host.

You can also manually test the connection by issuing a telnet to our servers on port 50120:

```
>telnet bis.btbuynet.bt.com 50120
```

If this times out, then this is an indication that there are network issues (ie – a firewall blocking access on your network)

Note - the Client ID 'TH01' has been pre-registered to the Buynet Merchant application, to enable ou to run these sample XML messages 'out of the box'.

8   *Appendix C – eCommerce indicators*

8.1   Terminal Type

This is a 4 digit numeric value which specifies the characteristics of the terminal used when the credit card number was captured. For all web based transactions the value for terminal type should be 4108. For Mail order / Telephone order (MOTO) transactions the value for terminal type should be 4101.

8.2 Origin

This identifies the origin of the credit card transaction. Note – you must ensure that the value you use corresponds with the types of transactions that are accepted by your bank for your Merchant ID.

1 = Mail / Telephone order

J = Internet / eCommerce

8.3 CVC / AVS Response values

The six byte response field returned to the client from the Buynet server has the following representation.

byte 1 = CSC return code. byte 2 = Post code return code byte 3 = Address numerics return code	Possible Values 0,1,2,4 & 8 0 = data not supplied, (usually a data error or null supplied. 1 = Not Checked 2 = Matched 4 = Not Matched 8= Partial Match.
byte 4 = authorising entity byte 5 & 6 = reserved for future use by banks/APACS	byte 4 is not used by Buynet

For example, a completely successful check will return a value of '222 ', i.e. the CSC code matched, the postcode matched and the address numeric data matched.

9   *Appendix D - Buynet Windows Service*

9.1   Pre-requisites

The following components are required to set up BT Buynet to run as a service-
- srvany.exe
- srvinstw.exe

The srvany.exe software enables applications to be run as a Service under Windows.
The required files can be found on the **Microsoft Windows Server Resource Kit CD**
Install these two files as follows:

File	Destination Directory
SRVANY.EXE	C:\Windows\System32\
SRVINSTW.EXE	C:\Windows\System32\

9.2   Setting up the BT Buynet service

Run   **C:\Windows\System32\SRVINSTW.exe**

Follow the instructions as follows:

Window…	Response
Install/Remove Service	Select **Install a Service**
Select Computer	Select **Local Machine**
Service Name	**BT Buynet**
Executable File…	C:\Windows\System32\SrvAny.exe
Type of Service	Service in its own process
Security Credentials	System Account Selected Allow Service to Interact with Desktop Unchecked
Startup Option	Automatic (*for normal operation*)
Create Service:	Press the **Finish** button.
Install Success	Press the **OK** button

Load **RegEdit**

Go to Registry location:
       HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\BT Buynet

Add New Key: **Parameters**

Under the **Parameters** location, **add** the following parameters (New, String Value)

Parameter	Value
AppDirectory	**C:\Program Files\BTBuyNet\merchant**
Application	**C:\Program Files\BTBuyNet\merchant\java\jre1.5.0_05\bin\javaw.exe**
AppParameters	*-server -Xrs -classpath Lib\BTBUYNET_3D_VERSION_1_07.jar;Lib\xml4j.jar;Lib\xerces.jar;Lib\Phaos_SSLava.jar; com.bt.BTBuynet.merchant.application.Client Start -M merchant.properties*

10   *Appendix E – Implementing 3D Secure*
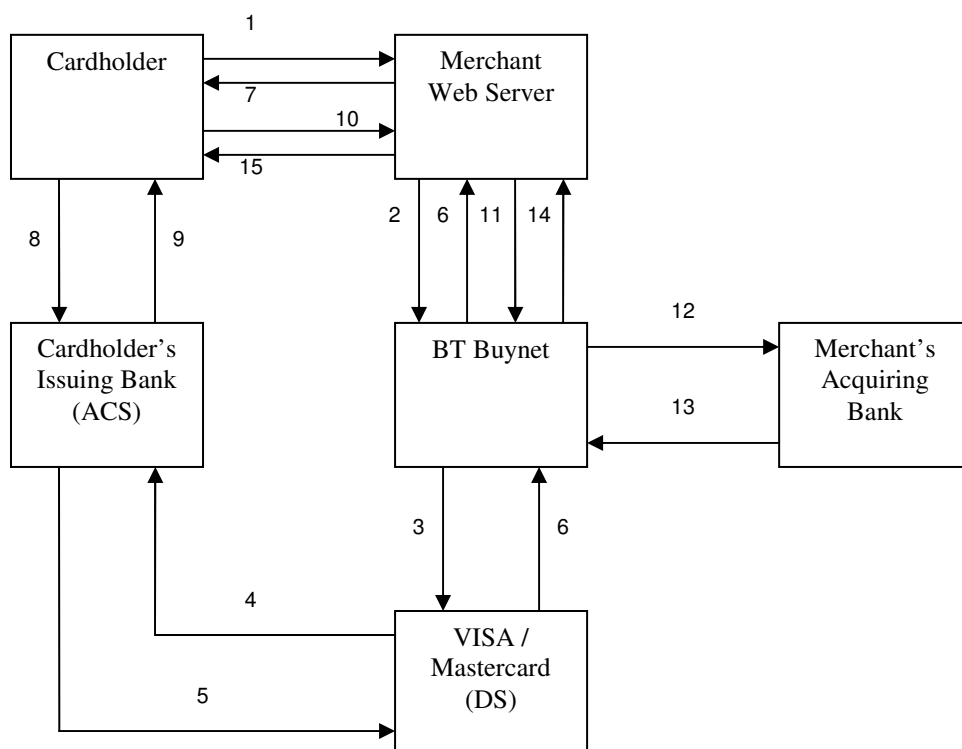
10.1 3D Secure Messages Flows

Step	Description
1	The cardholder enters their credit card details at the merchant's checkout page as usual.
2	The merchant sends an Authorise or AuthoriseandSettle XML message to the Buynet client.
3	The Buynet server will check to see if the card number is in a participating card range. Buynet maintains a cache of participating ranges and if the card is outside these ranges, then a standard authorisation request (Step 12) is sent to the acquiring bank.

4	If the card number is within a participating range, then the Visa or MasterCard Directory Server will message the card issuing bank to check that the card is enrolled.
5	The issuing bank will respond with a **VERes** message.
6	Buynet will create the required **PAReq Form** from the **VERes** received from the issuer and return this to the merchant application.
7	The merchant extracts the **PAReq** details from the Buynet response and constructs a browser redirect page containing the **PAReq Form** information including URL where the merchant wishes to handle the response.
8	The cardholder is redirected to the URL of their card issuing bank, where the issuing bank will validate the identity of the cardholder using their password or PIN.
9	The Issuing bank sends the result of the authentication in the form of an encoded **PARes** message via the cardholders browser to the Term URL that was specified by the merchant in step 7.
10	The Merchant reads the issuer response and extracts the encoded **PARes**
11	The merchant now forwards the **PARes** to the Buynet by passing a **PARes** XML message. Buynet decodes the issuer response and validates that the digitally signed message has been created by a bone-fide card issuer and has not been tampered with.
12	The authorisation of funds request is sent to the merchants acquiring bank along with the confirmation details that the cardholder has been successfully authenticated.
13	The acquiring bank responds with the usual authorisation code or decline reason code.
14	Buynet returns the response to the merchant's application.
15	The merchant display's the appropriate success or failure page to the cardholder.

10.2 Additional Data Required for 3D Secure Transactions

For 3D Secure transactions, the following element is added to the Transaction element of the Buynet transaction XML message. Note that this element is only supported for Authorise and AuthoriseAndSettle transactions.

```
<threeDSecure>
  <verify>Y</verify>
  <browser>
    <deviceCategory>0</deviceCategory>
    <acceptHeaders>xml</acceptHeaders>
    <userAgent>Buynet Test CardHolder</userAgent>
  </browser>
</threeDSecure>
```

Element	Content
verify	Y or N. If set to Y, 3D Secure processing will be attempted.
deviceCategory	Must be 0.
acceptHeaders	The exact content of the HTTP accept header as sent to the merchant from the card holder's browser (user agent).
userAgent	The exact content of the HTTP user-agent header as sent to the merchant from the card holder's user agent.

As an example, within a Java Server Page (JSP), the HTTP accept header and user-agent header can be obtained simply as follows -
>   String acceptHeaders = request.getHeader("Accept");
>   String userAgent   = request.getHeader("User-Agent");

10.3 Handling the Payer Authentication Request (PARes)

The response from the Buynet client is in the form of a comma delimited string, the first element of which is the responseCode.
If the merchant submitting a transaction to Buynet has requested 3D Secure and the cardholder is enrolled in the 3D Secure scheme with their card issuer, Buynet will return a responseCode of '300' in response to a payment transaction request – note that at this point the processing of the card payment authorisation will not have been completed with the merchant's acquiring bank.
The format of the response string in this case differs from the normal response string and will be of the following form -
responseCode, , , encodedPaReq, termURL, merchantData, acsURL,

Element	Name	Description
1	responseCode	**300** ~ indicates the Buynet 3D Secure response

		message
2	Empty	
3	Empty	
4	encodePAReq	Base-64 encoded representation of the Payer Authentication Request (PAReq) message
5	termURL	The terminating URL for the 3D secure transaction to where the Payer Authentication Response (PARes) form is posted by the ACS (via cardholder redirect).
6	merchantData	The Buynet unique reference number for this 3D Secure transaction
7	acsURL	The URL of the ACS
8	Empty	

The merchant's application must use the returned data to build an ACS redirect html page which is returned to the cardholder's browser. An example is shown as follows –

```
<html>
  <head>
    <title>ACS Redirect</title>
  </head>
  <body OnLoad="OnLoadEvent();" >
    <form name="downloadForm" action="acsURL" method="POST">
      <noscript>
        <br>
        <br>
        <center>
          <h1>ACS: Processing your 3-D-Secure Transaction</h1>
          <h2>JavaScript is currently disabled or is not supported
              by your browser.<br></h2>
          <h3>Please click Submit to continue the processing of your
              3-D Secure transaction.</h3>
          <input type="submit" value="Submit">
        </center>
      </noscript>
      <input type="hidden" name="PaReq" value="encodedPaReq">
      <input type="hidden" name="MD" value="merchantData">
      <input type="hidden" name="TermUrl" value="termURL">
    </form>
    <SCRIPT LANGUAGE="Javascript" >
    <!--
    function OnLoadEvent()
    {
        document.downloadForm.submit();
    }
    //-->
    </SCRIPT>
  </body>
</html>
```

10.4 Processing the Payer Authentication Result (PARes)

The **PARes** form will be posted to the **termURL** that you indicated in the **PAReq** ACS redirect form returned to the cardholder in the above step. The merchant's web application component that resolves this **termURL** must perform the following processing –

1. Read the **PARes** and **MD** parameters from the **PARes** form. For example, using Java ,

    ```
    String paRes           = request.getParameter( "PaRes" );
    String merchantData    = request.getParameter( "MD" );
    ```

2. Construct the Buynet **pAResForm** XML message and submit to Buynet. For example

    ```
    <?xml version="1.0" encoding="UTF-8" ?>
    <paResForm>
      <paRes>PaRes</paRes>
      <merchantData>MD</merchantData>
    </paResForm>
    ```

    where **PARes** and **MD** are the parameters extracted from the **PARes** form.

Buynet will process the Payer Authentication Response (**PARes**). If the cardholder is authenticated, Buynet will continue the authorisation payment transaction (using the details captured in the original transaction request) and the appropriate transaction response will be returned as per standard Buynet transaction processing. (i.e ResponseCode=0 for authorised transactions and ResponseCode=2 for declined transactions).

10.5 Integration Testing

Prior to implementing 3D Secure on your production platform, it is recommended that you conduct Integration Testing with Buynet, using Buynet's Integration Test platform. To book a test slot please contact the Buynet Integration Helpdesk (telephone - **0845 601 0569** or email – btbuynetsupport@bt.com)

Once you have been allocated a slot, we will provide you with test accounts and scripts to test each of the major scenarios involved in 3D Secure. Note that Integration test slots are subject to scheduling/availability and as such we cannot guarantee that the testing environment will be available outside of the pre-arranged schedule.

10.6 Further guidance to implementing 3D Secure

Visa and MasterCard both provide a wealth of guidance on implementing 3D Secure at their respective websites as follows -

- Verified by VISA -
  http://www.visaeurope.com/merchant/handlingvisapayments/cardnotpresent/verifiedbyvisa.jsp
- Mastercard SecureCode -
  http://www.mastercard.com/us/merchant/security/what_can_do/SecureCode/getting_started.html

You are recommended to download the merchant implementation guides for each scheme from their respective websites. Appendices D and E of the Verified by VISA Merchant Implementation Guide provide useful guidance/best practice on consumer messaging for Verified by VISA. Similar guidance for Mastercard SecureCode is provided in Section 3-Merchant-Customisation of the SecureCode Merchant Implementaion Guide.

Your Merchant Acquirer bank will also be able to advise you on any policies that you should be made aware of during your accreditation process with them.

11 *Appendix F - Integrating into Linux*

It is possible to integrate Buynet on a Linux platform, there are however a few additional steps required:

NOTE – the following steps are provided as guidance only and are NOT supported by Buynet. It is recommended that before deleting/renaming anything on your system, full backups are taken. Buynet cannot be held responsible for any loss of data/service resulting from trying to integrate into a Linux system this advice is given purely as guidance only.

1. untar the Solaris version of Buynet and install as normal
2. take a copy of cacerts, java.policy and java.security from <DIRECTORY_ROOT>/BuyNet/merchant/java/jre/lib/security and store somewhere safe
3. download and install the jdk for the your version of Linux from the web
4. copy the jre directory structure from the new version of Java into the java directory of Buynet <DIRECTORY_ROOT>/BuyNet/merchant/java/
NOTE it may need to be renamed to follow the Buynet naming convention (for example from jre1_1.5) and overwrite the old version supplied with the client.
5. copy the original files cacerts, java.policy and java.security back into BuyNet/merchant/java/jre/lib/security
6. run ./btbn_setup and ./startPass as normal to setup the service
7. finally run ./startBTBuyNet to start the service
 If you experience any problems, it is suggested that you run debugging (set it up in the merchant.properties file) and look for any errors.
This can be done by adding a new line to the merchant.properties
8. edit merchant.properties (using vi or any editor) and add the following line:
CLIENT_DEBUG_LOG= merchant\\LOGS\\debuglog
Under the existing line
CLIENT_EXCEPTION_LOG= merchant\\LOGS\\exceptionlog
9. Save the file then (stop) start Buynet as normal.

Note - as the debug log can take up a lot of space, it is suggested that you remove the new line from the merchant.properties file once testing has been completed

12 Appendix G - Input Validation Rules

Note – the following validation rules must be followed for all data entry – failure to do so will result in RC:813 errors and the transaction will NOT be processed

Client XML Element	Max size	Basic data validation rules	Comments
Card Data			
cv2	4	0 to 9	
expiry	4	0 to 9	YYMM
holder	Truncated to 30 max	A to Z, a to z , 0 to 9, space, hypen, full stop	Any characters not in the identified list are replaced with a SPACE character.
issueNo	2	0 to 9	
no	19	0 to 9	
type	10	A to Z	
Transaction Data			
acceptHeaders	n/a		Not validated – data must be passed to DS as received
amount	9	0 to 9	
authCode	8	A to Z, 0 to 9	
authCodeDate	4	0 to 9	YYMM
authToken	10	A to Z, a to z, 0 to 9, underscore, hyphen, full stop, asterisk, plus, equals	
buynetId	9	0 to 9	
captureMethod	1	N, K, C	
clientId	10	A to Z, 0 to 9	
currency	3	A to Z	
chargeType	2	A to Z	

deviceCategory	1	0	
house	Truncated to first 5 numeric digits	0 to 9	All non-numeric characters are removed before validation as only the numbers are submitted to the bank for AVS checking.
id	Truncated to 20 max	A to Z, a to z , 0 to 9, space, hyphen, full stop	
merchantData	38	0 to 9	
occurrence	1	O, S	
origin	1	1, J	
origTxnId	20	A to Z, a to z, 0 to 9, space, hyphen, full stop	
postCode	Truncated to first 5 numeric digits	0 to 9	All non-numeric characters are removed before validation as only the numbers are submitted to the bank for AVS checking**.**
purchaseDescription	50	A to Z, a to z, 0 to 9, space, hyphen, full stop, comma, ampersand, exclamation mark	
service	18	A to Z	Buynet Client always changes to upper case.
terminalType	4	0 to 9	
userAgent	n/a		Not validated – data must be passed to DS as received

verify		1	Y or N	
Card On File				
action		20	A to Z, a to z, 0 to 9	
friendlyName		30	A to Z, a to z, 0 to 9, space, hyphen, full stop	
partyId		255	A to Z, a to z, 0 to 9, space, hyphen, full stop, underscore, at ('@')	
paymentInstrumentRef		38	0 to 9	
stopReason		50	A to Z, a to z, 0 to 9, space, hyphen, full stop	

13 *Appendix H – Card on File*

Make Payment and Store the Card

1   Merchant sends payment request to Buynet
2&3 Payment goes to acquiring bank who route it to the cardholder's bank for authorisaton
4 & 5 transaction is authorised
6 The card number is stored in the Buynet Card on File Store
7 A Payment Instrument Reference is passed back to the merchant.
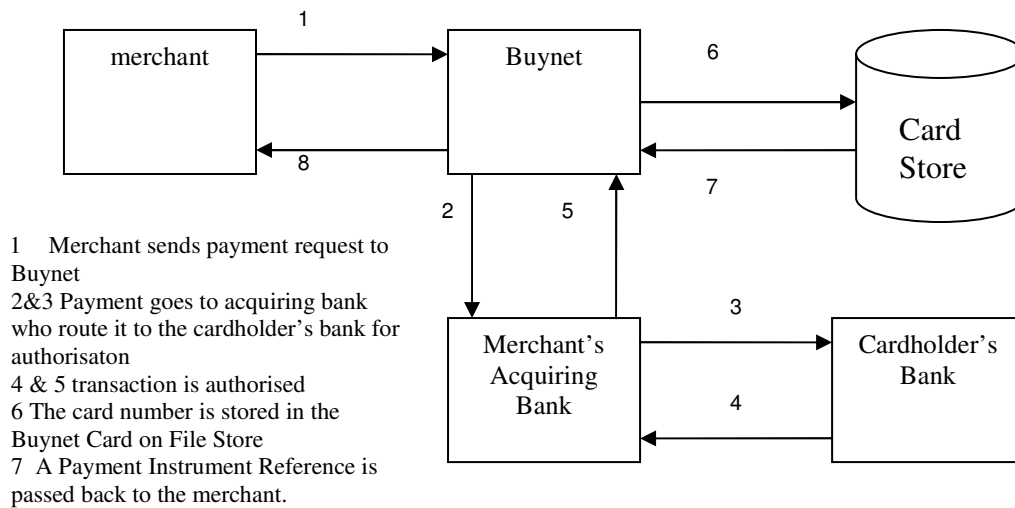
Make Payment Using Card on File Reference

1 Merchant requests a list of all stored cards for Customer Identifier 'ABC123'
2 Buynet requests a list of all Payment Instrument References for that customer.
3&4 The payment Instrument References are returned to the Merchant.
5 The merchant decides what card to use based on the Payment Instrument Ref description.
6&7&8 The chosen card number is sent to Buynet who forward it to the bank.
9-12 The transaction proceeds as a normal transaction.

14 Glossary

Application Program Interface (API). The specific method prescribed by a computer operating system or by another application program by which a programmer writing an application program can make requests of the operating system or another application.

An API can be contrasted with a graphical user interface or a command interface (both of which are direct user interfaces) as interfaces to an operating system or a program.

Authorise. Before a Credit or Debit-card transaction can be settled the Acquiring Bank will need to authorise the transaction. For example, the Bank will check that the card number and expiry date are valid, the credit limit will not be exceeded and that the card is not being used fraudulently. If the request is approved then an authorisation code will be returned, and the cardholder will have the value of this transaction added to his cards commitment (reducing the amount of available credit on that card).

Authorise and Settle. In addition to separate "Authorise" and "Settle" requests, BT Buynet can issue a combined "Authorise and Settle" request to the Bank. In this case, the Bank makes an authorisation check, and provided this is successful then a Settle request follows immediately. If however the CSC/AVS responses are less than perfect, the merchant may decide to cancel the settle.

AVS. Address Verification Service. This is an additional check performed by the bank, comparing the address details given by a merchant's customer with the address details as they appear on the cardholder's bill. The key data consists of the postcode and the first five numerics within an address. (Typically a house number, but also possibly a flat number AND house number for example).

Cancel. The merchant can decide to cancel an authorised (but not yet settled) transaction, typically where CSC/AVS checks are not satisfactory. This prevents the settle transaction occurring, and may lead to a reversal, if the bank supports this functionality. (see Reversal).

Card On File. A service provided by BT Buynet whereby customer card details may be stored in the Buynet Card On File store and retrieved if a payment reference is provided with a Buynet transaction.

CSC. Card Security Code. (Also known as CV2). A 3 digit code located on the signature strip (for Visa and MasterCard) or a 4 digit code on the front of an AMEX card.

CV2. See CSC.

Enquire. You can check on the status of a transaction using the MSW (Merchant Services Website). You will need to provide a combination of either the Client transaction ID, or the Buynet transaction ID and your Client ID in order to access the transaction's details.

Note – due to PCI data retention policy, we will only have details of transactions within the last 12 months at any given time.

Java Virtual Machine. A term used by Sun Microsystems to describe software that acts as an interface between compiled Java binary code and the microprocessor (or "hardware platform") that actually performs the program's instructions.

Reclaim (Refund). BT Buynet can issue a Refund against a previously settled transaction. In this case, the card used for that settlement could be credited with funds in order to provide the customer with a refund against an earlier transaction. This can be carried out by using the MSW (Merchant Services Website) or the API.

Reversal. Where a merchant has decided to cancel an authorised (but not yet settled) transaction, a reversal message is sent by BT Buynet to the bank, where if successful, the cardholder's available funds will be restored to their level prior to the original transaction. Some banks do not fully support this transaction, and some banks require the transaction to be the transaction immediately following the original authorisation request for a given merchant. Therefore, restoration of available funds to the customer's balance is not guaranteed.

Server Farm. A group of computers acting as servers and housed together in a single location. In a business network, a server farm or cluster performs services such as providing centralised access control, file access, printer sharing, and backup for workstation users. The servers may have individual operating systems or a shared operating system and may also be set up to provide load balancing when there are many server requests. In a server farm, if one server fails, another can act as backup.

Settle. Once a transaction has been authorised, the merchant may issue a "Settle" request to the Acquiring Bank. This simply requests that the authorised funds be moved into the merchant's account.

Shipment. A shipment is taken to mean the act of a merchant physically dispatching goods to a customer.

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