VeriSign®

White Paper

XMLPay

XML Trust Services

Contents

Executive Summary

XML (Extensible Markup Language), the flexible data framework that allows applications to communicate on the Internet, has become the preferred infrastructure for e-commerce applications. All of those transactions require trust and security, making it mission-critical to devise common XML mechanisms for authenticating merchants, buyers, and suppliers to each other, and for digitally signing and encrypting XML documents like contracts and payment transactions.

XML Trust Services—a four-component suite of open specifications for application developers developed in partnership with industry leaders including Microsoft, Ariba, WebMethods, and Netegrity—makes it easier than ever to integrate a broad range of trust services into B2B and B2C applications. XML complements Public Key Infrastructure (PKI) and digital certificates, the standard method for securing Internet transactions.

To help Internet merchants process a broad range of Web-based payment types (including credit debit card, purchase card, and Automated Clearinghouse, or ACH payments) for B2B and B2C e-commerce, VeriSign, Ariba, and other vendors created the **XMLPay** specification for sending payment requests and responses through financial networks. XMLPay is an eXtensible Markup Language (XML) specification for payment requests and responses in a distributed, Web-based payment transaction environment. XMLPay is also a scalable payment service application operated by VeriSign in support of both B2C and B2B Internet payment applications.

The typical user of XMLPay is an Internet merchant or merchant aggregator who wants to dispatch consumer credit (or debit) card, corporate purchase card, Automated Clearinghouse (ACH), or other payment requests to a financial processing network. Using the data type definitions specified by XMLPay, such a user creates an XMLPay client payment request and dispatches it—using a transport mechanism intentionally left unspecified by XMLPay—to an associated XMLPay-compliant server component. Responses are also formatted in XML and convey the results of the payment requests to the client.

The use of XML simplifies client-side processing in payment service applications, allowing payment service applications to be easily linked larger XML-workflow environments.

This paper describes the capabilities that XMLPay brings to payment services in a variety of application scenarios. The intended audience of this paper is anyone who is thinking about adding the ability to payment capabilities to their merchant Web site, B2B trading exchange, or other online transaction system. We describe what XMLPay is, who uses it, and how the VeriSign XMLPay payment gateway implementation makes it possible to use XML simply and easily in payment service applications.

I. Introduction

The XMLPay specification defines four things. First, it defines a way to describe payment transaction requests in the eXtensible Markup Language (XML). Next, it defines a way for that transaction request to be communicated to a financial institution for payment and settlement. Third, it provides XML-based way for the results of the transaction to be expressed and imported into e-commerce applications.

Finally, XMLPay is also a live Web service endpoint operated by VeriSign. This "payment gateway" Web service provides connectivity to most major bank processors and financial networks and comes pre-integrated in many e-commerce applications. Using XMLPay, merchants communicate their payment requests to the XMLPay Gateway, and VeriSign "switches" these requests to the appropriate financial institution, returning results back to the merchant.

XMLPay is an open and broad specification intended for use in both Business-to-Consumer (B2C) and Business-to-Business (B2B) payment processing applications.

A. Why XMLPay?

Today's fragmented payment systems connect merchants to banks via privately operated, point-to-point payment networks. In 1999, over 6 billion US electronic payment transactions—originating from approximately 2 million merchant locations and representing over $290 billion in merchant dollar volume—were passed over leased lines and non-Internet interfaces to a single transaction processor (First Data Corporation).

Such traditional payment systems often prove ill equipped to manage the costs and complexity of transitioning and enabling transactions over the Internet. Because of the high cost and complexity of automating payment using legacy payment technologies, only a fraction of today's potentially automated e-commerce applications are currently enabled for Internet payment.

In short, today's infrastructure for payments on the Internet is fragmented and difficult to integrate into applications. As a result, adding even basic payment capabilities to Web services often proves to be an expensive and difficult process. And in business-to-business e-commerce, the appropriate Internet payment infrastructure is practically nonexistent.

Over the last two years, the work of Internet standards communities such as W3C together with many announced industry initiatives has highlighted XML as a key technology for smoothing the integration of distributed applications between business over the Internet.

B. XMLPay Benefits

By choosing XMLPay for XML payment execution, B2C and B2B merchants, merchant aggregators and trading exchanges gain the ability to free themselves from point-to-point and difficult to integrate payment solutions, reaping the benefits of an integrated XML payment platform designed specifically for the Internet.

Banks and financial institutions also benefit, because use of XMLPay frees these traditional payment marketplace participants of the time and cost required to build in-house solutions and allows them to reach broader and new markets in Internet time.

II. How XMLPay Is Used In B2C Payments

B2C transactions begin when a Buyer presents a payment instrument (e.g., credit card number) to a Seller in order move money from the Buyer to the Seller (or vice-versa in the case of a credit or refund). In the diagram below, one can think of the Buyer as consumer using a Web browser, and the Seller as a merchant Web site.

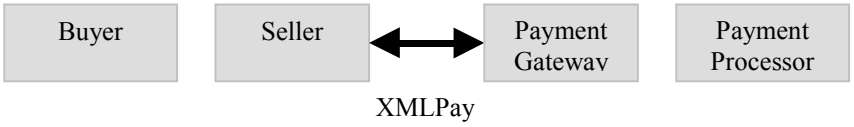

Figure 1: Typical XMLPay processing model for Business-to-Consumer (B2C) transactions

Use of XMLPay comes into play when the Seller needs to forward the Buyer's payment information on to a Payment Processor (at the far right). The Seller formats a XMLPayRequest and submits it either directly to an XMLPay-compliant payment processor or, as pictured, indirectly via a XMLPay-compliant Payment Gateway, such as operated by VeriSign. Responses have type XMLPayResponse.

The Buyer-to-Seller and Payment Gateway-to-Payment Processor channels are typically left unaffected by use of XMLPay. For example, XMLPay is typically not used in direct communications between the buyer and the seller. Instead, conventional HTML form submission or other Internet communication methods are typically used. Similarly, because Payment Processors often differ considerably in the formats they specify for payment requests, it is often desired to localize XMLPay server logic at the Payment Gateway, leaving the legacy connections between gateways and processors unchanged.

III. How XMLPay is Used in B2B Payments

When used in support of B2B transactions, the Seller does not typically initiate XMLPay requests. Instead, an aggregator or trading exchange uses XMLPay to communicate business-focused purchasing information (such as Level 3 corporate purchase card data) to a payment gateway.

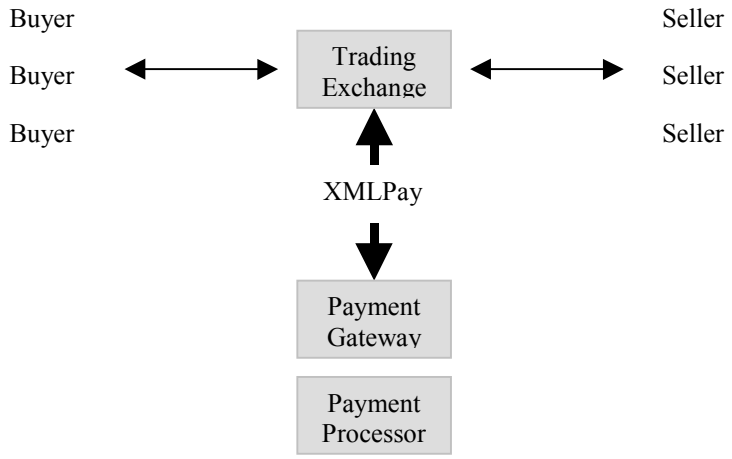

Figure 2: Typical XMLPay processing model for Business-to-Business (B2B) transactions

In this way, the trading exchange links payment execution to other XML-based communications between Buyers and Sellers such as Advance Shipping Notice delivery, Purchase Order communication, or other B2B communication functions.

IV. Technical Components

The XMLPay Specification consists of three parts.

- **XMLPay: Core** is the heart of XMLPay. It defines the basic XML datatypes needed to unify B2C and B2B payment processing applications.
- **XMLPay: Registration** captures automation of payment-related enrollment functions, such as merchant registration and configuration.
- **XMLPay: Reports** specifies mechanisms for automating merchant transaction reporting functions in the payments back office.

The first of these specifications, XMLPay Core, is available now (Nov 2000). Teams working on XMLPay are planning to extend the functionality to registration and reporting. The driving goal is to provide a public specification for Web payment interoperability, from merchant service sign-up, to payment execution, to reporting functions after payments have taken place.

VI. For More Information

To access the XMLPay specification and learn more about VeriSign's XML Trust Services, see http://www.verisign.com/developer/xml/index.html

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