

**Effective Data Inc.
White Paper:**

***EDIINT – EDI Over
the Internet***



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Executive Summary

EDIINT – EDI over the Internet – is a working group of the Internet Engineering Task Force (IETF) enabling the transport of EDI and XML data over the Internet in a secure manner. It is also an alternative data transport to value added network (VAN) based data communications between EDI trading partners. It provides the major auditable functions associated with VAN services – mail boxing, trading relationship management, security, authentication and non-repudiation – via software.

There are three major standards: AS1 (Applicability Statement 1 for SMTP protocol, asynchronous – “Batch Mode”), AS2 (Applicability Statement 2 for HTTP protocol, synchronous – “Peer-to-Peer, Real Time”), and AS3 (Applicability Statement 3 for FTP protocol, synchronous – “Client/Server”). The AS1 uses email attachments with S/MIME (Secure/Multipurpose Internet Mail Extensions) encryption and security over SMTP (Simple Mail Transfer Protocol); AS2 provides S/MIME encryption over HTTP (Hyper Text Transfer Protocol); while AS3 provides S/MIME encryption over FTP (File Transfer Protocol) in a server/client model manner.

Always looking to cut costs, major retailers and large manufacturers have implemented or are in the midst of EDIINT initiatives that will eventually require their supply chain to make the change to eliminate VAN costs. Although they have never used VANs, Wal-Mart, the world’s largest retailer, has moved to EDIINT replacing their “bisync direct dial communications” and is now requesting for all their vendors to accommodate. Many other major hubs followed Wal-Mart’s initiative, therefore, many major software companies provide software and services that support EDIINT/AS2.

In order to make an informed decision on which product will best serve their requirements, an organization must understand how many trading partners it will move to EDIINT. Convenience may favor a single use solution and if that is the only connection requiring EDIINT it will not be cost prohibitive. However, even with pricing plateaus, the cost of adding additional trading partners can add up quickly. If a company anticipates multiple trading partners moving to EDIINT there are other, more economical choices. An enterprise anticipating a major conversion to EDIINT should be looking at hub products that provide more robust features for managing multiple trading relationships.

The Data Transport Dilemma

EDI has come a long way from its origins in the 1960s bisynchronous communications protocols of the IBM mainframe environments. In the 70s, EDI evolved into store and forward networking that became the predominant model used by Value Added Network (VAN) service providers since then. Value added networks (VAN) provide third party, auditable features considered important in the reliable and secure exchange of electronic business documents between trading partners. Through mail boxing services VANs provide a level of convenience by allowing each trading partner to process data on their own schedule. For those relationships using VANs there is a cost factor directly related to the volume of documents and number of characters exchanged. While VAN unit costs have been lowered, the number and size of documents exchanged has increased at a faster rate, driving VAN costs up.

Industry realized that expanding Internet bandwidth and its relatively low cost would be an excellent alternative. Issues of security, authentication and non-repudiation needed to be resolved and standards were developed to provide these through software along with mail boxing and trading relationship management.

Presently, Internet Engineering Task Force group is proposing and certifying new forms of EDI to deal with the turbulent world. With the business environment changing rapidly, the existing EDI standards process may not be suitable for business operations as competing companies in several industries operate with specialized business arrangements, which may only last for a couple of months or few transactions.

What is the major difference? Today, in the vast majority of EDI transactions, we have negotiated Trading Partner Agreements (TPAs) specifying data interchange on a one-to-one basis. On the Internet and electronic commerce arena, there is an emerging trend of what can be termed Unilateral TPAs - where one party promulgates the standard to be used for a transaction and invites anyone willing to do business with that firm to submit transactions of that type. This is analogous to the paper "Order Form" and can be seen in the on-line World Wide Web (WWW) "forms interface" expected to be the basis for "electronic commerce" on the Internet. But, note that UTPAs are not fly-by-night forms but do require some thinking about syntax and semantics in the context of legal, accounting and auditing considerations.

An additional benefit provided by the "new-EDI" and EDIINT in particular is the ability to exchange business documents in a real time environment, where the traditional EDI provides a batch driven process that creates a wait time between submitting and receiving a receipt or confirmation for a submitted document. The fastest way to send a document is to deliver it directly to the recipient with no intermediate routing or mail boxing - and this is exactly what AS2 and AS3 protocols specify. AS2 and AS3 capable software at the sender establishes a connection over the Internet to the receiver's software and sends the document. The receiver then gives the sending system a receipt.

Enterprise Network Security

New MIME based protocol AS2 offers options for security ranging from sending data over a secure connection (HTTP/S) to package encryption (using a digital certificate to completely encrypt the business document). A document also can be digitally signed, letting a receiver be confident the document is valid. Along with its significant benefits, AS2 presents some new challenges, especially to smaller suppliers that might be called on to implement AS2 to connect to one or more of their large customers.

Although there are significant benefits, AS2 also presents some new challenges, especially to smaller suppliers that might be forced to implement AS2 with their large customers.

First, AS2 requires a company to have at least one computer connected to the Internet around the clock. Specifically, a requirement of EDIINT AS2 is the Internet visibility of a valid IP address. While AS1 uses email attachments and is routed through existing email servers and protocols, AS2 poses the problem of opening up a portion of an enterprise network to the outside world to enable receipt of files via HTTP/HTTPS. All solutions must involve network administration where the initial reaction can well be, "No!"

Second, AS2 requires companies to manage digital certificates, which can be revoked at any time, and which will expire periodically. This means that someone actually must visit each issuing authority and look at the revocation lists. Expired certificates also must be renewed with new certificates, and this burden grows with each partner. Digital certificates must be imported manually to the AS2 software, and there are no commonly used standards to deal with revocation.

There is also a new specification from the Internet Engineering Task Force (IETF): AS3. This new MIME based protocol defines how to perform secure and reliable file transfers with FTP in a standardized way to ensure interoperability between solutions (important concern related to B2B transfers). AS3 provides security and reliability features FTP does not. The formal specification and foundation upon open standards ensure AS3 can be implemented by many organizations and commercial software vendors in an interoperable manner. AS3 also provides for no repudiation and because encryption is document-based and doesn't interfere with network packets, it is much more compatible with firewalls than Secure FTP using SSL.

AS3 is a client/server model like FTP (as opposed to "peer-to-peer" like AS2). AS3 uses MDN's (receipt notifications) just like AS2. The client initiates "send" and "receive" just like regular FTP. Client-side AS3 does not require a listener (unlike AS2) to be always aware of inbound traffic, so a persistent Internet connection is NOT required (Unlike AS2 that does require a persistent connection for the listener). Dial-up Internet connections are fine.

EDIINT Software Evaluations

Effective Data has undertaken an evaluation of six EDIINT software packages. Each of these packages, in their most basic form, can get a company functional with EDIINT with a minimum of additional hardware and software.

The Drummond Group has certified all the evaluated products as EDIINT AS2 compliant. The five were selected because they are stand alone products that can be plugged into an existing EDI infrastructure without significant changes to current operational set ups.

Product Descriptions

The following software packages are capable of doing EDIINT processing, i.e. doing all the required functions of a certified, interoperable, EDI over the Internet system.

Please contact software vendor for an exact pricing.

<u>Company Name</u>	<u>Contact Information</u>	<u>Software Name</u>
bTrade, Inc.	http://www.btrade.com 1-877-4bTrade	TDAccess, TDPeer, TDNgin
Cleo Communications, Inc.	http://www.cleo.com 1-800-233-2536	Cleo LexiCom
Cyclone Commerce, Inc.	http://www.cyclonecommerce.com	Cyclone Interchange
Inovis USA, Inc.	http://www.inovis.com 1-877-4INOVIS	BizConnect
Isoft Corporation	http://www.isoft.com 1-214-890-9988	Commerce Suite
Sterling Commerce Inc.	http://www.sterlingcommerce.com	Gentran Integration Suite

bTrade, Inc.

TDAccess/TDPeer

TDAccess/TDPeer is a comprehensive EDIINT real-time communications solution for smaller trading communities. It has task scheduling and can be integrated into back-office systems. It features AS1, AS2, VAN/SSL, and PKI certificate security.

TDPeer comes with three components. The Client is a command-line interface. This is either DOS or a Windows interface. The AS2 server is the HTTP listener, needed for real-time inbound transactions. The TDManager module is used for trading partner relationship setup and certificates setup.

Command line instructions are used to start processes – these are put in a command file (batch file). The system routes files using filenames. There are log files, where error notices can be found.

The TDAccess for Windows is priced at \$1,500.00 (for UNIX cost is \$3,500.00, for AS/400 cost is \$5,000.00, for Mainframe cost is \$20,000.00). There is a Wal-Mart starter package available.

“bTrade, Inc.” also offers **TDEngine** that supports larger environments.

Cleo Communications

LexiCom

LexiCom is an automated client file transfer tool that allows scheduling of automated Internet file transmissions and retrievals. It allows transferring files to and from remote host (either server or VAN) mailboxes at scheduled times, communication with several different partners through a variety of protocols, automatic handling of transmissions, and configuring special handling instructions for separate files within transmissions.

Transmissions can be initiated by using command-line options from batch/command files; Multiple mailboxes can be configured according to function, file type, partner, or other criteria; Transfer status can be actively monitored; The XML log file may be viewed or used to generate custom transfer reports using XSL style sheets; The schedules allows multiple transfers with multiple partners at specified times; Received files with duplicate names are uniquely named. The received files can be routed to local applications or remote partner mailboxes without intervention.

The LexiCom software (support for Windows, Unix, Linux & AS/400) is licensed, one license per computer per trading partner. Cleo has Monday through Friday telephone support on a callback basis. A subscriber account is available for downloading free upgrades and sample scripts. There is a support knowledgebase available at www.cleo.com without subscription.

LexiCom comes with the necessary Java Runtime Engine, GXS IBC Dialer for dialing the GXS network, and LexiRas for dial-up networking. Also there are many pre-configured hosts (Daimler Chrysler, Ford, Michaels, IBM IE, GXS ICS, Wal-Mart, etc). Cleo has a test server for testing AS2 and FTP.

The LexiCom screen has all the views and tools needed for system configuration and activity monitoring. This includes log file viewing, host command scripting using built in commands, certificate generation and maintenance, etc.

This package lacks some of the features that are found in the bigger packages, like email notifications (except that MDNs can be forwarded by email), data archiving, document viewers, reporting, etc.

The base price of the “Cleo VLTrader for Windows” is \$1,095.00 per license for one trading partner; the support fee is \$219.00. The 10 Trading Partner version is \$6,000.00 with \$1,200.00 for the annual support.

Cyclone Commerce

Cyclone Interchange

Cyclone Interchange is an Internet-based trading engine that facilitates B2B initiatives by making it easier, faster, and more reliable to connect and scale Internet trading communities. It is part of a powerful set of solutions designed for large enterprises with hundreds of trading partners. It comes mostly preconfigured – enabling quick installation and connection to partners. It can be managed and monitored by Cyclone Central (network management platform), and can manage and monitor Cyclone Activator (secure connection end-points). It will also work as a standalone package.

Cyclone Interchange has document tracking; retry upon delivery failure; archiving by partner; JAVA architecture; a built-in database for partner profiles; supports external databases; “Quickstart” testing server and technical support; detailed logging; and administrative consoles.

The Administrator applet is used for doing configuration of company profiles, partner profiles, schedule definitions, certificate creation and user profiles. This is also where the Server Monitor can be started. The Server Monitor is a real-time html report on server activity, having sections for Summary, Agents, Transactions, and Alerts. The Server Monitor is a useful tool for status monitoring of the system.

There are some other consoles. The Server, Tracker, and Monitor Server include pretty much what’s in the Server Monitor. The Tracker adds event and audit logs. There is a document generator that will create X12 and XML documents for connectivity testing.

The outbound processing method is for Cyclone Interchange to poll the out directories; process and send the data according to the partner profile; send email notification if Cyclone Interchange cannot do the processing; and back up the data. The package is resent the number of times specified in the profile until acknowledgement (MDN) is received. After the last retry, the document is placed in the rejected directory, and an alert email is sent.

Inbound processing places the decrypted, verified, uncompressed document in appropriate directories, backs up the data, and sends an MDN, if requested. Error alerts are sent if necessary. Routing is via Profile preference, document header, hub and spoke, or peer-to-peer.

There are five levels of messaging used for alerts and logging. This package uses all transport protocols, security models, and data types.

Administration would include adding and maintaining partner profiles; adding users; adding schedules; maintaining certificates; configuring new transport methods, etc.

Pricing for the whole suite begins at \$600,000.00, while the Cyclone Interchange module is \$12,000.00 for 10 Trading Partner license with \$2,160.00 for annual support. Activator is pegged at \$3,000.00 for a single trading partner.

Inovis***BizConnect***

BizConnect is a Java-based data exchange solution designed for small-to-medium size enterprises with up to 25 business partners. It is scaleable using IPNet's BizManager BizLink server solution. It runs on Windows 2000, AIX, AS/400, Solaris and HP/UX. BizConnect comes with pre-configured partners (Ace Hardware, Auto Zone, Wal-Mart, etc.), plus there are other items already configured, such as several EDI reports.

There are powerful business rule capabilities that allow conditional routing/transport type, file manipulation, extra processing, API scripts, alternate scheduling, as well as Web-based transaction monitoring and tracking, and email alerts are strong (very useful features).

BizConnect includes a self-signed certificate generator and includes both Functional Acknowledgement processing and Message Disposition Notification processing.

The BizConnect Web Administrator console is where the user configures and monitors the system. The available areas are:

- Parties List – Both external trading partners and internal server owners are listed. In the External trading partner area one can add processing rules, such as checking for duplicate EDI interchanges, specifying transport type, etc. Rules can have conditions, such as a code (PO) in a segment (GS). The actions available for these rules are quite varied and useful. They include calling IPNet TransAct API scripts.
- Transactions – Here one can view lists of transactions that failed, were successful, are pending, etc. There is a good Find utility.
- Reports – MDR and EDI reports can be viewed. New reports may be defined. These might be based on pending, negative acknowledgements, positive acknowledgements, timeout, etc.
- Access – User enablement and information.
- Server – Services, Aging, Gateways, Agents, Settings are the configurable areas.
- Setup – Configurations for XML Doc Types, Doc Types, Certificates, Licenses.
- Tools – Configuration file Import and Export, XML Validation.

There is a Directory Monitor Service that scans, or polls for incoming files. There could be multiple instances of Directory Monitors for various purposes, perhaps to route different file types differently, based on file extension, etc.

The list price starts at \$5,000.00 for a single trading partner, additional trading partners at \$1,000.00 each with discounts for five trading partners total cost at \$7,500.00 and ten trading partners at \$9,000.00 for the Windows product. Minimum UNIX pricing starts at \$50,000.00 for 25 trading partners. AS/400 carries a 20% premium over Windows pricing.

iSoft Corporation***Commerce Suite***

The iSoft Commerce Suite is a core product that enables B2B transactions over the Internet using AS1/AS2/Secure FTP EDIINT protocols. It has a very small footprint, but can process 6,000 transactions per minute on Windows PC/Server, AS/400, Unix/Linux machines. This is the EDIINT solution that Wal-Mart has implemented.

Key features are: unlimited trading partners; message queuing; load balancing; XML administration; thin client administration; multi-threading and multi-tasking for scalable parallel processing; creation and application of digital signatures; suitable for large trading communities.

The package comes pre-configured, and has a web-based console for system administration and a Java based Manager for Trading Community setup. Using the console/manager, easy access is given to document tracking, alerts, configuration, setup, partner profiles, etc. It assures reliable data delivery through session management and recovery features. It provides automatic notification of transfer completion.

Available packages include:

- Wal-Mart only Connection - \$550.00
- Commerce Suite Base, which includes up to three partner connections - \$3,100.00
- Commerce Suite for AS/400 - \$2,000.00 to \$6,500.00
- Addition partner connections - \$500.00 to \$800.00 each depending upon the number of partner connections required.

Sterling Commerce

Gentran Integration Suite

Sterling Commerce is one of the world's largest providers of EAI and B2B software solutions. Sterling's Gentran Integration Suite consolidated the Gentran and Connect: families of its products. This consolidation resulted in a single integration platform that can handle both small transactional messages and large bulk data and batches of messages.

The Gentran Integration Suite supports plenty of Internet protocols and new standards including EDIINT AS1 and AS2. It also features mailbox services, real-time and batch processing, and is suitable for large trading communities.

Sterling's mailbox functions are similar to mailboxes in a mail server but holds messages rather than emails that allow for:

- Each user can have one or more mailboxes
- Mailboxes can be functional, rather than user related
- A user can be continually connected to the mailbox and process messages continuously
- Users can leave message in the mailbox and then process them on mass
- Rules can be applied to the messages as they come in to a mailbox to decide how they should be processed (some messages should be dealt with urgently while others should wait for a batched process)

Over and above these email analogous functions Sterling Integrator provides the ability to connect to the mailboxes using various protocols so the messages could arrive:

- Over a message protocol such as JMS or MQ
- As a web service
- As a file transfer initiated from a browser
- Directly from a form on a browser so that a small user would not need any special technology at their end to send or receive B2B messages

Because everything goes through a mailbox the applications do not have to be aware of the widely differing partners. This gives a great flexibility to the partner connections without needing any changes in the applications.

Available EDIINT with AS2 packages (GIS - AS2 Edition - Windows 3.1.00) include:

- 3 Trading Partner package is \$2,000.00 with \$400.00 annual support fee.
 - 6 Trading Partner package is \$4,000.00 with \$800.00 annual support fee.
- For large customers full Gentran Integration Suite starts at \$40,000.00.

Help is Available

Effective Data has over a decade of experience implementing EDI and working with Internet technologies. That is the kind of experience that can make the difference between struggling through an EDIINT implementation and quickly and efficiently implementing the process to maximize return on investment. Effective Data's senior level consultants understand the issues involved with responding to change requests from important customers, exactly the kind of experience needed to help smooth over the rough edges in an EDIINT implementation.

About Us

EDI is our forte and nobody does it better. Over the past decade, ED has supported companies of all sizes - in every industry. From Mom and Pop shops - to the Fortune 100, ED has developed and implemented an EDI solution for them all. We have worked on every platform and with every EDI software package under the sun - whether home grown, off the shelf, or custom. Through all the ups and downs over the past decade, one thing has remained constant; the nation's top companies have continuously relied on Effective Data for EDI support.

Effective Data builds and maintains long-term business relationships with our clients. Offering a unique approach to each project and unsurpassed responsiveness, our clients receive EDI services that are aligned to meet their specific technology needs and business objectives. Before you move ahead with your next project, evaluate our past. Clients include:



Company names and/or trademarks are the properties of their respective companies

Further details and testimonials from our client base can be obtained by contacting our offices or visiting us on the web at www.effective-data.com.