



**EDI-INT AS2:
VAN Elimination
&
Deployment Options**

A Business and High Level Technical
Guide to AS2

Version 1.0

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Executive Summary

The one truth about operations is that reducing operational expenses has a more immediate benefit to your bottom line than increasing your revenues. Why is this? If a company generates a million dollars in additional revenue, there are certain costs associated with attaining this money which include sales, marketing, development and additional support costs. This leaves you with a profit margin (otherwise known as EBIT). Depending on your industry this can range from 15 to 30 percent, thus really only adding 150K to 300K in profit; but, reducing your expenses by one million dollars goes directly to your BOTTOM LINE.

The primary motivations for introducing electronic collaboration, more commonly called Business to Business Integration has been to achieve cost savings while simultaneously reducing process inefficiencies. Over the last decade those companies which have managed their core business operations the most efficiently and effectively have gained competitive advantage and garnered a higher percentage of market share. As market leading companies have managed their business processes from a fundamental standpoint, they have also realized that the underlying technology is a key driver of their success. The worlds largest retailer, Wal-Mart, is a leading example of a company which continually strives to utilize cost saving processes through the application of technology solutions. This now leads us to the question of EDIINT: AS2. Why should the solution be evaluated and what are my options today?

On a high level, EDIINT AS2 is an Internet based communication protocol which allows you to send business data such as Purchase Orders, Invoices and Delivery Notes over the Internet regardless of the data format EDI (Electronic Data Interchange) or XML. The traditional means of transferring business data to trading partners has been via the Value-Added Networks; however, there is a large cost associated with using these services and typically the pricing model is very confusing. By utilizing the AS2 solution in your B-to-B strategy, a company can reduce their on going expenses with VANs. It is critical that an organization understand the benefits of existing technologies and new Internet standards.

No company can afford to dismiss this new Internet protocol—think for a second about the cost savings potential that Wal-Mart with over 5,000 trading partners will see by reducing their VAN costs by even 10 percent. Over the past year, the adoption of EDIINT has steadily increased as organizations look to reduce their costs; however, the adoption of this standard has been inhibited by software prices that do not promote large scale deployment. SEEBURGER is the first worldwide B2B integration solution provider that is answering the marketplace with an affordable, unlimited use AS2 module. In this overview, SEEBURGER provides an explanation of not only what EDIINT AS2 is, but more importantly how the protocol can be implemented today.

SEEBURGER Company Profile

SEEBURGER has been exceeding customer expectations for more than 17 years. Currently more than 5,800 customers including approximately 1000 SAP customers utilize our Business Integration Suite to solve internal and external integration of disparate IT systems and business processes. Providing an efficient, flexible, and open software solution has made us the worldwide leader in B2B/EDI. SEEBURGER delivers the products and solutions that connect disparate applications, networks, suppliers, and customers.

The Business Integration Suite (BIS) is designed to solve the complex needs of global IT departments with intuitive and cost effective software solutions, thus eliminating the need for many programmers. The end target is to achieve the seamless connection of systems and business partners resulting in 100% Trading Partner Integration. With our solutions, we are in a position to enable our customers to connect their internal applications and business processes to their external partners – large-scale enterprises or small and medium businesses (SMB); thereby, automating fundamental business processes and information exchange in the logistics and supply chain.

The Business Integration Suite (BIS) contains everything that is necessary for the internal or external integration of company-wide business processes, thus operational processes from procurement to sales management can be completely integrated. BIS handles all message and communication standards including point-to-point-connections via EDI and XML, marketplaces, portals, or over traditional fax. Companies of all sizes and in all industries can profit by investing in SEEBURGER's software solution resulting in significant increases in efficiency while achieving a quick return on investment.

The communication components establish the connection to the external business partners. They serve for the exchange of data in the form of messages. Supported transport methodologies include Value Added Networks (VANs), ISDN, the Internet, analog point-to-point-connections, company-internal Intranets, Internet connectivity such as AS2, and branch-specific Extranets like ANX/ENX (Extranet of the automotive industry).

Key Points:

- Provide flexibility to incorporate a mixture of protocols to reduce costs
- Provide the transport required by different EDI and B2B standards
- Provide administration of partner data
- Provide administration and observation (runtime of the chosen transports)

Emerging Technologies

Communications History and Evolution: How did we get here?

Over the past few decades, businesses have been communicating electronic documents in the form of EDI messages. The routing and distribution of these documents has been evolving over the last 5 years with the advent of the Internet and new communication protocols. It is important for all corporations to understand the evolution of electronic communication channels as this will be crucial for managing costs. For any business, the key challenge will be to match the correct communication protocol with the right customer and suppliers. The new Internet-based messaging is providing increased flexibility, better response times, and lower cost options for data exchange between trading partners; however, analysis and final decisions will be based on the industry, geographic specific movement, as well as the mixture of trading partner capabilities.

Historic options for communicating include:

- Traditional Value-Added Networks
- Point-to-Point Connections, modem
- Internet Messaging
 - Mail (SMTP/POP3/IMAP4)
 - FTP

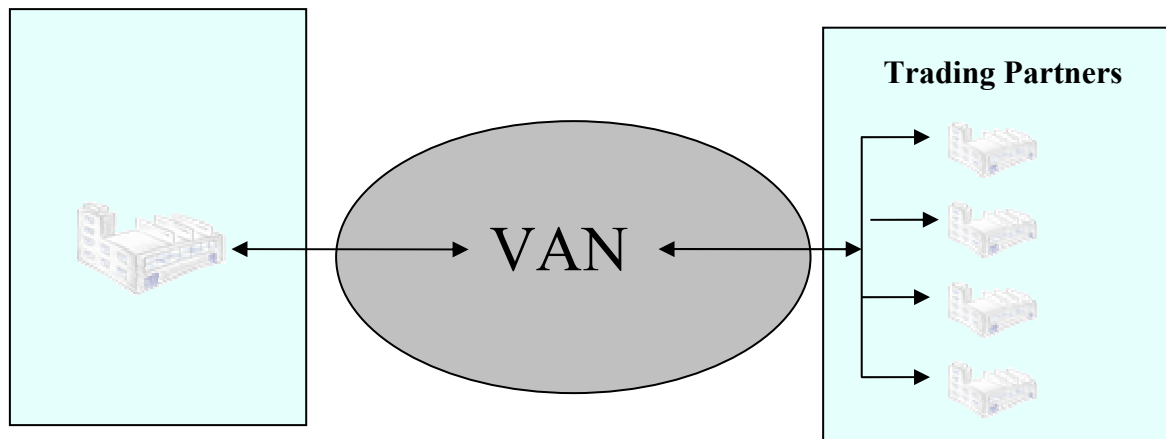
Traditional Value-Added Networks

There was a time when transport/communication technology was limited to the Value Added-Networks (VANs) and proprietary protocols. VANs have been the dominant force in data exchange over the past few decades and made EDI a possibility. Today, they still have strengths, but they do have weaknesses.

Key Characteristics:

- Worldwide network of global and local acting VAN providers (IBM, AT&T, GEIS, Telebox, Atlas, Ecodex, MCI, Sterling, ...)
- EDI relationship: long history of performing its desired functionality
- Closed networks and reliable providers enable communication without encryption and signature

- The user needs only one physical connection to the provider to reach all his communication partners (Hub-Spoke-Architecture)
- Heavy use: multiple trading partners can be accessed via VAN connectivity
- Reliability & Security: VANs manage the process of coordinating document exchange, once the VAN has received the document they provide excellent monitoring and execution capabilities as well as separation of multiple trading partners via log-in and password protected entry ways.
- Asynchronous transfer (notifications/reports, store & forward) : store and forward doesn't accommodate some new Industry initiatives that involve more real-time integration that the Internet is evolving to handle
- Operational Fees: If the number of documents is high, VAN charges can be confusing and pricy

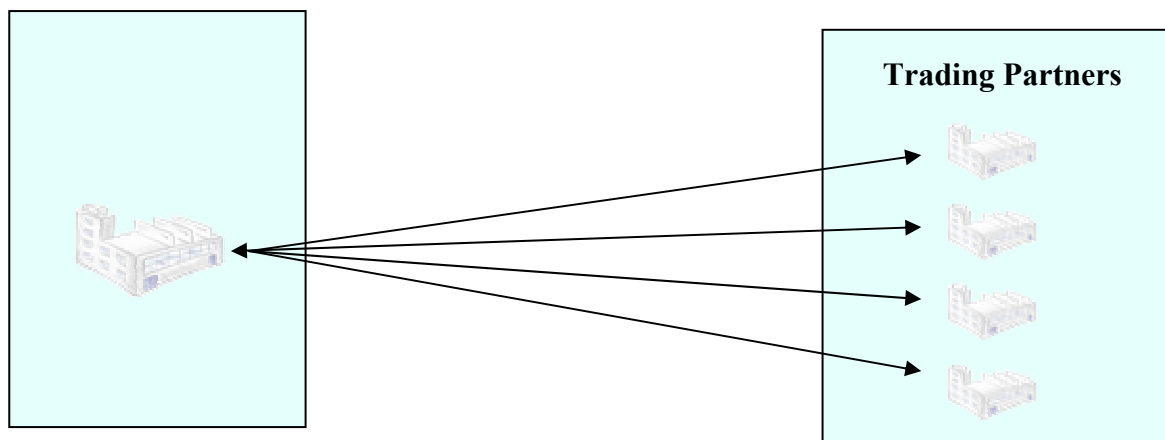


Point-to-Point Connections

By using Point-to-Point connections, you have to provide and configure a direct dial-in connection to establish a link to every single trading partner. Although you can get rid of the VAN costs utilizing this methodology, you will have to deal with dial-in configuration and provisioning as well as (long distance) call costs. Furthermore there may be availability and reliability issues.

Overview:

- Using the available telecommunication networks (ISDN, X.25, Modem) that form a homogeneous infrastructure on regional level; modem connectivity can have reliability issues in large numbers
- The user has to maintain one physical connection to each of its partners
- Addressing is done via phone number
- Closed, quasi tap-proof networks allow communication also without encryption and signature
- Guaranteed bandwidth => pre-calculated transfer times



Internet Messaging

The Internet is generating mindshare with those business and technical executives who are always looking to manage the cost of communication. The Internet is a global infrastructure with the inherent benefits of being independent of the regional networks while having the ability to handle both asynchronous and synchronous communication depending on the procedures and protocols used. However, one must remember that this is an open network accessible to everyone and users must provide security measures such as firewalls and other protocols. Before we look at AS2 in more detail, let's look at some of the other options that are in use today.

Mail (SMTP/POP3/IMAP4)

- Asynchronous, bi-directional, routing-capable
- Addressing analogue to X.400
- Store & forward principle
- Security of transfer by notifications (reports) – not standardized for implementation
- Security of contents »outside«, i.e. by additional procedures such as PGP, S/MIME, PEM, ... – not standardised for implementation

FTP

- »Unidirectional«, synchronous, not routing-capable
- Point-to-Point principle between client and server
- Security of transfer in protocol
- No security of content
- Incompatible FTP server

These particular communication protocols while they save money still have the issues of securing both the transfer and the content. Due to these gaps of old, industry specific communication protocols were generated over the past few years such as RNIF for RosettaNet. The movement to Internet based messaging is inevitable especially with these newer XML standards in release as well as the previously mentioned cost savings from moving away from the VAN. Take for example the Big 3 Automotive OEMs, they started to replace proprietary VANs with an Internet-based VPN over 4 years ago. Additionally, Daimler-Chrysler has moved to a protocol denoted as EBMX to save money. With all of this activity, you can see why the decisions about which communication protocol to utilize are not black and white. However, the multiple and industry specific standards, the weaknesses of certain protocols regarding secure data transfer, and the high costs of some options which we have discussed should give you an understanding of why AS2 was developed. EDIINT AS2 is vertical, industry and data format agnostic, but more importantly it covers routing control and the secure transfer of the package.

AS2: Due Diligence is Key

What is EDIINT?

EDIINT (EDI over INternet) protocol is a MIME based data exchange protocol which has two flavors, either communicating through AS1-SMTP (mail) or AS2-HTTP (web). EDIINT is especially designed to allow agnostic (but assumed EDI data) format transmission over the Internet. Therefore, the EDIINT focuses on a common protocol format (MIME), security (encryption and signatures) and business process exchange requirements (ack/nack signals, Non-repudiation of receipt).

In general the EDIINT specification provides the layout of messages about to be sent as well as definitions for non-repudiation of receipt (NRR) by providing MDN (Message Disposition Notification). EDIINT also defines all levels of security regarding messages by allowing encryption as well as signatures in both the EDIINT data/content messages as well as in the EDIINT notification messages (MDN).

Strengths include:

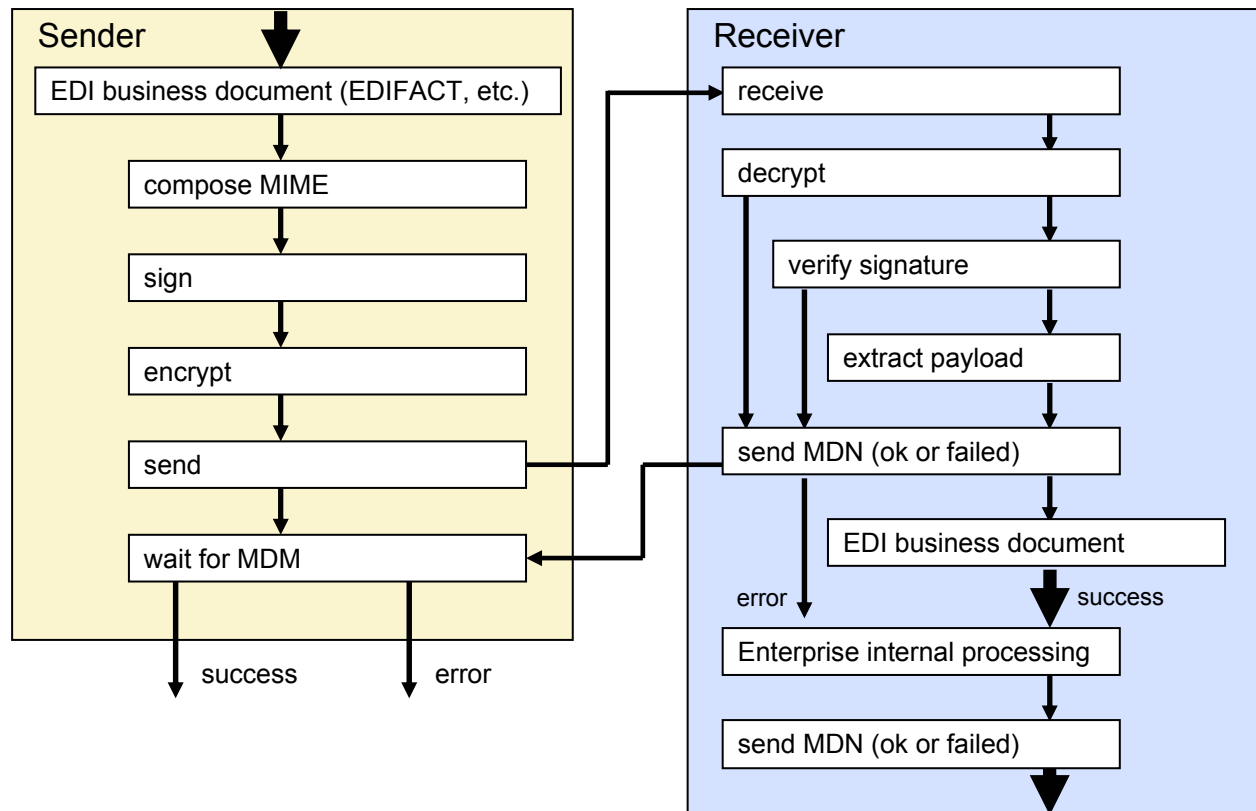
- Operational Fees: low, as to lack of transactional or kilo character fees
- Reliability & Security
- 24/7 availability (Internet)
- No charge for long distance calls anymore
- Designed for secure and reliable data transmission over the internet
- Digital Signatures provides authentication and prevents data manipulation.
- Encryption ensures the security of your data at all times.
- Supports the handling of acknowledgments to ensure your data was safely transferred.

How does AS2 work?

The purpose of the EDIINT AS2 (EDI over INternet) protocol is to allow the secure exchange of EDI data over the public Internet utilizing HTTP as the transport protocol. AS2 is designed to allow the secure transmission of any type of files (but usually EDI). As AS2 utilizes the internet to exchange data with your trading partners, all you and your partners need is a persistent connection to the Internet. AS2 uses two different message types: the actual payload message and the Message Disposition Notification (MDN). The payload message encapsulates an EDI file so that it can be transmitted via HTTP. Additionally, the payload message may be compressed, encrypted or digitally signed by the sender.

The purpose of the MDN is to acknowledge the receipt of a payload message. An MDN contains machine-readable information about the delivery status of the payload message. For example, it contains the message digest (MIC) of the payload message as calculated by the recipient.

An MDN may optionally be signed, in which case the recipient can authenticate the sender of the MDN and check its integrity. A valid, signed MDN together with a valid MIC reported by the MDN can be used by the sender of the payload message to claim “non-repudiation of receipt” (NRR) of the payload message.



What should I consider in my Due Diligence of AS2 Solutions?

Trading Partner Capabilities.

It is very important to understand the communication capabilities that your trading community is capable of performing. True, many companies started with AS2 due to the Wal-Mart initiatives, but the global community is seeing the tangible benefits of utilizing Internet based messaging. This can be seen by other large organizations adopting similar AS2 policies as Wal-Mart. This is the first step; this will allow you to better understand the type of solution which will be necessary. Most companies will maintain a mixture of communication protocols for their trading partner community.

In order to perform AS2 communication with a trading partner, that partner must also be enabled with AS2 capability. From the supplier to an organization like Wal-Mart, this is not an issue, but to utilize with a wider subset of companies, capabilities must be evaluated and this is where ROI comes into play. AS2 solutions have typically been “protocol providers” for the single connections to the larger mandates. However, as one looks at the larger picture, companies must further investigate strategic concepts such as the Hub & Spoke model for AS2 connectivity. Hub & Spoke allows your organization to be the impetus for change as well as the technology provider to your community. This solves the issues of having the community look on their own for expensive solutions as well as gives the ability to download an AS2 solution which is automatically linked to your Hub and flexible enough for your partner to utilize with their other partners. Even more important is the fact that a Spoke solution can go beyond communication and offer Mapping/Conversion capability to those partners that currently don't have a B2B solution in house. This generates a strategic investment: cover all AS2 needs, supply your trading community with AS2 to ease rollout, and provide an end-to-end integration strategy for small suppliers that allows you to reduce inefficiencies and costs.

Solution Providers:

Selecting the right company is very important as again this is a portion of a much larger picture. Today, there exist a number of “protocol providers” that started to focus on AS2 when it first came to market. These “protocol providers” sell stand alone AS2 solutions. The question that should be asked is: Does my company want to add another 3rd Party software application that performs one task or a solution that allows me flexibility with my trading partners. As discussed before, the supplier capabilities are critical to understand in fully gaining the advantages of AS2, and communication protocols are a piece of the integration puzzle which also includes: Workflow, Data Conversion, Data Mapping, and Monitoring. In a market that is consolidating will these vendors be around a year from now, and will they be able to add value in future initiatives. Does a company offer just the protocol or a strategy and long-term viability to assist in generating ROI?

Drummond Group Certification

The Drummond Group is a non-biased 3rd Party testing service. They excel in the testing of software compliance. Over the past few years, they have developed the eReadiness testing program that ensures that different AS2 solutions have the capability of interoperating.

Monitoring, Logging, Error Workflow

It is important to understand that when Internet Messaging such as AS2 is implemented that some of the value of a VAN Store and Forward methodology is lost. VANs offered the services at a high cost of monitoring your data and ensuring that this was completed; however, this system was not perfect; errors would occur. It was the responsibility of the VAN to monitor and fix these transactions—it was covered as part of their fees. With AS2, the monitoring capability is replaced by automated workflow and monitoring.

Pricing & Licensing

Many of the “protocol providers” placed a large trading partner fee on these communication solutions which handled only a small subset of functionality. Today, this pricing should be avoided and again points to the survivability of these types of providers. ROI comes from adoption and deployment. Many companies priced these solutions at a point which was not palatable to organizations for this to take place. Organizations today should look for an unlimited trading partner license model. SEEBURGER provides a low cost, unlimited trading partner model as AS2 in our view is a communication protocol in the larger picture of B2B integration.

Achieving ROI is a simple calculation, but requires the necessary due diligence outlined above. Numbers and figures to consider when doing this ROI analysis include:

- How many Trading Partners do you work with?
- What percentage are AS2 capable today?
- What percentage are willing to discuss AS2 migration?
- What is your current volume of data you are running through a VAN?
- What are your monthly VAN charges?
- What is the upfront investment for AS2 (software/services/maintenance)?

**The other key point to remember is that if you have to become compliant due to a customer requesting AS2 such as Wal-Mart, why not look into the further cost savings of the protocol.

SEEBURGER AS2 Installation Scenarios

SEEBURGER analyzed the market and developed 3 tiers of solutions to allow for flexibility as no one company has the same needs, yet all companies focus on strategic growth and need solutions which can expand in functionality.

- **BIS: AS2 Stand Alone Solution**
Some companies will desire just to trade with a few partners, and communicate data out of a multitude of B2B systems at a low cost thus needing a stand alone AS2 solution.
- **Business Integration Suite: BIS: AS2 Module**
Many companies are looking to invest in full integration suites that cover workflow, XML/EDI conversion, monitoring, and of course communication. SEEBURGER added AS2 as a primary protocol to the already 50 industry and regional protocols that are capable with the SEEBURGER BIS.
- **BIS: Hub & Spoke AS2**
As our company focuses on 100% Trading Partner integration, we saw in the market that in order for true ROI, the solutions needed to be deployed through out the trading partner community. The Hub & Spoke model focuses on the deployment and management of AS2 connectivity between larger organizations and their suppliers ensuring interoperability, risk management, ease of deployment, and of course ROI. It goes one step further by providing the ability if desired to enable end to end integration with those partners in a trading community that had not typically traded business documents electronically.

In this section, we explore in more detail the functionality included in these modules. All of the solutions are based on the same architecture so if your needs today only involve a few partners, you are still protected for the future and can easily gain the benefits of the more complex functionality. All modules comply with the necessary AS2 specification including, but not limited to, the following topics:

- Message security
- Signatures
- Encryption
- Non-repudiation of origin
- Non-repudiation of receipt
- Message compression
- Synchronous and asynchronous delivery notifications (MDN)

For more detailed technical information please refer to the following whitepapers: See BIS: AS2 Stand Alone Whitepaper for details or See BIS: AS2 Module Whitepaper for details.

BIS: AS2 Stand Alone Solution

Beside the AS2 protocol specific features, SEEBURGER's BIS: AS2 "stand alone" solution offers a broad set of functionality to deliver a complete and sophisticated solution. To enable you to connect and manage your data exchange with your trading partners, SEEBURGER's AS2 "stand alone" solution provides the following features:

- Trading Partner management.
- Sending/receiving messages using AS2
- Monitoring of message exchanges and trading partners.
- Backend integration Services (DB, File, Batch, Script, API)
- Transformation Services. Possibility to transform messages from in-house formats to a partner specific format and vice versa. Almost all relevant formats are supported (EDIFACT, ANSI X12, CSV, INHOUSE (Flat files), XML)
- Remote administration.

Business Integration Suite: BIS: AS2 Module

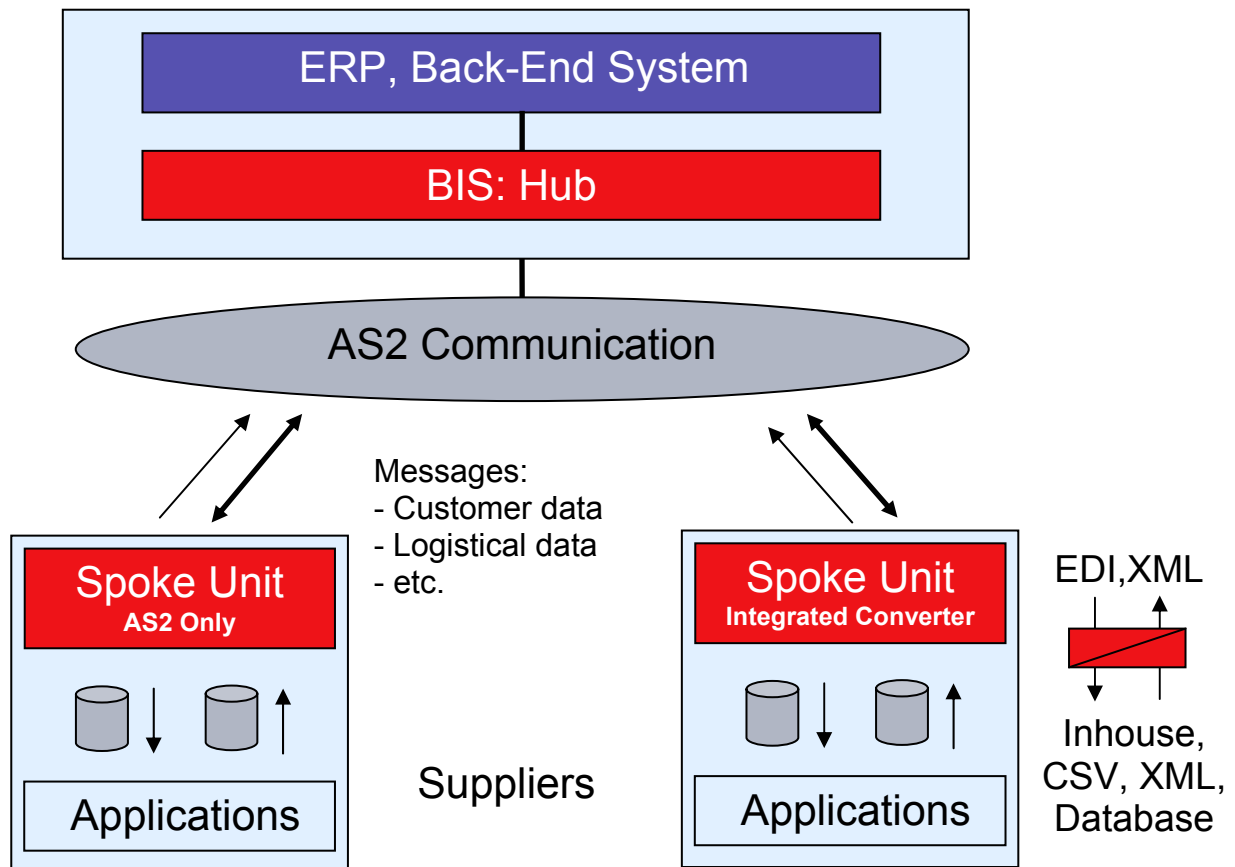
SEEBURGER's BIS: AS2 is a fully integrated extension for the SEEBURGER BIS (Business Integration Server). By using the SEEBURGER BIS and the AS2 extension you have access to the following core functionality as well as the

- Sending/receiving messages using AS2
- Monitoring of message exchanges and trading partners.
- Backend integration Services (ERP (SAP, BAAN, JDE...),DB, File, Batch, Script, API)
- Transformation Services. Possibility to transform messages from in-house formats to a partner specific format and vice versa. Almost all relevant formats are supported (EDIFACT, ANSI X12, CVS, INHOUSE (Flat files), XML)
- Workflow definition and management.
- User management and security management.
- Remote administration.
- Scalability and Extensibility.

The key point to using the full version of the BIS: AS2 solution is the combination of a powerful Integration Suite that can meet all of your internal (EAI) and external (B2B/EDI) integration needs. Additionally, with our focus on 100% Trading Partner Integration, companies can gain the benefits of our small supplier solutions including Paper2ERP, WebEDI, XMLMail and full Hub & Spoke.

BIS: Hub & Spoke AS2

This solution takes into consideration the fact that many of the trading partners that a corporation would like to involve may not have pre-existing capabilities to perform AS2 communication. The Hub & Spoke model answers this deployment question. The Spoke Unit is a centrally managed add-on component. This solution allows the greatest potential for collaboration as it provides not only a rollout capability of an AS2 solution, but also the ability to provide an end to end integration solution to your smaller partners.



Conclusion

Cost saving are possible today. Business to Business Integration is evolving and this includes the manner in which business documents are exchanged. Today, unlike 5 years ago, options for reducing costs are viable. Companies must spend the time to investigate these options. True, no one communication is going to cover all of the potential trading partner's needs and capabilities, but a balance can exist which allows for the right mix of protocols at the most efficient cost structure. No company can overlook the potential cost savings that AS2 can bring.

When looking into AS2 solutions, there are a few key criteria that must be examined. As with all technology, first to market start ups will look to make a mark; however, companies must look at the strategic benefits of the solutions. From a practical standpoint, two key areas of research should be accomplished as they have direct bearing on both the viability of the software and the strategic reach it can facilitate.

First from a viability standpoint, companies should analyze the following when performing their due diligence on AS2:

- Their Trading Partner Communication capabilities
- Solution Providers—protocol vs. strategic solutions
- Drummond Group Certification
- Monitoring, Logging, Error Workflow
- Pricing & Licensing—look for unlimited trading partner licensing

Secondly, from a strategic role it is important for companies to understand the potentials of AS2 software when combined with integration suites. Solutions exist today that cover the basic one off trading partner, but more importantly solutions exist which are tightly integrated into a collaborative environment. Remember to look for options that can impact ROI in multiple ways.

Around the globe, more than 5,800 organizations-including over 1,000 SAP customers-are using SEEBURGER solutions to connect with their business partners and to reduce operating costs. If your organization is looking to reduce costs or implement an emerging standard such as EDIINT AS2, SEEBURGER provides the technology foundation that connects, integrates, and monitors your extended trading partner community.

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