



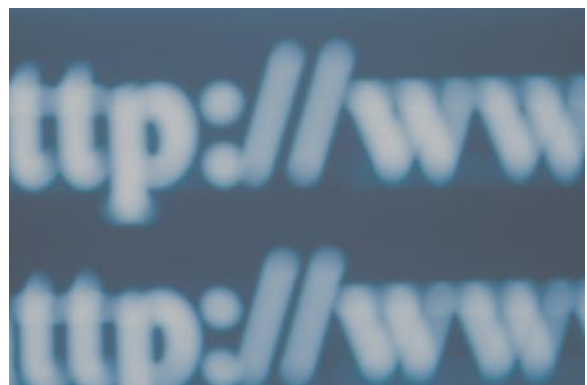
Integration that makes sense

The Business Case for an Enterprise Messaging Hub

Effective integration of business processes between two or more enterprises presents unique challenges beyond the challenges of enterprise application integration. This "B2B integration" becomes more and more challenging as the trading partner community grows to include more partners and extends to more collaborative business processes. The move to service-oriented architecture has accelerated business process innovation and increased the need for flexibility in the configuration and management of the trading partner network.

In the past, businesses have analyzed the opportunity and chosen the option or options from the available alternatives that suits their business needs best. Some businesses have chosen to implement a messaging hub in the enterprise data center using software, hardware, and support services owned, licensed or developed by the business. Others have chosen to "outsource" the messaging hub to a value-added network (VAN) or some other hosted services provider. Often, the best solution has been a combination of the two that leverages the strengths of the VAN while minimizing the cost through strategic use of direct connection. Business Integration Technology and other service providers have offered specialized services to assess the opportunity, implement the solution, and even outsource the maintenance and support of the messaging hub.

But what if we start over and take a fresh look at the problem. We could ask when and why is an enterprise messaging hub a good thing and when and why does a VAN provide an attractive alternative. But first, let's look at the components of the solution and determine when and why each component should be implemented locally or shared in a hosted service. Then we can examine what optimal solution could be crafted beyond the existing choices.



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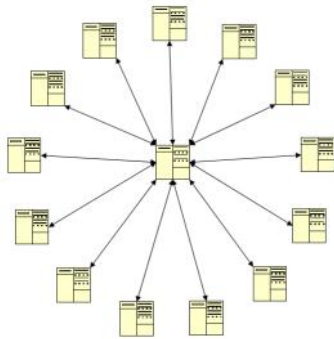
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So - what are the components necessary to provide a complete messaging service? Who should control each component? Is it more cost-effective to implement at each trading partner or is it better to share a service? Let's look at the components and make some observations. The most important business value is, of course, in the collaborative business process but that remains constant across the alternatives and is not the subject of this document. We presume that most trading partner communities include diverse participants each with their own enterprise systems, enterprise architecture, message formats, protocols, and processing schedules. And each participant will be in control of their own timetables for scheduled maintenance, technical upgrades, and messaging standards updates. That implies a need for adaptation and configurability of many aspects of B2B integration to achieve the necessary business agility.



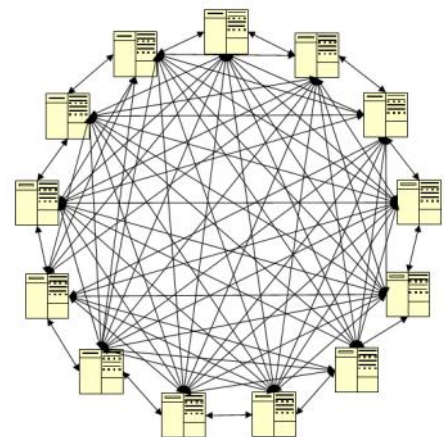
The technical components of a messaging hub include physical network connections, network protocol support, message format conversion, security management, and an auditable record of collaborative transactions.

PHYSICAL NETWORK CONNECTIONS



Much has already been said about the apparent benefit of a hub-and-spoke model over point-to-point connections between trading partners. While this benefit is clear in the case of actual direct network connections, the benefit is less clear when the connections are, in fact, all over the same physical Internet infrastructure in any case. A “pre-wired” large trading community can provide significant benefit, even if it is just the configuration of connections over the Internet - as long as that community includes the right partners. That said, the business models of VANs and other hosted service providers

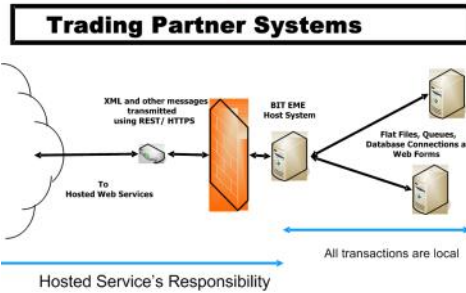
has been to bear the cost of configuring the connectivity up front and charge for it for as long as it is used. This made a lot of sense when the VAN “owned” actual physical network connections, but the on-going “click charges” can be burdensome and are hard to justify with extremely low Internet bandwidth costs. So - what can be said in general? If each enterprise implements a hub, and expects all trading partners to connect to them, the hubs actually become spokes in each others' hub without benefit. There are fewer connections necessary, in total, in a shared messaging hub. The trade-off is between the benefit of sharing connections and the cost of a shared hub.



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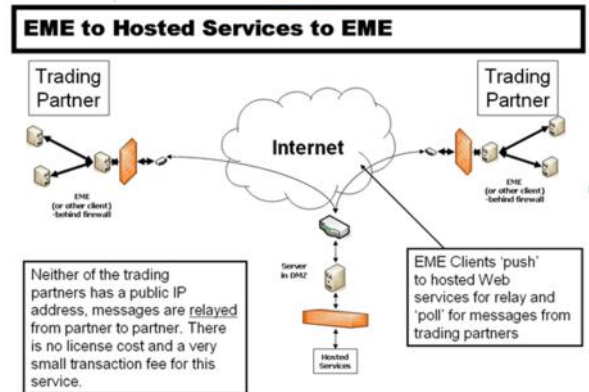
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NETWORK PROTOCOL SUPPORT



For many years, collaborative communities have touted the benefits of “standards” in message formats. Recently, this discussion has been applied to protocols as well. Recent technology innovations such as Web services have increased the desirability of a “universal standard.” While this is certainly an important effort and standards certainly provide value, it is clear that standards are not static and not universal. Even if all the members of a trading partner community agreed on a single protocol, there would be variances introduced by vendor implementations and standards updates and additions to reflect technical innovation. A messaging hub, whether implemented

by an enterprise or shared, will need to accommodate protocol changes and variances. A case can also be made that the real challenge and real business benefit is in getting the messages all the way from enterprise application to enterprise application. Then the issue of protocol becomes an enterprise application integration question and is unique to the trading partner and enterprise application. So, the general statement is that B2B integration requires protocol adaptation as a “necessary evil,” but integration to the enterprise application provides real value. The B2B protocol adaptation can benefit from reuse in a shared configuration - at a cost. The enterprise integration cannot be shared.



MESSAGE FORMAT CONVERSION

This discussion follows from the “standards” discussion on protocols. The real benefit is in integrating the business processes end-to-end and agreed-upon standards provide the value of a common definition of data elements and business processes that can facilitate that integration. Whether the data-center-to-data-center message format conversion is provided by a shared or enterprise messaging hub is much more a question of skill sets and tools than it is the location of the hub. If an enterprise has sufficient work in this area to justify dedicated specialists, they may reduce costs. But a wide range of specialized skills are required and many organizations will benefit from a shared “economy of skill.”

SECURITY MANAGEMENT

Security has many important aspects that apply to a messaging hub. These include authentication, authorization, encryption, non-repudiation, and the vulnerabilities of a publicly-accessible communications server. Enterprise strategy for security dictates the approach to some of these issues, but inter-enterprise security has its own challenges. Modern technology provides the fundamentals of effective authentication, authorization, encryption and non-repudiation, but Business Integration Technology has found that these fundamentals are rarely applied in a comprehensive manner across a collaborative community. Perhaps a shared hub will be more successful in enforcing security standards.

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The security concerns of a vulnerable communications server merits special consideration. Certainly, an enterprise messaging hub will require many network connections to many ports and protocols. This incurs significant risk. A shared hub (implemented without any direct connection) can reduce the risk to one connection and one protocol - but may still require a publicly-addressable Internet server with significant vulnerability. It is possible to access a shared hub from a secure outbound connection from behind the firewall and eliminate this risk. Even inbound messages can be received by "polling" - making scheduled requests. This is the most secure solution.

AUDITABLE RECORD OF COLLABORATIVE TRANSACTIONS

In addition to the non-repudiation of a digitally-signed message receipt, it provides significant business value to implement a trusted repository of inter-enterprise transactions. Although this component can be implemented at the enterprise messaging hub, an independent third party service has a clear advantage for hosting this function.

SUMMARY

In conclusion, for a large and complex trading partner community with sophisticated participants and a wealth of specialized technologists, the inherent benefits of a shared hub are clear for only a few things. Correctly implemented, a shared hub can reduce the complexity of the network, share the costs of an aggregate fewer total connections, and reduce the risks of Internet communications server vulnerabilities. Smaller, less technologically sophisticated participants and large enterprises that do not choose to build capabilities in B2B integration will see the additional benefits of economies of scale and economies of skill in a shared hub. Whether these benefits outweigh the costs is a business decision.

ANOTHER OPTION – The Virtual VAN™

The costs of a VAN or other shared hub are based on a reasonable return on investment for the hub on their infrastructure and services. Current vendors have chosen to implement the maximum capability in their data center and with their staff. Recent business and technology innovation by BIT has created another option - The Virtual VAN™. The Virtual VAN™ implements the absolute minimum shared service and distributes the remaining components to the trading community participants. The participants need only pay a dramatically reduced charge for what is essentially a commodity technical service. And they can make a business decision on which of these components will be supported by internal resources and which are more effectively outsourced. This new offering is made possible by leveraging commodity-priced on-demand services from a leading e-commerce vendor in concert with BIT's EME enterprise messaging system.

BIT Enterprise Messaging Engine				
Composite Applications	BIT EME Control and Configuration	Spring MVC	PXE* BPEL	
ESB	Mule - Universal Message Objects			J M X
Message Queuing	ActiveMQ and other JMS			
Business Logic	Spring POJOs	Jetty JSPs		a n d
Transmission	Mule Transports: HTTP(s), REST, SOAP, SMTP, JDBC, POP3, IMAP, TCP, JMS, File System	BIT Enhanced Protocols*: FTP, AS2, RNIF, WS-I, ebMS		
Transformation	Saxon	DOM4J		M X 4 J
Persistence	Hibernate	HSQL and other RDBMS		

* - futures

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Key features of The Virtual VAN™:

- A single connection for all inbound and outbound message traffic
- Elimination of the need for a publicly-addressable Internet communications server and its associated hardware, software, and support costs - and elimination of the vulnerabilities inherent in such servers; highly secure communications
- Low-cost and simple connection to trading partners and remote administration of trading partner interfaces
- Dramatically lower costs make business process collaboration efficient and effective

This solution represents a “disruptive technology” innovation by BIT. If you want to simplify your B2B integration while you cut costs to a fraction of what you are currently paying, please contact us for further details. A confidentiality agreement will be required.

	Learning curve	Your Control	Startup cost	License fees	Transaction charges	Data Center costs	Security risks
Customer-implemented software	---	+	---	---	+	---	---
VAN/B2B hosted services	-	---	+	+	---	-	-
BIT B2B outsource	+	+	-	+	+	--	--
The Virtual VAN	+	+	-	+	+	+	+

About Business Integration Technology:

Business Integration Technology (BIT), a leader in B2B integration for transportation, logistics, and supply chain, designs and implements highly cost-effective business-to-business connections that eliminate the costs of doing business with paper, phone and fax. With deep roots in transportation, supply chain and logistics, BIT brings innovative value to shippers, carriers, 3PLs, and any firm looking to improve cycle time and reduce cost.

You only pay us for the work our business-to-business experts do, not for licenses or transaction fees. You own the solution, you run it, and you save month after month.

BIT is based on the team that built the messaging engine that runs North American Rail. BIT is also a partly-owned subsidiary of Daugherty Business Solutions with over 20 years experience and over 400 consultants in St. Louis, Atlanta, Minneapolis and Chicago.

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