

WHITE PAPER

Top Ten “Must Haves” of an Integration Solution

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Introduction

The list of available integration options is massive if you include point solutions, or those which address specific types of integration. Most companies are moving painfully toward a fully integrated solution by combining point solutions – and often stretching them past their limits. At some point it becomes obvious that a more comprehensive integration solution will not only streamline processes and simplify the maintenance burden, but will also assimilate and present accurate, timely information that cannot be obtained via a collection of point solutions.

The list of appropriate integration approaches narrows when considering a comprehensive solution that can meet business as well as technical requirements. When selecting the appropriate comprehensive solution, refer to the list on the right of “must haves” that comprise an optimum set of functions and tradeoffs.

If you’re among the vast majority of companies that are not satisfied with the status quo of their integration environment, you may be wondering what options you have. You can continue to enhance and use your existing solutions, while being mindful of the costs of ongoing support and maintenance. Alternatively, if you’re considering a new solution, rather than focus on one area (data, application, process), you may wish to step back and adopt a comprehensive approach. You may be able to consolidate your existing suite of tools into a single solution that can more effectively address all your requirements.

Whether you decide to develop these capabilities in-house (e.g., customizing and connecting existing integration tools) or are considering a vendor solution, it’s helpful to have a starter list.

If considering a third-party solution, in addition to the suite of features, functions, utilities and connectors, consider the vendor’s service offerings. Investigate their ability to do asynchronous (for batched data) integration, integrate services exposed by a SaaS application, and easily integrate with cloud data, in real time.

The ideal solution should allow multiple integration services, including:

- Business-to-Business (B2B) for the exchange of business transactions
- Application-to-Application (A2A) for migration and movement of data across multiple applications, regardless of platform
- Database integration for migration and movement of data across databases, files, spreadsheets and other file types
- Data transportation across multiple communications protocols
- Integration with cloud data and services

Product Must Haves

1. Ease of use
2. Any-to-any integration
3. Model-driven approach
4. Automated object generation
5. Expandability and scalability
6. Process automation and event management
7. Business activity monitoring
8. Support for real time and asynchronous integration

Vendor Must Haves

9. Software solution support
10. Vendor viability

The Complexities of Integrating

Modern organizations require integration of data and process as well as automation of activities and processes. They require connectivity using different protocols, formats, platforms, security and timeframes from batch to real-time. All this must be accomplished with high availability, scaling and elasticity as volumes go up and down, with predictable impact on performance. Therefore, service-level monitoring is needed to ensure the right response times. Availability and throughput are managed transparently to the end user. If you're considering a vendor solution, be sure to evaluate their offerings across the top ten list covered in this white paper. This starter list should be expanded into a detailed list of requirements and prioritized based on your specific needs.

Companies struggle with delivering timely and accurate data for their applications in real-time, to a wide audience, internally and externally, as they deal with hundreds or thousands of disparate databases, and structured and unstructured data. The ability to aggregate, cleanse and present data these days is quite a challenge, particularly since a myriad of solutions are used to extract, transform and load data to make it consumable and presentable. The vast majority of companies are ill-prepared to meet today's data integration needs because of the inventory of point solutions they've aggregated and customized as a part of their arsenal to meet demand.

There are three distinct needs for integration: data, applications and processes. Managing each using different technology enablers can break the CIO's budget and the IT manager's back. Having taken on a defensive approach year after year in building the arsenal of tools, and given the availability of comprehensive integration solutions, perhaps it's time to proactively seek and develop a solution that can meet today's needs and address emerging requirements.

As integration capabilities have become mission-critical to every organization, they have also increased in complexity. It is more difficult than ever to produce the right data, in the proper format, and at the right time for key decisions. If you are unable to deliver the right data upon demand, you risk data integrity and confidentiality. Most importantly, you risk losing business, as external and internal consumers of your data will lose trust and walk away.

As you look into integration solutions, consider an approach that can satisfy an appropriate combination of your external B2B needs, internal A2A and database integration requirements, communications protocols, and integration with cloud-based data. You should be able to develop, manage, and monitor integration needs more efficiently and cost-effectively, using a single platform.

Top Ten “Must Haves” of an Integration Solution

Product Must Haves

1. Ease of Use

Ease of use has a different meaning to the new generation than those who grew up with green screens. Now we download apps on mobile devices with a simple push of a button and select apps with a light touch on a colorful icon. No training is needed to begin use.

Someday, traditional applications may take on the same look and feel that mobile apps have today. Until then, ease of use means an application has to at least be intuitive and easy to follow.

Integration software, particularly programs that meet very complex requirements, can appear overwhelming at first. Although you can begin using integration software without training, it's not an advisable approach. Navigating and leveraging the features and tools will require that your staff learns to use the software effectively and efficiently.

When looking for an easy-to-use integration tool, pay attention to intelligent suggestions or limitations offered by the solution, which can simplify and speed up the mapping process. You should look for solutions that make integration easier by offering things such as drag-and-drop functionality and the ability to visually build simple to complex business processes, while mapping transactions or automating business processes.

Ease of use means you can quickly find an existing map and modify it. It means the software can fill in the blanks as you begin typing, much like a smart search engine does. The mapping and integration process should be logical and easily flow from start to finish. If you have to open multiple windows and jump around, you will lose productivity and increase the odds of making mistakes. You want it to be easy and sequential as 1-2-3. So look for visual modeling and a simple flow.

Another consideration is system flexibility. If you're a mid-size company, chances are you have customers and suppliers that range from small to large. Your integration software needs to be flexible in order to accommodate trading partners of all sizes, no matter how different their requirements are.

You don't want a system that's overkill or too complicated for smaller trading partners. Nor do you want a solution that falls short of accommodating the more complex requirements imposed by larger companies. The same applies to internal integration needs. Ease-of-use is indeed an invaluable attribute for integration software; it can translate to time and cost savings.

2. Any-to-Any Integration

The multitude of niche integration solutions developed over the years has created a complex and costly environment for companies to manage. These point solutions bear inherent risks of inaccuracy and inconsistency; each solution does something different or does the same thing differently.

Organizations have come to realize the need for consolidation of these solutions, as well as the need to accommodate newer requirements. This has resulted in the search for and adoption of a singular, comprehensive solution that can seamlessly perform any-to-any integration.

Any-to-any integration includes the ability to transform any type of source format to any type of target format. This includes integration of flat files, databases, applications, various standardized files (e.g., X12, EDIFACT), XML, or any other structured file. It also includes integration of trading partners, hubs, web applications, internal applications or any other resources, including data resources such as files and databases.

Finally, any-to-any integration refers to the ability to connect and exchange information regardless of communication protocols used to transport the message. The list of protocols spans VANs, AS1/AS2, direct connections, FTP or HTTP. Resource interfaces, including SOAP, REST, SQL, or any other APIs are also part of the mix in a true any-to-any integration environment.

Integration needs extend beyond A2A and B2B, to include data file transfers, process automation, and integration with data in the cloud and SaaS data. In the absence of the right approach, many companies spend a lot of money to develop custom solutions to enable integration with SaaS or cloud data.

TOP TEN MUST HAVES OF AN INTEGRATION SOLUTION

1. Ease of use
2. Any-to-any integration
3. Model-driven approach
4. Automated object generation
5. Expandability and scalability
6. Process automation
7. Business activity monitoring
8. Real time and async integration
9. Software solution support
10. Vendor viability



Your ability to combine data from on-premise and cloud-hosted data is an important consideration. The right integration solution should allow you to work with data in any format from source to destination, and process from one end point to another, regardless of platform or technology stack. And along the way, it should seamlessly perform transformation and validation, securely and quickly.

3. Model-driven Approach

Budgets are tight and deadlines always too pressing as more gets piled on the IT manager's desk each day. Integration projects, much like other IT projects, require agile methodologies to be more efficient and cost effective. The trouble with software applications that offer rich functionality is they can be difficult to learn and use. At the same time, with the proper training, your IT staff can learn how to leverage tools and techniques, such as object-based modeling, that often come with these sophisticated solutions but go unnoticed. So be sure to sign up for training.

Using a model-based approach allows your team to build object-based frameworks that can be modeled and reused multiple times. The object model contains the rules that drive instructions and invocations during run time. Once built, these objects are tagged and stored in searchable libraries.

Object libraries may come populated with standard or commonly used objects, developed by the vendor based on industry best practices, or by other customers. In order to work efficiently, your staff needs a solution that makes it quick and easy to make changes across all object types, including rules, processes, and document maps. Availability of generation and conversion utilities can be huge time-savers. For example, being able to create a document definition or trading partner profile based on a transaction set can save hours of setup and testing. Finally, availability of adapters or connectors for ERPs such as Oracle or SAP can significantly reduce work efforts.

4. Automated Object Generation

Companies spend a lot of time and effort during the design phase of a typical integration project. While major efficiencies are gained when using an object or model-based approach to set up transactions, processes, and associated rules, an additional approach offers further efficiencies. The ability to automatically generate or guide specification of integration objects during the design phase is a great way to reduce the downstream workload.

With a model-driven approach, you build the objects with given rules and store them in the object library for re-use.

Alternatively, you can use tools to generate those objects using metadata, sample data or other machine-readable data. For instance, you could generate an EDI trading partner profile based on ISA envelope information or generate a purchase order document definition by using an X12 850 file. Objects may also be generated using heuristically-driven algorithms. Besides the time savings, a major benefit of this approach is output consistency and predictability.

Naturally, the quality of the object depends on the correctness of the input content, such as metadata associated with a database when its schema is used to generate the object. Still, once the object is generated, the user can make corrections and adjustments. The bonus inherent in this approach is that the auto-generated object is now part of a searchable, reusable library.

With a robust metadata architecture, object reuse is easier and more helpful. Leveraging metadata also helps improve transparency with the compliance and audit capabilities of the integration software. Automated importers and metadata generators reduce the time needed to create reusable document definitions.

You should also search for solutions that offer mapping assistants. Document or process mapping can be complicated and time-consuming, given variances in standards, versions, document types, and trading partners or databases. Assisted mapping may leverage a user-weighted combination of things such as dictionary, history, or attribute matches.

You should also look for utilities and other automated tools to convert document map versions, formats, or conversion from one file type to another (XML, EDI, flat files). Automated conversion assistants can save you significant time as well as deliver consistent output. Ideally, you can perform mass conversion, say for all X12 850s from one version to another, saving a lot of time and effort and speeding up time to implement.

5. Expandability & Scalability

Some integration software solutions include all functions, whether you will be using them or not. Others create modules that can be turned on or off. For instance, if your initial need involves database integration, modular solution vendors enable you to leverage that functionality without having to turn on and pay for the other features such as their B2B integration suite. This translates to significant upfront capital savings.

Solution scalability is another key consideration. Although you may start small, you want a solution that can grow with you. This is important as you add additional capabilities for different lines of business, for pending mergers, and for new types of integration across databases, applications, and trading partners.

Be sure to evaluate how well the vendor solution performs within your environment, not just theirs. A scalable system should also have elasticity in order to adjust system performance and delivery in response to different workloads. Imagine a sale or weather condition that can drive interest for a product, causing a huge spike in transactions. There are many options to help manage large data volumes effectively, including clustering, load balancing, and 64-bit architecture.

One other option to explore is whether the provider offers on demand or SaaS-based services. This is a great option if you want to minimize your initial capital investment and if you have in-house resource limitations.

6. Process Automation & Event Management

As companies seek to automate more business processes, they look to technology solutions to manage events based on business rules. Transactions and processes may be event-driven, scheduled, or triggered based on different rules. The ability to seamlessly establish data and process synchronization rules using complex algorithms is important in order to automate more and, leave less to manual handling.

Business rules may include actions triggered based on transaction receipt, non-receipt, generation, or errors. You must have the ability to design and configure automated procedures that generate and route events, actions, alerts or aborts based on errors or missed timelines.

Proper workflow automation can make the difference between the right and wrong decision being made as the result of a specific activity, data, or ruleset. For example, you want to be alerted when an unusually large order has come in, but depending on the customer history and their order patterns, you may require different actions. A customer who sends very large orders from time to time may be processed as normal, as it may have been triggered by a major natural event like a snowstorm or flood. You don't want any slowdown; in fact, you may want to expedite its processing. On the other hand, a very large order from another customer may be an error and require a different set of actions.

The ability to establish different rules, exception management and notifications (emails, web service requests, etc.) is critical to ensure the right things go on and exceptions are managed, providing the ability to make decisions based on the right data at the right time.

7. Business Activity Monitoring

Once you've set up your integration maps, you need the means to ensure things are operating smoothly. A good integration solution should include tools that allow you to monitor the activities effortlessly once they're live. Monitoring processes should be an automated task. For example, inbound and outbound transactions should be automatically managed and provide alerts for you and your trading partner if failures and errors occur. A dashboard, much like the ones Business Intelligence (BI) tools offer, should give you visibility to all tasks and activities.

You should have a seamless automation of events, including proactive monitoring and alerts for things coming due, expected delays, and alternative actions that may be required. Your integration solution should log every action, including completed or incomplete processes, alerts, and notifications, as well as exceptions.

The ability to monitor your processes and transactions has many benefits. Think about the ability to perform analysis of data that has traveled across your systems, such as the total number of orders received, orders from a particular customer, invoices sent, or payment notices received. This level of visibility helps to track down missing, duplicate, or erroneous information. Dashboards usually come with various security levels, allowing you to give the right access to information

to the right people. And you may even be able to give your trading partners a self-service view into their own dashboard, saving your internal resources the time and effort.

To comply with laws involving data integrity and confidentiality, it's important to select an integration tool with the built-in ability to do detailed tracking and reporting of all activities. Monitoring and tracking data movement within and across organizations is paramount to ensure legal compliance and avoid penalties.

8. Support for Real-Time & Asynchronous Integration

The time to integrate data has shrunk from the early EDI days, when data were batched and forwarded once or twice daily, to hourly, and then even to minutes. Along with this, data volumes have grown to such massive sizes that sifting through them without the right approach can lead to unacceptable lag times and inaccurate results, depending on where the data are sourced. In addition to data from traditional business documents, we have to contend with data on the fly, video, audio, streaming data, and unstructured information. The data are in disparate locations, including on-premise, in the cloud, or behind a trading partner's firewall. The integration vendor's approaches to this challenge can make data integration more manageable.

Other things to look for include data replication technologies or data services to support dynamic integration and assimilation through metadata management and data modeling. The vendor's architecture should support real-time, service-oriented integration for structured (and ideally unstructured) data using the same integration platform.

Vendor Must Haves

9. Software Solution Support

The list of features and functions to consider can be huge. One thing that should not be forgotten is the vendor's support for their application. Below is a list of things you should inquire about:

- **Frequency of upgrades (major releases)** – On average twice a year is a good target. Less than that requires you to wait too long for enhancements. More than that increases your costs to keep up and signifies weak planning and coordination from the vendor.
- **Frequency of patches** – How often are patches issued? Are patches held for release upgrades (minor releases)?
- **Documentation** – Is sufficient documentation provided, listing enhancements and bug fixes?
- **Upgrade support** – Does the vendor require you use their services to perform upgrades, or are instructions provided for you to tackle this on your own? Also, consider if upgrades (and initial installation) are automated and self-contained so as to eliminate the need to synchronize application servers, and tool and dashboard frameworks, among other components.
- **Skills availability** – How many resources are dedicated to the integration product (if there are other products)? If the vendor has multiple integration products, it's good to know if their resources work across all or focus on one. In addition, you want to find out if there are resources in the market with the required skills.

- **Customer forums/user groups** – Availability of customer forums or user groups is just as important as the product's viability. Other customers can serve as subject-matter experts, sharing best practices. Customer forums or user groups are a great way to use the voice of the collective customers and influence product direction and timelines.

10. Vendor Viability

The top ten list for any hardware or software selection should always include vendor viability. It's important to evaluate a vendor's ability to withstand tough economic times. During lean times, vendors who continue to invest in their products demonstrate good financial planning and backup. Factors such as company size, cash flow, outstanding A/R, percent of permanent employees to subcontractors and other typical criteria also apply.

Integration is mission-critical in today's business, so you want a vendor who's not only been around but will continue to invest in their integration suite. One thing to consider when evaluating vendors is your tolerance for best-of-suite versus best-of-breed. Although each has its pros and cons, integration crosses multiple platforms within your organization, outside your company, across platforms, and technology stacks. Therefore, it's recommended you give strong consideration to vendors who are platform-neutral as well as focused on the next big integration thing, not just the next big thing.

Summary

If you need to move data across applications, and manage different documents, file types and communications protocols used by business partners with little to no manual processing, you have a complex integration environment. Add to this the need to automate processes, within and outside your organization, and set up events and alerts, and suddenly you've seriously narrowed the list of solutions that can meet your requirements with a single solution.

As you consider current and future integration needs, don't rush to implement the one that meets your needs on the surface or is the least expensive. Integration requires in-depth knowledge of your technology environment, but also that of others. Be sure to leverage your enterprise architects and experienced consultants in the selection process, whether you plan to find a new solution or re-purpose existing ones. There are good vendor solutions available that can manage integration requirements across data, processes, and applications. Your challenge is to find the right fit for you.

Key Findings

- Integration needs and complexity continue to challenge the modern business
- Disparate, legacy integration solutions do not meet all requirements efficiently
- There are three distinct areas of integration need: data, application and process
- Management of multiple solutions is costly and inefficient
- The main driver to improving data and processes is to reduce rising costs
- There are business as well as technology requirements to consider
- Refining the requirements list to a minimum can be tough to do

About the Author



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Nahid Jilovec is a driven IT executive with proven skills in program and operational management in SMB and enterprise-level global companies.

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