



1 IBM Solution Construction

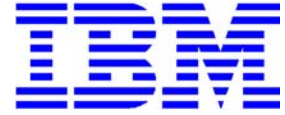
The IBM-CrossWorlds solution was constructed to maximize coverage to the three layers of requirements for your company. The overall IBM solution has been designed and architected to address these major categories of requirements that are:

- **HIPAA Regulatory Requirements** – The elements of the solution that specifically are demanded by the HIPAA regulations.
- **Ongoing HIPAA Compliance Operational Requirements** - Becoming HIPAA compliant is defined within the regulatory requirements. However, there are sets of requirements that deal directly with staying HIPAA compliant as the regulation expands and new providers become partners of your company.
- **Your Organization’s-Specific HIPAA Compliance Requirements** – There are defined distinctions to your organization’s technical environment that will affect a solution’s ability to achieve and retain HIPAA compliance. These requirements push towards a mutable solution that allows for a phased deployment that accommodates your organization’s changing application landscape and multiple platform processing.

1.1 HIPAA Regulatory Requirements

The IBM Solution was designed to create compliance with the HIPAA requirements. An overview of high-level requirements the IBM solution addresses is listed in the table below.

| HIPAA High- Level Compliance Requirements | | | |
|--|--|--|---------------------------------|
| Requirement | Definition | Related Buzz Words | Purpose |
| Electronic Health Transaction Standards | Health organizations must adopt a group of standard code sets to be used in all healthcare transactions. All parties to any transaction will have to use and accept the same coding. This also includes alternate forms of claim related transaction entry. Somewhere within a transactions | EDI data-level compliance, SNIP code level checking ICD-9, etc. | Faster Claims Processing |
| Unique Identifiers | The current system allows multiple variations ID numbers to identify different entities. A national standard is to be set and complied to. | National Provider ID, Employer ID, etc. | Accurate Claims Processing |
| Security & Electronic Signature Standards | The new HIPAA Security Standard will allow for a uniform level of protection for all health information that is stored and/or transmitted electronically and that relate to a person. Organizations that use any Electronic Signatures practices will be required to meet additional standards. | Chain of Trust, Business Associates, Message Integrity, User Authentication, Non-repudiation, etc. | Technical Security & Safeguards |
| Privacy & Confidentiality Standards | HIPAA provides new rights to consumers regarding the release of their medical information. There will be limitations set for information usage with potential financial penalties for violations. HIPAA balances the need for public use of information (research, public health, fraud prevention, etc.) with are entrusted with health information to protect it against deliberate or inadvertent misuse or disclosure | Consumer Control, Boundaries, Accountability, Public Responsibility, Data Protection, etc. | Consumer Protection |



1.2 Ongoing HIPAA Compliance Operational Requirements

1. **Solution Preparedness for Partner Acceptance** – The solution must be readily implemented in advance of the regulatory dates to accommodate testing with partners. While your company can influence a provider's testing schedule, they cannot control it. During testing, remediation and changes need to be rapid so that temporal risks are averted. Because your company may be a source of HIPAA solutions to providers, a broad-based IBM solution was designed to maximize the variety of provider transaction delivery methods as well as the ability to operate within a clearinghouse construct.
2. **Regulatory Change Responsiveness** - HIPAA regulations are not finalized so the need to be adaptable is imperative. The IBM solution accommodates the need for easily, expeditiously and consistently changing formats; code sets and integration elements is required from a solution.
3. **Data Management and Control** – Transactions data needs to be able to be standardized, retained, and cross-referenced. The underpinning of the solution lies in its ability to manage data and data transformation. The IBM solution was designed to accommodate not only data mapping but also consistent, accurate data movement to all the participating applications, operational data stores, archives and persistent data stores. The solution design ensures that transactions will flow and that single points of failure are eliminated.
4. **Technical Risk Reduction** – The IBM solution helps your company to mitigate technical risks by the utilization of proven components. The solution is designed to leverage OEM partnerships with recognized best of breed software augmenting mature technologies and systems.

1.3 Your Organization's HIPAA Compliance Technical/Process Requirements

1. **Transaction Cross-Referencing** - The 835-837 transaction matching process is critical to the timely processing of claims. The IBM solution exploits the underlying cross-reference tables in the Interchange Server to allow it to match the 835 transactions back to the associated 837 transactions. Additionally, the solution will allow for the completion of an 837 transaction to the HIPAA standard and then populating that associated HIPAA compliant data from the data store back to the outbound 835 transaction.
2. **Transaction Routing** – Due to the robust EDI data management tooling in the IBM solution, the capacity exists to take in all EDI transactions, validate them, and to route them based upon their compliance with the HIPAA standard.
3. **HIPAA Transaction Checking (SNIP Level 6)** – The WebSphere Data Interchange solution component performs SNIP Level 5 Compliance checking. The higher Level 6 is configurable within the IBM solution based upon the needs of your company in conjunction with the abilities or limitations of its other EDI translators or applications. The HIPAA code sets are being added to the solution to provide for a fully compliant solution down to HIPAA segment levels.
4. **Non-HIPAA Data Transformation** – Because your company may be converting non-compliant transactions within a clearinghouse service, the IBM solution was designed to accommodate, as needed, the capacity to support transaction transformation of non-HIPAA compliant transaction into HIPAA compliant transactions.
5. **Ease of Implementing Format Changes** – Several factors can create a need to change the format that an EDI file is to be received and processed. To satisfy this requirement, the IBM solution is standards based and uses both compliance libraries and GUI tools to assist in prompt remediation. This includes not only the HIPAA compliant transactions but also the non-compliant transactions. Through utilization of the Common Business Object processing model, changes are made incrementally and only to the sections of the interface that are affected instead of the end-to-end interface. This process reduces the development and testing cycles dramatically.
6. **Error Management Cycle** – The IBM solution allows for a variety of error management tools. The architecture allows for the error management at multiple levels and in multiple integrated tools based on the best fit to your organization's need. The error management processes of ***Error Detection***, ***Error Notification*** and ***Error Handling*** are maintained across all of the components of the IBM



solution. The settings are designed to be configurable so that the error management process can be optimized for automated handling and for the process changes that are expected to occur while the HIPAA regulations mature. The IBM solution also supports working in concert with prevalent SNMP providers of system management tools.

2 Key Solution Elements

The information below addresses some of the highlights of the IBM solution as they relate to the key elements for integration.

2.1 Scalability

Scalability is defined as the ability of a component to continue to operate “properly” as it is changed in size or volume in order to meet a user need. This requires not just the ability to function well in the rescaled situation, but to actually take full advantage of it.

2.1.1 Hardware Utilization

The IBM solution allows for the sharing of hardware. Key to this element is the ability to partition large computers in such a fashion that it can be utilized more efficiently. The IBM solution runs on more than just IBM hardware. This means that your company can expect to increase their ability to maximize their hardware resources in a non-platform dependent fashion. This is achieved through more accurate planning and controlling of hardware expenses and expenditures as the marriage of hardware and software scalability falls under one umbrella.

2.1.2 Integration Engine Instantiation/High Availability

The integration server has the following features:

- Ability to instantiate servers which are configurable using “distributed servers”,
- Allows for pre-defined “logical” load balancing configurations,
- Ability to grow with large scale enterprise,
- Supports high transaction throughput,
- Provides Sub-second response time through the “hub”,
- Is compatible and fault tolerant with high-availability operating systems,
- Is configurable so that there is no single point of failure.

2.2 Portability

Portability is defined as a quality attributed to software so that it can be utilized with an operating system other than the one on which it was created without requiring major rework.

2.2.1 Development Environments

Because the IBM solution is Java-based, and runtime environment has made it possible to have programs that run on any operating system that supports the Java standard. The IBM solution also allows for the development of integration code on multiple platforms. This means that a developer could create integration code on a stand-alone Windows 2000 workstation and then port it to an UNIX environment with only a nominal amount of component configuration. Additionally, the IBM solution allows for the controlled porting of developed code between logical servers such as from a development server to a test server.

2.2.2 Multiple Supported Platforms

The IBM solution allows for a combination of platforms to be utilized. The Trading Partner Interchange and the WDI EDI translator operate well on UNIX or mainframe platforms. The integration server operates on AIX, Solaris and Windows 2000 platforms.



2.3 Extensibility

Extensibility is defined as software, like a program, programming language, or protocol, which is constructed so that users (or later designers) can extend its capabilities. Extensibility can be a primary reason for the system, as in the case of the Extensible Markup Language (XML), or it may be only a minor feature.

2.3.1 Multiple Format Translation

Through utilization of a Common Business Object integration model, the IBM solution is capable of supporting multiple languages and translations for the same transaction. Because all integration transactions/objects are converted to a common or generic business object, a transaction can be received in one format, such as X12, and readily converted to multiple other formats and mappings, such as XML, HTML and JText or an application-specific data structure.

2.3.2 Function Extension

When new business or data requirements are placed upon an integration process, the IBM solution allows for the easy insertion of the business logic within either the integration mapping or process collaboration object. Effectively, there are multiple places and methods by which data-level or business-level processing rules can be applied to transactions. The IBM solution's native ability to both transform and complete transactions from disparate data locations and applications is crucial to extensibility. Because of the system design, the ability exists to apply specific business processing rules to all transactions or only to certain types of transactions.

2.3.3 Additional WebSphere Add-On Solutions

The IBM solution is designed to allow for even further functionality extension with sophisticated process management tools from the WebSphere family with MQ Workflow, WMQI and HOLOSOFX.

2.4 Total Cost of Ownership

Total cost of ownership is a major consideration. While a solution may be inexpensive to install, it may be expensive to operate and maintain; which negatively affects the overall Total Cost of Ownership. The IBM solution is designed with this in mind.

2.4.1 Ease of Change

In particular, a HIPAA solution must allow the ability to make frequent changes to formats, partners, protocols while partners and regulators come to agreement on standards and their application to transactions. The IBM solution offers the following features to facilitate the ease of change:

5. A GUI-based XML & EDI editing and management tool is provided
 - Pre-loaded with comprehensive library of XML, X.12 and EDIFACT message definitions,
 - New formats are imported/exported between the integration engine and the EDI transaction management tool,
 - New transaction sets easily created by modifying these definitions for custom deployments.
6. The Interchange Server has its own Centralized Reference Repository that:
 - Has Pooled Database Connectivity
 - Supports multiple server instances
 - Allow both design-time and at run-time data
 - Maintains reference tables that manage:
 - 1) Static Reference Information (Code Sets for validation)
 - 2) Transaction Information (Persistent Data Storage and Failed Transaction Flow Storage)
 - 3) Event Information (Unique Transaction Numbering)



- 4) Relationship Management (Dynamic Cross-Referencing of Transactions)
7. Has Drag-and-Drop data mapping for simple creation of flow-through transaction maps.
8. Allows change to be limited to only the affected components and/or formats instead of the entire end-to-end interface.
9. Addition of a new application or integration end-point allows for a partial re-use of existing interface code. If a new instance of an existing application is added, full re-use is available with transaction routing.
10. Partner Management using a browser-based console to assist in partner management. This includes starting with setting the community trading policies and can drill down to individual trading partners.

2.4.2 EDI Transaction Type Support

1. The Interchange server supports the creation and script import of unique code sets and standard code sets for transaction and data-level validation.
2. Included in the Data Interchange Library is support for the following HIPAA formats:
 - HIPAA 270 - Health Care Eligibility Inquiry
 - HIPAA 271 - Health Care Eligibility Response
 - HIPAA 276 - Health Care Claim Status Request
 - HIPAA 277 - Health Care Claim Status Response
 - HIPAA 278 - Health Care Services Review Request
 - HIPAA 278 - Health Care Services Review Response
 - HIPAA 820 - Payroll Deducted and Other Group Premium Payment for Insurance Products
 - HIPAA 834 - Benefit Enrollment and Maintenance
 - HIPAA 835 - Health Care Claim Payment/Advice
 - HIPAA 837 - Health Care Claim: Institutional
 - HIPAA 837 - Health Care Claim: Dental
 - HIPAA 837 - Health Care Claim: Professional

2.4.3 Access to Knowledge

1. Access to IBM Knowledge Capital to support your HIPAA and IT needs. IBM provides not only technical support but also access to Industry-knowledgeable resources with years of field experience.
2. Access to the IBM Exchange which contains:
 - Development & Implementation Methodologies
 - Field-developed Tools, Tips & Tricks
 - Reusable objects and connectivity components
 - Integration information forum
 - White papers and detailed product information

2.5 Risk Management

2.5.1 Product Maturity and Capability

The IBM solution is comprised of a marriage of new technologies built on top of mature products. The MQ Series and Data Interchange are very mature Messaging and Data Management tools that are part of the foundation of the IBM software product suite. The new technologies are leveraged using the Interchange Server and the Trading Partner Interchange (TPI). Of note for HIPAA, the TPI product is part of an OEM relationship with Cyclone Commerce, a recognized industry leader in HIPAA compliant partner communication and management. The TPI products provides security well in excess of HIPAA standards while retaining flexibility for use with other organizational integration efforts such as additional forms of EDI processing or supply chain management. The final OEM component is the EDIFECs SpecBuilder 4.0a library of current formats and file standards that has additional GUI tools for test data creation and file format discovery.



2.5.2 Vendor Stability

IBM is a Fortune 100 company. In business since 1900, IBM currently has over 300,000 employees worldwide and revenues in excess of \$85 billion for fiscal year 2001. IBM is poised to be a partner with your company for the long run.

2.5.3 Product Support

1. IBM offers world-class customer support through the Passport Advantage program. Specialists are available to respond to your technical needs day and night.
2. IBM-CrossWorlds offers Solution Center services with senior staff to assist with:
 - Implementation Support
 - Design Reviews
 - Design Workshops
 - Knowledge Management
 - Off-Site Development
 - Mentoring
 - Technical and Architectural Advisor
 - Engineering Liaison
3. IBM Education Services offer classes and training, on-site or off-site, to help re-train existing staff and/or to enhance your internal staff's level of proficiency.
4. IBM has both staff and IBM Business Partners in the Detroit metropolitan area. They to assist with development and on-site support, often on an as-needed basis. The partners are IBM-trained and experienced on other deployments and engagements as part of the overall IBM team.
5. IBM maintains a full-time development labs and engineering staff explicitly assigned to the further development and enhancement of each portion of the IBM product line and solutions. As business needs and regulatory requirements change, IBM is at the forefront of development to assist organizations in responding to these issues.



3 Executive Summary and Introduction

3.1 Background

IBM's Commitment regarding HIPAA:

HIPAA - It's more than patient care and compliance...

...it's all about: efficiency of care delivery and compliance with the law. HIPAA is also about good business.

In addition, working with IBM, organizations can act on that fact to realize significant benefits.

- Optimize mission-critical processes.
- Avoid significant penalties for non-compliance.
- Achieve better integration of data exchange between providers, payers and partners.
- Effect long-overdue system and application clean up.
- Accelerate transaction speeds.
- Realize a clear and positive differentiation from the competition.

Working with our customers

Make no mistake: HIPAA compliance can be complex and demanding. Thoughtful action is needed to optimize the opportunities and overcome the obstacles presented by this new mandate. With exceptional expertise in the healthcare and regulatory environments, IBM serves as a valuable, reliable partner to your organization, providing a wealth of experience-based solutions designed to help you meet HIPAA compliance.

Proven industry team and security solutions

Our dedicated Healthcare team -- including HIPAA professionals, technology experts, healthcare specialists, and electronic security professionals -- offer worldwide experience and proven success in providing solutions for clients in a broad range of industries. Calling upon our substantial expertise in electronic data interchange (EDI), security, privacy, code sets, and system integration, IBM can work with your HIPAA project team to evaluate key transactions, identify the critical gaps within your systems and assess the impact of the new regulations on your organization.

IBM Acquisition and Integration of CrossWorlds Software:

Before its acquisition, CrossWorlds Software was an integration partner with IBM for more than four years. CrossWorlds, which was built on the WebSphere MQ messaging platform, was a natural fit into the WebSphere product suite. With the completion of the merger in January of 2002, IBM now had another new and powerful integration tool to offer customers. The close interoperability between CrossWorlds software and IBM's WebSphere software was acknowledged by InfoWorld analysts George A. Chidi and Tom Sullivan wrote, "IBM and CrossWorlds have been integration partners for four years, which has permitted IBM's WebSphere e-business infrastructure products to work closely with CrossWorlds' software."

Overwhelmingly, industry analyst responses were very positive. Regarding the customers' benefit of the merger, Laura Koetzle in the November 8, 2001 edition of *The Forrester Brief* writes, "IBM customers already use the workflow tools and messaging infrastructure of MQFlow and MQSeries, but they lack sophisticated tools for modeling and monitoring business processes. IBM can plug that gap with InterChange [Server], which excels in those areas -- as shown in Forrester's Integration Server TechRankings™."

The current product alignment is represented in the graphic below:

The IBM-CrossWorlds Value Proposition:

IBM HIPAA Solution Overview

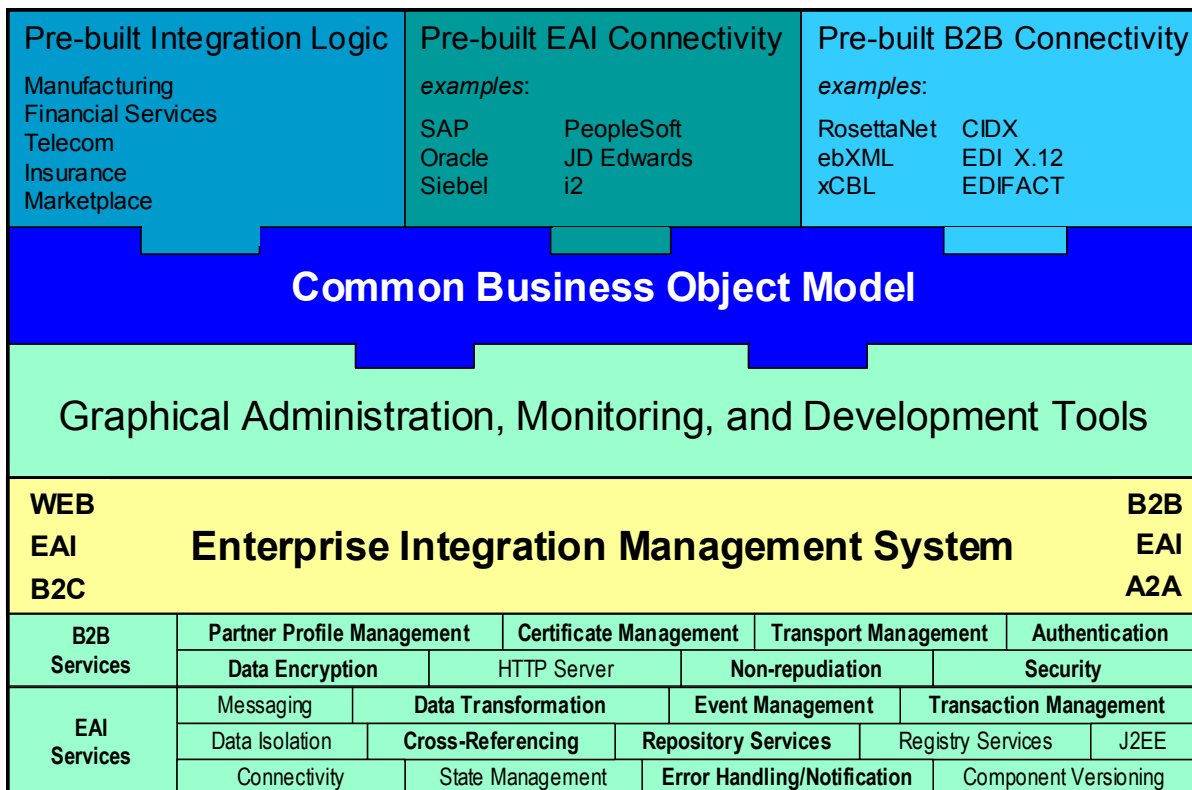


The core of the IBM-CrossWorlds software works on a basic premise that business processes define data, data doesn't define business processes. The IBM-CrossWorlds integration process has four defining components that set it apart:

1. **Pre-Built Components** - Businesses processes between organizations are similar but never the same. The IBM-CrossWorlds solution understands that by offering pre-built components that satisfy the bulk of an organization's business process needs but that can still be configured to its specific business process. This allows for configuring existing software instead of developing and building integration software from the ground up.
2. **Hub and Spoke Architecture** – Data is brought into the integration server (hub) and it is then sent to all the systems that need that information. It is no longer necessary to create an interface from the same starting point to every system that uses it. Once built, when you add another system that needs the information, you add a spoke to the wheel instead of re-inventing the wheel.
3. **Common Business Object Model** - The IBM-CrossWorlds integration process allows data to be created into a Generic Business Object. Once this object is created, this “generisized” data is now available to be further updated, transformed, or augmented so that it can reach out to other applications. This commonality of data allows the integration hub to send the information to every system that needs it, in a format that system can read.
4. **Component Re-Use** – Software development is a time and capital consuming process. IBM-CrossWorlds software allows for the re-use of developed components. With the IBM-CrossWorlds software, when a data format or standard changes, only incremental change are made. Even more powerful is the addition of a completely new standard, format or application. In those situations, only the integration from the new item to the hub is created and NOT the entire integration to each application participating in the integration.

IBM-CrossWorlds Architecture

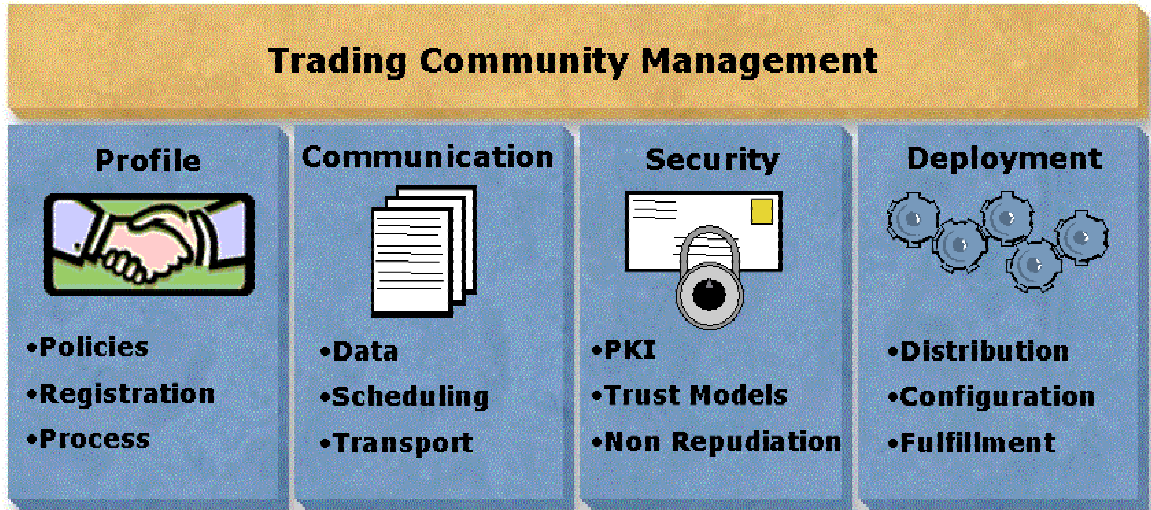
The components of the IBM-CrossWorlds solution work in harmony as a “stack”. Each of the components operates in conjunction with the other parts to flow data through an organization. The architecture of the layers is defined in the graphic below:





Partner Management

Having controlled its own data, organizations must look outward and control their business partners. With the advent of HIPAA, this is now a regulation instead of a business practice. The IBM-CrossWorlds solution offers a robust tool for both working with and managing a business's trading community.



EDI Data Management

The Data Interchange component of the IBM solution provides the full spectrum of EDI processing functionality. Included are:

- Application data form conversion to (or from) industry-specific, EDI standards or other fixed application data formats
- Electronic data translation for exchange with trading partners via the Information Exchange commerce engine or MQ messaging queues
- Setup and administration including online customization of EDI standards, maps, and trading partner relationships
- Translation capability including syntax checking and test and production support
- Reporting and auditing capabilities including trading partner relationships and trading partner communications
- Versatile communications with support for networks and direct connections to trading partners
- Support for HIPAA processing using validation of the HIPAA standard format, in conjunction with the validation map to provide the SNIP Level 5 compliance