

Establish a clinical information exchange network to maximize quality of care.



Highlights

- **Automate the collecting, aggregating, analyzing and reporting of clinical data**
- **Enable rapid detection and response to adverse health events**
- **Facilitate data sharing within an individual hospital, between hospital affiliates and between healthcare providers and health research entities**
- **Integrate with existing heterogeneous systems**
- **Correlate events from disparate systems over time (longitudinal tracking)**

Collect and disseminate data to facilitate appropriate, rapid responses to adverse health events

Up-to-date information helps clinicians treat patients. Healthcare data is spread across a broad range of participants, including hospital labs, clinics, clinician systems, payers, pharmaceutical companies and other health research entities. Because of the broad and expanding number of devices, using the captured data is increasingly difficult. Information often gets trapped in silos of legacy systems linked merely by point-to-point connections, if at all.

Consequently, healthcare organizations seek a way to rapidly aggregate and disseminate disparate healthcare information. To help providers avoid medical errors and respond rapidly and appropriately to adverse health events

(such as drug reactions and disease outbreaks), the exchange of information needs to occur in real time.

Closely related to the rapid exchange of information is the need to manage reporting requirements. Good reporting can reinforce quality of patient care by providing clinicians with data that they can use to improve their practice of medicine. But outdated and disconnected processes impede the establishment of superior reporting systems. Currently the labor-intensive, manual method of reporting is costly, complicated, slow and error-prone.

An information exchange solution that facilitates the transmission of healthcare data in a private, highly secure fashion helps healthcare organizations maximize the quality of patient care. It provides clinicians and administrators

with information about healthcare delivery that they can use to improve their operations. And it helps minimize reliance on costly methods for exchanging information, such as paper, fax, mail and electronic data interchange (EDI).

IBM has developed a middleware solution for exchanging healthcare information — a solution that maximizes the use of your existing infrastructure and enables your existing systems to support your strategic initiatives. Drive quality of care and reduce costs.

IBM delivers comprehensive solutions for exchanging information

As a dedicated partner in the healthcare industry, IBM can help you exchange information with integration solutions. IBM healthcare industry solutions are built with your long-term needs in mind. IBM's component-based model and commitment to open standards facilitate your freedom of choice, enable interoperability and help preserve your existing investments. IBM focuses on helping providers leverage technology to solve care and business problems. For the healthcare industry, IBM solutions use proven implementations of technology to deliver business value.

The IBM Middleware Solution for Healthcare Collaborative Network is designed to facilitate rapid deployment of an information exchange network. When you implement the infrastructure of the IBM Middleware Solution for Healthcare Collaborative Network, you can:

- *Provide personalized access to relevant healthcare information (such as adverse drug reactions, disease outbreaks and more) that is integrated throughout the hospital's affiliate facilities.*
- *Optimize the ability to judge and track quality of care – exchange aggregated information in near real time, help minimize medical errors and dramatically speed up response times.*
- *Enable private and highly secure transmission of healthcare data.*
- *Leverage all these capabilities to help improve outcomes and reduce costs.*

The IBM Middleware Solution for Healthcare Collaborative Network provides a common infrastructure for helping your provider organization deliver on each goal described in the following sections.

“HCN brings a huge benefit to identifying patients at risk. It is difficult to identify patients easily with existing systems today. HCN will facilitate patient identification and outcome analysis.”

— Bill Gregg,
Director of Health Informatics,
Vanderbilt University
Medical Center

Provide personalized access to relevant healthcare information

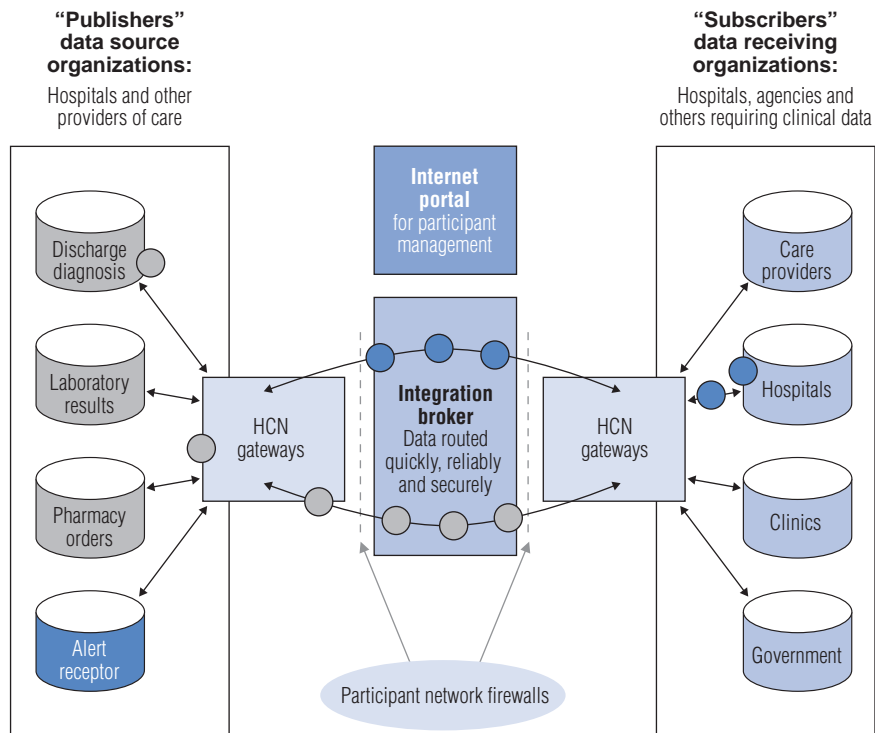
To enable healthcare organizations to filter, link and map data elements in accordance with their individual requirements, the IBM Middleware Solution for Healthcare Collaborative Network is based on a hub-and-spoke architecture:

Hub— The hub has two primary components: the new IBM Healthcare Collaborative Network Administrative Server and the new IBM Healthcare Message Flow Server. The IBM Healthcare Collaborative Network Administrative Server software includes Java™ code running on the IBM WebSphere® Application Server along with IBM DB2® software and IBM WebSphere MQ. Installed at a central facility, it allows clinicians and administrators to easily create clinical

event topics they are interested in tracking. It works in conjunction with the IBM WebSphere Business Integration Message Broker to provide a mechanism for passing clinical information reliably from the publisher to the subscriber.

Spoke (gateway)—The IBM Healthcare Collaborative Network Gateway is typically installed within each participating clinical infrastructure (hospitals, clinics, urgent care facilities). Based on software that works with WebSphere Business Integration Server Express, it connects clinical affiliates to the central facility. It integrates pharmacy, lab and ADT systems and collects the relevant HL7 data streams needed by data subscribers. It correlates all the required patient data so that a comprehensive picture can be analyzed at the subscriber end point and verifies that only approved data is securely published in the agreed-upon manner (de-identified, for example, if specified by the sender).

The IBM Middleware Solution for Healthcare Collaborative Network enables you to exchange data across multiple healthcare applications and sites according to business rules



At the participant site, the gateway filters, links and maps data elements based on business rules they approve.

that you define. As a result, you can identify and configure the types of clinical information your organization wants to receive or is willing to provide, for example:

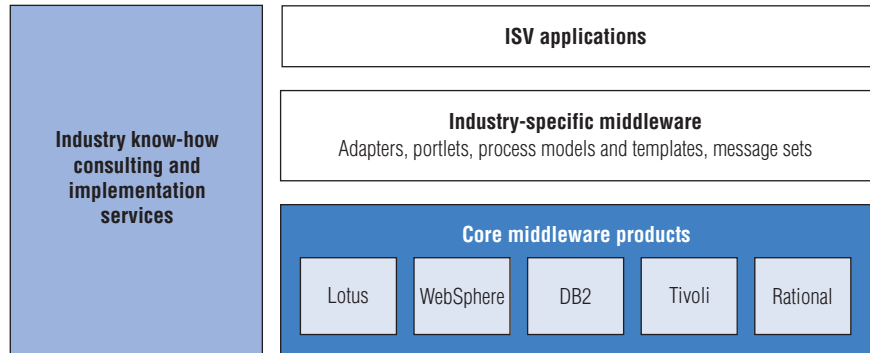
- *Discharge diagnoses.*
- *Laboratory results.*
- *Pharmacy orders.*
- *Outbreak and drug reaction alerts.*
- *Biosurveillance data (connects to the CDC PHIN Network).*

The IBM Middleware Solution for Healthcare Collaborative Network maintains role-based access controls to verify that only authorized and authenticated individuals publish, subscribe and view data. The IBM Middleware Solution for Healthcare Collaborative Network can take advantage of existing LDAP-based rules for data access and control and can leverage IBM Tivoli® enterprise access and identity management software.

Move from a paper-based reporting system to a system for exchanging information in near real time

Government-issued drug alerts may be checked against clinical data throughout your system to rapidly identify individuals who may be affected. Or a business rule may be established that checks updated patient records to see if all recommended tests or procedures have been completed based on the diagnosis. For example, the IBM Middleware Solution for Healthcare Collaborative Network can identify patients with acute myocardial infarction who have not been administered beta-blockers within 24 hours of admission — a focus area of typical quality improvement programs. In these and other ways, you can use the IBM Middleware Solution for Healthcare Collaborative Network to facilitate the proper treatment for a diagnosis or help manage disease outbreaks.

The solution also includes WebSphere MQ software that allows you to reliably exchange information across the different platforms within your existing infrastructure. Therefore, you can rapidly and easily share results of your rules-based data analysis throughout your organization.



Overview of a middleware solution

“What IBM is focusing on, ... is the conversion of paper records to paperless systems – the maximum exploitation, in the best sense of the word, of information systems – is one of the most important things that can happen in healthcare. It means that information will be more rapidly delivered so it can be helpful to patients.”

— Dr. Herbert Pardes,
President and CEO,
NY Presbyterian Hospital

Transmit healthcare data in a private, highly secure fashion using open standards

The IBM Middleware Solution for Healthcare Collaborative Network meets the healthcare industry’s security needs for authentication between senders and receivers and data encryption requirements. Because the solution uses a hub-and-spoke

architecture, it can monitor and log information flows between data sources and users. WebSphere MQ enables you to transmit information in a highly secure and reliable manner. Without disrupting your current infrastructure, you can implement this solution while complying with privacy and security requirements. Data that can directly identify a patient can be passed without including personal information; however, the solution maintains traceability back to the individual based on a global anonymous patient identifier. At the same time, the IBM Middleware Solution for Healthcare Collaborative Network uses open standards, such as HL7 and XML, to leverage your existing data.

Meet reporting requirements

Many of the difficulties of manual and electronic reporting — both administrative and regulatory — are

The IBM Middleware Solution for Healthcare Collaborative Network helps you:

- ✓ Leverage existing information systems — no “rip and replace.”
- ✓ Start small and then scale up as your integration needs require.
- ✓ Synchronize and integrate key clinical data across multiple hospitals and systems.
- ✓ Avoid errors and maximize efficiency.
- ✓ Administer notification and quality management.

compounded by the disparate systems across many healthcare organizations. With the IBM Middleware Solution for Healthcare Collaborative Network, you can integrate those systems to facilitate consistent reporting and automate reporting functions that you currently handle manually.

For example, you can use the solution to track outcomes in a rapid, error-free fashion that is far superior to chart pulls (which can only happen much later). Leverage healthcare delivery information that payers publish to better control costs. And mark all messages with accurate, consistent time stamps to help meet audit requirements.

In the future, if you need to manage reporting to federal and other agencies for biosurveillance purposes, the solution is equipped to manage these information flows as well.

“HCN allows for the establishment of a gateway to clinical information systems that are maintained by healthcare providers. And that’s very attractive to us, allowing us almost instantaneous access to electronic health records, which is the ideal way to monitor whether or not there is a new or expected adverse event.”

— Kelly Cronin,
Director Patient Safety and
Outcomes Research, FDA

IBM services help address your information exchange requirements

IBM offers an unsurpassed breadth of service capabilities. Resources include:

- *IBM Business Consulting Services, with thousands of worldwide consultants*
 - Strategy
 - Integration services
 - Business process reengineering
- *IBM Global Services – IBM Healthcare and Life Sciences Integrated Technology Consulting Services*
 - Data integration and management
 - Computational and knowledge management
- *IBM Software Services – software lab services with deep technical expertise*



IBM Business Partner applications for the healthcare industry complement the solution

The IBM Middleware Solution for Healthcare Collaborative Network provides a world-class foundation for your information exchange solutions. Applications provided by our extensive network of industry-focused ISVs — combined with IBM consulting services and hardware — can complement the full solution. IBM ISV Business Partners provide industry-specific business applications that run on IBM middleware platforms. Examples include geospatial and medical event correlation.

The IBM Healthcare Collaborative Network is one of several middleware solutions designed expressly for healthcare organizations. IBM

Middleware Solutions are customized combinations of IBM software and industry-specific middleware that, when used with application software from IBM's network of independent software vendor partners and industry-specific services, enable customers to build an on demand operating environment.

For more information

For middleware solutions that help you respond rapidly to adverse health events, count on IBM. To learn more about the IBM Middleware Solution for Healthcare Collaborative Network and other solutions for the healthcare industry, including case studies and more detailed information about solution components, call your sales representative or visit ibm.com/software/industries/healthcare

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