

CORTEXCHANGE

Hospitals, laboratories, and clinics are all faced with the demand of providing electronic interfaces at unprecedented rates. The rising demand is due to the operational objective of streamlining workflow and the revenue objective of efficiently establishing productive relationships with referring physicians.

Cortex anticipates the need to provide interfaces for ADT transactions, pathology reports and laboratory orders to and from hospitals and doctor's offices. Additionally many laboratories are acquiring processing and diagnostic instruments and need instrument interfaces within the laboratory.

Interfacing applications is an essential ingredient to achieving both objectives. Today, there are two primary approaches to interfacing:

Create **point-to-point interfaces** with different application vendors to connect to internal applications or providers and their applications

Select an **interface engine solution** that can broker communication of patient data between various internal applications and providers and their applications

Cortex has traditionally done **point-to-point interfaces** and has fifty plus interfaces operational for clients.

Cortex now offers an **interface engine solution** called CORTEXCHANGE.

An interface engine can transform or map the data to the receiving application's requirements while the message is in transit so that it can be accepted by the receiving application.

Essentially, the import and export module from the sending application is built in a very comprehensive manner, capturing all potential data to be used in one interface. The application interface is built with a one-to-many concept in mind. These import/export modules then are connected to an interface engine so that the mapping, routing, and monitoring are managed by this system.

Benefits of an interface engine strategy are:

- Reduces the dependency on multiple vendors to make changes in the format of messages to be sent or received
- Leverages one import or export module from core applications (e.g., HIS, EMR, LIS, etc.) and distributes interfaces to multiple applications productively
- Improved physician and client support through proactive interfacing monitoring and message log management
- Enables flexibility to adapt to different HL7 message standards, XML healthcare standards, etc. as well as different application data
- Lowers overall interface cost by re-purposing an application's import / export module to multiple applications

CORTEXCHANGE

An Integrated Solution

CORTEXCHANGE enables secure transmission of messages via web services in tandem with the core functionality of the Integration Engine solution. CORTEXCHANGE connects to remote point of care applications through a lightweight agent. The agent then transmits the data to the local clinical applications.

CORTEXCHANGE extends interfacing functionality to locations where security barriers may have prevented normal transmission of messages, or where VPN use has become cumbersome to establish and maintain. The value proposition is very strong for allowing users to access the central application remotely. This type of approach reduces the cost of deployment because only a small physical footprint is required at the remote locations.

Individualized Mailboxing

CORTEXCHANGE core functionality is based on the use of mailbox queuing to send and receive messages for each remote system. Each mailbox is associated with a connection, and each connection is associated with an application interface at a client's remote site.

The mailboxes reside at the central server and can be easily configured and monitored through the web-based CORTEXCHANGE application. Each mailbox shows all messages that were sent to the remote system, providing a single location to view real-time information about a client.

Centralized Processing

Most of the processing of the messages is done at the central server – not at the remote sites. CORTEXCHANGE focuses on sorting the processed messages into a designated mailbox, moving the messages from a mailbox to an agent (and vice versa), and monitoring the activity of the mailboxes. Once at the remote site, a separate connection is used to transmit messages between the agent and the client side system.

Agent

In a full bi-direction deployment, two separate connections are used by the agent to transmit messages between the CORTEXCHANGE platform and the clinical application, plus a third connection to transmit agent message statistics.

Sending Messages Securely

CORTEXCHANGE uses a web service to establish a secure connection between the mailbox and the remote application. Each agent communicates with the CORTEXCHANGE platform at regular intervals and whenever data is ready to be sent from the client application. The

CORTEXCHANGE

CORTEXCHANGE mailbox is checked, and any waiting messages are retrieved for delivery back to the remote system.

As part of the transmission process, the message is logged and acknowledged at each stop along the way to ensure that it is received correctly and completely. Meanwhile at the central server, the message can be watched in real-time as it is delivered without the hassle of having to go to the remote system.

Sending Messages to the Remote Site

Outgoing messages generated on the central application are first stored in the appropriate CORTEXCHANGE mailbox. Then when the remote agent authenticates and checks for messages, messages are delivered to the remote site. The agent then delivers these messages to the remote point of care application.

Receiving Messages from the Remote Site

Incoming messages generated on the remote application are first received by the remote agent and safely enqueued at the remote site. The agent then delivers the message to the CORTEXCHANGE platform via secure web service call.

Centralized Monitoring and Troubleshooting

Centralized monitoring and troubleshooting for all remote connections is possible because an easy to use, web-based application provides a real-time view of message transmission, history and status for all remote clients.

Transmitting Remote Statistics

Each agent is configured to “call” into the CORTEXCHANGE platform periodically with log file statistics, using a separate remote connection designated solely for this purpose. As a result, the log files at the CORTEXCHANGE server not only contain information about the message as it is processed, but also information about the message as it is put into the mailboxes and sent to the remote locations.

Although the site-specific log files allow each remote client to view information about their connection’s messages and possible issues, troubleshooting for all connections can be done from the central location because the remote sites’ statistics are available at the CORTEXCHANGE server.

CORTEXCHANGE

CORTEXCHANGE Web-based Application

The CORTEXCHANGE application allows for easy monitoring of all existing mailboxes and connections, plus quick creation of new clients, connections and mailboxes – all from a central location. The clients available for access are based on login credentials.

Scalability

CORTEXCHANGE is easily scalable while maintaining First In First Out (FIFO) order in each message stream. Expansion is achieved by adding some additional processing to the Integration Engine at the central server. The CORTEXCHANGE connections can then collectively leverage existing functionality in the core Integration Engine, meanwhile using “mailbox locking” during processing to ensure consistent maintenance of FIFO. This allows for easy addition of new remote clients, and the ability to keep pace with business needs as processing demands increase with the number of remote installations.

