

REAL WORLD TESTING RESULTS REPORT – 2022

GENERAL INFORMATION

Plan Report ID Number: EMRDirect.InteropEngine.RWT.2022

Developer Name: EMR Direct

Product Name(s): Interoperability Engine

Version Number(s): 2017

Certified Health IT Product List (CHPL) Product Number(s): 15.04.04.1397.Inte.17.00.0.161117

Developer Real World Testing Page URL: <https://www.interopengine.com/rwt>

Developer Real World Testing Results Report Page URL: same as Testing Page URL

CHANGES TO ORIGINAL PLAN

None.

WITHDRAWN PRODUCTS

Product Name(s): Interoperability Engine

Version Number(s): 2017

CHPL Product Number(s): 15.04.04.1397.Inte.17.00.0.161117

Date(s) Withdrawn: 12/31/2022

Inclusion of Data in Results Report: All data in this report was captured on the above product prior to its withdrawal date. The above product was superseded by Interoperability Engine 2023 in December 2022 after the conclusion of the data collection period.

SUMMARY OF TESTING METHODS AND KEY FINDINGS

EMR Direct's Application Access and Direct Messaging software product helps our partners meet interoperability-related requirements. In approaching Real World Testing for our own products, we designed measures to demonstrate the continued capability of certified health IT to exchange applicable payloads as the transport standards and/or payload vocabulary standards advance.

In designing our testing approach, we leveraged the fact that the functionality of the applicable criteria subject to the RWT requirements for this software product result in discrete transactions (Direct messages, API requests), each of which can be classified as successful or not successful, allowing for straightforward measurement of functionality as the number of successful transactions as a percentage of the total transactions. Our approach to RWT was to leverage actual production data from our deployed software instances to best reflect the intent of RWT in the truest sense. To demonstrate ongoing conformance, rather than point-in-time conformance, data for each measure was collected over a period lasting at least 90 consecutive days.

We recognize that our testing methodology necessarily underestimates success rates due to confounding effects from other software products involved in each interoperability transaction. For example, in actual production settings, the transmission of a Direct message requires a sending edge system to communicate with the sending HISP software. Messages are then sent to a receiving HISP that is

connected to a receiving edge system. Each of these software components is usually provided by a different vendor. This means that a true real-world interaction will usually involve 4 different vendors and at least 4 different software products. Any one of these may introduce an issue that causes a Direct message transmission to fail, e.g. the sending edge system transmits a non-conforming CCDA message. Similarly, for Application Access transactions, our system provides the g.7, g.8, and g.9 functionality but is not a base EHR itself, meaning that the source data used by our software to generate API responses is not stored by our software module, but is retrieved from another health IT module that typically provides the base EHR capabilities. There is also a separate client application that makes the API requests, such that there are typically 3 different vendors using at least 3 different software products involved in an Application Access transaction.

Thus, in general, a successful end-to-end transaction requires all of the involved software products from all of these vendors to work correctly. Our RWT methodology is based on our observations while operating our software as a service, that by aggregating across our deployed customer base, we avoid potentially negatively skewing of data by any one “other vendor” issue, as these tend to average out such that the overall aggregated success rate of transactions provides a lower bar on the conformity for each of the systems involved. Since our software is common to every transaction, aggregated measures thus also provide a lower bar on the real-world success rate attributed to our own software. We further refined this by designing measures that exclude transactions where one of the other actors can be readily identified to be the cause of the issue, e.g. expired Direct certificates, unauthorized API clients, etc.

During data collection and analysis, it was noted that a relatively new Direct messaging use case (patient event notifications/ADTs via Direct) was not well supported by the XDR edge systems evaluated during the collection period. Since this message type was identifiable by the error message received from the edge system, these transactions were excluded in the XDR-specific inbound messaging metric consistent with our stated testing methodology of excluding transactions where one of the other actors can be readily identified to be the cause of the issue.

With respect to care settings, we note that the functional requirements for the certification criteria subject to RWT are identical for both the ambulatory and inpatient settings, justifying our decision to aggregate data across all care settings in our measures, as our software is setting-agnostic and operates identically in all settings.

Analysis of the collected data, summarized in the Outcomes section below, validated our ongoing real-world interoperability and conformance with the certification requirements, with successful interoperability demonstrated in the vast majority of transactions. Overall, Direct messaging success rates exceeded our pre-test expectations, while API success rates were in line with pre-test expectations. Higher success rates for Direct transactions are consistent with the more mature ecosystem that exists for Direct messaging as compared to the newer API criteria.

STANDARDS UPDATES (INCLUDING STANDARDS VERSION ADVANCEMENT PROCESS (SVAP) AND UNITED STATES CORE DATA FOR INTEROPERABILITY (USCDI))

The tested product did not include these voluntary standards.

Care Setting(s)

Care Setting	Discussion
Ambulatory and Inpatient	Our software is marketed for integration with both hospital and ambulatory settings. However, as discussed above, we have aggregated measurement data across both care settings because the functional requirements for the criteria tested in the plan are identical for all care settings, i.e. our software operates identically regardless of care setting, such that we find no additional value in collecting separate measures for each setting.

Metrics

Measurement/Metric	Associated Criterion	Description
M22.1: Percentage of Direct messages sent that were successfully acknowledged by the receiving system	h.2	The % of Direct messages transmitted where the expected MDN acknowledgement was received. These measures will also be partitioned by the edge protocol used by the sending edge system.
M22.2: Percentage of Direct messages received where a non-failure acknowledgement was sent back to the sender.	h.2	The % of Direct messages received where the message could be successfully decrypted, the signature validated, and trust confirmed, and, when applicable, where no edge protocol errors were detected during final delivery. These measures will also be partitioned by the edge protocol used by the receiving edge system.
M22.3 Percentage of valid patient selection requests for which data was successfully returned to the client	g.7	The % of valid patient selection API requests received where patient identifiers for use in subsequent requests were returned for patients matching the selection criteria, or where the response indicated that no patient matched the selection criteria.
M22.4 Percentage of valid requests for a Data Category for which data was successfully returned to the client	g.8	The % of valid data category API requests received where data were returned for data matching the request parameters (patient ID, data category, optional date or date range), or where the response indicated that no matching data was found.
M22.5 Percentage of valid requests for All Data for which data was successfully returned to the client	g.9	The % of valid API requests for all data received where data were returned for data matching the request parameters (patient ID, optional date or date range), or where the response indicated that no matching data was found.

Outcomes

Measurement/Metric	Outcomes
M22.1: Percentage of Direct messages sent that were successfully acknowledged by the receiving system	Overall success rate: 96% By edge protocol: XDR: 90%, API: 97% Note: No outbound messages sent via SMTP edge during collection period.

M22.2: Percentage of Direct messages received where a non-failure acknowledgement was sent back to the sender.	Overall success rate excluding edge failures: 99.98% Overall success rate including edge failures: 98% By edge: XDR 92%, SMTP 100%, API=99.9% Note: XDR metric excludes ADT transmissions.
M22.3 Percentage of valid patient selection requests for which data was successfully returned to the client	Overall success rate: 78% Note: all non-successful transactions involved one EHR system that received a disproportionate percentage of patient selection requests (72%).
M22.4 Percentage of valid requests for a Data Category for which data was successfully returned to the client	Overall success rate: 100%
M22.5 Percentage of valid requests for All Data for which data was successfully returned to the client	Overall Success rate: 83% Note: relatively small number of All Data requests compared to other request types.

No notable challenges were encountered in data collection or analysis.

KEY MILESTONES

Key Milestone	Care Setting	Date/Timeframe
Data collection started	All	August 2022
Data collection completed	All	October 2022