AAN-Axon Data Pull-Push Technical Overview
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I. Introduction:

There are two major ways of submitting data for the Axon Registry, viz. Data PULL and Data PUSH. Data thus collected is then analyzed for calculating Axon Registry Clinical Measure Performance Rates. Performance rates for all participating providers are displayed in Registry Dashboard. Every participating provider is given access to the Registry Dashboard to view their own performance rates.

A. Data PULL - RPC Data Extraction Utility installed at participating Practice:

- FIGmd sends Registry Practice Connector (RPC) installer to participating provider’s IT staff so that provider’s authorized IT personnel can install RPC in provider’s environment under his/her credentials.
- RPC is installed as Service on server selected by the IT personnel of the Practice.
- The IT personnel also creates a read-only account to connect to its EHR database.
- FIGmd mapping team then performs mapping using extracted TEST DATA.
- After finalization of mapping, RPC is configured to start a nightly job to extract all available clinical EHR data for all patients of all participating providers from the EHR.
- The extracted data is first stored in a file on the Practice server in encrypted, compressed format.
- Another scheduled job then pushes it to the FIGmd registry database hosted on Amazon Web Services (AWS) cloud, which is outside of the Practice’s IT system.
- The Data is stored in Axon Clinical Data Repository (CDR) Warehouse.
- FIGmd mapping team then maps this data from CDR into the Axon DataMart using the Axon Registry Data Dictionary (DD). The mapping load on participant is far less than that involved in a Data PUSH method.
- Participant only helps the FIGmd mapping team in the mapping exercise.

B. Data PUSH – No RPC Data Extraction Utility installed at participating Practice:

- No RPC installation required at participant’s end.
- A standard CDR Data Pull Layout template is shared with the participant.
- The Participant takes on mapping responsibilities for mapping their own EHR data to elements in the CDR Layout Template.
- Participant will send EHR data to Axon AWS Data Warehouse via SFTP (SSL/ TLS), Web Service or TCP Tunnel (VPN, etc.).
- The data is sent in the pre-determined format (CDR Layout Template) to the Registry by the participant.
- Data submitted by the participant is stored in Axon Clinical Data Repository (CDR) Warehouse.
- FIGmd mapping team then maps this data from CDR into the Axon DataMart using the Axon Registry Data Dictionary (DD). Some help is required from the participant to complete the final mapping.
C. Axon Dashboard Application hosted at US AWS Cloud:
   - FIGmd processes the data present in Axon Database in AWS cloud environment.
   - FIGmd allows participating providers to see dashboard that details performance of each participating provider.
   - The Axon Registry Dashboard gives snapshot of how an Practice/Provider is performing against the benchmark for each measure.
   - FIGmd also supports PQRS submissions for the participating providers, if applicable.
## II. FIGmd Solution Components:

<table>
<thead>
<tr>
<th>Category</th>
<th>RPC</th>
<th>Registry Dashboard Portal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Who installs it</strong></td>
<td>Participant Practice Admin under his/her credentials</td>
<td>FIGmd</td>
</tr>
<tr>
<td><strong>Hosted at</strong></td>
<td>Practice environment</td>
<td>Axon Registry hosted in AWS</td>
</tr>
<tr>
<td><strong>Installed by</strong></td>
<td>Practice IT admin</td>
<td>FIGmd</td>
</tr>
<tr>
<td><strong>Accessed by</strong></td>
<td>Only by Practice IT admin &amp; FIGmd for Troubleshooting</td>
<td>Participants via Web browser; no direct access to data.</td>
</tr>
<tr>
<td><strong>Incoming connections</strong></td>
<td>RPC Management server for initial setup and data extract management.</td>
<td>Data load from RPC to Axon CDR and then to Axon data mart</td>
</tr>
<tr>
<td><strong>What does it connect with?</strong></td>
<td>EHR database with read-only account</td>
<td>Raw and processed data in Axon AWS storage</td>
</tr>
<tr>
<td><strong>Does it access PHI?</strong></td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Does it store PHI?</strong></td>
<td>Yes, on Practice server in compressed, encrypted format before upload.</td>
<td>Yes, a provider sees only his/her data based on role setup in dashboard portal</td>
</tr>
<tr>
<td><strong>Outgoing Connections</strong></td>
<td>AWS cloud to Clinical Data Repository (CDR) database of Axon Registry</td>
<td>Browser access by participating providers</td>
</tr>
<tr>
<td><strong>HW required</strong></td>
<td>Processor: 1 GHz, 2 GB memory during scheduled data extraction and upload jobs. Hard Drive: 1 GB of free space, Broadband Internet Access.</td>
<td>Any web browser</td>
</tr>
</tbody>
</table>
III. Data Flow Diagram - Data PULL:

Data Pull Scenario

- EHR, Claims, and/or Billing Database(s)
- Registry Practice Connector (RPC)
- RPC Management Server
- Clinical Data Repository (CDR)
- Clinical Data Upload Server
- Registry Dashboard
- Registry Quality Reporting
- Data Marts
- Registry in AWS

Encryption for data in transit:
- 128-bit Bit locker local / 256 EBS Network Drive encryption
- Microsoft Transparent Data Encryption (TDE)
- 256-bit Rijndael key
- Port: XXXX
- https:// Port 443
- 2048-bit RSA key
- Data Pull Scenario

Practice / Provider

Authorized Practice User

Key Managed by Encryption Server Provider
IV. Data Flow Diagram - Data PUSH:

Data Push Scenario

- **Clinical Data Repository (CDR)**
  - EHR, Claims, and/or Billing Database(s)
  - SFTP Server/Client

- **Registry in AWS**
  - Encryption for data in transit
  - HTTPS: Port XXXX, 2048-bit RSA key

- **Data Marts**
  - Registry Quality Reporting

- **Authorized User**
  - Key Managed by Encryption Server Provider

- **Practice / Provider**
  - Supplied Data Feed
  - SFTP Server/Client

- **Participant Mapping Analyst**
  - FIGmd Mapping Analyst

- **FIGmd Mapping Analyst**

- **Microsoft Transparent Data Encryption (TDE)**
  - 128-bit Bit locker local / 256 EBS Network Drive encryption

- **Registry Dashboard**