openIDL - Target Architecture

High Level Requirements of the System

Notes from the team

KS

- support stat reporting
- support ad-hoc data calls
- verify data availability
- Data stays private to the carrier
- Only results of extractions leave the carrier
- common extraction request across all nodes
- common data model for extraction across all nodes
- Any one extraction uses the same model for all data owners
  - JM - Agreed, but per level of the published model
- trust extractions - we are executing code after all
- Correlated data can be accessed as part of the extraction
- All updates to the system are well managed
- Support multiple "footprints"
- physical db schema maintenance is minimized
- Technical choices for implementation can vary from carrier to carrier for those items that reside in the carriers perimeter
- Passes audit by All members of TSC

JM

- Security model has white hacks as part of regression testing
- Done when everything is in a comprehensive regression test base and all tests pass
- Each major box has "push button" install process
- Reference tables all pre-populate as part of HDS install
- DDL in the db to build out the model in each major technology
- Test records self install to HDS and test base runs.
- Capacity and DR specifications are published and tested

TE

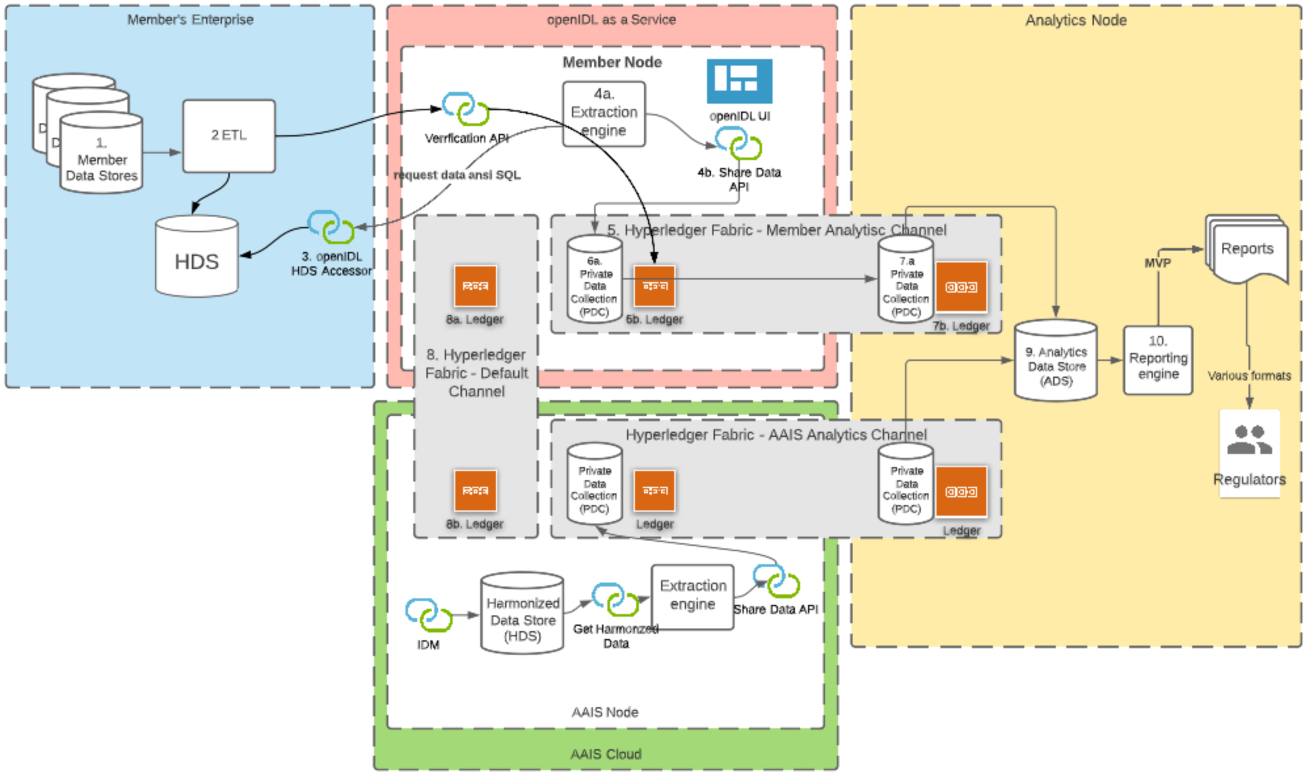
- Insurer needs a standard for regular Policy-level "experience recording" assertion
- Insurer's data moves from batch/chunk integrity at load, to Per-Policy integrity over time and at time of inquiry
- Analytics node is the "box" when we talk "openIDL in a box" as it determines the value of the information as a result (who gets the analysis and why) - we need different types/sizes as well as Orgs/Roles (todal it's all AAIS)
- Analytics Node host ("information seeker") or Seeker's Agent (e.g. NAIC, PCI, etc. on behalf of >1 Seekers) for Org/Roles/purpose - creating Extraaction Patterns, etc. (today is AAIS or whoever deploys the network - ND, MS, etc.)
- "AAIS" cloud/node(s) need to become "(Stat) Agent" orgs/nodes (>1) acting on behalf of >1 Data Owners

SB

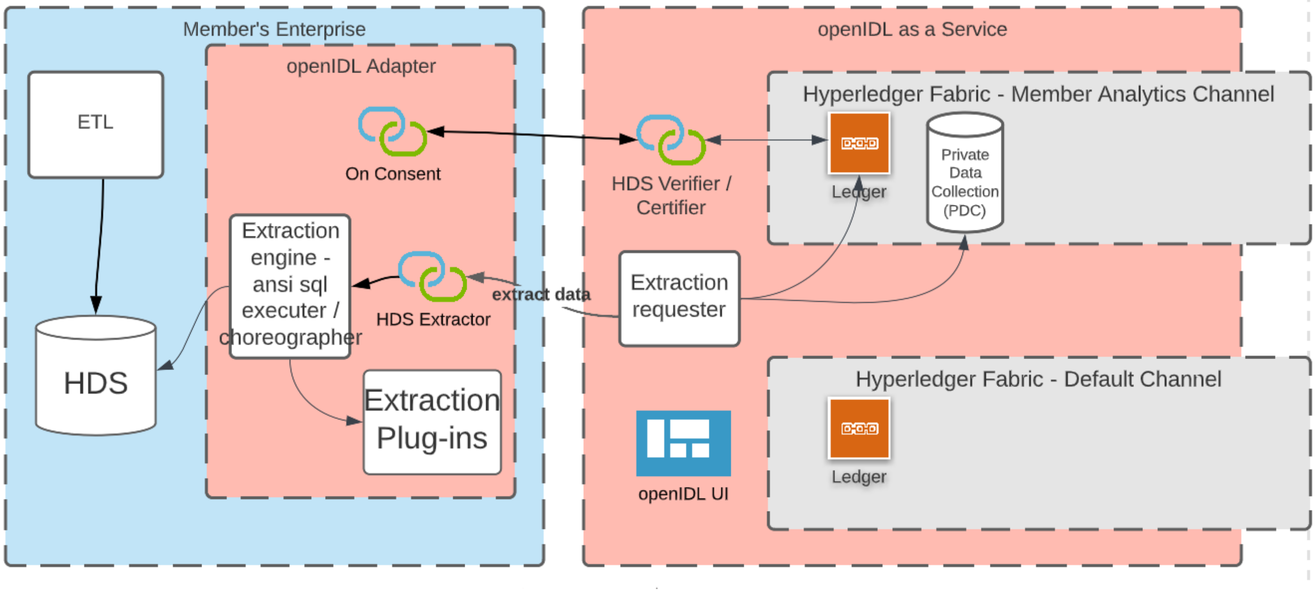
- There is a test-net and a main-net
- Governance Framework required for why (principles) AND how (mechanics) things get done
- States and prospective members can Pilot/POC via testnet?
- openIDL is running at least 2 nodes (CA and analytics) to operate NOC-like service
- Is there "one node architecture" for all or would a state have a different kind of node (please say no)
- Applications (stat reporting, etc)----openIDL Network----openIDL TestNet

Target Application Architecture

openIDL as a Service - High Level Application Architecture

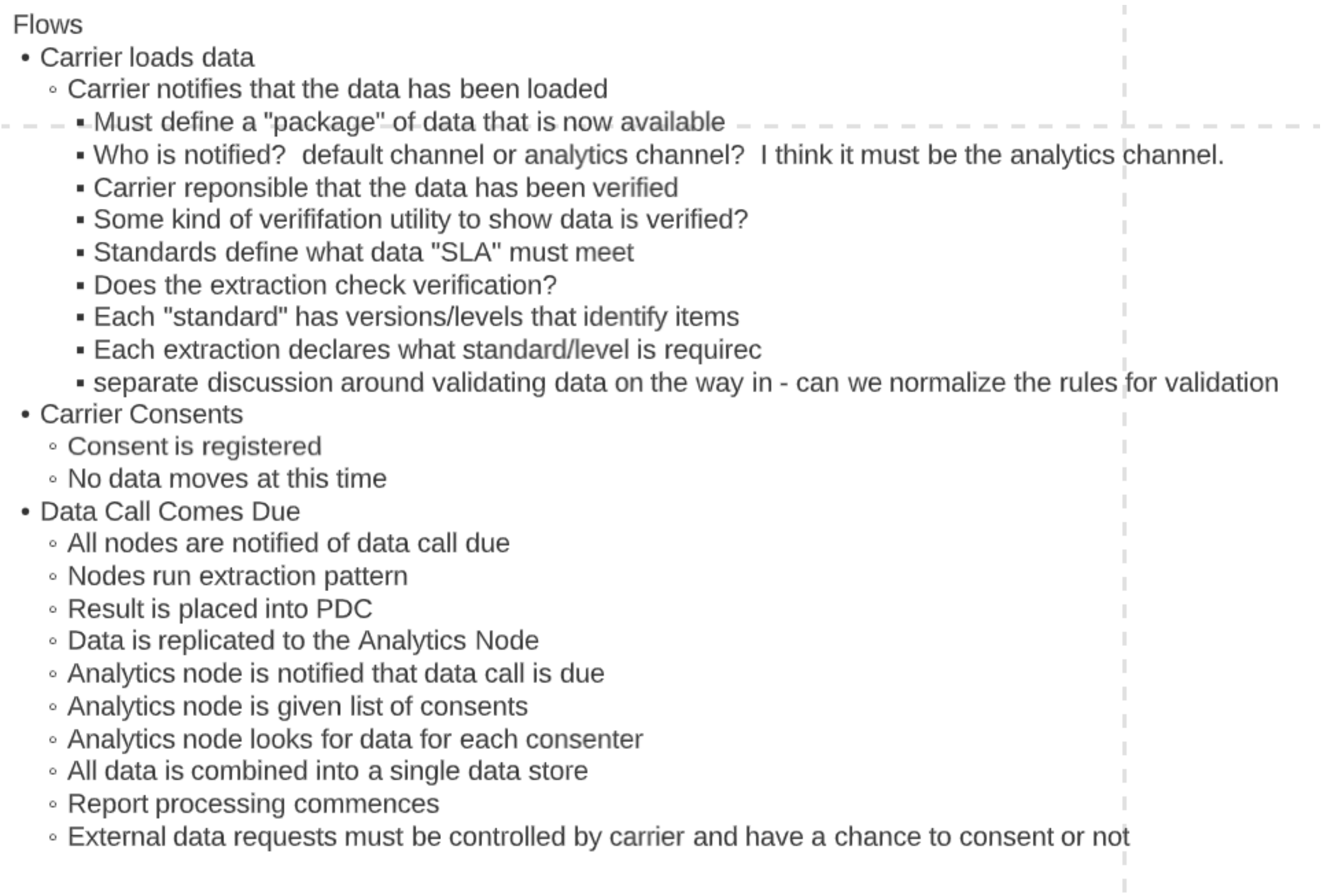


Details of the Member



Components

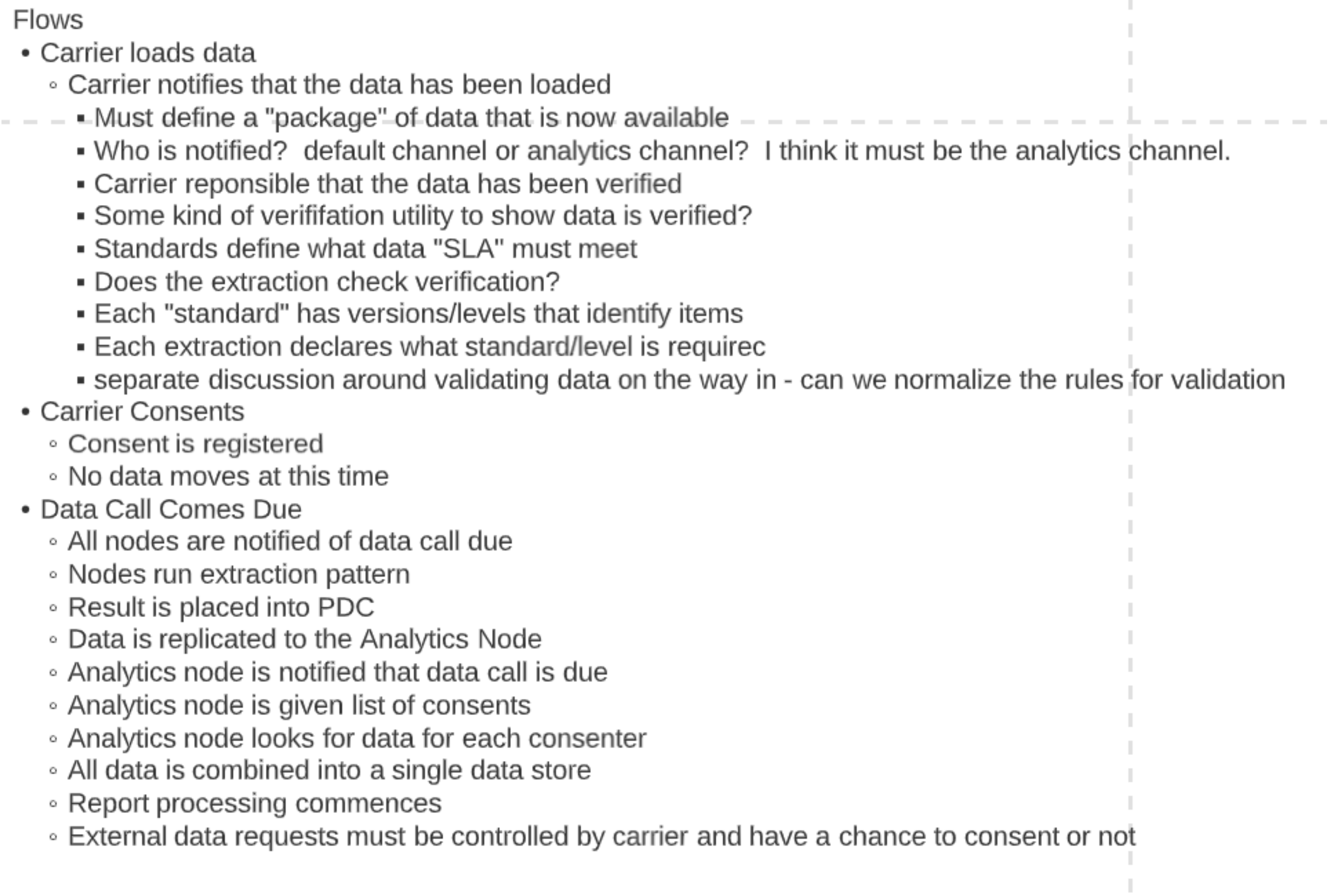
- ETL
  - Member owned and operated software to process data and load into the HDS through the HDS loader api
- HDS
  - Member owned database that meets the expectations of the HDS extractor
- openIDL Adapter
  - Hosts openidl components needed to participate in openIDL
  - HDS Loader
    - Used by ETL to push data into HDS
    - Makes sure loaded data is registered with the network
  - HDS Extractor
    - Called when extraction ins run
    - Processes standard query to return data
  - Extraction Engine
    - Executes Queries
    - Runs scripts when needed
  - Extraction Plugins
    - Additional worker components for doing special math or accessing apis to correlate private dataa with external data
- openIDL as a Service
  - Hosted solution managing components required to connect to the blockchain and establish identity in the community
  - Hosts the UI for the data calls and statistical reporting
  - HDS Verifier / Certifier
    - makes sure the state of the member data is verified and shared on the network
  - Extraction Requester
    - sends extraction request to member
    - processes results and places into
  - HLF Analytics Channel
    - communicate with analytics node to share extracted data
  - HLF Default Channel
    - communicate with network to participate in stat reporting and data calls



Flows

- Carrier loads data
    - Carrier notifies that the data has been loaded
        - Must define a "package" of data that is now available
        - Who is notified? default channel or analytics channel? I think it must be the analytics channel.
        - Carrier reponsible that the data has been verified
        - Some kind of verififation utility to show data is verified?
        - Standards define what data "SLA" must meet
        - Does the extraction check verification?
        - Each "standard" has versions/levels that identify items
        - Each extraction declares what standard/level is requirec
        - separate discussion around validating data on the way in - can we normalize the rules for validation
- Carrier Consents
    - Consent is registered
    - No data moves at this time
- Data Call Comes Due
    - All nodes are notified of data call due
    - Nodes run extraction pattern
    - Result is placed into PDC
    - Data is replicated to the Analytics Node
    - Analytics node is notified that data call is due
    - Analytics node is given list of consents
    - Analytics node looks for data for each consenter
    - All data is combined into a single data store
    - Report processing commences
    - External data requests must be controlled by carrier and have a chance to consent or not

Discussion about the adapter



Flows

- Carrier loads data
  - Carrier notifies that the data has been loaded
    - Must define a "package" of data that is now available
    - Who is notified? default channel or analytics channel? I think it must be the analytics channel.
    - Carrier reponsible that the data has been verified
    - Some kind of verififation utility to show data is verified?
    - Standards define what data "SLA" must meet
    - Does the extraction check verification?
    - Each "standard" has versions/levels that identify items
    - Each extraction declares what standard/level is requirec
    - separate discussion around validating data on the way in - can we normalize the rules for validation
- Carrier Consents
  - Consent is registered
  - No data moves at this time
- Data Call Comes Due
  - All nodes are notified of data call due
  - Nodes run extraction pattern
  - Result is placed into PDC
  - Data is replicated to the Analytics Node
  - Analytics node is notified that data call is due
  - Analytics node is given list of consents
  - Analytics node looks for data for each consenter
  - All data is combined into a single data store
  - Report processing commences
  - External data requests must be controlled by carrier and have a chance to consent or not

Target Network Architecture

Target Data Architecture

See Technical Considerations

Target Technical Architecture

Digging into the integration between the hosted node and the carrier.

Feedback on Current Architecture and Implementation

See this site for feedback from Travelers based on deployment experience with the current architecture.