

OHDSI on AWS
 Open source automation
 to automatically deploy an
 OHDSI environment on
 Amazon Web Services
 (AWS).

BACKGROUND

- Deploying the OHDSI toolset can be time consuming and technically challenging
- The infrastructure required to use the OHDSI tools can be expensive and complicated
- OHDSI on AWS seeks to address both of these challenges by offering full automation to deploy a best-practices OHDSI environment in just a few hours using inexpensive AWS infrastructure (figure 1)

METHODS

The features of using this architecture are as follows:

- It can be deployed with access from the public Internet, or accessible only from within your organization's private network
- It deploys the OMOP CDM with sample data, Atlas, WebAPI, Achilles, Jupyter Notebooks, and RStudio with PatientLevelPrediction and many other OHDSI libraries
- Provides role-based access control for Atlas and RStudio
- It uses data-at-rest and in-flight encryption to respect the requirements of HIPAA
- It uses managed services from AWS; OS, middleware, and database patching and maintenance is largely automatic
- In a small deployment, it costs less than \$450/month including the data warehouse

A complete secure, enterprise, multi-user, scalable and fault tolerant OHDSI environment deployed automatically on AWS in hours.

RESULTS

- IQVIA uses this architecture globally to support their OHDSI and OMOP environments.
- IQVIA cites the ability to turn environments on and off and also to scale environments up and down quickly as advantages of this architecture.
- The automation accepts parameters that allow customization of the scale, included data sources (figure 2), OHDSI project versions (figure 3), and network configuration

Sample Data Source	Size	Schema Name
Synthea	1,000 persons	synthea1k
Synthea	100,000 persons	synthea100k
Synthea	>2,000,000 persons	synthea23m
CMS DeSynPUF	1,000 persons	CMSDeSynPUF1k
CMS DeSynPUF	100,000 persons	CMSDeSynPUF100k
CMS DeSynPUF	>2,000,000 persons	CMSDeSynPUF23m

Figure 2

OHDSI Component	Version
OMOP Common Data Model	v5.3.1
Atlas	v2.7.3
WebAPI	v2.7.3
Achilles	v1.6.3
PatientLevelPrediction	v3.0.6
CohortMethod	v3.1.0
SqlRender	v1.6.2
DatabaseConnector	v2.2.0
DatabaseConnectorJars	v1.0.0
SqlRender	v1.6.2
OhdsiRTools	v1.7.0
FeatureExtraction	v2.2.4
Cyclops	v2.0.2
EmpiricalCalibration	v2.0.0
OhdsiSharing	v0.1.3
MethodEvaluation	v1.0.2
Hydra	v0.0.4
PredictionComparison	v1.0.0
Eunomia	v0.0.1

Figure 3

James Wiggins¹, Frank DiMartini², Mui Van Zandt^{3,4}

¹Amazon, Seattle, WA, ²IQVIA, Plymouth Meeting, PA, ³OHDSI, New York, NY, ⁴IQVIA, Durham, NC

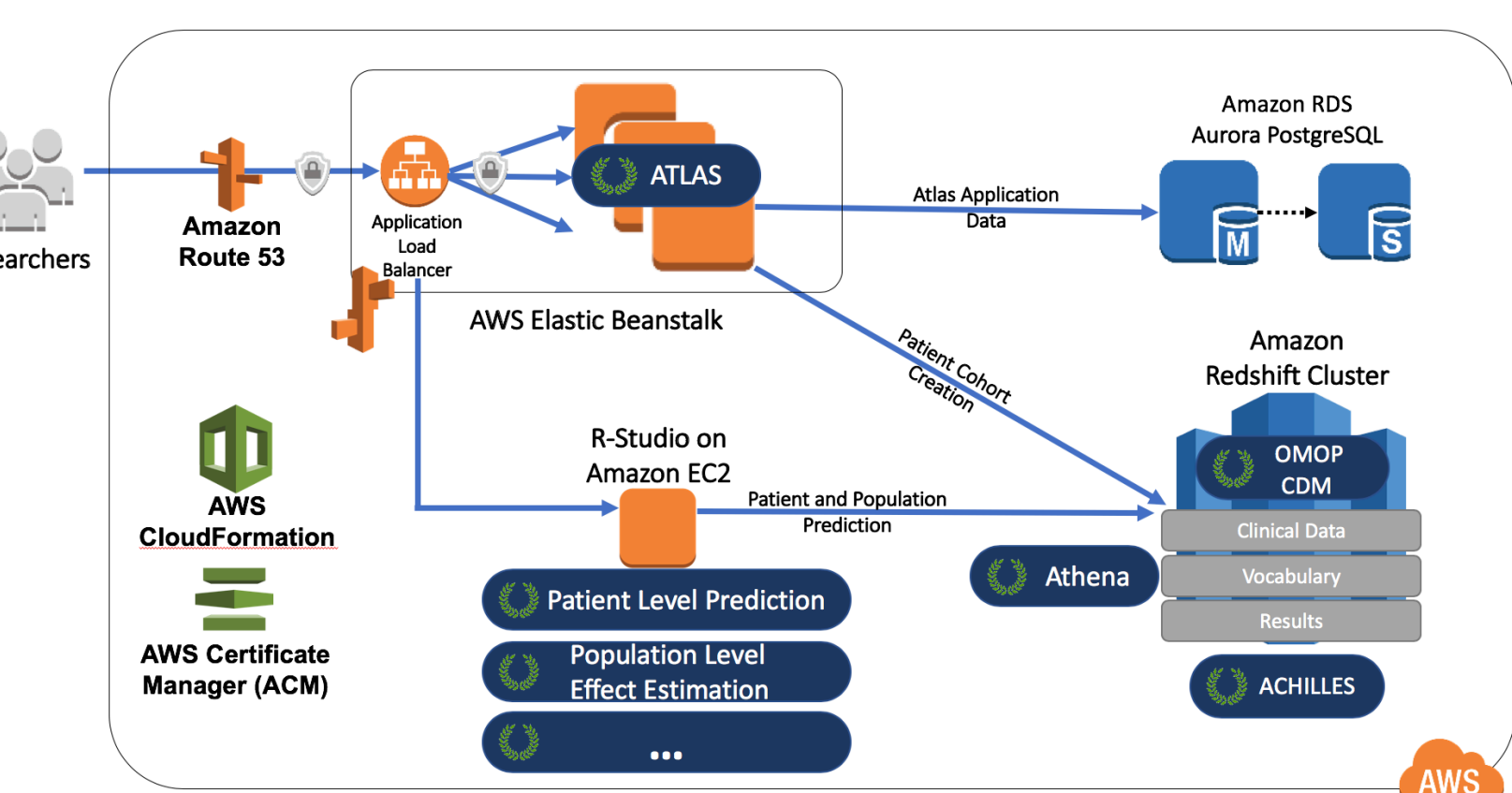


Figure 1

