



**Ministry of Housing and Urban Affairs**  
**Government of India**



# **IUDX v2.0.0 Release Notes**

October 1, 2020



# 1. Introduction

We are happy to announce the IUDX-v2.0.0 release, which is technically the first production release for the core software components and platform components for India Urban Data Exchange (IUDX). It incorporates feature upgrades and enhancements from IUDX-1.0 which was a proof-of-concept release for IUDX.

This note provides important links to the software, API documentation and other supplementary materials for the IUDX core components and IUDX platform components that are a part of this release.

Key software components that are a part of this release are as follows:

- IUDX core components
  - Catalogue server
  - Resource server
  - Authorization server
  - Deployment and containerization scripts
- IUDX platform components
  - Monitoring and Logging module
  - Catalogue UI portal (web application)
  - Registration and Authorization panel (web application)
  - Vocabulary browser (web application)

## 2. Component-wise release notes

### 2.1 Catalogue Server

#### Highlights

- Search and discovery of data resources hosted on IUDX platform
- Support for text, geo-spatial, relationship and attributes searches
- Upload, delete and modify operations on catalogue objects (meta-information corresponding to resources)
- Use of JSON-LD to represent catalogue meta-information objects with data attributes linked to published vocabularies and data models
- Scalable, service mesh architecture-based implementation using open source components
- Key open-source components: Vert.X API framework, Elasticsearch

### Key Links:

- Source code: [Link](#)
- API docs: <https://api.catalogue.iudx.org.in/apis>
- Unit test reports: [Link](#)
- Integration test reports: [Link](#)
- Postman collection: [Link](#)

## 2.2 Resource Server

### Highlights

- Provides data access from available resources using standard APIs and streaming subscriptions (AMQP)
- Search and count APIs for searching through available data: Support for Spatial (Circle, Polygon, Bbox, Linestring), Temporal (Before, during, After) and Attribute searches
- Adaptor registration endpoints and streaming endpoints for data ingestion
- Integration with authorization server (token introspection) to serve private data as per the access control policies set by the provider
- Secure data access over TLS
- Scalable, service mesh architecture based implementation using open source components: Vert.X API framework, Elasticsearch/Logstash and RabbitMQ for data broker

### Key Links:

- Source code: [Link](#)
- API docs: <https://rs.iudx.org.in/apis>
- Unit test reports: [Link](#)
- Integration test reports: [Link](#)
- Postman collection: [Link](#)

## 2.3 Authorization Server

### Highlights

- Registration and issuing client certificates to all IUDX Platform Users
- Providers can manage access to their secure resources
- Providers can audit access tokens issued to different users for resources they own
- Consumers can obtain access tokens to secure resources if they have been pre-approved by Providers

- Onboarders can obtain access tokens to manage IUDX Catalogue Server entries on behalf of the Providers
- Data Ingesters can obtain an access token to upload data to the IUDX Resource Server

#### Key Links:

- Source code: [Link](#)
- API docs: <https://authdocs.iudx.org.in/>
- Unit test reports: [Link](#)
- Integration test reports: [Link](#)
- Postman collections: [Link](#)

## 2.4 Deployment and containerization scripts

#### Highlights

- Scripts for containerization of IUDX components
- Scripts for installation of IUDX components
- Orchestrates the IUDX platform in a docker swarm network
- Node communication is over a secure channel, and is accessible only within the docker swarm network
- Secure and scalable deployment system implementation using open source components: Docker, Docker-compose and shell scripts.

#### Key Links:

- Source: [Link](#)

## 2.5 Monitoring and Logging module

#### Highlights

- Enables monitoring of the IUDX system at a centralized location
- Provides query capability on system metrics, usage metrics and logs
- Administrator can view the system stability using a dashboard and can enable alerts
- Secure and scalable monitoring and logging system implementation using open source components: Grafana, Loki, Prometheus, Micrometer, Promtail and Log4J

#### Key Links:

- Source: [Link](#)

## 2.6 Catalogue UI portal

### Highlights

- Search, list or browse available datasets for a city with deployed IUDX instance
- Search data resources using text and/or map based geo-spatial searches
- Display meta-information for data resources to help choose the right data resource
- Information about the data from a given resource: view sample data, view live data for publicly available resources, view linked-data based data-descriptors for a given resource etc.

### Further information:

- Catalogue landing page for each deployed city: <https://<city-instance-id>.catalogue.iudx.org.in>.  
Currently active:
  - Pune: <https://pune.catalogue.iudx.org.in>
  - Surat: <https://surat.catalogue.iudx.org.in>
  - Varanasi: <https://varanasi.catalogue.iudx.org.in>
- Links to each city are also provided at: <https://catalogue.iudx.org.in>

## 2.7 Registration and authorization panel

### Highlights

- Console for Provider, Consumer and delegated role (onboarder, ingestor) registration and obtaining certificates
- Provider panel to authorize onboarders to onboard catalogue items for its resources
- Provider panel to authorize ingestors to push data into resource server

### Further information:

- Registration page: <https://register.iudx.org.in/>
- Authorization/Provider panel: <https://accounts.iudx.org.in/>

## 2.8 Vocabulary browser portal

### Highlights

- Browse through various attributes/properties used in IUDX data models
- Text based search for existing properties in the published vocabulary
- Vocabulary defined using generic system of properties and types derived from RDF-Schema

### Further Information

- Vocabulary page: <https://voc.iudx.org.in>

### 3. Enhancements to IUDX-1.0

- New search features (Text search, Relationship searches) in catalogue
- Improved search performance for complex queries for resource server and catalogue search
- API harmonization with ETSI NGSI-LD for resource server APIs
- Addition of subscription-based access for streaming data
- Full integration of data access services with authorization server
- Introduction of delegated onboarder and data ingestor roles to ease deployment
- Improved authorization flows:
  - Manage user registrations and access policies using UI
  - Review existing access policies using UI
  - Streamlined user registration and certificate generation process
- New Angular based frontend for catalogue UI and introduction of a UI backend server for better performance, configurability and extensibility
- New platform components
  - Monitoring and logging stack
  - Registration and Authorization panel
  - Vocabulary browser
- New deployment system based on docker, docker-swarm and monitoring stack
  - The system uses an overlay network and supports manual scaling using docker run.
  - Hazlecase with Zookeeper is used as our cluster manager.
  - Monitoring of the APIs, Services, Containers, Nodes are done using Micrometer, Promtail and Node exporter.
  - Metrics are pushed to Loki, Prometheus and visualized using Grafana.