TImR and RITA Sync Mediator

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Dec 27, 2021

CONTENTS

INSTALLING THE MEDIATOR

All installation instructions below assumes that the mediator is running under Ubuntu OS

nodejs The mediator requires nodejs to run, node 16 or above is recommended

```
sudo apt-get install nodejs
```

npm

```
sudo apt-get install npm
```

You might need to upgrade your node version to the latest stable version Check installed version

```
node --version
```

If less than 16 then upgrade with below commands

```
sudo npm install n -g
sudo n stable
```

Now time to clone source codes from github, run below command to clone

Note: You need to have git installed to be able to clone the source code

```
git clone https://github.com/ashaban/openhim-mediator-timr-rita.git
```

Install mediator dependencies

```
cd openhim-mediator-timr-rita
npm install
```

TWO

CONFIGURING THE MEDIATOR

Configuration to connect the mediator with openHIM inside the mediator, use your preffered text editor and open config.json under config folder

```
vim config/config.json
```

Below is the content of config.json

```json
{
  "api": {
    "username": "root@openhim.org",
    "password": "openhim-password",
    "apiURL": "https://localhost:8080",
    "trustSelfSigned": true
  },
  "register": true
}
```
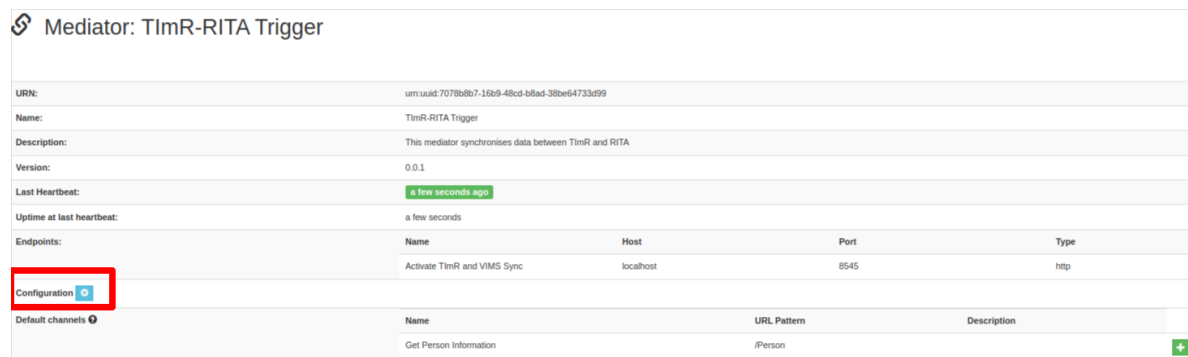
Change username and password to a real account that can connect to openHIM

If the mediator and openHIM are on different servers, then you will need to change the apiURL

Note: You need to start the mediator with below commands before you can proceed with the rest of the configurations

```
cd openhim-mediator-timr-rita
node index.js
```

Configuration parameters of the mediator with TImR and RITA Login to openHIM and click the mediators link Click to open the TImR-RITA Trigger mediator

Mediator: TImR-RITA Trigger

URN:	urn:uuid:7078b8b7-16b9-48cd-b8ad-38be64733d99			
Name:	TImR-RITA Trigger			
Description:	This mediator synchronises data between TImR and RITA			
Version:	0.0.1			
Last Heartbeat:	a few seconds ago			
Uptime at last heartbeat:	a few seconds			
Endpoints:	Name	Host	Port	Type
	Activate TImR and VIMS Sync	localhost	8545	http
Configuration ⚙				
Default channels ❶	Name	URL Pattern	Description	
	Get Person Information	/Person		+

Click the gear icon next to configuration to open the configuration page that looks as below

1. TImR OAUTH2 section defines credentials needed to request access token from TImR that will be used to query data in TImR

2. TImR section defines credentials for querying data to TImR

3. RITA section defines credentials required to push data inside RITA.

- URL: is the RITA base URL

- username: is the user that has permission to push data to RITA

- password: is the password of the user that has permission to push data to RITA

- Last Sync: is the last time data was pushed to RITA, the mediator uses this time to pull updated data from TImR since this time

- Reset Last Sync: Use this if you want to reset the mediator and pull all children data from TImR and push them to RITA

4. FHIR Server defines credentials to connect to the FHIR server that has facilities and administrative areas mapping data between RITA and TImR

THREE

RUNNING THE MEDIATOR AND LOGS LOCATION

The mediator can be run using below commands

```
sudo service timr-rita-mediator start
```

The mediator can be manually run as well using below commands

```
cd openhim-mediator-timr-rita
node index.js
```

To view logs, run below command

```
sudo journalctl -f -u timr-rita-mediator.service
```

DATA SYNCHRONIZATION - TABULAR

The mediator comes with a single API that can be triggered to push data to RITA. The name of the API is /pushPatients which supports the POST method. This end point pulls data from TImR using FHIR standard which then it converts these data to RITA format and finally sends the converted data to RITA.

4.1 *Below are the data elements that are currently being sent to RITA*

Table 1: Variables

Name	Value
$mother	contained.find(c=>c.resourceType == "RelatedPerson" && c.relationship.coding[0].code == "MTH")
$father	contained.find(c=>c.resourceType == "RelatedPerson" && c.relationship.coding[0].code == "FTH")
$informant	contained.find(c=>c.resourceType == "RelatedPerson" && c.relationship.coding[0].code == "Contact")
$createdBy	extension.find(e=>e.url=="http://openiz.org/fhir/extension/rim/relationship/CreatedBy").valueReference.reference

Table 2: RITA-FHIR Mappings

RITA DATA Element	RITA Data in FHIR (TImR)
form_number	identifier.find(id => id.system == "http://ivd.moh.go.tz/timr/birthcert").value
child_first_name	name[0].given[0]
child_second_name	name[0].given[1]
child_last_name	name[0].family
gender	gender
child_date_of_birth	birthDate
birth_place_id	extension.find(e => e.url == "http://openiz.org/extensions/patient/contrib/timr/birthPla
health_facility_id	extension.find(e => e.url=="http://openiz.org/fhir/extension/rim/relationship/Dedicated
child_birth_place_village_id	extension.find(e => e.url == "http://openiz.org/fhir/extension/rim/relationship/Birthpla
delivery_witness_id	extension.find(e => e.url == "http://openiz.org/extensions/contrib/timr/birthAttendant"
mother_first_name	$mother.name[0].given[0]
mother_second_name	$mother.name[0].given[1]
mother_last_name	$mother.name[0].family
mother_national_identity_number	$mother.identifier.find(id => id.system == "http://ivd.moh.go.tz/timr/nid").value
mother_date_of_birth	$mother.birthDate
mother_country_birth_id	$mother.extension.find(e => e.url == "http://openiz.org/fhir/extension/rim/relationship
mother_nationality_id	$mother.extension.find(e => e.url == "http://openiz.org/fhir/extension/rim/relationship
mother_education_id	$mother.extension.find(e=>e.url=="http://openiz.org/extensions/contrib/timr/socialInd

Table 2 – continued from previous page

mother_occupation_id	$mother.extension.find(e=>e.url=="http://openiz.org/extensions/contrib/timr/socialInd
mother_village_id	$mother.address.find(addr => addr.extension.find(e=>e.url=="http://openiz.org/fhir/pro
father_education_id	$father.extension.find(e=>e.url=="http://openiz.org/extensions/contrib/timr/socialIndic
father_occupation_id	$father.extension.find(e=>e.url=="http://openiz.org/extensions/contrib/timr/socialIndic
father_nationality_id	$father.extension.find(e => e.url == "http://openiz.org/fhir/extension/rim/relationship/C
father_country_birth_id	$father.extension.find(e => e.url == "http://openiz.org/fhir/extension/rim/relationship/l
father_first_name	$father.name[0].given[0]
father_second_name	$father.name[0].given[1]
father_last_name	$father.name[0].family
father_date_of_birth	$father.birthDate
father_national_identity_number	$father.identifier.find(id => id.system == "http://ivd.moh.go.tz/timr/nid").value
father_village_id	$father.address.find(addr => addr.extension.find(e=>e.url == "http://openiz.org/fhir/pro
number_of_pregnancy	$mother.extension.find(e=>e.url=="http://openiz.org/extensions/contrib/timr/pregnanc
number_of_children	$mother.extension.find(e=>e.url=="http://openiz.org/extensions/contrib/timr/pregnanc
number_of_children_safe_delivery	$mother.extension.find(e=>e.url=="http://openiz.org/extensions/contrib/timr/pregnanc
number_death_before_delivery	$mother.extension.find(e=>e.url=="http://openiz.org/extensions/contrib/timr/pregnanc
month_of_pregnancy	$mother.extension.find(e=>e.url=="http://openiz.org/extensions/contrib/timr/pregnanc
informant_first_name	$informant.name[0].given[0]
informant_second_name	$informant.name[0].given[1]
informant_last_name	$informant.name[0].family
informant_phone_number	$informant.telecom.find(tel => tel.system == "phone").value
informant_national_identity_number	$informant.identifier.find(id => id.system == "http://ivd.moh.go.tz/timr/nid").value
informant_relationship_id	contained.find(c=>c.id == $informant.id).relationship.coding[0].code
informant_permanent_residence_village_id	$informant.address.find(addr => addr.extension.find(e=>e.url == "http://openiz.org/fhi
date_of_informant	$informant.meta.lastUpdated
registration_centre_id	extension.find(e => e.url == "http://openiz.org/fhir/extension/rim/relationship/Registra
register_date	meta.lastUpdated
updated_at	meta.lastUpdated

Pending RITA Dataelements

1. birthStatus

2. childWeight

3. father_date_of_birth

4. informant_phone_number

5. registrar_first_name

6. registrar_second_name

7. registrar_last_name

DATA SYNCHRONIZATION - LIST

The mediator comes with a single API that can be triggered to push data to RITA. The name of the API is /pushPatients which supports the POST method. This end point pulls data from TImR using FHIR standard which then it converts these data to RITA format and finally sends the converted data to RITA.

Below are the data elements that are currently being sent to RITA

Table 1: Variables

Name	Value
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$informant	contained.find(c=>c.resourceType=="RelatedPerson" && c.relationship.coding[0].code=="Contact")
$createdBy	extension.find(e=>e.url=="http://openiz.org/fhir/extension/rim/relationship/CreatedBy").valueReference.reference

- form_number

    1. identifier.find(id=>id.system=="http://ivd.moh.go.tz/timr/birthcert").value

- child_first_name

    – name[0].given[0]

- child_second_name

    – name[0].given[1]

- child_last_name

    – name[0].family

- gender

    – gender

- child_date_of_birth

    – birthDate

- birth_place_id

    – extension.find(e=>e.url=="http://openiz.org/extensions/patient/contrib/timr/birthPlaceType").valueDecimal

- health_facility_id

    – extension.find(e=>e.url=="http://openiz.org/fhir/extension/rim/relationship/DedicatedFacilty").valueIdentifier.value

- child_birth_place_village_id
  - extension.find(e=>e.url=="http://openiz.org/fhir/extension/rim/relationship/Birthplace").valueIdentifier.value
- delivery_witness_id
  - extension.find(e=>e.url=="http://openiz.org/extensions/contrib/timr/birthAttendant").valueDecimal
- mother_first_name
  - $mother.name[0].given[0]
- mother_second_name
  - $mother.name[0].given[1]
- mother_last_name
  - $mother.name[0].family
- mother_national_identity_number
  - $mother.identifier.find(id=>id.system=="http://ivd.moh.go.tz/timr/nid").value
- mother_date_of_birth
  - $mother.birthDate
- mother_country_birth_id
  - $mother.extension.find(e=>e.url=="http://openiz.org/fhir/extension/rim/relationship/Birthplace").valueIdentifier.value
- mother_nationality_id
  - $mother.extension.find(e=>e.url=="http://openiz.org/fhir/extension/rim/relationship/Citizen").valueCode
- mother_education_id
  - $mother.extension.find(e=>e.url=="http://openiz.org/extensions/contrib/timr/socialIndicators/education").valueCodeableConcept.coding[0].code
- mother_occupation_id
  - $mother.extension.find(e=>e.url=="http://openiz.org/extensions/contrib/timr/socialIndicators/occupation").valueCodeableConcept.coding[0].code
- mother_village_id
  - $mother.address.find(addr=>addr.extension.find(e=>e.url=="http://openiz.org/fhir/profile#address-CensusTract").valueString)
- father_education_id
  - $father.extension.find(e=>e.url=="http://openiz.org/extensions/contrib/timr/socialIndicators/education").valueCodeableConcept.coding[0].code
- father_occupation_id
  - $father.extension.find(e=>e.url=="http://openiz.org/extensions/contrib/timr/socialIndicators/occupation").valueCodeableConcept.coding[0].code
- father_nationality_id
  - $father.extension.find(e=>e.url=="http://openiz.org/fhir/extension/rim/relationship/Citizen").valueCode
- father_country_birth_id

- $father.extension.find(e=>e.url=="http://openiz.org/fhir/extension/rim/relationship/Birthplace").valueIdentifier.value

- father_first_name

  – $father.name[0].given[0]

- father_second_name

  – $father.name[0].given[1]

- father_last_name

  – $father.name[0].family

- father_date_of_birth

  – $father.birthDate

- father_national_identity_number

  – $father.identifier.find(id=>id.system=="http://ivd.moh.go.tz/timr/nid").value

- father_village_id

  – $father.address.find(addr=>addr.extension.find(e=>e.url=="http://openiz.org/fhir/profile#address-CensusTract").valueString)

- number_of_pregnancy

  – $mother.extension.find(e=>e.url=="http://openiz.org/extensions/contrib/timr/pregnancyStatus/previousPregnancies").valueDecimal

- number_of_children

  – $mother.extension.find(e=>e.url=="http://openiz.org/extensions/contrib/timr/pregnancyStatus/previousPregnancies").valueDecimal

- number_of_children_safe_delivery

  – $mother.extension.find(e=>e.url=="http://openiz.org/extensions/contrib/timr/pregnancyStatus/liveBirths").valueDecimal

- number_death_before_delivery

  – $mother.extension.find(e=>e.url=="http://openiz.org/extensions/contrib/timr/pregnancyStatus/preNatalDeaths").valueDecimal

- month_of_pregnancy

  – $mother.extension.find(e=>e.url=="http://openiz.org/extensions/contrib/timr/pregnancyStatus/monthsCaring").valueDecimal

- informant_first_name

  – $informant.name[0].given[0]

- informant_second_name

  – $informant.name[0].given[1]

- informant_last_name

  – $informant.name[0].family

- informant_phone_number

  – $informant.telecom.find(tel=>tel.system=="phone").value

- informant_national_identity_number
  - $informant.identifier.find(id=>id.system=="http://ivd.moh.go.tz/timr/nid").value

- informant_relationship_id
  - contained.find(c=>c.id==$informant.id).relationship.coding[0].code

- informant_permanent_residence_village_id
  - $informant.address.find(addr=>addr.extension.find(e=>e.url=="http://openiz.org/fhir/profile#address-CensusTract").valueString)

- date_of_informant
  - $informant.meta.lastUpdated

- registration_centre_id
  - extension.find(e=>e.url=="http://openiz.org/fhir/extension/rim/relationship/RegistrationFacility").valueIdentifier.value

- register_date
  - meta.lastUpdated

- updated_at
  - meta.lastUpdated

Pending RITA Dataelements

1. birthStatus
2. childWeight
3. father_date_of_birth
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5. registrar_first_name
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