

Embedded Databases (IoTDB, Realm etc)

Development notes related to Embedded Databases used in the Playground

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Apache IoTDB

Phase1 PoC

- Versions used for development: Apache IoTDB v1.2.2, Apache Go Client v1.1.7
- Timeseries Schema
 - As there is no mechanism (that we are aware of) for a southbound feeder and WAIL to negotiate/communicate a schema as a starting point a simple key/value pair schema was used within IoTDB to store VSS timeseries data. A simple schema is probably the best place to start anyway for simplicity of understanding.
 - The [IoTDB data model supports hierarchical paths](#) for efficiency of data at scale. The model uses a dot notation. So for example a vehicle DB may have the hierarchy *root.region.model*.
 - This causes a challenge integrating VSS node paths which also use a dot notation. For example using the VSS node path *Vehicle.CurrentLocation.Longitude* as the timeseries key/measurement would cause Vehicle and CurrentLocation to be used in the hierarchy. When scaled across millions of vehicles this would cause inefficiency in storage and retrieval.
 - A simple solution is to quote the VSS node path and is what used here.
 - Example: Using the Go Client the VSS node *Vehicle.CurrentLocation.Longitude* is back quoted and suffixed to the IoTDB timeseries path, e.g. *root.region.model.`Vehicle.CurrentLocation.Longitude`*
 - Example: querying stored last VSS value using the IoTDB Cli client:

[illegible]

- Creating VSS aligned timeseries

- Examples of creating a schema for an aligned VSS timeseries using SQL

```
CREATE ALIGNED TIMESERIES root.test2.dev1(`Vehicle.CurrentLocation.Longitude` FLOAT, `Vehicle.CurrentLocation.Longitude` FLOAT, `Vehicle.Cabin.Infotainment.HMI.DistanceUnit` TEXT)
```

```
CREATE ALIGNED TIMESERIES root.test2.dev1(`Vehicle.CurrentLocation.Longitude` FLOAT encoding=PLAIN
compressor=SNAPPY, `Vehicle.CurrentLocation.Longitude` FLOAT encoding=PLAIN compressor=SNAPPY,
`Vehicle.Cabin.Infotainment.HMI.DistanceUnit` TEXT encoding=PLAIN compressor=SNAPPY)
```

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MongoDB Realm