Structured Data Crawler Setup

The structured Data crawler allows structured data as found in databases or web services to be crawled and assembled into yaml documents inside SimSage which then in turn can be searched and processed as any other document style asset within SimSage.

The structured Data crawler is configured via a yaml based configuration file.
Code completion and validation is provided by a Json schema definition, when adding the configuration into the editor inside the Structure Data Crawler.
The schema file can also be downloaded from: *SIMSAGE_URL/api/crawler/sdc_schema*

Configuration overview

The configuration has two core elements:

1. A list of data provider configurations (**dataProviders)**
   This list contains the connection details for a data provider to connect to it's data source
   See Data Providers below for configuration details

2. A structure definition defining how individual records (and child records) are to be assembled
   To allow for hierarchical data structures, the definition presents a nested view of record definitions, starting with the **root** definition.

   Each record has the following properties available:

   - provider
     The name of the provider configured in the provider list to use to fetch the data

   - primaryKeyTemplate
     A template string defining how the primary key for the uploaded asset in SimSage is to be constructed (see below for template strings)

   - titleTemplate
     A template string defining how the title of the uploaded asset in SimSage is to be constructed (see below for template strings)

   - fields
     The list of singular data items fields for the constructed asset.
     Each field is represented as an object, keyed as the field name and with the following sub properties:

     - DataType
       The data type for the field (String, Int, Date, Decimal)

    - format (Optional)
      Formatting options depending on the data type such as
      format: "dd/MM/yyyy"
      to get a date formatted in UK format

    - Enum (Optional)
      If the value is a key to an Enum value, a mapping between the value and a human readable text can be added here, e.g.
      enum:
        1: Pending
        2: Processing
        3: Rejected
        4: Completed

- meta
  List of mappinga between a Simsage Meta data item for the asset to be created and a string template for the value, e.g. *customer-id: ${customerId}* to create a meta data item for the record's customerId field

- recordAction – optional for root record (has to be DOCUMENT)
  This field defines for child collections how they are stored inside SimSage. Available options are:

    - DOCUMENT
      The child records become assets in their own right and are only linked via SimSage's attachment mechanism to the parent record

    - CHILD_COLLECTION

      The child records become an array of items inside the parent record themselves

    - NONE
      The child record is ignored. Useful if a level of the data structure is purely technical and should not be uploaded

- collections
  a list of nested record definitions for one to many relations of the current record

- config
  Provider specific details how to fetch the data and map it to the record. See Data Providers below for specific details

Template Strings

Certain fields such as primaryKeyTemplate, titleTemplate and some of the provider configuration fields will need to contain values from the actual fetched record.
This can be achieved by adding the name of the field inside the value inside substitution brackets (${}), e.g. “primaryKeyTemplate: Customer-${customerId}”
In nested structures the field name can be preceeded by one or more “../” steps to climb up the hierachy to fields of a parent record, e.g. *${../customerId}* to use the customer Id field of the parent record.

Data providers

JDBC Provider

Connection properties:

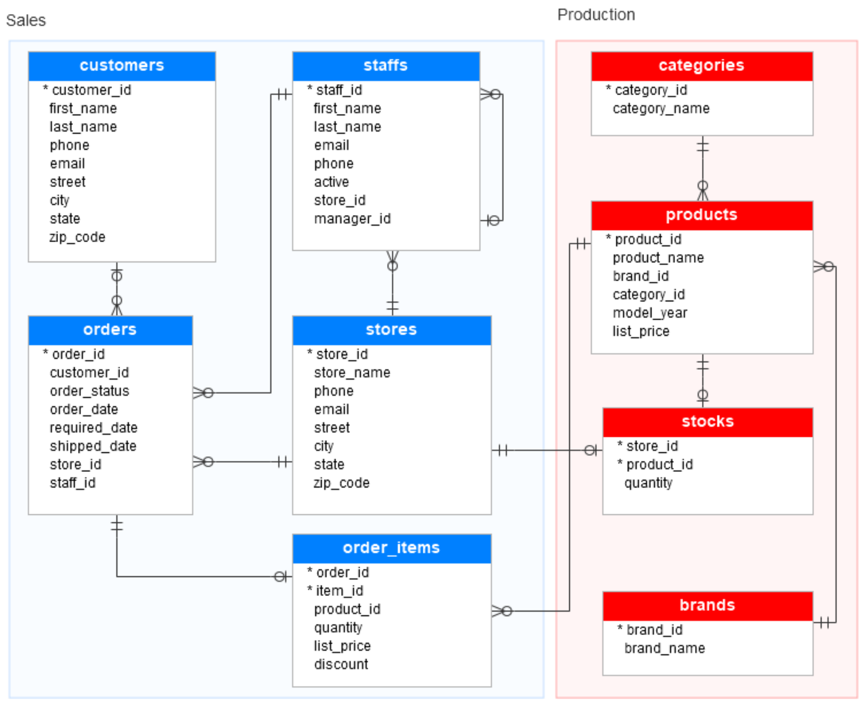
- name
  The name of the provider
- type
  ‘jdbc’
- connectionString
  jdbc connection string for the database
- userName
  The username for the DB login
- password
  The password for the DB login

Record configuration

- columns
  List off mappings from record field name to column name as per from clause in sql query below
- query
  from clause of the sql query to fetch the records. Template syntax can be used.

Example Configuration

The below is an example configuration to crawl a fictional store database as described in: https://www.sqlservertutorial.net/sql-server-sample-database/



Configuration Yml:

```
dataProviders:
 - name: OrderDB
   type: jdbc
   connectionString: jdbc:sqlserver://mysqlserverhost:1433;database=orders
   userName: username
   password: password
root:
 provider: OrderDB
 primaryKeyTemplate: Customer-${customerId}
 titleTemplate: ${firstName} ${lastName} (${customerId})
 fields:
   customerId:
     dataType: Int
```

```
  firstName:
    dataType: String
  lastName:
    dataType: String
  email:
    dataType: String
  street:
    dataType: String
  city:
    dataType: String
  state:
    dataType: String
  zip:
    dataType: String
config:
  columns:
    customerId: customer_id
    firstName: first_name
    lastName: last_name
    email: email
    street: street
    city: city
    state: state
    zip: zip_code
  query: from sales.customers
meta:
  customer-id: ${customerId}
  fullname: ${firstName} ${lastName}
collections:
  orders:
    provider: OrderDB
    primaryKeyTemplate: Order-${../customerId}:${orderId}
    titleTemplate: Order ${orderId} for ${../firstName} ${../lastName} (${../customerId})
    recordAction: DOCUMENT
    fields:
```

```
  orderId:
    dataType: Int
  orderStatus:
    dataType: Int
    enum:
      1: Pending
      2: Processing
      3: Rejected
      4: Completed
  orderDate:
    dataType: Date
    format: "dd/MM/yyyy"
  shippedDate:
    dataType: Date
    format: "dd/MM/yyyy"
config:
  columns:
    orderId: order_id
    orderStatus: order_status
    orderDate: order_date
    shippedDate: shipped_date
  query: from sales.orders where customer_id=${../customerId}
meta:
  order-id: ${orderId}
collections:
  items:
    provider: OrderDB
    recordAction: CHILD_COLLECTION
    fields:
      productId:
        dataType: Int
      brand:
        dataType: String
      productName:
        dataType: String
  quantity:
    dataType: Int
  listPrice:
    dataType: Decimal
  discount:
    dataType: Decimal
    format: Percent
config:
  columns:
    productId: items.product_id
    productName: products.product_name
    quantity: items.quantity
    listPrice: items.list_price
    discount: items.discount
    brand: brands.brand_name
  query: |
    from sales.order_items items
      join production.products as products on products.product_id = items.product_id
      join production.brands as brands on products.brand_id = brands.brand_id
      where order_id=${../orderId}
```