

MSDF SDCOE Ed-Fi Transcript Prototype: Overview and Installation Guide

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San Diego County Office of Education, Innovation and ITS (datascience@innovatesd.net)
Application development: Leapfrog Technology, Inc. (DBA Eduphoric)

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Overview of Ed-Fi Based Transcript Prototype

For the San Diego County Office of Education, this transcript prototype is part of a larger project to work with the Ed-Fi data standard towards both increasing the number of interoperability options the county’s schools and districts and exploring a variety of special analytical use cases.

The transcript prototype is an exploration into the potential of digital learner records: ownership and control (including, validity of records), the importance of security and a challenge in transferring ownership of records from parents to students, and the promise of students as records owners being able to share some or all of their records electronically when applying to a college or university or when pursuing employment.

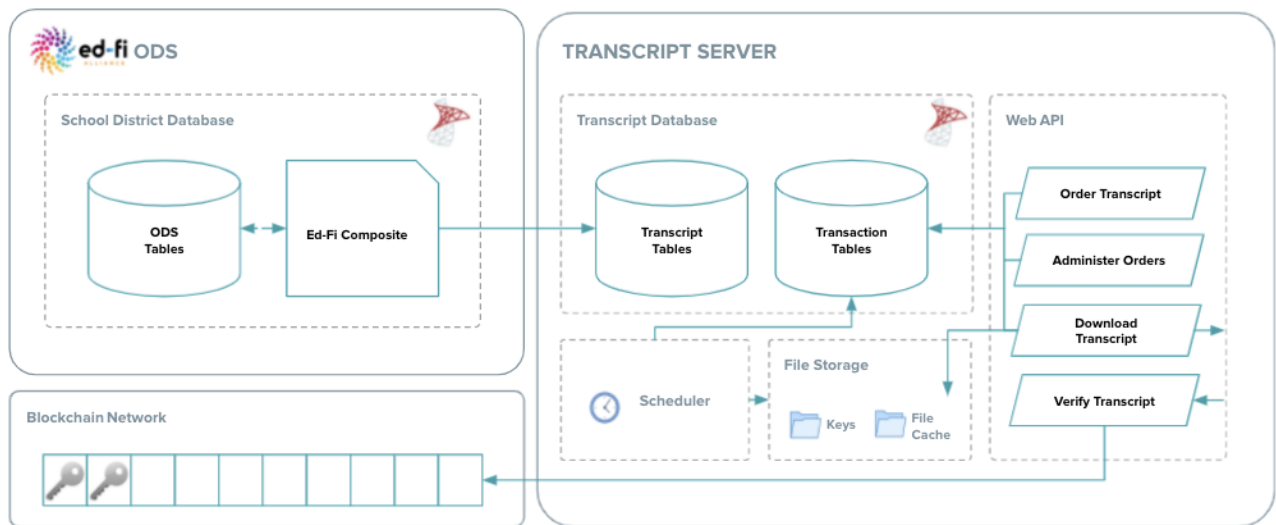
We were interested in leveraging the ODS overall, but also:

- Testing situations where students might be present in multiple ODS’s (as might be the case when a student might transfer from one local district to another, and both district have an ODS),
- Experimenting with validity of records (via blockchain validity checking),
- Having an interface for managing records and output, and along the way,
- If we could develop a file layout for transcripts, this might be leveraged for transferring records between ODS and SIS and possibly ODS to ODS (replacing paper cumulative folders).

Prototype

Our concept was to build a working prototype transcript technology around the ODS. There are examples of work in this area in general (MIT Blockcerts, <https://www.blockcerts.org/guide/>) but these are larger-scale projects. Thus, with our prototype development scope we knew we would not be able to build a production system nor implement a digital records wallet application.

Our scope included a number of foundational capabilities: Pulling data from one or more ODS, determining what format student records could be stored in, assembling student transcript data into an electronic document (JSON), having a method for validating a transcript - provenance and anti tamper, generating printable transcripts (PDF) and providing a proof-of-concept around various technologies that could be combined in a larger system. The following diagram illustrates the main components of the system.



The diagram shows the components of the system at a high level. Here's an overview:

- The *ODS* server is hosted on a separate server. It provides the *Transcript Server* with the transcript data via *Composite API*. The *Transcript server* iterates all composite APIs to retrieve all transcript related data for a student.
- The database shown on the transcript server can be hosted on the server itself or somewhere else. We have tested the system with MSSQL and Postgres.
- The data that is controlled by the Transcript Server contains the two types of tables. The *Transactional Tables* contains information needed for the operation of the Web Application. The *Transcript Tables* contain transcript data fetched from the ODS.
- The scheduler for Linux is the system *cron* whereas for Windows, it is the system scheduler.
- Keys such as private keys can be stored in a secure location in the system.
- File Cache represents temporary files that come about in the PDF rendering process.
- The Web API represents the most important functionality of the Application.
- Instead of using a Blockchain Network, we use a Ganache server.

The underlying transcript application components can be installed on either Windows or Linux operating systems. Deploying the Ed-Fi Transcript Prototype requires the following prerequisites and installation of the primary transcript components as described in the following table.

Prerequisite / Component	Windows	Linux
Ed-Fi ODS and Admin application	✓	✓
Database server	SQL Server	Postgres
Ethereum Ganache	Optional	Optional
Node.JS (and various libraries)	✓	✓
Ed-Fi Transcript-related Composite	✓	✓
Transcript web application and CLI APIs.	✓	✓
Local user authentication *	Optional	Optional
Azure AD user authentication *	Optional	Optional

* Note that one user authentication method is required for normal operation.

Configuration Options

Versions of this application released after July, 2021 can be installed with several configuration variations. These configuration options allow for important variation in deployment so that one can include desired features, or, to reduce the complexity of an install. Here are the two areas that can be customized and guidance as to how this documentation and others will help with the installation process.

Configuration Option: Include Azure AD SSO authentication *

This configuration will provide a robust authentication method for the application.

1. Install using the deployment guides (Windows or Linux) as described in those guides.
2. Confirm that local authentication IS NOT enabled per the Deployment Options Guide.
3. Confirm that Microsoft authentication IS enabled per the Deployment Options Guide.
4. Establish an Azure AD B2B account and set up users and redirect URLs to match your installation configuration.

** Note that one user authentication method, either Azure AD SSO or local authentication is required for normal operation. Both can be operational as well.*

Configuration Option: Local user authentication *

This configuration will simplify installation and allow for local user authentication without the need for setting up an Azure AD account.

1. Install using the deployment guides (Windows or Linux) as described in those guides.
2. Confirm that local authentication IS enabled per the Deployment Options Guide.
3. Confirm that Microsoft authentication IS NOT enabled per the Deployment Options Guide.

** Note that one user authentication method, either Azure AD SSO or local authentication is required for normal operation. Both can be operational as well.*

Configuration Option: Do Not Include blockchain digital signing & validation

This configuration will simplify installation, prerequisites and operation of the application for those who wish to explore the transcript composites and outputs in a less complex setup.

1. Install using the deployment guides (Windows or Linux) as described in those guides, but skip the following sections in the Windows guide:
 - a. Do not install Ganache in Step 2 of the Windows Deployment Guide.
 - b. Do not perform Step 3 (Security) in the Windows Deployment Guide.
 - c. Do not provide DID_KEY or RSA_PRIVATE_KEY_FILE in the .ENV settings file as described in Step 5 (Transcript-API) in the Windows Deployment Guide.
 - d. Do not perform Step 7 (Verification API) in the Windows Deployment Guide.

2. Confirm that Microsoft authentication IS NOT enabled per the Deployment Options Guide.

Configuration Option: Include blockchain digital signing & validation in process

This configuration will include blockchain-based digital identity integration and produce PDF transcripts that can be validated along with using the transcript composites and outputs.

1. Install using the deployment guides (Windows or Linux) as described in those guides.
2. Confirm that Microsoft authentication IS NOT enabled per the Deployment Options Guide.

The balance of this document contains a starter guide for Ed-Fi Composite installation, and references to various documents associated with the project, and Ed-Fi Composite definitions used and the Transcript JSON definition.

Ed-Fi Transcript-related Composite Installation

<https://techdocs.ed-fi.org/display/EXCHANGE/SDCOE+Universal+Transcript+Initiative>

Ed-Fi Composites provide a secure endpoint interface access to defined search and outputs from an Ed-Fi ODS. The transcript Composite supports two sets of endpoints:

- educationOrganizationHierarchies which returns one or more sets of education organization details including LEA ID, name and address, where single organizations can be retrieved by passing the organization ID in the Ed-Fi Composite request.
- studentTranscripts which returns one or more student transcript records, containing student information, and records of schools attended, course-taking history, programs associated with and major assessment and awards.

The XML definitions for the composite are included further in this document.

To integrate and activate the Ed-Fi Composite it is assumed that the Ed-Fi ODS / API has been successfully downloaded and is running in a local environment.

The Ed-Fi Transcript Composite installation requires retrieval of the Visual Studio Composite Project, via github, and following these steps using Visual Studio:

Step 1. Open the Composites Project

Step 2. Integrate Composites into the Solution

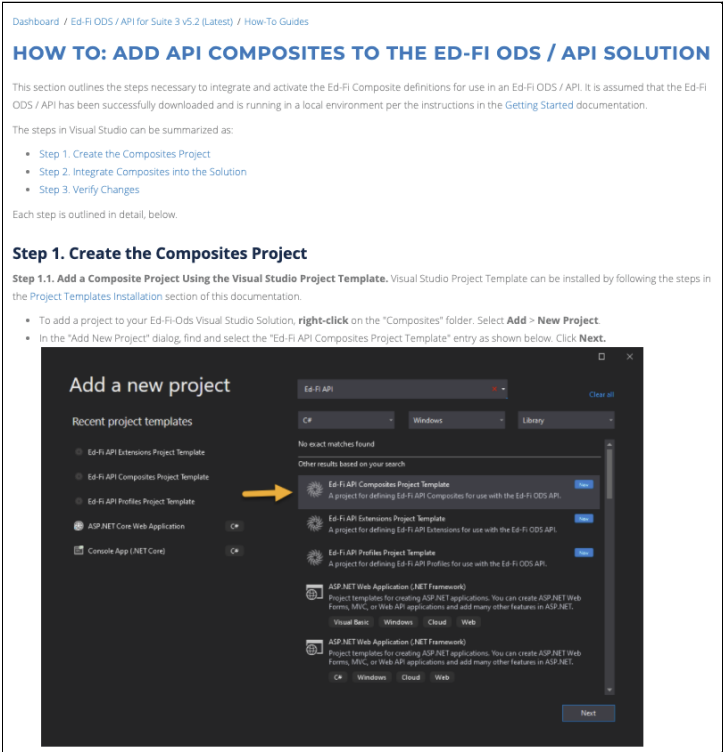
Step 3. Verify Changes

Each step is described in the online How-To guides as follows:


Dashboard > Ed-Fi ODS / API v3.4 Home > How-To Guides
<https://techdocs.ed-fi.org/pages/viewpage.action?pageId=68071128>

Dashboard > Ed-Fi ODS / API for Suite 3 v5.0.0 > How-To Guides
<https://techdocs.ed-fi.org/pages/viewpage.action?pageId=79889163>

Dashboard > Ed-Fi ODS / API for Suite 3 v5.2 (Latest) > How-To Guides
<https://techdocs.ed-fi.org/pages/viewpage.action?pageId=83799298>



Once the Ed-Fi Composite has been installed, it can be tested via the Swagger interface as shown in the screenshot below.



API Section: Composites: Transcript

Ed-Fi Operational Data Store API ³

[Base URL: sdcoeapi.nearshoredevs.com:443/composites/v1]
<https://sdcoeapi.nearshoredevs.com/metadata/composites/v1/sdcoe/transcript/swagger.json>

The Ed-Fi ODS / API enables applications to read and write education data stored in an Ed-Fi ODS through a secure REST interface.

Note: Consumers of ODS / API information should sanitize all data for display and storage. The ODS / API provides reasonable safeguards against cross-site scripting attacks and other malicious content, but the platform does not and cannot guarantee that the data it contains is free of all potentially harmful content.

Authorize

educationOrganizationHierarchies

studentTranscripts

GET

/SDCOE/Transcript/StudentTranscripts

Retrieves specific resources using the resource's property values (using the "Get" pattern).

This GET operation provides access to resources using the "Get" search pattern. The values of any properties of the resource that are specified will be used to return all matching results (if it exists).

Parameters

Try it out

Deployment Documentation

The documentation for the project setup exists for both Linux and Windows environments. In the case of Linux, deployment scripts have also been added to the scripts folder. For more information, these separate documents can be referred for the individual environments:

- Linux Environment Setup

See: **MSDF SDCOE Ed-Fi Transcript Prototype: Linux Installation Guide (PDF)**

Also, for the Linux environment, the scripts can be run in order to set up the *sdcoe-transcript* project.

The scripts folder contains a *vagrant* file and other scripts used for deployment.

<https://github.com/leapfrogtechnology/sdcoe-transcript/tree/dev/scripts>

- Windows Environment Setup

See: **MSDF SDCOE Ed-Fi Transcript Prototype: Windows Installation Guide (PDF)**

The steps are the same in the local environment, as mentioned in the deployment document above. Separate production builds for APIs and Web Clients are not needed. If needed, one can simply run the development scripts in *package.json* of the respective modules.

Additionally, there are options for configuring the blockchain and authentication features of the application, which are described in this additional guide:

- Deployment Options Guide

See: **MSDF SDCOE Ed-Fi Transcript Prototype: Windows Deployment Guide (PDF)**

User Documentation

There currently is no user's guide document for the application. The operational features of the application have very few user interactions: A student (without login) can request a transcript, school or district personnel can login and request a transcript, and an internal operations staff member can log in and approve transcript requests. Here are all of the use cases:

Student and Public User Use Cases

- A Public Student wants to request an ROP or Universal Transcript.
 - The user accesses the Data Hub, clicks on the Transcript link, which opens the transcript feature URL in the same browser window.
- A Public Student wants to retrieve an ordered transcript (download)
 - The user receives an email from the system containing a link to the transcript.
- A person holding a student transcript wants to validate the document.
 - The user accesses Data Hub, clicks Transcript link, follows validation instructions.

School or District Uses (Requires an account/SSO login)

- A school/district user wants to request a Universal Transcript
 - [The user accesses the Data Hub, logs in (SSO) clicks on the Transcript link, which opens the transcript feature URL in the same browser window.]
 - The user enters student information for the transcript request.
- A school/district user wants to retrieve an ordered transcript (download)
 - [The user accesses the Data Hub, logs in (SSO) clicks on the Transcript link, which opens the transcript feature URL in the same browser window.]
 - Available transcripts are listed and may be downloaded on the district's page.

An internal operations staff member reviews transcript requests for approval, or accesses documents prepared by the system

- A staff member would like to access the list of transcript requests from students or districts and approve or deny the request.
 - The user accesses the Data Hub, logs in, and accesses the Transcript option (same window).
 - Once authenticated as a district user, the staff member can access transcript request list and approve or deny the request.
 - Approve: On approval, the system pulls the student data, prepares the transcript in forms requested, and if successful, updates the request as "filled" and emails the requester.
 - Deny: On deny, the system updates the request as "denied" and emails the requester.
- A staff member would like to access the list of transcript requests from students or districts and retrieve a transcript previously created by the system.
 - The user accesses the Data Hub, logs in, and accesses the Transcript option (same window).
 - Once authenticated as a district user, the staff member can access transcript request list and, if previously approved, download the available transcript locally (for instance, to provide a printed copy of the transcript).

GitHub Repository Details and Associated Documents

The front-facing packages of the sdcoe-transcript project are the **transcript-api**, the **verification-api** and the **web-client** packages. Other utilities exist in this git repository to facilitate the backend work of these front-facing packages.

The headings below describe each of the packages in brief. In each of these folders are README.md files that contain further documentation for each package.

- **Design**
 - This folder contains the main design elements that used for the SDCOE front end
- **Docs**
 - This folder is the main documentation module
 - Contains Markdown files, importantly:
 - PDF Signing and Verification: pdf-signing-and-verification.md
 - How to add more transcript types: how-to-add-more-transcript-types.md
 - Software Design Notes: software-design-notes.md
- **Email Utils**
 - This folder contains libraries and templates for sending out SDCOE emails
 - Is a node package with handlebar templates
- **PDF Utils**
 - This folder contains libraries to modify a PDF and its metadata
 - Is a node package for with code mainly used for handling pdf metadata
- **Scripts**
 - This folder contains scripts for deployment, creating services and for running background schedules *bash scripts* for deployment and *cron files* for scheduling
- **Security**
 - This folder contains utilities for transcript security such as key generation and blockchain
 - Node package with libraries for DID mgmt., key gen., blockchain interaction, JWT signing
- **Transcript API**
 - This is the express API module for requesting transcripts
 - Model View Controller express app; Knex based migration scripts
- **Transcript Backend**
 - This is the module that deals with ODS interaction, creating transcript JSON and pdf files
 - Node package with JS and handlebar files
- **Verification API**
 - This is the express API module for verifying transcripts
 - Node express related code
- **Web Client**
 - This is the React JS web application

API Documentation

The sdcoe-transcript project consists of two APIs- one for requesting a transaction and the other for verifying the transcript.

1. **Transcript-API**

This module contains the code for the REST API for requesting a transcript. Path to file is below:
/sdcoe-transcript/tree/dev/transcript-api/README.md

2. **Verification-API**

This module contains the code for the REST API for verifying a transcript. Path to file is below:
/sdcoe-transcript/blob/dev/verification-api/README.md

Transcript Backend CLI

A separate document exists that describes CLI commands for this application along with their uses and illustrations. The application includes a number of command-line modules, and these can be accessed directly and utilized in a number of ways depending on the setting and goals for use of the application. The CLI guide can assist users in accessing the command-line interface.

- Transcript-Backend and CLI Reference
See: **MSDF SDCOE Ed-Fi Transcript Prototype: Transcript-Backend and CLI Reference (PDF)**

Ed-Fi Transcript Composite Output Layout Reference

studentTranscripts

```
[
  {
    "academicRecord": [
      {
        "schoolYear": 0,
        "termDescriptor": "string",
        "cumulativeEarnedCredits": 0,
        "cumulativeAttemptedCredits": 0,
        "cumulativeGradePointAverage": 0,
        "educationOrganizationType": "string",
        "educationOrganizationId": 0,
        "diplomas": [
          {
            "diplomaTypeDescriptor": "string",
            "diplomaAwardDate": "2021-05-05",
            "achievementTitle": "string",
            "achievementCategoryDescriptor": "string",
            "issuerName": "string"
          }
        ],
        "studentAcademicRecordAcademicHonors": [
          {
            "academicHonorCategoryDescriptor": "string",
            "honorAwardDate": "2021-05-05",
            "honorDescription": "string",
            "achievementTitle": "string",
            "achievementCategoryDescriptor": "string",
            "issuerName": "string"
          }
        ],
        "studentAcademicRecordRecognitions": [
          {
            "recognitionTypeDescriptor": "string",
            "recognitionAwardDate": "2021-05-05",
            "achievementTitle": "string",
            "achievementCategoryDescriptor": "string",
            "issuerName": "string"
          }
        ],
        "transcript": [
          {
            "courseRepeatCodeDescriptor": "string",
            "courseAttemptResultDescriptor": "string",
            "attemptedCredits": 0,
            "earnedCredits": 0,
            "methodCreditEarnedDescriptor": "string",
            "earnedCreditConversion": 0,
            "whenTakenGradeLevelDescriptor": "string",
            "finalLetterGradeEarned": "string",
            "finalNumericGradeEarned": 0,
            "courseCode": "string",
            "courseTitle": "string",
            "academicSubjectDescriptor": "string",
```

```
        "careerPathwayDescriptor": "string",
        "highSchoolCourseRequirement": true,
        "courseDefinedByDescriptor": "string",
        "courseOfferings": [
            {
                "localCourseCode": "string",
                "localCourseTitle": "string"
            }
        ]
    }
]
},
"alternateIds": [
    {
        "gender": "string",
        "hispanicLatinoEthnicity": true,
        "oldEthnicityDescriptor": "string",
        "educationOrganizationType": "string",
        "educationOrganizationId": 0,
        "races": [
            {
                "raceDescriptor": "string"
            }
        ]
    }
],
"assessments": [
    {
        "administrationDate": "2021-05-05T05:59:09.021Z",
        "whenAssessedGradeLevelDescriptor": "string",
        "schoolYear": 0,
        "assessmentTitle": "string",
        "assessmentFamily": "string",
        "assessmentCategoryDescriptor": "string",
        "assessmentVersion": 0,
        "maxRawScore": 0,
        "scoreResults": [
            {
                "assessmentReportingMethodDescriptor": "string",
                "result": "string",
                "resultDatatypeTypeDescriptor": "string"
            }
        ],
        "performanceLevels": [
            {
                "assessmentReportingMethodDescriptor": "string",
                "performanceLevelDescriptor": "string",
                "performanceLevelMet": true
            }
        ]
    }
],
"birthDate": "2021-05-05",
"birthSexDescriptor": "string",
"demographics": [
    {
        "gender": "string",
        "hispanicLatinoEthnicity": true,
        "oldEthnicityDescriptor": "string",
        "educationOrganizationType": "string",
```

```

    "educationOrganizationId": 0,
    "races": [
      {
        "raceDescriptor": "string"
      }
    ]
  },
],
"enrollment": [
  {
    "entryDate": "2021-05-05",
    "entryGradeLevelDescriptor": "string",
    "schoolYear": 0,
    "exitWithdrawDate": "2021-05-05",
    "exitWithdrawTypeDescriptor": "string",
    "schoolId": 0,
    "nameOfInstitution": "string",
    "graduationPlan": {
      "graduationPlanTypeDescriptor": "string",
      "graduationSchoolYear": 0,
      "individualPlan": true,
      "totalRequiredCredits": 0,
      "totalRequiredCreditTypeDescriptor": "string",
      "totalRequiredCreditConversion": 0,
      "graduationPlanCreditsBySubjects": [
        {
          "academicSubjectDescriptor": "string",
          "credits": 0,
          "creditTypeDescriptor": "string",
          "creditConversion": 0
        }
      ],
      "graduationPlanCreditsByCourses": [
        {
          "courseSetName": "string",
          "credits": 0,
          "creditTypeDescriptor": "string",
          "creditConversion": 0,
          "whenTakenGradeLevelDescriptor": "string"
        }
      ],
      "graduationPlanRequiredAssessments": [
        {
          "assessmentIdentifier": "string",
          "assessmentTitle": "string",
          "assessmentFamily": "string",
          "assessmentCategoryDescriptor": "string",
          "assessmentVersion": 0,
          "maxRawScore": 0,
          "graduationPlanRequiredAssessmentScores": [
            {
              "assessmentReportingMethodDescriptor": "string",
              "minimumScore": "string",
              "maximumScore": "string"
            }
          ]
        }
      ]
    }
  }
],
],
```

```
"firstName": "string",
"guardians": [
  {
    "relationDescriptor": "string",
    "livesWith": true,
    "resourceId": "string",
    "parentUniqueId": "string",
    "firstName": "string",
    "lastSurname": "string",
    "addresses": [
      {
        "addressTypeDescriptor": "string",
        "streetNumberName": "string",
        "apartmentRoomSuiteNumber": "string",
        "city": "string",
        "stateAbbreviationDescriptor": "string",
        "postalCode": "string",
        "nameOfCounty": "string"
      }
    ],
    "telephones": [
      {
        "telephoneNumber": "string",
        "telephoneNumberTypeDescriptor": "string",
        "textMessageCapabilityIndicator": true,
        "orderOfPriority": 0
      }
    ]
  }
],
"lastSurname": "string",
"programs": [
  {
    "programName": "string",
    "programTypeDescriptor": "string",
    "beginDate": "2021-05-05",
    "endDate": "2021-05-05",
    "reasonExitedDescriptor": "string"
  }
],
"resourceId": "string",
"studentUniqueId": "string",
"_etag": "string"
}
]
```

THIS VERSION WITH BY ID - INCLUDES ALTERNATE ID

```
[
  {
    "academicRecord": [
      {
        "schoolYear": 0,
        "termDescriptor": "string",
        "cumulativeEarnedCredits": 0,
        "cumulativeAttemptedCredits": 0,
        "cumulativeGradePointAverage": 0,
        "educationOrganizationType": "string",
        "educationOrganizationId": 0,
        "diplomas": [
```

```
        {
          "diplomaTypeDescriptor": "string",
          "diplomaAwardDate": "2021-05-05",
          "achievementTitle": "string",
          "achievementCategoryDescriptor": "string",
          "issuerName": "string"
        }
      ],
      "studentAcademicRecordAcademicHonors": [
        {
          "academicHonorCategoryDescriptor": "string",
          "honorAwardDate": "2021-05-05",
          "honorDescription": "string",
          "achievementTitle": "string",
          "achievementCategoryDescriptor": "string",
          "issuerName": "string"
        }
      ],
      "studentAcademicRecordRecognitions": [
        {
          "recognitionTypeDescriptor": "string",
          "recognitionAwardDate": "2021-05-05",
          "achievementTitle": "string",
          "achievementCategoryDescriptor": "string",
          "issuerName": "string"
        }
      ],
      "transcript": [
        {
          "courseRepeatCodeDescriptor": "string",
          "courseAttemptResultDescriptor": "string",
          "attemptedCredits": 0,
          "earnedCredits": 0,
          "methodCreditEarnedDescriptor": "string",
          "earnedCreditConversion": 0,
          "whenTakenGradeLevelDescriptor": "string",
          "finalLetterGradeEarned": "string",
          "finalNumericGradeEarned": 0,
          "courseCode": "string",
          "courseTitle": "string",
          "academicSubjectDescriptor": "string",
          "careerPathwayDescriptor": "string",
          "highSchoolCourseRequirement": true,
          "courseDefinedByDescriptor": "string",
          "courseOfferings": [
            {
              "localCourseCode": "string",
              "localCourseTitle": "string"
            }
          ]
        }
      ]
    ],
    "alternateIds": [
      {
        "gender": "string",
        "hispanicLatinoEthnicity": true,
        "oldEthnicityDescriptor": "string",
        "educationOrganizationType": "string",
        "educationOrganizationId": 0,
```



```

    "races": [
      {
        "raceDescriptor": "string"
      }
    ]
  },
  "assessments": [
    {
      "administrationDate": "2021-05-05T07:13:29.450Z",
      "whenAssessedGradeLevelDescriptor": "string",
      "schoolYear": 0,
      "assessmentTitle": "string",
      "assessmentFamily": "string",
      "assessmentCategoryDescriptor": "string",
      "assessmentVersion": 0,
      "maxRawScore": 0,
      "scoreResults": [
        {
          "assessmentReportingMethodDescriptor": "string",
          "result": "string",
          "resultDatatypeTypeDescriptor": "string"
        }
      ],
      "performanceLevels": [
        {
          "assessmentReportingMethodDescriptor": "string",
          "performanceLevelDescriptor": "string",
          "performanceLevelMet": true
        }
      ]
    }
  ],
  "birthDate": "2021-05-05",
  "birthSexDescriptor": "string",
  "demographics": [
    {
      "gender": "string",
      "hispanicLatinoEthnicity": true,
      "oldEthnicityDescriptor": "string",
      "educationOrganizationType": "string",
      "educationOrganizationId": 0,
      "races": [
        {
          "raceDescriptor": "string"
        }
      ]
    }
  ],
  "enrollment": [
    {
      "entryDate": "2021-05-05",
      "entryGradeLevelDescriptor": "string",
      "schoolYear": 0,
      "exitWithdrawDate": "2021-05-05",
      "exitWithdrawTypeDescriptor": "string",
      "schoolId": 0,
      "nameOfInstitution": "string",
      "graduationPlan": {
        "graduationPlanTypeDescriptor": "string",
        "graduationSchoolYear": 0,

```

```

        "individualPlan": true,
        "totalRequiredCredits": 0,
        "totalRequiredCreditTypeDescriptor": "string",
        "totalRequiredCreditConversion": 0,
        "graduationPlanCreditsBySubjects": [
            {
                "academicSubjectDescriptor": "string",
                "credits": 0,
                "creditTypeDescriptor": "string",
                "creditConversion": 0
            }
        ],
        "graduationPlanCreditsByCourses": [
            {
                "courseSetName": "string",
                "credits": 0,
                "creditTypeDescriptor": "string",
                "creditConversion": 0,
                "whenTakenGradeLevelDescriptor": "string"
            }
        ],
        "graduationPlanRequiredAssessments": [
            {
                "assessmentIdentifier": "string",
                "assessmentTitle": "string",
                "assessmentFamily": "string",
                "assessmentCategoryDescriptor": "string",
                "assessmentVersion": 0,
                "maxRawScore": 0,
                "graduationPlanRequiredAssessmentScores": [
                    {
                        "assessmentReportingMethodDescriptor": "string",
                        "minimumScore": "string",
                        "maximumScore": "string"
                    }
                ]
            }
        ]
    }
}

],
"firstName": "string",
"guardians": [
    {
        "relationDescriptor": "string",
        "livesWith": true,
        "resourceId": "string",
        "parentUniqueId": "string",
        "firstName": "string",
        "lastSurname": "string",
        "addresses": [
            {
                "addressTypeDescriptor": "string",
                "streetNumberName": "string",
                "apartmentRoomSuiteNumber": "string",
                "city": "string",
                "stateAbbreviationDescriptor": "string",
                "postalCode": "string",
                "nameOfCounty": "string"
            }
        ]
    }
],

```

```
      "telephones": [
        {
          "telephoneNumber": "string",
          "telephoneNumberTypeDescriptor": "string",
          "textMessageCapabilityIndicator": true,
          "orderOfPriority": 0
        }
      ]
    },
    "lastSurname": "string",
    "programs": [
      {
        "programName": "string",
        "programTypeDescriptor": "string",
        "beginDate": "2021-05-05",
        "endDate": "2021-05-05",
        "reasonExitedDescriptor": "string"
      }
    ],
    "resourceId": "string",
    "studentUniqueId": "string",
    "_etag": "string"
  }
}
```

educationOrganizationHierarchies

```
[
  {
    "localEducationAgencyId": 0,
    "schoolId": 0,
    "addresses": [
      {
        "addressTypeDescriptor": "string",
        "streetNumberName": "string",
        "city": "string",
        "stateAbbreviationDescriptor": "string",
        "postalCode": "string",
        "nameOfCounty": "string"
      }
    ],
    "localEducationAgencyResourceId": "string",
    "nameOfLocalEducationAgency": "string",
    "nameOfSchool": "string",
    "schoolResourceId": "string",
    "_etag": "string"
  }
]
```

Ed-Fi Transcript JSON Definition

```
{
  "studentTranscript": {
    "resourceId": "",
    "transcriptRunDate": "11/20/2020",
    "studentUniqueId": "123456778",
    "studentUniqueIdType": "SSIS",
    "studentLocalId": 2093820931829,
    "studentIdentificationSystemDescriptor":
      "uri://ed-fi.org/StudentIdentificationSystemDescriptor#Local",
    "firstName": "TestFirst",
    "lastSurname": "TestLast",
    "birthDate": "11/11/2011",
    "demographics": [
      {
        "gender": "uri://ed-fi.org/SexDescriptor#Female",
        "hispanicLatinoEthnicity": false,
        "races": [
          {
            "raceDescriptor": "uri://ed-fi.org/RaceDescriptor#Asian"
          }
        ]
      }
    ],
    "guardians": [
      {
        "relationToStudent": "uri://ed-fi.org/RelationDescriptor#Mother",
        "livesWith": true,
        "guardianId": "f50036f254234dd89d12bbfd1c855655",
        "firstName": "Madelyn",
        "lastSurname": "Woods",
        "addresses": [
          {
            "addressType": "uri://ed-fi.org/AddressTypeDescriptor#Home",
            "streetNumberName": "54 Rocky Clarendon Avenue",
            "city": "Grand Bend",
            "state": "uri://ed-fi.org/StateAbbreviationDescriptor#TX",
            "postalCode": "78834",
            "nameOfCounty": "WILLISTON"
          }
        ],
        "telephones": [
          {
            "telephoneNumber": "(950) 943 8054",
            "telephoneNumberType":
              "uri://ed-fi.org/TelephoneNumberTypeDescriptor#Emergency 2",
            "orderOfPriority": 1
          }
        ]
      }
    ],
    "studentAcademicRecord": [
      {
        "studentUniqueId": "CD333",
        "gradeLevel": "uri://ed-fi.org/GradeLevelDescriptor#Ninth grade",
        "studentCounselorName": ""
      }
    ]
  }
}
```

```

    "educationOrganizationId":255901107,
    "schoolId":2,
    "nameOfInstitution":"Escon HS 2",
    "districtResourceId": "922d768f6b3f4ed78ce77d13e44b505a",
    "districtId": 255901,
    "nameOfDistrict": "Grand Bend ISD",
    "nameOfCounty":"Piedmont",
    "nameOfState":"CA",
    "schoolYear": 2012,
    "termDescriptor": "uri://ed-fi.org/TermDescriptor#Fall Semester",
    "cumulativeEarnedCredits": 7.000,
    "courseTranscript": [
      {
        "attemptedCredits": 1.000,
        "earnedCredits": 1.000,
        "finalLetterGradeEarned": "D",
        "finalNumericGradeEarned": 63.00,
        "courseCode": "03100500",
        "courseTitle": "Algebra I",
        "academicSubject":
"uri://ed-fi.org/AcademicSubjectDescriptor#Mathematics",
        "localCourseCode":"03100500",
        "localCourseTitle":"English 01 PreAP",
        "courseAttemptResult":
"uri://ed-fi.org/CourseAttemptResultDescriptor#Pass",
        "methodCreditEarned":
"uri://ed-fi.org/MethodCreditEarnedDescriptor#Classroom credit",
        "CourseNonacademic": "",
        "CourseHonors": "",
        "CourseCollegePrepCode": "",
        "CourseRepeated": "",
        "CourseCTE": "",
        "CourseInstructor": "",
        "CourseExitDate":""
      },
      {
        "attemptedCredits": 1.000,
        "earnedCredits": 1.000,
        "finalLetterGradeEarned": "A",
        "finalNumericGradeEarned": 97.00,
        "courseCode": "BIO",
        "courseTitle": "Biology",
        "academicSubject":
"uri://ed-fi.org/AcademicSubjectDescriptor#Science",
        "localCourseCode":"03100500",
        "localCourseTitle":"English 01 PreAP",
        "courseAttemptResult":
"uri://ed-fi.org/CourseAttemptResultDescriptor#Pass",
        "methodCreditEarned":
"uri://ed-fi.org/MethodCreditEarnedDescriptor#Classroom credit",
        "CourseNonacademic": "",
        "CourseHonors": "",
        "CourseCollegePrepCode": "",
        "CourseRepeated": "",
        "CourseCTE": "",
        "CourseInstructor": "",
        "CourseExitDate":""
      },
      {
        "attemptedCredits": 1.000,
        "earnedCredits": 1.000,

```

```
        "finalLetterGradeEarned": "B",
        "finalNumericGradeEarned": 82.00,
        "courseCode": "ENG-1",
        "courseTitle": "English I",
        "academicSubject":
"uri://ed-fi.org/AcademicSubjectDescriptor#English Language Arts",
        "localCourseCode": "03100500",
        "localCourseTitle": "English 01 PreAP",
        "courseAttemptResult":
"uri://ed-fi.org/CourseAttemptResultDescriptor#Pass",
        "methodCreditEarned":
"uri://ed-fi.org/MethodCreditEarnedDescriptor#Classroom credit",
        "CourseNonacademic": "",
        "CourseHonors": "",
        "CourseCollegePrepCode": "",
        "CourseRepeated": "",
        "CourseCTE": "",
        "CourseInstructor": "",
        "CourseExitDate": ""
    }
}
],
"programs": [
{
    "studentUniqueID": "CD333",
    "educationOrganizationId": 1,
    "nameOfInstitution": "Escon HS",
    "schoolYear": "2020-2021",
    "term": "uri://ed-fi.org/TermDescriptor#Spring Semester",
    "gradeLevel": "uri://ed-fi.org/GradeLevelDescriptor#Ninth grade",
    "programID": "RTOC",
    "programTitle": "RTOC",
    "programTypeDescriptor": "test",
    "beginDate": "12/2/2009",
    "endDate": "12/2/2009",
    "reasonExitedDescriptor": "LeftProgram"
}
],
"assessments": [
{
    "studentUniqueId": "CD333",
    "educationOrganizationId": 1,
    "nameOfInstitution": "Escon HS",
    "date": "12/2/2009",
    "testType": "uri://ed-fi.org/AssessmentCategoryDescriptor#Benchmark
test",
    "testCode": "SAT",
    "testName": "SAT test",
    "testScore": "1020",
    "schoolYear": "2020-2021",
    "term": "uri://ed-fi.org/TermDescriptor#Spring Semester",
    "gradeLevel": "uri://ed-fi.org/GradeLevelDescriptor#Ninth grade"
}
],
"awardsAchievements": [
{
    "studentUniqueId": "CD333",
    "educationOrganizationId": 1,
    "nameOfInstitution": "Escon HS",
    "schoolYear": "2020-2021",
```

```
      "term": "uri://ed-fi.org/TermDescriptor#Spring Semester",
      "awardCode": "HS",
      "awardName": "High School Diploma"
    }
  ],
  "enrollment": [
    {
      "educationOrganizationId": "123456",
      "nameOfInstitution": "Greenfield HS",
      "entryDate": "",
      "entryGradeLevelDescriptor": "",
      "schoolYear": "",
      "exitWithdrawDate": "",
      "exitWithdrawTypeDescriptor": "",
      "graduationPlan": [
        {
          "graduationPlanTypeDescriptor": "",
          "graduationSchoolYear": "",
          "individualPlan": "",
          "totalRequiredCredits": ""
        },
        {
          "graduationPlanCreditsBySubjects": [
            {
              "academicSubjectDescriptor": "",
              "credits": "",
              "creditTypeDescriptor": "",
              "creditConversion": ""
            }
          ]
        }
      ]
    }
  ]
}
```