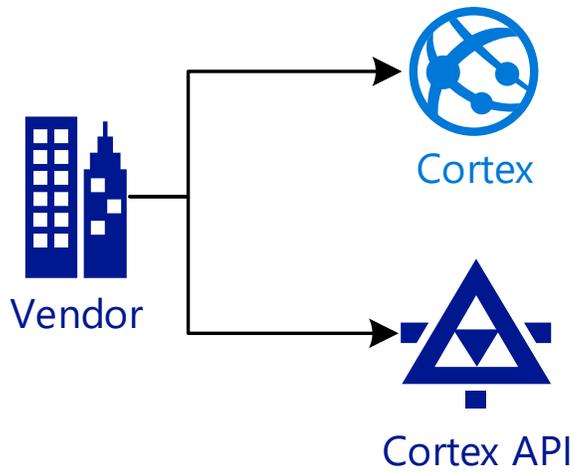


InnovateEDU

# Cortex API



5-18-2016

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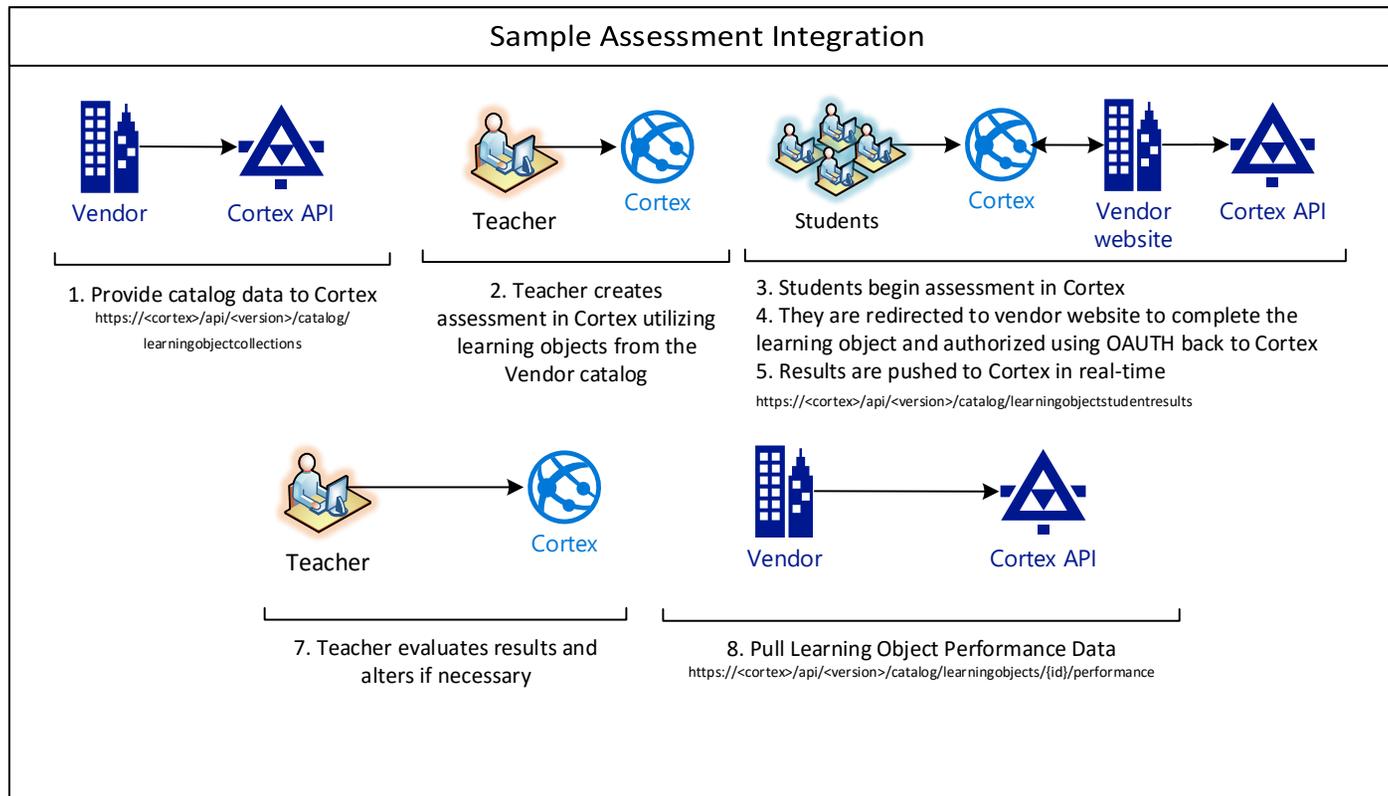
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# 1 Introduction

The preferred method of integration with Cortex is through the Cortex API. The Cortex API exposes endpoints that allow great flexibility in how your system can interact with Cortex. The Cortex API allows your system to push catalog and student result data directly into Cortex. Though the pushing of result data can be on a cadence of your choosing, we highly recommend real-time integration, or as near real-time as your system supports.

This document serves as an introduction to the concepts involved in interacting with the Cortex API.

## 1.1 Sample Workflow



## 2 Security

All calls to the Cortex API require authentication via an API Key and must be secured through the https protocol to protect the data in transit between your system and Cortex.

### 2.1 Student Information

As stated in our privacy policy, we're deeply committed to creating a safe and secure environment for our students and teachers. We take the protection of this information seriously.

- Any student achievement data provided by InnovateEDU school district partners will be used solely for the purpose of evaluating our work or throughout the course of development of resources. We will obtain a FERPA authorization and data sharing agreement with each school district.
- The data will be anonymous / de-identified (per standard industry practice), requested per the district's standard process, consistent with all relevant laws governing such data, and used solely to enable third-party studies of long-term academic outcomes for students taking our courses.

### 2.2 Authentication

#### 2.2.1 Obtaining an API Key

You must request an account via the Cortex website.

<https://<cortex>/Vendor/AccountRequest>

Once your request has been submitted and approved, you will be issued an API Key. This API Key must be kept safe and secure within your system. If, for some reason, you need to change your API Key, you may do so via the Cortex website.

***Once your API Key has been changed your old API Key will no longer be valid and all calls to the Cortex API will be denied***

#### 2.2.2 Student Authentication

Cortex's primary means of identifying students and authenticating their identities is through OAuth2 with Google as our initial identity provider. Users log into any Google service and Cortex requests their identity from Google's OAuth2 service.

This requires that all users have an e-mail address, but does not require that the address end in google.com or gmail.com. Any valid e-mail address can be used.

An integrated vendor can request any user's identity from Google's OAuth2 service and receive information about the current user including their e-mail address. This address is the Cortex API's primary identifier for its student users.

### 3 Versioning

The Cortex API is versioned to allow for enhancements to be made to the API while still maintaining backwards compatibility for older clients. This allows you, as a vendor, the ability to move to newer versions of the API as you are able. The version of the API that you are using is provided in the URL:

```
https://<cortex>/api/<version>/
```

To determine which versions are available in a Cortex installation, refer to the Version API information in section 4.

*See support documentation for details regarding how long versions are supported*

### 4 Software Development Kits (SDK)

Cortex API SDKs are available, at no cost, to aid in integration and can be found on our GitHub page:

```
https://github.com/InnovateEDUNYC/ngl-sdk
```

## 5 Available APIs

All endpoints in the Cortex API utilize JSON formatted data for ease of integration with any server or client side code.

### 5.1 Versions

<https://<cortex>/api/versions> GET

The versions endpoint allows the Vendor to query for the versions of the API that are available in the Cortex installation.

<https://<cortex>/api/versions/<version>/> GET

Providing a version to this endpoint will return the endpoints available for the specified version of the API.

### 5.2 Catalog

<https://<cortex>/api/<version>/catalog/> GET

The catalog endpoint allows the vendor to query their catalog of learning objects available to Cortex teachers and administrators when creating student assessments or assignments.

A catalog consists of learning object collections, which contain one or more learning objects that may be used in assessments or assignments. A learning object may have between one and three learning standards associated with it.

See [Sample Data Sets](#) for example JSON data.

#### 5.2.1 LearningObjectCollectionGroups

<https://<cortex>/api/<version>/catalog/learningObjectCollectionGroups/{id}> GET, POST, PUT, DELETE

The learning object collection groups endpoint can be used to manage a single learning object collection group including its learning object collections.

A learning object collection group can be thought of as a “product” or similar grouping mechanism for learning object collections.

See [Sample Data Sets](#) for example JSON data.

#### 5.2.2 LearningObjectCollections

<https://<cortex>/api/<version>/catalog/learningObjectCollections/{id}> GET, POST, PUT, DELETE

The learning object collection endpoint can be used to manage a single learning object collection including its learning objects.

See [Sample Data Sets](#) for example JSON data.

#### 5.2.3 LearningObjects

<https://<cortex>/api/<version>/catalog/learningObjects/{id}> GET, POST, PUT, DELETE

The learning object endpoint can be used to manage a single learning object including its learning object standards. A learning object may have between one and three learning standards associated with it.

Note: learning object standards can only be managed as part of a learning object.

See [Sample Data Sets](#) for example JSON data.

### 5.3 Authorize

<https://<cortex>/api/<version>/catalog/learningobjects/{id}/authorize/{studentidentifier}/>

GET

The authorize endpoint is used to determine if the student is authorized to access a learning object in the vendor system. Student must be authenticated (see [Student Authentication](#) for details) prior to the call to this endpoint.

This method returns an object that indicates if the student is authorized for the learning object as well as assessment reference information for use when sending student assessment results to Cortex.

See [Sample Data Sets](#) for example JSON data.

### 5.4 Student Assessment

<https://<cortex>/api/<version>/edfi/studentassessments/{id}> POST, PUT

The student assessment endpoint allows the vendor to push scoring results into Cortex using an Ed-Fi standard API. The API is intended to be used in real-time or as near real-time as the vendor's system can support.

See [Sample Data Sets](#) for example JSON data.

See [Ed-Fi API online API Docs](#) for more details.

### 5.5 Learning Object Performance

<https://<cortex>/api/<version>/catalog/learningObjects/{id}/performance/> GET

The learning object performance endpoint can be used to extract information regarding student performance for a learning object. The data includes anonymized student demographic information and their scores as entered by teachers and administrators in Cortex.

See [Sample Data Sets](#) for example JSON data.

## 6 Alternative Integration

### 6.1 CSV Import/Export

For systems lacking the capability to integrate with the Cortex API directly, Cortex does support bulk importing and exporting of data via CSV files. While this approach works for integration it is highly recommended for vendors to utilize the API directly as it is the most efficient way to get data in and out of Cortex. In addition, not all features of the Cortex API are available via CSV import and export.

## 7 Sample Data Sets

### 7.1 Catalog

```
{
  "learningObjectCollectionGroups": [
    {
      "learningObjectCollections": [
        {
          "learningObjects": [
            {
              "id": "ca82366b-4b62-43c4-a219-17be8230c655",
              "learningObjectCollectionId": "82f4ca47-a631-426c-b4b1-44d67001f836",
              "title": "Unit 1: Graphing Linear Equations updated",
              "description": "A series of increasingly difficult challenges",
              "type": "Assessment",
              "url": "https://<vendor_site>/Assessment/ca82366b-4b62-43c4-a219-17be8230c655",
              "rubricUrl": "https://<vendor_site>/Rubric/ca82366b-4b62-43c4-a219-17be8230c655",
              "version": 1,
              "learningObjectStandards": [
                {
                  "gradeLevel": "Tenth grade",
                  "uri": "http://corestandards.org/Math/Content/HSG-GPE/B/4",
                  "description": "High School: Geometry > Expressing Geometric Properties with Equations > Use coordinates to prove simple geometric theorems algebraically > 4"
                }
              ]
            },
            {
              "id": "82f4ca47-a631-426c-b4b1-44d67001f836",
              "learningObjectCollectionGroupId": "2d2976b6-be43-4d82-be14-b018ab86cb2e",
              "title": "Advanced Math for students v4.4",
              "academicSubject": "Mathematics",
              "description": "Advanced algebra and geometry",
              "version": 1
            }
          ]
        },
        {
          "id": "2d2976b6-be43-4d82-be14-b018ab86cb2e",
          "name": "Math Quizzler",
          "description": "Math quizzes"
        }
      ]
    }
  ]
}
```

## 7.2 Learning Object Collection Group

```
{
  "id": "2d2976b6-be43-4d82-be14-b018ab86cb2e",
  "name": "Math Quizzler",
  "description": "Math quizzes"
}
```

## 7.3 Learning Object Collection

```
{
  "id": "82f4ca47-a631-426c-b4b1-44d67001f836",
  "learningObjectCollectionGroupId": "2d2976b6-be43-4d82-be14-b018ab86cb2e",
  "title": "Advanced Math for students v4.4",
  "academicSubject": "Mathematics",
  "description": "Advanced algebra and geometry",
  "version": 1
}
```

## 7.4 Learning Object

```
{
  "id": "ca82366b-4b62-43c4-a219-17be8230c655",
  "learningObjectCollectionId": "82f4ca47-a631-426c-b4b1-44d67001f836",
  "title": "Unit 1: Graphing Linear Equations",
  "description": "A series of increasingly difficult challenges",
  "type": "Assessment",
  "url": "https://<vendor_site>/Assessment/ca82366b-4b62-43c4-a219-17be8230c655",
  "rubricUrl": "https://<vendor_site>/Rubric/ca82366b-4b62-43c4-a219-17be8230c655",
  "version": 1,
  "learningObjectStandards": [
    {
      "gradeLevel": "Tenth grade",
      "uri": "http://corestandards.org/Math/Content/HSG-GPE/B/4",
      "description": "High School: Geometry » Expressing Geometric Properties with Equations » Use coordinates to prove simple geometric theorems algebraically » 4"
    }
  ]
}
```

## 7.5 Learning Object Authorized

```
{
  "authorized": "true",
  "assessmentReference": {
    "title": "Formative Geometry",
    "academicSubjectDescriptor": "Mathematics",
    "assessedGradeLevelDescriptor": "Tenth Grade",
    "version": 1
  },
  "objectiveAssessments": [
    {
      "identificationCode": "0da42215-ecd5-4ad8-9eea-c755023d44ca",
      "learningStandards": [
        {
          "learningStandardReference": {
            "gradeLevel": "Tenth grade",
            "learningStandardId": "http://corestandards.org/Math/Content/HSG-
GPE/B/4"
          }
        }
      ]
    },
    {
      "identificationCode": "d7c8de2b-9bcc-4811-9bc4-13900ca246c5",
      "learningStandards": [
        {
          "learningStandardReference": {
            "gradeLevel": "Tenth grade",
            "learningStandardId": "http://corestandards.org/Math/Content/HSG-
GPE/B/5"
          }
        }
      ]
    }
  ]
}
```

## 7.6 Student Assessment

```
{
  "id": "3560b9cad7554f76909432b920dfc491",
  "assessmentReference": {
    "title": "Formative Geometry",
    "assessedGradeLevelDescriptor": "Tenth Grade",
    "academicSubjectDescriptor": "Mathematics",
    "version": 1
  },
  "studentReference": {
    "studentUniqueId": "cortex.student@cortex.com"
  },
  "administrationDate": "2016-04-20T00:00:00",
  "studentObjectiveAssessments": [
    {
      "objectiveAssessmentReference": {
        "identificationCode": "0da42215-ecd5-4ad8-9eea-c755023d44ca"
      },
      "scoreResults": [
        {
          "assessmentReportingMethodType": "Raw score",
          "result": "65",
          "resultDatatypeType": "Integer"
        }
      ]
    },
    {
      "objectiveAssessmentReference": {
        "identificationCode": "d7c8de2b-9bcc-4811-9bc4-13900ca246c5"
      },
      "scoreResults": [
        {
          "assessmentReportingMethodType": "Raw score",
          "result": "91",
          "resultDatatypeType": "Integer"
        }
      ]
    }
  ]
}
```

## 7.7 Learning Object Performance

```
{
  "learningObjectId": "ca82366b-4b62-43c4-a219-17be8230c655",
  "scoreResult": "80",
  "scoreResultDataType": "percentage",
  "assessmentReportingMethod": "Achievement/proficiency level",
  "race": "African American",
  "sex": "Female",
  "hispanicOrLatino": "false",
  "disability": "",
  "economicDisadvantaged": "",
  "limitedEnglishProficiency": ""
}
```

## 8 Descriptor Definitions

### 8.1 Academic Subject Descriptors

| CodeValue                              | Description                            |
|----------------------------------------|----------------------------------------|
| ELA                                    | English Language Arts                  |
| Reading                                | Reading                                |
| Mathematics                            | Mathematics                            |
| Life and Physical Sciences             | Life and Physical Sciences             |
| Social Sciences and History            | Social Sciences and History            |
| Social Studies                         | Social Studies                         |
| Science                                | Science                                |
| Fine and Performing Arts               | Fine and Performing Arts               |
| Foreign Language and Literature        | Foreign Language and Literature        |
| Writing                                | Writing                                |
| Physical, Health, and Safety Education | Physical, Health, and Safety Education |
| Career and Technical Education         | Career and Technical Education         |
| Religious Education and Theology       | Religious Education and Theology       |
| Military Science                       | Military Science                       |
| Other                                  | Other                                  |
| Speaking and Listening                 | Speaking and Listening                 |
| Math Content                           | Math Content                           |
| Math Practice                          | Math Practice                          |
| Composite                              | Composite                              |

## 8.2 Grade Level Descriptors

| CodeValue                 | Description               |
|---------------------------|---------------------------|
| Adult Education           | Adult Education           |
| Early Education           | Early Education           |
| Eighth grade              | 8th Grade                 |
| Eleventh grade            | 11th Grade                |
| Fifth grade               | 5th Grade                 |
| First grade               | 1st Grade                 |
| Fourth grade              | 4th Grade                 |
| Grade 13                  | Grade 13                  |
| Infant/toddler            | Infant/toddler            |
| Kindergarten              | Kindergarten              |
| Ninth grade               | 9th Grade                 |
| Other                     | Other                     |
| Postsecondary             | Postsecondary             |
| Preschool/Prekindergarten | Preschool/Prekindergarten |
| Second grade              | 2nd Grade                 |
| Seventh grade             | 7th Grade                 |
| Sixth grade               | 6th Grade                 |
| Tenth grade               | 10th Grade                |
| Third grade               | 3rd Grade                 |
| Twelfth grade             | 12th Grade                |
| Ungraded                  | Ungraded                  |

### 8.3 Reporting Method Descriptors

| Achievement/proficiency level             | Achievement/proficiency level2            |
|-------------------------------------------|-------------------------------------------|
| ACT score                                 | ACT score                                 |
| Adaptive scale score                      | Adaptive scale score                      |
| Age score                                 | Age score                                 |
| C-scaled scores                           | C-scaled scores                           |
| College Board examination scores          | College Board examination scores          |
| Composite Score                           | Composite Score                           |
| Composite Rating                          | Composite Rating                          |
| Composition Score                         | Composition Score                         |
| Grade equivalent or grade-level indicator | Grade equivalent or grade-level indicator |
| Graduation score                          | Graduation score                          |
| Growth/value-added/indexing               | Growth/value-added/indexing               |
| International Baccalaureate score         | International Baccalaureate score         |
| Letter grade/mark                         | Letter grade/mark                         |
| Mastery level                             | Mastery level                             |
| Normal curve equivalent                   | Normal curve equivalent                   |
| Normalized standard score                 | Normalized standard score                 |
| Number score                              | Number score                              |
| Pass-fail                                 | Pass-fail                                 |
| Percentile                                | Percentile                                |
| Percentile rank                           | Percentile rank                           |
| Proficiency level                         | Proficiency level                         |
| Promotion score                           | Promotion score                           |
| Ranking                                   | Ranking                                   |
| Ratio IQ's                                | Ratio IQ's                                |
| Raw score                                 | Raw score                                 |
| Scale score                               | Scale score                               |
| Standard age score                        | Standard age score                        |
| Standard error measurement                | Standard error measurement                |
| Stanine score                             | Stanine score                             |
| Sten score                                | Sten score                                |
| Theta                                     | Theta                                     |
| T-score                                   | T-score                                   |
| Vertical score                            | Vertical score                            |
| Workplace readiness score                 | Workplace readiness score                 |
| Z-score                                   | Z-score                                   |
| Other                                     | Other                                     |
| Not applicable                            | Not applicable                            |
| Quantile Measure                          | Quantile Measure                          |
| Lexile Measure                            | Lexile Measure                            |

|                                   |                                   |
|-----------------------------------|-----------------------------------|
| Vertical Scale Score              | Vertical Scale Score              |
| National College-Bound Percentile | National College-Bound Percentile |
| State College-Bound Percentile    | State College-Bound Percentile    |
| RIT scale score                   | RIT scale score                   |

## 8.4 Result Data Type Descriptors

| CodeValue  | Description |
|------------|-------------|
| Integer    | Integer     |
| Decimal    | Decimal     |
| Percentile | Percentile  |
| Range      | Range       |
| Level      | Level       |