# Ed Exchange Network Narrative

**for**

# Data Exchange

**Version 1.00**

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# Table of Contents

## Revision History

| Name | Date | Reason For Changes | Section | Version |
|---|---|---|---|---|
| John DiPirro | 05/16/2014 | Modified title of document to “Ed Exchange Network Narrative” and changed the version number to 1.00 | Title Page | 1.00 |
| Louis Delzompo | 09/06/2013 | Added CDS Directory Server description | CDS Directory Server | 0.11 |
| John DiPirro | 08/23/2013 | Provides response to Issues that were still in a TBD state, Updated assumption on transaction ID. Added CDS Network Process Diagram to document. Removed XML excerpts. | Issues, Assumptions, | 0.10 |
| John DiPirro | 08/13/2013 | Added Issues section, updated delivery options table, added title page, table of contents, and revision history. | Entire Document | 0.9 |
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## CDS Directory Server

The CDS Directory Server may be overseen by the Postsecondary Electronic Standards Council (PESC), by Ed-Unify, or by some other Organization/Entity. The CDS Directory Server is used to maintain the CDS Organization Directory and the CDS Delivery Options Directory. There will likely be only one server used to maintain these directories.

The purpose of the CDS Directory Server is to identify supported delivery paths to an intended recipient organization for use by a transcript exchange service provider or other application. Requests to the CDS Directory Server will only be accepted from registered service providers or applications.

At a high level, a requester (actor) will interact with either a provider of a transcript exchange service or an application deployed by their institution to place an "order" for a transcript to be delivered. As part of this process, the requester will indicate the destination or destinations where they wish the transcripts to be delivered. More often than not, the service provider or application will have to limit the choice of destinations to a set that the service is able to reliably deliver to. The CDS Directory Server will allow the service provider to expand the number of supported destinations through the leverage of other service providers. In the physical world, this is analogous to Federal Express knowing that they can support delivery to an address in Belgium by contracting with DHL for the delivery. It is clear that the value of a transcript service to an end user will be higher if that user is not limited in where they can send the transcript.

The CDS Directory Server plays an important middleman role in this process. While the intent is to make it possible for any sending application to first discover paths to a recipient and then ultimately deliver through the CDS protocol via another application service to that recipient, it is unlikely that a recipient service will accept any delivery request without some constraints. These constraints can include price, content (XML, EDI, etc.), as well as other considerations. The Directory Server will be the place where recipients are listed along with service providers that support delivery to those organizations along with the constraints (delivery options) that each service provider has.

How a service provider chooses to expose additional destinations empowered by CDS is not mandated. However, it is reasonable to assume that service providers will take one of three main approaches. In the first, providers will add destinations to their list of destinations in batches only when the provider can validate that constraints published by the destination service are aligned with their service SLAs. Most often, this will be based on price, but could also be dependent upon service parameters. An example might be that the recipient is interacting with a service and wishes to have that service deliver a paper transcript to an employer such as Google. While the service provider does not support the printing and mailing of a paper transcript, a third-party service may do so and this would allow the service provider to expand their services. Equally, the price of such delivery will bear on whether the service provider exposes that recipient to an end user (actor).

The second approach would be that a service provider might only choose to support destinations provided by a service provider they have a contracted business relationship with. The fact that the CDS Directory Service publishes information that comprises an SLA does not in fact commit the listing organization to living up to that SLA. Instead, by contracting with another organization, the sending service provider is assured of being able to comply with their SLA to the end user (actor). In point of fact, the CDS Directory Service information would be somewhat redundant except for providing a web service end point for the sending service.

The third approach would be one where a service provider or application provider would extend the design of their system to look up recipients in the CDS Directory whenever they have a request to send to a destination. Upon finding the destination, the application will parse the paths to that destination to determine the path that is most advantageous to the end user's request. Then, the service will contact the recipient service via CDS to deliver the transcript. The application may choose to present several prices for the delivery if there are multiple paths.

The main point of describing these expected paths is that the existence of the CDS Directory Service coupled with an organization's support for CDS does not require that all destinations available in the Directory will be supported by any member organization. Nor, does supporting CDS require that the only way a member organization can deliver a transcript is via another CDS member. Service providers are free to offer

alternative ways to deliver a transcript such as email or “Open Destination” models where transcripts are downloaded from secure websites.

Additionally, it is not anticipated that individuals will be listed as destinations in the Directory. That is, sending a transcript to an individual vs. an organization will not be supported unless the individual is a part of the recipient organization.

## Organization Directory:

Data are captured and maintained in the Organization Directory for those organizations interested in participating in the exchange of payloads (transcripts or other data) from one organization to another.

| Field Name | Description | Required |
|---|---|---|
| Organization Name | See Organization ID table below | Y |
| Organization ID | Unique Identifier to be concatenated with the Organization Id Organization to form a global unique ID | Y |
| Organization Sub Code | Further refinement of the delivery location. Ex, department (Math, Science) | N |
| Description | | |
| Credential | Unique for each sender and receiver | Y |
| Contact Type | Admin, Technical, Billing, etc… | Y |
| Address | Mailing/Billing Address of organization | Y |
| Email | Email address of organization | Y |
| Phone | Phone Number of organization | Y |
| URL | Web Site address of organization | Y |
| EIN – Employer Identification Number | Employer Identification Number (EIN) is also known as a Federal Tax Identification Number, and is used to identify a business entity | Y |
| Entity Indicator | Identifies if organization is a Vendor or an Institution | Y |
| Terms of Use | Rules which one must agree to abide by in order to use a service. Terms of service can also be merely a disclaimer, especially regarding the use of websites. | Y |
| Privacy Policy | A statement that discloses some or all of the ways a party gathers, uses, discloses and manages a customer or client's data. | Y |
| Receiving Format | Data format the organization is able to process | Y |
| | | |

| Organization ID | Description |
|---|---|
| OPEID | Office of Postsecondary Education identification code. Number issued to colleges that are eligible to participate in federal financial aid programs |
| IPEDS | Integrated Postsecondary Education Data System ID |
| ATP | College Board's Admissions Testing Program, codes maintained by ETS |
| FICE | Federal Interagency Committee on Education |
| ACT | American College Testing program |
| CCD | |
| CEEB | College Entrance Examination Board ID. Unique ID for high school, college, or university |
| PSIS | Statistics Canada Organization ID |
| USIS | |
| ESIS | |
| DUNS | A unique nine digit identification number, for each physical location of a business. |
| NCHELP ID | |
| | |

## Organization Delivery Options:

Data are captured and maintained in the Organization Delivery Options data store for those Vendors and Institutions interested in providing a service to send a payload (transcripts or other data) from one Institution/Vendor to another Institution/Vendor.

Need to define what delivery options are captured for each entity in the DB.

Delivery Options Table

| | Organization Name | Content Code | WebService URL | Cost Amount | Speed Code | Delivery Confirmation Flag | Error Handling Indicator |
|---|---|---|---|---|---|---|---|
| MEMBERS | Vendor 1 | PESC XML | HTTP://www.Vendor1url.com | $1.00 | Fastest | Yes | Yes |
| | Vendor 1 | EDI | HTTP://www.Vendor1url.com | $2.00 | Faster | Yes | Yes |
| | Vendor 1 | PDF | HTTP://www.Vendor1url.com | $3.00 | Fast | No | No |
| | Vendor 1 | TEXT | HTTP://www.Vendor1url.com | $4.00 | Normal | No | No |
| | Vendor 1 | Hard Copy | HTTP://www.Vendor1url.com | $0.50 | 1st Class | N/A | N/A |
| | Vendor 1 | Hard Copy | HTTP://www.Vendor1url.com | $2.50 | Priority | N/A | N/A |
| | | | | | | | |
| | Vendor 2 | PESC XML | HTTP://www.Vendor2url.com | $1.00 | Fastest | Yes | Yes |
| | Vendor 2 | EDI | HTTP://www.Vendor2url.com | $2.00 | Faster | Yes | Yes |
| | Vendor 2 | Hard Copy | HTTP://www.Vendor1url.com | $1.50 | Registered | N/A | N/A |
| | | | | | | | |
| | Vendor 3 | PESC XML | HTTP://www.Vendor3url.com | $1.00 | Fastest | Yes | Yes |
| | Vendor 3 | EDI | HTTP://www.Vendor3url.com | $2.00 | Faster | Yes | Yes |
| | Vendor 3 | TEXT | HTTP://www.Vendor3url.com | $4.00 | Normal | No | No |
| | | | | | | | |
| | Institution X | PESC XML | HTTP://www.Vendor3url.com | $1.00 | Fastest | Yes | Yes |
| | Institution X | EDI | HTTP://www.Vendor3url.com | $2.00 | Faster | Yes | Yes |
| | Institution X | TEXT | HTTP://www.Vendor3url.com | $4.00 | Normal | No | No |
| | | | | | | | |

The following table will establish a relationship between the institutions that want to send a payload and the vendor or other institution that will deliver that payload.

Vendor Reference Table

| | Organization ID | Organization Reference |
|---|---|---|
| MEMBERS | Institution 1 | Vendor 1 |
| | Institution 1 | Vendor 2 |
| | | |
| | Institution 2 | Vendor 1 |
| | Institution 2 | Vendor 3 |
| | | |
| | Institution 3 | Vendor 1 |
| | Institution 3 | Vendor 2 |
| | Institution 3 | Institution X |

# CDS Network Server

The purpose of the
While there will probably be only one CDS Directory Server there may be many CDS Network Servers. Each Institution or vendor may maintain one or more server used to send and receive payloads via the CDS Webservice.

## CDS Get Delivery Options

1. Actor initiates a document exchange (Delivery Options Request)

2. Process connects to the server to get the Delivery Locations.

3. Access the “Organization Directory & Delivery Options” database to obtain an updated list of all organizations and their locations in the directory. The directory contains the organizational information and delivery options of all entities, educational institutions and vendors alike).

4. Access the “Organization Directory & Delivery Options” database to obtain an update of the delivery options available from each organization in the directory. Delivery Options are passed back to the actor.

5. Actor selects one or more Delivery Locations and one or more Delivery Options to be associated with each Delivery Location.

6. Actor SENDS the payload to the CDS Network Server

7. Payload is sent (maybe a request for a transcript) to the selected Delivery Locations,

7.1 Transaction History DB is updated

8. Receiving Entity(s) as defined by Delivery Location receives the payload.

9. Receiving Entity(s) send some payload back to the Actor.

9.1 Transaction History DB is updated

See Figure 1-1 CDS Network Process Diagram below for a graphical representation of the delivery options.

## Issues

1. Do I have to be a PESC member to be a member of the CDS Network?
   Response: Yes, only PESC members will be allowed to participate

2. Is there a need to vet prospective organizations prior to allowing access to the CDS Network?
   Response: Yes, PESC or its appointed representative will vet any and all organization prior to allowing said organization access to send or receive any payload over the network.

3. If there is a need to vet prospective organizations, what criteria are used to determine acceptance?
   Response: Default to the PESC membership vetting criteria.

4. Should Full Replacement be used when updating Organization Directory and Delivery options or should individual Create, Read, Update, and Delete transactions be used?
   Response: Will use Create, Read, Update, and Delete transactions. Delivery Options obtained from the Organizational Directory will be included in the transactions being transmitted.

5. What documentation is needed to define the structure of the Organizational Directory and Delivery Options database?
   Response: Data Model, Data Dictionary, Meta Data… to be continued….

6. Will other public organizational types such as military institutions (Army, Navy, Air Force, Marines, Cost Guard, etc…) be included in the Organization Directory?
   Response: Yes, contingent on acceptance, vetted member in good standing.

7. Will other private organizational types such as large national and multi-national company's (IBM, HP, Walmart, GM, Apple etc…) be included in the Organization Directory?
   Response: Yes, contingent on acceptance, vetted member in good standing.

8. Is vender information is also captured:
   Response: Yes, vendor information will be captured. The vendor information will be useful for coming up with the routes. Probably when someone looks up a destination and a route, portions (or all) of that route will involve vendors.

9. Do the institutions in the directory send and receive or just receive data?
   Response: Institutions may send, receive or send and receive data. They might send passwords and credentials but for the most part they look up data.

10. If the same institutions or vendors are also in the Organization DB do we need two separate DBs?
    Response: No, a single Data Base will be used to store organization and delivery option data.

11. Who creates and maintains the routing information. Vendors?
    Response: Deduced from the organizations delivery options.

12. What Web Service security methodology will be used for the CDE network? Discussions have so far been around using a third party trusted certificate authority such as Verisign or using an open source option such as Shibboleth.
    Response:

## Assumptions

1. Each CDS network server will provide their own Unique Id for each transaction. Each transaction may be composed of one or more transmissions. Transactions are between CDS Network servers and not between the CDS network servers and the organizational directory server.

2. Not all organizations in the “Organization Directory & Delivery Options” database will have delivery options associated with their organization.

3. The receiving organization will always send an acknowledgement or other response to the sending organization.

# CDS Network Process Diagram

Figure 1-1