Public Comments and Responses
Data Transport Specification
October 2, 2007

On June 23, 2005, the Data Transport Workgroup submitted a Letter of Intent notifying PESC and the education community of its desire to develop a specification for data transport that would be approved and recognized as an education-wide community standard. The need and a significant foundation for the specification were born out of the National Council of Higher Education Loan Program’s (NCHelp) Electronic Standards Committee (ESC) and once the Letter of Intent was submitted, the Workgroup was officially formed under PESC’s Standards Forum for Education.

On February 6, 2006, the Data Transport Workgroup, after having completed its development efforts, submitted its Data Transport Specification to PESC with the objective that it become an approved and recognized education standard. On February 17, 2006, PESC posted the Data Transport Specification on its website, made all corresponding announcements and communications regarding this submission, and opened a 30-day public comment period so that the education community could review and publicly comment on the Data Transport Specification. During the public comment period, which expired on March 20, 2006, a number of public comments were received. Those public comments were routed to the Data Transport Workgroup and the Standards Forum for Education’s Change Control Board (CCB). Both groups reviewed the public comments, discussed each thoroughly and meticulously, and on April 21, 2006 provided responses.

With public comment period successfully addressed, the Data Transport Specification was presented to the PESC Members for a Vote of Approval on May 1, 2006. On May 19, 2006, PESC Members that approved Data Transport Specification v 1.0.0 included: AcademyOne, American Association of Collegiate Registrars and Admissions Officers (AACRAO), AES, Citibank, Coalition of Higher Education Assistance Organizations (COHEAO), The College Board, Community College of the Air Force, Consumer Bankers Association (CBA), Datatel, Edfinancial Services, ELM Resources, Florida State University, Iowa State University, Law School Admission Council (LSAC), Miami University – DARS, National Association of Student Financial Aid Administrators (NASFAA), National Association of Student Loan Administrators (NASLA), National Career Assessment Services Inc. (NCASI), National Council of Higher Education Loan Programs (NCHelp), National Student Clearinghouse, Nelnet, Oracle Corporation, Pearson Government Solutions, Sallie Mae, Student Loan Servicing Alliance (SLSA), SunGard Higher Education, TG, University of Illinois at Chicago, University of Illinois Student Financial Services, University of Illinois at Urbana Champaign, University of Mississippi, University of Oklahoma, University of Texas at Austin, USA Funds, U.S. Department of Education, and XAP Corporation. On May 25, 2006, after ratification by the PESC Board of Directors, the Data Transport Specification was released to the public as a national education community standard.

To improve upon v 1.0.0, the Data Transport Workgroup developed and submitted on April 13, 2007, Data Transport Specification v 2.0.0. On May 21, 2007, PESC posted the Data Transport Specification v 2.0.0 on its website, made all corresponding announcements and communications regarding this submission, and opened a 30-day public comment period so that the education community could review and publicly comment on the Data Transport Specification. During the public comment period, which expired on June 20, 2007, a number of public comments were received. Those public comments were routed to the Data Transport Workgroup and the Standards Forum for Education’s Change Control Board (CCB). Both groups reviewed the public comments, discussed each thoroughly and meticulously, and on July 17, 2007 provided responses. All comments and responses are provided below.
As public comment period has been successfully addressed, the Data Transport Specification v 2.0.0 is now presented to the PESC Members for a Vote of Approval on October 2, 2007. The voting period for PESC Members is 10 business days and expires on October 17, 2007.

**Public Comment 1**

**Issue:** We noticed that the DTSRequestPayloadBytes and DTSResponsePayloadBytes elements are defined as xsd:string.

**Reason:** The data contained in the element is a numeric value.

**Proposed Solution:** Shouldn't these be defined as integers?

**Response:** DTSRequestPayloadBytes and DTSResponsePayloadBytes were defined as xsd:string due to data type interop problems in version 1. "xsd:string" is the easiest data type to handle from both .Net and Java and easily converted to integer or long in either technology. Leaving it "xsd:string" will allow companies that have already implemented v1 to leave their code intact when dealing with these 2 header elements.

**Public Comment 2**

**Issue:** I was wondering if, when we were reviewing available standards and implementations to meet the needs of DTS, whether we ever looked at AS2? AS2, or Applicability Statement 2, is an EDI standard that is published in RFC 4130: [http://www.ietf.org/rfc/rfc4130.txt](http://www.ietf.org/rfc/rfc4130.txt). Here is the Wikipedia page: [http://en.wikipedia.org/wiki/AS2](http://en.wikipedia.org/wiki/AS2).

From the Oracle site, I found another good definition of AS2:

AS2 (Applicability Statement 2) is a specification for Electronic Data Interchange (EDI) between businesses using the Internet's Web page protocol, the Hypertext Transfer Protocol (HTTP). The specification is an extension of the earlier version, Applicability Statement 1 (AS1). Both specifications were created by EDI over the Internet (EDIINT), a working group of the Internet Engineering Task Force (IETF) that develops secure and reliable business communications standards. The AS2 standard provides Secure Multi-Purpose Internet Mail Extensions (S/MIME) and uses HTTP or a more secure version, HTTPS, to transmit data over the Internet. AS1 uses a slower protocol, SMTP (Simple Mail Transfer Protocol). The use of HTTP or HTTPS allows communication in real time rather than through e-mail delivery. Security, authentication, message integrity, and privacy are assured by the use of encryption and digital signatures. Another important feature, non-repudiation, makes it impossible for the intended recipient of a message to deny having received it. The AS2 standard allows businesses to use a common, single communications solution. This eliminates the complications and costs involved when different businesses in a network use different transfer protocols. A Web server, an EDI transfer engine, and digital certificates are required for data exchange using AS2. Almost any type of data can be transmitted.

**Reason:** If we didn't already, shouldn't we look at AS2 as an existing standard that could meet the defined business and functional needs, is available in commercial products (for those who prefer to buy), and has a defined specification to allow construction for those who prefer to build? I realize that AS2 isn't necessarily a "web services" (WS-*) implementation, but as you can see below it does leverage the submit-response approach, uses HTTPS, S/MIME, encryption, digital signatures and non-repudiation.
Proposed Solution: Look at AS2 instead of continuing with DTS.

Response: See response below comment #3, the general remarks apply to this comment as well and there is a specific paragraph related to AS2.

Public Comment 3

Issue: Need for additional security and exchange models – particularly pull models not just push.

Reason:

Proposed Solution: Suggest option to support ebXML messaging and particularly the 2.xx and new 3.xx work. Because there are now several mature open source implementations and also Oracle and IBM both now supporting ebMS - this means that many PESC members can use this "out-the-box" with their existing infrastructure. The push interchange models - plus ability to use secure and signed exchanges with reliable delivery options - provide a significant level of benefits to PESC organizations.

Response: The below response addresses general issues to both comments #2 and #3 while addressing specific aspects of each comment.

General Response to #2 and #3:
DTS version 2 is the culmination of an effort to answer the original business requirements for a transport standard for the higher education community. DTS v 1.0.0 was proven interoperable between Java and .Net implementation platforms. V 1.0.0 answered all of the requirements except one: make the “Key Management and Exchange” easier and simpler. V 1.0.0 of DTS was approved as a PESC standard (May 2006). Version 2 is a major enhancement, adding closer adherence to the standards that create the foundation for Web Services (WS-*) and answers the final business requirement concerning key management and exchange. The significant advantages attained with adoption of version 2 come with minimal actual changes to any existing DTS version 1 implementations. The DTS Technical Workgroup recommends that PESC approve version 2, as a standard superseding the existing version. Version 2 meets all requirements given to the DTS workgroup, including the additional ability to provide secure and encrypted data transport without an out-of-band key exchange.

The DTS Specification was produced during the same time frames as both specifications mentioned in the comments above; Version 1 at the same time as AS2 and ebMS version 2, Version 2 at the same time as ebMS version 3. While there are competing general data transport mechanisms, including AS2 and ebXML, none are widely used. Both DTS version 1 and 2 are designed to be compatible with existing higher education processing systems that currently rely on e-mail or FTP transport.

Future work and discussions of the Technical Workgroup will involve researching and potentially creating reference implementations of other standards-setting organizations’ (OASIS, IEEE, IETF) output, including ebMS version 3. DTS is known to be interoperable and the same advances in the development toolkits that allowed closer adherence to the WS-* specifications should allow ebMS to be interoperable as well. However, neither the DTS Technical workgroup nor the PESC Technical Advisory Board has proven ebMS to be interoperable at this time.

Comment #2 Specific:
AS2 is not a Web Service or based upon SOAP. While there was nothing in the business requirements that specified using SOAP and a Web Service approach for the solution, it was widely agreed upon that these technologies would
provide the best solution. DTS version 1, an approved standard, uses SOAP and Web Services so it stands to reason that the continued direction use the same type of technology.

Comment #3 specific:
Additional security concern: DTS version 2 and ebMS version 3 both implement the Web Services – Security (WS-S) specification.

Pull exchange model: DTS is a specification for transport framework. Exchange models, such as Push or Pull, are implementations of the transport mechanism. There is not anything in the DTS specification that limits the use of any of the same exchange models discussed in the ebMS (version 3) specification; in fact the implementation of DTS defined in the NCHELP – Technical Manual provides scenarios and expected behaviors of DTS for the same exchange models described in ebMS.

ebMS: While the ebMS standard does have merit for solving the transport issue for which DTS was created, keeping DTS as a higher education community specific standard allows our community to focus the evolution of the standard used by our specific industry. DTS was developed through extensive experience of transporting data within the higher education community.

After additional research, ebMS may have the ability to replace DTS as a transport standard and future versions of DTS could conceivably be replaced by ebMS. However, DTS was created based on the same basic Web Services standards that ebMS was and proven to work to solve all the business requirements the group was presented. This same proof of concept effort should be done for ebMS prior to adoption, it is expected that ebMS would need to be extended beyond the current specification to meet the needs of the higher education community.

With the publication/ratification of version 3 of ebMS occurring on July 12th, 2007; it is highly speculative that an “out of the box” solution exists today for ebMS. It is more likely that version 2 of ebMS, which does not implement the WS-S specification, is supported by off the shelf products. It is also expected that there will be packaged solutions available for DTS version 2 as well. The “out-of-band” key management process used by the current data exchange mechanisms (including ebMS version 2) requires extensive personnel resources and discourages periodic (highly recommended) security key updates. The adoption of WS-S by DTS version 2 is pivotal to providing a streamlined and automated solution to the key management/exchange process.