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. All public comments and responses are provided below.

As public comment period has been successfully addressed, the Data Transport Specification will be presented to the PESC Members for a Vote of Approval on May 1, 2006. Note that per PESC’s Policies and Procedures, the PESC Board of Directors is provided with a 7-calendar-day grace period to review the proposed candidate before it is present for a Vote of Approval. The voting period for PESC Members will then be 10 business days and expires on May 12, 2006.

Public Comment 1

**Issue**: How does the Data Transport Specification relate to the Oasis standard? PESC’s whitepaper published in 2000 mentions ebXML. The PESC XML Registry and Repository for the Education Community adopted the ebXML 2.5 repository standard as the basis of that work. The U.S. Department of Education is using Websphere’s implementation of ebXML in the Repository. Since I had not heard ebXML or ebMS in our conversations about the Data Transport Specification at any of our sessions, I may be raising a red flag where none is warranted.

**Reason**: It appears on the surface, the Data Transport Specification reference implementation is possibly duplicating what ebMS (a subset of ebXML) is doing with SOAP. If we head down the pike of the Data Transport Specification, we are expecting trading partners to implement a protocol and implementation that won’t apply across other standards bodies (like retail, healthcare, insurance, banking, stock trading, etc.). I think we are in a bind here, maybe as I’m not sure if this was vetted before.
Proposed Solution: I may be off base, but I think PESC should consider the ebXML implications and how ebMS fits into the picture. If all trading partners adopted an ebMS platform (from various vendors or open source products), then our payloads can be sent and received securely.

Response: The DTS team has evaluated the ebMS portion of the ebXML specification and covered the following topics in the response below:

- Historical timeline for the development of DTS and ebMS
- The lack of toolkit support of ebMS
- The lack of proven platform interoperability with ebMS
- DTS ability to provide platform interoperability with existing toolkits and standards
- DTS workgroup’s commitment to monitor evolving standards for potential adoption

The ebXML Message Service (ebMS) specification defines the message enveloping and header document schema used to transfer ebXML messages over a communications protocol such as HTTP or SMTP and the behavior of software sending and receiving ebXML messages. The ebMS is defined as a set of layered extensions to the base Simple Object Access Protocol and SOAP Messages with Attachments specifications.

We recognize the ebMS specifications are rooted with similar goals to the PESC DTS. These two efforts were being developed concurrently, publishing specifications to their respective communities in the fall of 2005. But there are significant differences in approach. ebMS was intended to be a broad industry specification. However, it has not been embraced by leading technology vendors. Rather these technology vendors has been focused on the development of the WS-* standards. Slow adoption by technology vendors has limited the development of tool kits supporting ebMS. PESC DTS, on the other hand, was focused on building a usable document transport to replace FTP and email delivery mechanisms that are costly and difficult to manage within our industry. DTS attempts to balance the same goals as ebMS within the constraints of:

- using readily available, cost-effective, and reliably functioning tools,
- proven interoperability between industry standard platforms, and
- accepting standards and usages which are truly relevant to the Use Cases identified by PESC members.

Interoperability is an important requirement for DTS. Interoperability is one of the goals established by the PESC membership in forming this workgroup and the business requirements that were followed in producing the reference implementations. Schools and trading partners will have different application platforms supported by their own IT departments or School Information Systems (SIS) vendors. The PESC DTS provides proven Microsoft (.NET) and Java (J2EE) reference implementations that are lightweight and easy to implement, enabling organizations to reliably and securely exchange documents and transactions. The PESC DTS Workgroup will continue to enhance the DTS specification and the reference implementations as Web Services specifications mature. DTS may leverage other specifications, including ebMS, over the next several years through the PESC Change Control process. But, in the present form and “Draft” status of ebMS, the DTS workgroup would not be able to produce a workable cross platform transport.

The DTS Workgroup anticipates ebMS or other emerging transport standards will eventually evolve and gain broader support and adoption yielding greater platform interoperability. The DTS Workgroup strongly recommends moving forward with DTS and gaining the return on investment, achieving proven platform interoperability, and providing a low cost method to exchange data securely and reliably.

The Change Control Board will make a recommendation to the PESC Steering Committee to share the DTS specification with OASIS for review by the ebXML committee as an example of platform interoperability.
See links below for additional information regarding ebXML (ebMS).

http://www.xml.com/pub/a/ws/2003/03/18/ebxml.html?page=1

http://www.rawlinsecconsulting.com/ebXML/


(Also see response to Comment 3)

Public Comment 2

Issue: I am wondering why the standard does not make use of XML-Digital Signature specifications instead of using the custom DTSRequestSignature SOAP Header.

Reason: Supporting the standard would allow web services aware products to perform the signature operations without requiring code support.

Proposed Solution:

Response: Interoperability was the primary reason this release did not incorporate the XML-Digital Signatures as documented in the XML-Digital Signature specification. During development and testing of interoperability of SOAP Headers between Java and .Net it was found that the "xsi:type" attribute must be present in order for the Java service and client to read and use header values. The XML-Digital Signature specification does not include this attribute.

Public Comment 3

Issue: The specification should define the header consistent with the WS-* series of proposed specifications so the data transport will be consistent with the major suppliers of software. These include WS-Addressing, WS-ReliableMessaging, WS-Policy Framework (updated 9 March 2006), WS-Security, and WS-Notification and/or WS-Eventing.

Reason:

Proposed Solution:

Response: The WS-* specifications do not contain the definition of the attribute that was found to be necessary for interoperability (xsi:type). The WS-* specifications were spawned from work on the WS-Interoperability Basic Profile. The Basic Profile itself states that following the specification does not guarantee interoperability. The DTS specification does guarantee interoperability (among tool sets used and tested) and the divergence from any WS-* specification is to that end.
Public Comment 4

Issue: The specification should use and reference the WSDL version 2 specification now (January 2006), a Candidate Proposal at W3C.

Reason:

Proposed Solution:

Response:

1) Version 2 is still only a “Candidate Proposal” and not accepted. One of the guiding principles was to use existing standards. The DTS Specification was completed in August of 2005, prior to WSDL version 2 becoming even a “Candidate Proposal”.

2) The available tools for development do not support WSDL version 2. Another guiding principle was to use existing development tools and guarantee interoperability between them.

3) The DTS Workgroup will continue to monitor future versions of the tools as they become available.

Public Comment 5

Issue: The specification should not reference or recommend the use of SSL (or more precisely TLS).

Reason:

Proposed Solution:

Response: This release (Version 1) of the DTS specification left the encryption to the protocol binding and is dealing with a point to point delivery. With the widespread use of SSL by institutions in the higher education arena, it was thought that by allowing it to handle the encryption there would be a higher level of understanding and willingness to adopt a transport that built on existing encryption technology.

Public Comment 6

Issue: For reasons stated above in comment #4 and #5, public comment period for this specification should be extended to initiate and support a broader role for PESC.

Reason:

Proposed Solution:

Response: Computer Science and Information Technology have been and continue to be a fast paced and quickly evolving environment. There will always be the need for considering using what exists at the current time or to wait for the next upgrade. The DTS Specification addresses the business requirements and is a valid technical solution. The DTS Workgroup will continue to monitor new standards and technologies as they evolve.
Public Comment 7

Issue: The specification used the phrase “among schools, servicers, lenders, FAMS, guarantors and FSA” reflecting the interest of these groups and the historical focus of PESC. This specification applies to data exchange generally; it should be consistent with both information technology and vertical industry practices. The specification would benefit from research on these practices. Otherwise the burden of incompatibility on college and university information technology infrastructure will lead to further dissatisfaction and reduce the scope of implementation. The software suppliers participating in this specification must be aware that creating a specification inconsistent with other parts of the world will increase development and support costs and reduce the value of US-based software.

Reason:

Proposed Solution:

Response: The DTS Specification developed meets the business requirements from the PESC community and provides a valid technical solution. SIS vendors have participated in discussions regarding this specification.

See response to Public Comment 1.

Public Comment 8

Issue: The use of the request-response model is consistent with best practices and should be a required component of this specification. Although other models – publish and subscribe – are available, they may not yet be needed. The specification should acknowledge that other models exist, when they would be appropriate, and how they might be implemented nothing this is “beyond the scope” of the current specification.

Reason:

Proposed Solution:

Response: The request-response model is required. For every call to the DTS Service, the DTS Client will get a response. Since the specification is completely payload agnostic in terms of actual transport, the implementation models are immaterial.

Public Comment 9

Issue: Rather than specify how to achieve guaranteed delivery, the specification should reference WS-ReliableMessaging and specify the implementation. This makes the SOAP headers consistent with other applications. The cited Basic Profile does not define SOAP header blocks, but comments, “Header blocks – Header blocks are the fundamental extensibility mechanism on SOAP.” Rather than create additional header block definitions, those of the WS- “Extensions” should be used.
Reason: 

Proposed Solution: 

Response: The request-response model of Web Services guarantees the delivery from point A to point B without adding additional layers of complexity. Interoperability was also the reason for the exclusion for this release (see response to Public Comment 3).

Public Comment 10

Issue: Experience has shown that simple routing from A to B is not sufficient; many organizations find it necessary to use intermediaries. A specific implementation of WS-Addressing should be used to permit further expansion in the future if the need arises. This makes the SOAP headers consistent with other applications using the “Extensions.”

Reason: 

Proposed Solution: 

Response: This release only addresses point-to-point routing (A to B). Even if intermediaries are used, an A to B implementation to the intermediary and then another A to B from the intermediary to final destination can be used. WS-Addressing was viewed to have interoperability problems (response to Public Comment 3). This release was intentionally simplistic for ease of adoption.

Public Comment 11

Issue: The specification requires the use of zLib compression. The reader is left without a justification of the choice or its relation to the forthcoming specifications on SOAP attachments. The use of compression suggests large payload SOAP messages. If “batch” files are being sent by SOAP, then perhaps the specification should focus on the use of attachments.

Reason: 

Proposed Solution: 

Response: zLib compression is an existing standard (IETF-RFC1950,1951). The specifications on SOAP attachments are still “forthcoming”. This release is based on readily available technology, tools, and specifications. Whether the payload size is large or small, the use of compression minimizes the amount of actual data sent across the wire.

Public Comment 12

Issue: Standard Adoption Costs - it appears to meet all of the requirements set forth by the DTS business team, however, it is our understanding that a newer version of DTS is nearing completion that replaces the encrypted-signature approach with an approach based on an existing OASIS standard.
Reason: To encourage organizations to adopt and implement a standard that may be replaced in a short period of time is costly and not in the best interest of PESC and the community. This is especially true since we understand that the newer version of DTS is not backward compatible.

Proposed Solution: We would recommend to the CCB, that the DTS standard distributed for public comment should be updated with the elements of the newer version before proceeding with the approval process.

Response: Every organization will need to evaluate the return-on-investment in terms of embracing new technologies. This release addresses the business requirements and provides technical functionality that can be utilized now for those organizations that choose to adopt it. A projected date for the next release has not yet been determined. The Technical workgroup is working on candidate enhancements for the next version.

Public Comment 13

Issue: Central Repository - one issue that the standard does not address is the creation of a central repository to support the exchange of security key information replacing the need of each organization to maintain a private key ring with security information from each trading partner.

Reason: As the volume of data exchanges and the number of participants increase, the lack of a central repository will become more burdensome.

Proposed Solution:

Response: This release of DTS left the storage and retrieval of keys out of scope for the SOAP definition. A Central Repository is not necessary for ratifying the specification for how to build the SOAP sent across the wire as a standard. Further, this is more of a business negotiation issue. The specification states that X.509 keys must be used. The actual storage and retrieval mechanism can be implemented in various ways and still meet the DTS specification.

Public Comment 14

Issue: Oasis ebXML-Message - we understand that an international standard exists that provides much if not all of the same capability as set forth in the proposed DTS standard.

Reason: It is in the best interest of PESC and the educational community that an objective comparison of the Oasis ebXML-Message standard and DTS be made to determine the relative merits of each. The development goal of any standard should be geared toward broad adoption by the Higher Education community to eliminate or reduce the number of multiple, often proprietary, solutions.

Proposed Solution:

Response: See response to Public Comment 1. Any such evaluation by an outside party, and the merits of such an action, is a decision that should be made by the Steering Committee.
Public Comment 15

Issue: Interoperability - it is recognized that a lot of effort has been expended to resolve interoperability issues that exist between Java and .net.

Reason: If ebXML provides the same capability from a standards point of view, perhaps DTS should focus on the interoperability issues within the international standard.

Proposed Solution:

Response: See response to Public Comment 1.

Public Comment 16

Issue: FSA's Data Strategy Framework - it is critical for the CCB to understand the Department's position on the adoption issues of this version of the proposed data transmission standard for the industry.

Reason: No transmission standard will gain wide acceptance in the industry unless the Department is willing to endorse and adopt it.

Proposed Solution:

Response: “As an active member on many of the PESC working groups, the Department of Education's Office of Federal Student Aid is supportive of the PESC Data Transport Standard and is encouraged by the progress made to date. The project's goal of creating "an industry standard for the exchange of data" aligns with Federal Student Aid's goals of improving service, reducing costs, and integrating FSA systems. We are confident that the project will provide a viable standard for the entire Higher Education community and we will continue to participate on the Data Transport Standard workgroup.

It appears that adoption of the Data Transport Standard will require major changes to FSA's Student Aid Internet Gateway (SAIG). We will be evaluating and possibly re-designing the SAIG as part of our strategic plan to modernize and integrate our systems and business processes, and we will include the Data Transport Standard in our evaluation. However, Federal Student Aid’s current focus is on initiatives which are underway, such as Borrower Services and ADVance, which will make significant progress in implementing our goals of improving service, reducing costs, and integrating FSA systems and processes. We are also continuing our data strategy initiative to build a common infrastructure for data and services which will include the evaluation of the Student Aid Internet Gateway.”

- Holly Hyland, US Department of Education, Office of Federal Student Aid