

PENS

The Emerging Standard

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Introduction

Package Exchange Notification Services (PENS)

There is currently a noticeable disconnect between the creation of content packages and the actual deployment of those packages through a Learning Management System (LMS). This disconnect exists because there are no standards in place to facilitate the exchange of information between content and learning management systems.

Each content provider has a unique way of formatting, delivering, editing and housing content. As a result, LMSs have been forced to design vendor specific integration for every content provider, limiting the out-of-the box options for customers.

In response to this challenge, the AICC is developing a standard for streamlining the management of learning content called the Package Exchange Notification System (PENS). This paper will discuss what PENS is, how it works and its expected benefits. It will also address the future potential for PENS and the steps required to achieve it.

Section One

PENS Defined

The Package Exchange Notification Services standard (PENS) is a notification scheme that facilitates communication between content authoring systems and targeted servers. Through the specification, target servers are notified that a content package exists and is accessible. The specification also includes data components to identify what the package is and where it can be found. This establishes a successful connection between content source and learning management system; the first step in driving greater efficiencies within the learning environment.

Because the PENS specification follows all protocols defined in the AICC data model for Computer Managed Instructions, it will provide a common protocol for all vendors to follow. The benefits of such a standard are many, and will be addressed later in this paper. First, however, let us explore the detailed specifications of the PENS standard.

Section Two

PENS Integration Details

The content source, which can be an authoring tool, an enterprise content management system (ECMS), or a learning content management system (LCMS), notifies the target server – the LMS – that a package is available to be collected. This notification can be given via a variety of methods including:

- HTTP POST & HTTP GET
- Web Services
- SOAP / XML
- Email.

Once the LMS receives the notification that a new content package is available, it must retrieve the package. This retrieval process is governed by existing compliance formats (SCORM) and accessed via:

- UNC
- FTP & HTTP
- SOAP Binary Attachment
- Email attachment.

Once the content package is retrieved, it can be stored or deployed following normal internal procedures.

Where do the responsibilities lie?

In order to ensure a successful transaction, both the sender and recipient have unique responsibilities.

Responsibilities of the sender: The content source is responsible for the following activities:

- creating and preparing the content package
- making sure the content package is suitable and accessible for transfer via a FTP or HTTP site
- sending a message to the target servers to announce that the package is available

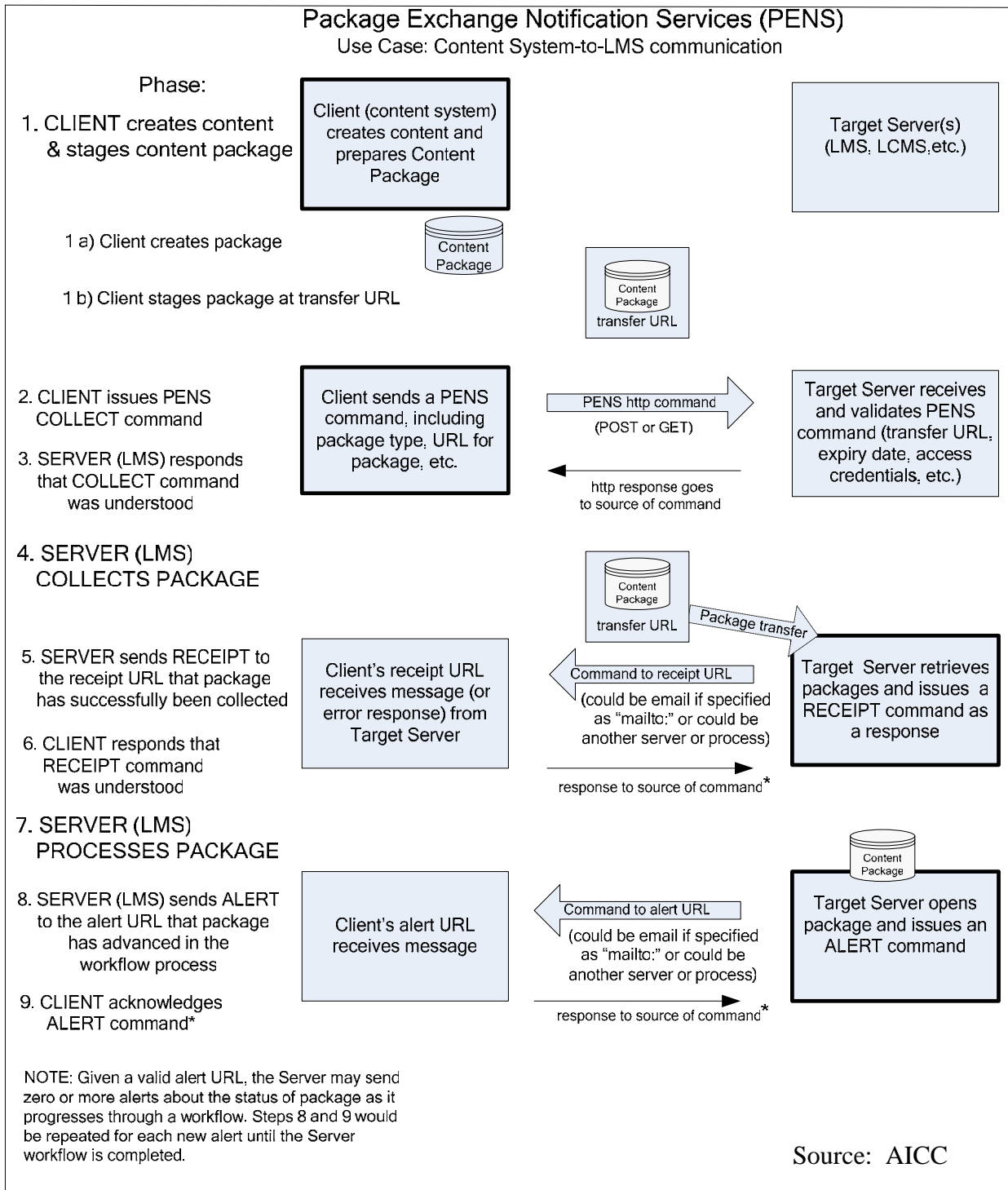
In order for the recipient to access this package, the content source may also assign a password within the notification, if desired.

Responsibilities of the recipient: After the notification is received, the recipient is responsible for:

- pulling the content package
- storing or deploying the content package
- validating the PENS message
- sending a message back to the sender's system that the PENS message was recognized

The content can then be chosen by the recipient who will follow normal internal protocol for opening the package, approving the content, associating the content with a specific course catalog and deploying that content.

Please see the following diagram for further explanation.



*When a message is sent from an HTTP or secure HTTP URL, the system receiving that message shall generate an HTTP response back to the sender. Asynchronous URL protocols, such as "mailto:", shall not be required to acknowledge PENS messages with a response.

Section Three

PENS Benefits

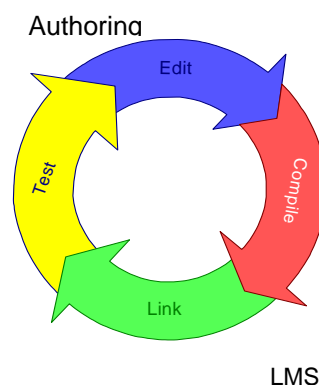
By defining a standard for automation, PENS eliminates the manual and segmented methods formerly required to transport content. No longer will an LMS administrator need to:

- Edit / author content
- Create a package using SCORM/AICC
- Manually import the content package into the LMS
- Manually deploy the content to a content server
- Update the Item/Component in the LMS
- Login as a student
- Test the content

With PENS, the LMS administrator will only be required to perform the following steps:

- Choose the content authoring source
- Publish via PENS

PENS provides a simplified deployment method for authors, and allows LMS administrators to focus on what they do best. By leveraging existing, understood and accepted technology, the PENS standard can be leveraged by a broad user group, not just companies or individuals on the “cutting edge” of technology. It will also provide a link that can be built upon, extending communication and integration into the future.



Section Four

PENS Next Steps

What does the future hold from an industry standpoint?

PENS is currently being driven by AICC, and the first iteration of the standard is scheduled to be commercially available in 2005 (PENS 1.0).

The PENS data model may be extended in the future, however, to include commands that go beyond the “collect” capabilities currently defined in this document. Value spaces for future data elements have been reserved and can be modified as determined by the community of users.

Specifications are being written in IEEE so that the standard will be adopted industry wide.

Section Five

PENS and Plateau

In spring 2004, Plateau delivered the latest iteration of its human performance management solution, called OpenSuite™. As its name suggests, OpenSuite is an open application approach to enterprise learning, complete with pre-configured integration and workflows to many of the leading applications for authoring, content management, virtual learning and business intelligence. Therefore, many of the expected benefits of PENS are available today through Plateau's extensive integration and workflow capabilities. PENS will extend Plateau's capabilities, however, and allow integration with *any* content authoring tool or content management system that supports this open, industry-wide standard.

Plateau's strong commitment to industry standards and open applications has motivated the company to be a key advocate of PENS. Specifically, Plateau has done the following with regards to the specification:

- Plateau's Chief Technology Officer, Ed Cohen, has been heavily involved with the definition of the PENS standard.
- Plateau has already created a prototype, which is available for customer and partner testing.
- PENS can currently be utilized with the most recent version of Plateau OpenSuite and allows users to publish content to the LMS with fewer steps than previously required.
- Plateau has dedicated several of its engineers to work with the PENS group.
- The upcoming release of Plateau's Team Content product will conform to the PENS specification, providing an open architecture platform for e-Learning courseware creation, courseware development management, learning content management, enterprise content management, publishing and media storage.

*Note: PENS is currently for use with Plateau in conjunction with the certified application servers listed below:

WebLogic 7.0 SP4


WebLogic 8.1 SP2

WebSphere 5.1

Conclusion

A Promising New Standard

All learning constituents stand to benefit from the PENS standard. LMS administrators will have a more efficient way to download and leverage content. Authoring and content management vendors will enjoy the benefits of interoperability with any LMS system that adheres to the standard. And, LMS vendors will no longer have to design one-off integration for each content provider in the market.



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