



Content Integration Information for VA LMS Phase II

Toolkit Reference H

What This Is:

This document describes the content integration strategies that can be used with VA LMS.

Why It's Useful:

Many different types of online content with varying complexity can be successfully deployed through VA LMS, and current Phase II sites use a variety of strategies for delivering their local content. Understanding the benefits and challenges associated with the different development strategies will help VA LMS administrators make sound decisions on why and when to implement each option.

How To Use It:

This document provides a high-level overview of the options for deploying online content during Phase II implementation. It addresses benefits and drawbacks associated with each of the strategies. This tool can be used to support decision-making related to the amount of local resources to devote to the development and purchase of online content in preparation for Phase II implementation. It also introduces concepts and terminology that will be the basis for participating in more technical content development discussions locally, as well as in national forums supported by the VA LMS Program Office.



Content Integration Information for VA LMS Phase II

Background

User-friendly online content is an important consideration for VA domains transitioning into Phase II. Many different types of online content with varying complexity can be successfully deployed through VA LMS, and current Phase II sites use a variety of strategies for delivering their local content. The benefits and challenges associated with the different development strategies are summarized in order to help local managers decide which strategy or combination of strategies will work best for their organization.

Content Hosting

The VA LMS is not a “content host.” No online content resides on the application’s server. It is therefore important for Phase II VA LMS Administrators to work closely with those who develop and those who “host” their content. Course files need to reside on a separate web server. Online content to be launched from the VA LMS cannot be hosted on network servers. A fully-qualified web address is necessary.

Sites entering Phase II must evaluate their user populations and the access requirements they have when determining where to host online content. One important lesson learned from experience with the VA LMS is that some users will have difficulty launching online content when it is hosted inside the VA firewall. Some users access the VA LMS, which is hosted on an Internet-facing (www) site, from computers that are not authenticated on the VA network, such as a home computer or a computer at an academic affiliate. When these individuals attempt to launch VA LMS online content hosted on a VA Intranet (vaww) server they receive an error, even though the same content may work flawlessly for users logged into the VA network. The chart below identifies the different hosting options and how user populations are affected by each.

<u>Online Content Hosting Solution</u>	<u>VA Network Users</u>	<u>Non-authenticated Users</u>
Internet-facing web server	Users can launch content	Users can launch content
Intranet-facing web server	Users can launch content	Users <u>cannot</u> launch because they are not logged into the VA network and cannot, therefore, access files behind the firewall
Network server behind the VA firewall	Users <u>cannot</u> launch because content must reside on a web server with a fully-qualified web address	Users <u>cannot</u> launch because content must reside on a web server with a fully-qualified web address

There is no current enterprise-wide solution for hosting of local, online content. Sites entering Phase II deployment need to evaluate their requirements and resources available to accomplish them.

Content Development Tools

The VA LMS does not require online content developers to use specific software or tools. Generally, anything that can be hosted on a web server can be launched from the VA LMS. Therefore, the VA LMS Program Office does not recommend the purchase or use of any specific development software. Sites will want to consider the strategies discussed below when determining what software tools to use, though, because of the differing means and standards for communicating completions back to the VA LMS. It is the ability of development software to output content that meets those desired outcomes that sites need to evaluate prior to purchase or use.

Strategies for Content Integration

There are three primary strategies for developing content that is to be integrated with the VA LMS based on the level of communication required. In general, the less communication required, the less complex the content will be.

1. The first strategy targets the lowest level of communication and complexity. It enables deployment of existing files (e.g., slide presentations, documents, HTML), intends no communication between the content and the VA LMS, and requires the least amount of development resources to ensure the content meets VA criteria for web content delivery;
2. The second strategy uses a proprietary communication method that enables basic communication from the content to the VA LMS (e.g., user has reached the end of a course or certifies that they have completed the content). It requires some, but not extensive, development resources;
3. The third strategy is to design to international communications standards that enable consistent, complete interaction between the User, the content, and the VA LMS.

Each of these strategies can be implemented successfully and can be used individually on an Item-by-Item basis or in tandem with one another within a single Item on the VA LMS. The strategies are discussed in more detail below.

Strategy 1: Basic Online Content File Development/Purchase

Nearly all files that can be hosted on a web server can be launched from the VA LMS. This includes basic document types, slide presentations, spreadsheets, as well as HTML, audio, and video files. This strategy differs from the others in that one intentionally does no additional development on the files to make them communicate with the VA LMS. This translates to no bookmarking, no score reporting, no automatically recorded completion, etc., based on a user's progress in specific online content.

There are several ways to accomplish recording of completion for these items in the VA LMS:

- VA LMS items can be set to record completion of online content upon its launch without modifying anything in the content files - this means if a user clicks on the link to the content the VA LMS records a completion of the content whether or not the user actually reviews the materials;

- VA LMS items can be set to allow manual recording of completions by either the learner themselves, their supervisor, or a VA LMS administrator; or
- One workaround used at the national level is to add to an item a simple, re-useable piece of online content called a “self-certification” content object which uses Plateau Tracking Functions (PTF), described in Strategy 2, to record a completion for the item.

The benefits to using this strategy include:

1. nearly any file/content available from a web server can be launched from the VA LMS without additional, LMS-specific coding;
2. local content development resource requirements are low;
3. workarounds can be deployed to accomplish basic, automated online content completion; and
4. users can take direct responsibility for confirming their completion of online content.

Drawbacks to using this strategy include:

1. completions of the content are not always automatically recorded;
2. complexity of the content is limited due to the lack of shared information between the User, the VA LMS, and the content itself; and
3. information stored in the VA LMS about User activity is limited to whether or not they clicked on the link to the content.

Strategy 2: PTF-based Online Content Development/Purchase

A second option for building online content that communicates with the VA LMS is to design it using a set of JavaScript functions that are native to Plateau. These are called Plateau Tracking Functions, or PTFs. PTFs send information from the content to the VA LMS, but retrieve no data from the VA LMS. VA use of PTFs to date has been focused on sending completions from online content to the VA LMS when Users take specific actions or reach specific pages within the content. For example, if a web-based test has been programmed and the User gets a passing score, the next web page offered to them displays a button that when clicked, sends a completion to the VA LMS. Other basic communication functions can also be deployed with JavaScript programming knowledge.

The benefits of using PTFs include:

1. the basic JavaScript calls are relatively simple to insert into web-based content;
2. they communicate the basic requirements for online content completion to the VA LMS; and
3. they are Plateau-specific and can, therefore, be employed to communicate information to the VA LMS that standards-conformant content cannot (see below).

Drawbacks to using PTFs include:

1. knowledge of basic web-based content development and JavaScript programming are required;
2. sending only a single PTF post at a time is recommended due to restrictions inherent to the communication method, thus limiting the information that can be sent per User action and increasing delays the User may experience as separate posts are sent; and

3. more local resources will need to be dedicated to content development than for Strategy 1.

Strategy 3: Standards-Conformant Online Content Development/Purchase

This strategy offers a high-degree of content complexity and consistent, standards-driven communication with the VA LMS. Employing either the AICC or SCORM communications standards, this strategy also addresses future content interoperability and shareability (see <http://www.aicc.org> for information about the AICC standard, <http://www.adlnet.org> about SCORM). These international standards have been developed and deployed specifically to make communication between online content and learning management systems pre-defined and dependable. If local requirements dictate that User progress in content be tracked with some specificity, this option offers the most universally accepted methods to do so. Due to restrictions inherent to SCORM communication, the VA LMS recommends adoption of the AICC standard for local content development and deployment under this strategy. Application of the SCORM 1.2 and/or SCORM 2004 2nd Edition standards are also manageable, if the local decision is made to design to these standards.

The benefits to using standards-conformant online content include:

1. enhanced and consistent communication between the User, the content, and the VA LMS;
2. greater depth of information about a User's progress in specific content stored on the VA LMS;
3. allows communication with any LMS that is standards conformant; and
4. User-specific information can be shared with the content, enabling the content to respond to individual information.

The drawbacks to implementing this strategy include:

1. facility development resources are necessary to build conformant content if current and planned-for content has not been designed to meet either of these standards;
2. if SCORM-compliant content is developed or has been purchased, additional steps are required to support communication between it and the VA LMS when hosted on a local web server; and
3. VA LMS support for content developed to the SCORM 2004 3rd Edition standard is limited and it should be avoided.

Additional Information

Additional information about Content Integration with the VA LMS can be found online at <http://www.insidelms.va.gov> or can be obtained by contacting Jeffrey Henry of the VA LMS Program Office at Jeffrey.Henry@va.gov.

Glossary

AICC	Aviation Industry CBT Committee. The Aviation Industry CBT (Computer-Based Training) Committee (AICC) is an international association of professionals who work with technology-based training and e-learning.
Bookmarking	Ability of online content to report to a learning management system the page last visited and/or content completed by a user from one launch to the next
Content Host	Refers to the server on which content files are placed
Internet	An electronic communications network that connects computer networks and organizational computer facilities around the world
Intranet	A network operating like the World Wide Web but having access restricted to a limited group of authorized users (e.g., employees of a company)
JavaScript	Object-oriented programming language targeted for web-based development
Network server	A file server situated on a network specifically not purposed as a web server
Score Reporting	Ability of online content to report to a learning management system the score a user achieves at any given point in the content
SCORM	Shareable Content Object Reference Model. Integrates a set of related technical standards, specifications, and guidelines designed to meet SCORM's high-level requirements—accessible, interoperable, durable, and reusable content and systems.
Web server	A computer that has web server software installed (e.g., IIS) and serves up web pages.