Global Journal of Enterprise Information System

DOI: 10.18311/gjeis/2017/16180

Great Enterprise Contribution to Society

Allows Librarians at each Institution to take Custody of and Preserve Access to the E-Content

Website: https://www.lockss.org

The **LOCKSS** («Lots of Copies Keep Stuff Safe») project, under the auspices of Stanford University, is a peer-to-peer network that develops and supports an open source system allowing libraries to collect, preserve and provide their readers with access to material published on the Web. The system attempts to replicate the way libraries do this for material published on paper. It was originally designed for scholarly journals[1], but is now also used for a range of other materials. Examples include the SOLINET project to preserve theses and dissertations at eight universities, US government documents[3], and the MetaArchive Cooperative program preserving at-risk digital archival collections, including Electronic Theses and Dissertations (ETDs), newspapers, photograph collections, and audio-visual collections

The LOCKSS Program is an open-source, library-led digital preservation system built on the principle that "lots of copies keep stuff safe". The LOCKSS system is the first and only mechanism to apply the traditional purchase-and-own library model to electronic materials. The LOCKSS system allows librarians at each institution to take custody of and preserve access to the e-content to which they subscribe, restoring the print purchase model with which librarians are familiar. Using their computers and network connections, librarians can obtain, preserve and provide access to purchased copies of e-content. This is analogous to libraries' using their own buildings, shelves and staff to obtain, preserve and provide access to paper content. The LOCKSS model restores libraries' ability to build and preserve local collections.

A LOCKSS network functions in much the same way as traditional library networks, reinforcing the strength of the library community. Participating libraries acquire copies of important "stuff," but instead of paper, LOCKSS libraries acquire digital content in their local LOCKSS Box. Through a LOCKSS distributed network, libraries are cooperating with one other to ensure their preserved content remains authentic and authoritative. This collaboration measure and validates the integrity of the participants' holdings. As a result, libraries are self-reliant and self-sustainable in their communities.

When the publisher's web site is unavailable for any reason, content is served from the library's "LOCKSS Box," guaranteeing immediate and continuous user access. There are no "trigger events" that require human intervention. LOCKSS delivers a copy of the original publication to authorized users in real time, whenever it is needed. Because LOCKSS preserves the original publisher's copy of each item, it ensures that the most authoritative version persists, unchanged, with full credit to the publisher.

Read more about the preservation principles that set us apart, the benefits of LOCKSS for both libraries and publishers and technical information about how LOCKSS works.

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How LOCKSS Works

In 2004 The LOCKSS technology won the Computer Science Research Award from the Association of Computing Machinery. In 2014, the Council For Research Libraries (CRL) audited the CLOCKSS archive against the TRAC criteria and awarded it their first ever perfect score in the Technologies, Technical Infrastructure, Security category for its use of the LOCKSS technology. This page explains in more detail what sets the LOCKSS software apart, and how preservation works in LOCKSS networks.

- **Steps to Preservation**

A publisher gives permission for the LOCKSS system to preserve authorized content by putting online a LOCKSS permission statement and a LOCKSS manifest. A library uses the LOCKSS software to turn a mid-range PC, or the hardware equivalent, into a digital preservation appliance called a LOCKSS Box.

Preservation requires three actions: a publisher to give permission for the target content to be preserved; for a library to bring online a LOCKSS box that has authorized access to the content; and for that LOCKSS box to be registered with one of a number of associated LOCKSS Alliance networks.

Stanford University LOCKSS Program staff analyzes the target content's URL structure, file formats and delivery mechanisms. They design, implement and update a tailored, content-specific preservation action plan that serves publishers, librarians and readers.

- **Preservation:** The LOCKSS software continually monitors the content in each LOCKSS Box to ensure that it is being properly preserved, by cooperating over the Internet with other LOCKSS boxes to compare each box's copies of the same content using technology that won an ACM research award:
- **Delivery:** An institution's LOCKSS Box can provide readers with continual, seamless access to branded publisher content. The LOCKSS system preserves content at its original URL, critically retaining the content's relationship to other web resources. An institution's LOCKSS Box delivers content to authorized readers only when the publisher's website is unavailable (subscription cancelled, network traffic, publisher server down). The LOCKSS Program works to preserve, and to deliver to readers, the publisher's original artefacts, in other words – what the publisher published. LOCKSS Boxes provide three main ways for readers to access the content they preserve: by proxying (i.e. acting like a web cache), by serving (acting like a web server) or by serving through integration with an OpenURL resolver.

Management: Librarians administer their institution's LOCKSS Boxes through a web browser that allows them to easily select new content for preservation, monitor content's preservation status and a variety of other functions. The Stanford University LOCKSS staff provides support to LOCKSS Alliance participants.

Three audit and verification tools detail what content is in a library's LOCKSS Box and the content's preservation status.

- On demand, a LOCKSS Box produces a KBART (Knowledge Bases and Related Tools) report of the locally preserved content.
- A LOCKSS Box displays detailed preservation status for each Archival Unit. (An Archival Unit is typically a volume of a journal, or a complete book).
- A LOCKSS Box administrator can use a properly configured web browser from an authorized IP address to view preserved content through an "audit proxy." The viewer sees the content as it was collected by the LOCKSS system.

Sustainable Format Migration: LOCKSS preserves all web published formats (animations, datasets, moving images, still images, software, sound, text) and genres (journals, books, blogs, websites, scanned files, audio, and video). The LOCKSS software is format-agnostic and preserves all content in its original format, as delivered from the publisher, including the format metadata that enables a browser to render the content.

Open Source: The LOCKSS Program has been providing libraries with open-source software since its founding in 1998. Open-source software has the following advantages over proprietary closed source software. Open Source Software:

- Promotes interoperability between systems.
- Provides vendor independence. In community-driven development efforts, the efforts of many are leveraged through collaboration.
- Provides long term sustainability and low-cost of maintenance because of the contributions of many.
- Promotes open standards.
- Provides transparency. A knowledgeable reader can read the software code and understand a program's behavior.
- Provides forward growth. The community can evolve the software to meet the community's evolving needs and requirements.

LOCKSS Alliance members: (a) Collect and preserve Open Access titles as well as those e-journals to which they subscribe and (b) Participate in LOCKSS preservation of special collections and government document collections please see Private LOCKSS Networks.

Many of the publishers working with the LOCKSS Program are hosted on third party publishing platforms. LOCKSS Program staff works closely with these vendors to ensure authoritative, accurate and complete preservation of scholarly journals and books. Our partners include: Atypon, BioMed Central, HighWire Press, Metapress, Open Journal Systems, Publishing Technology, and Project MUSE.

Source: https://www.lockss.org/about/how-it-works/