EVERY CONNECTION has a starting point.

Web-scale Management: What, When, How, Why.... and Where

Andrew K. Pace
Executive Director, Networked Library Services

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Flight Plan: please remain seated...

Web scale and Cloud Computing (10,000 feet)
  • What it is and what it means

The world before Web scale

Web-scale in the context of libraries (5,000 feet)

DUE TO THE SHORT NATURE OF THE TRIP, THERE WILL BE NO CABIN SERVICE THIS AFTERNOON

“Web-scale management services” (1,000 feet)
  • An opportunity for *truly* next-generation library management services (500 feet)
  • Descriptions, Timelines, and Directions (100 feet)

Putting the Pieces Together (feet on the ground)

Planning Future Trips
Web Scale and Cloud Computing
Cloud Computing

A style of computing in which scalable and elastic IT-enabled capabilities are delivered as a service to external customers using Internet technologies.

-Gartner Group

Simple: Web-based applications with shared data and services.
Cloud Computing

A style of computing in which scalable and elastic IT-enabled capabilities are delivered as a service to external customers using Internet technologies.

-Simple: Web-based applications with shared data and services.

-Gartner Group
"'Web-scale' refers to how major web presences architect systems and services to scale as use grows. But it also seems evocative in a broader way of the general attributes of the large gravitational hubs which are such a feature of the current web (eBay, Amazon, Google, WikiPedia, ...)."
The Web is all about **scale**, finding ways to attract the most users for centralized resources, spreading those costs over larger and larger audiences as the technology gets more and more capable.
Changing demand
Changing collections

“No, you weren’t downloaded. You were born.”
Web scale value proposition

Be after cloud computing.

70% INFRASTRUCTURE

30% INITIATIVE

Amazon.com: http://www.slideshare.net/goodfriday/amazon-web-services-building-a-webscale-computing-architecture
Libraries Before Web Scale
In the 1970s...

Users

OPAC

ILS

Circulation

Cataloging

Library

Print Vendors
In the 1980s...

- ILS
- OPAC
- Circulation
- Cataloging
- Users
- Acquisitions
- Print Vendors
- Self Service
- Library
- Cataloging Utility
- National/Global System
- Consortial System
In the 1990s...
In the 2000s...

Users
- Self Service
- Institutional Repository

Library
- ILS
- OPAC
- Circulation
- Cataloging
- Users

Acquisitions
- A to Z List

Print Vendors
- ERM
- Resolver

Electronic Vendor
- Cataloging Utility
- National/Global System
- Consortial System

Meta-search
Questions to ask ourselves

Have the systems we use to deliver services kept pace with the changing nature of our users and our collections?

OR

Are libraries being held back by:

• Many systems to support
• Large investment in maintenance
• A fragmented Web presence
Libraries and Web Scale
“[There is] a major theme of Web 2.0 that people haven't yet tweaked to. It’s really about data... [and who] gives the best access to a class of data.” — Tim O’Reilly, April 2007
Libraries in a Web-scale landscape

First-generation Library
Web scale

Next-generation Library
Web scale
"Library Web scale"

Worldwide libraries and worldwide library transactions (PER YEAR)

- Libraries worldwide: 1,212,383
- Books: physical processing: 15,517,196,010
- Back-office transactions: 61,879,349
- OPAC searches: 105,607,800,600
- Database searches: 36,555,852,000
- Circulation / ILL: 4,983,393,968
  + Adds/deletes; patron record maintenance, etc.

Annual transactions: 166,041,975,140

Possible with a handful of commodity servers

18,954,563 transactions / day
5,265 transactions / second
Efficient storage of data in the cloud: Common use data
Efficient storage of data in the cloud: Data by agreement
Efficient storage of data in the cloud: Private data
Workflow

- Deaccession & Preservation
- Access, Circulation, & Delivery
- Discovery
- Library
- Identification & Selection
- Acquisition
- Accession & Description
- Users
- Data
- Suppliers
- Partners
Summary of what Web Scale gets you

1. Leverages shared data
2. Improves interoperability
3. Releases staff to create and implement innovation
Web-scale Management Services for Libraries
Web-scale Management Components

- Circulation
- WorldCat Local
- Users
- Cooperative Intelligence
- Library
- Workflow Engine
- Data
- Unified Selection & Acquisitions
- License Management
- Suppliers
- Cataloging
- Partners
## Components OCLC is delivering

### Circulation

<table>
<thead>
<tr>
<th>Core Functions</th>
<th>Web scale gains / workflow improvements</th>
<th>Service APIs</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Patron Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Check-out / renewal</td>
<td></td>
<td></td>
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<tr>
<td>• Check-in · Holds</td>
<td></td>
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<tr>
<td>• Notification · Billing</td>
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<tr>
<td>• Patron self service</td>
<td></td>
<td></td>
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<tr>
<td>• Configuration / administration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Reports</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• Combined physical and electronic reserves</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Network Delivery: Moving from circulation to fulfillment</td>
<td>Self-checkout · SIP / NCIP Patron API</td>
</tr>
</tbody>
</table>

### Acquisitions (Print & Licensed)

<table>
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<tr>
<th>Core Functions</th>
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</tr>
</thead>
<tbody>
<tr>
<td>• Resource discovery</td>
<td></td>
<td></td>
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<tr>
<td>• Vendor management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Purchase order, invoice and subscription management</td>
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<tr>
<td>• Budget / fund management</td>
<td></td>
<td></td>
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<tr>
<td>• Serials management and claims</td>
<td></td>
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<tr>
<td>• Inventory management / de-accession</td>
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<tr>
<td>• Configuration / administration</td>
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<tr>
<td>• Reports</td>
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<tr>
<td></td>
<td>• Format agnostic workflows</td>
<td></td>
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<tr>
<td></td>
<td>• Licensed resource management</td>
<td></td>
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<tr>
<td></td>
<td>• Evaluation and negotiation workflows</td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td>• External financial systems</td>
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<td></td>
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<td>• Electronic ordering</td>
</tr>
</tbody>
</table>
## License management

<table>
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<th>Service APIs</th>
</tr>
</thead>
</table>
| •Licensed resource activation; association with license terms. | •License storage  
•ILL fulfillment with e-resources  
•License workflow / negotiation  
•Rights and Resolution services | •SERU / ONIX PL support  
•COUNTER/SUSHI  
•Link Resolution services |

## Workflow

### Web scale gains / workflow improvements

Workflow engine · Task assignment · Task management · Configuration · Standard processes, tasks, activities · Graphical view and editor for library workflows

## Collection Analysis / Cooperative intelligence

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</table>
| •Analyze holdings  
•Compare holdings to WorldCat  
•Compare holdings to peer libraries  
•Booklist, Pub Weekly, and other comparisons  
•Compare print collections to digital collections  
•Circulation analysis  
•ILL analysis | Consortia fund management · Collection management · Coordinated collection development · Usage statistics and cost per use · Real-time circulation data · Collection shifting / off-site storage · Recommender services (staff & patron) · Order list comparison · Knowledgebase change tracking · Collection profile sharing · Enhanced resource information |
Show Order Information
“Modular Staff Client”
Next steps: Strategy

Web scale Management Services Library Advisory Council
Strategic direction, reality checks and moral support

Helene Blowers
Digital Strategy Director, Columbus Metropolitan Library

John Helmer
Executive Director, Orbis Cascade Alliance

Jan Ison
Executive Director, Lincoln Trail Libraries System

David Lankes
Associate Professor, Syracuse University

Sarah McHugh
Statewide Projects Librarian, Montana State Library

Mary Piorun
Associate Director, University of Mass. Medical Center Library

Tim Rogers
Executive Director, NCLIVE

John Teskey
Director of Libraries, University of New Brunswick

Andrew Pace
OCLC, ex officio

EMEA and APAC Advisory Councils
Coming Soon!
Test site: Pepperdine University

Payson Library and Harnish Law Library

- Malibu, California
- 412,000 titles
- 8,300 students
- 21 librarians/staff
- Current system: Ex Libris Voyager
Test site: Linfield College

Jereld R. Nicholson Library

- McMinnville, Oregon
- 205,000 titles
- 8,300 students
- 17 librarians/staff
- Current system: Innovative
- Also has an affiliated campus in Portland, Oregon
- Part of the Orbis Cascade Alliance
Test site: Idaho Commission for Libraries

Boundary County District Library
- Bonners Ferry, Idaho
- 45,500 items
- 13,000 patrons
- 1 librarian, 7 staff
- Annual circulation: 120,000
- Current System: Follett

Payette Public Library
- Payette, Idaho
- 55,000 items
- 6,300 patrons
- 1 librarian, 2.5 staff
- Annual circulation: 118,000
- Current system: Follett

Cooperative Information Network
Libraries in Kootenai, Shoshone & Benewah Counties, Idaho and Pend Oreille County, Washington
CPC (Craven-Pamlico-Carteret) Regional Libraries

Nine member libraries

• Headquarters: New Bern, NC
• 265,000 items
• 57,000 patrons
• 58 staff
• Annual circulation: 720,000
• Current system: Horizon
• Member libraries: Bogue Banks, Carteret County, Cove City, Emerald Isle, Havelock, New Bern-Craven County, Newport, Pamlico, Vanceboro
Truly shooting for next-gen benchmarks

- A scalable, Web-based platform for all basic library management functionality
- Reduced Total Cost of Ownership (TCO) and increased efficiency through a unified management platform for all types of materials, regardless of format or method of acquisition
- Network effects by sharing applications and data between libraries
- Concentrated data registries and repositories
- A flexible and customizable workflow platform
- A Service-Oriented Architecture (SOA) for interoperability with local environments and third-party business process systems (e.g., financial management, HR systems and course management) as well as locally built applications
Timeline
2010-2011 Fiscal Year = WMS Quarterly INSTALL
First Non-US customer implementation
Draft System documentation

Installs, Training, Technical Support
Final Documentation

Localisation and Internationalisation
License Manager Development

Circ Development

Acquisitions & Workflow Development

2011-2012 Fiscal Year = WMS BI-MONTHLY INSTALL

Live implementations in all geographic regions: Americas, EMEA, APAC
More than an application—Web-scale Management Services represent a platform
The Developers’ Platform: the Final Frontier

The cloud should not stifle library innovation—it should better enable it.

Discovery layer APIs are only the tip of the iceberg.

Next-generation solutions must enable levels of access for local development and participation unparalleled in the history of library automation.
Cloud Computing

A style of computing in which scalable and elastic IT capabilities are delivered as a service to external customers using Internet technologies.

Required OCLC Cloud Infrastructure

Web-scale Management Services for libraries

Value-add Definition:
The exclusive difference is the “network effect” that bringing all our members together provides. Our cooperative efforts will create scale savings and efficiencies, bring wider recognition for libraries, and provide cooperative intelligence for better decision-making, and provide the platform on which libraries can innovate.

-Gartner Group
Toward a Developers’ Platform

OCLC Web-scale management service

MyLib  Circulation  Acquisitions  Catalogue  Reports  Administration

Welcome, Deb Black | log out

OCLC

Facebook

Profile  edit  Friends  Networks  Inbox  home  account  privacy  logout

WorldCat

Search for an item in libraries near you

Enter title, subject or author

Quick Search

Find books, music, videos and more in WorldCat for "boating".

Quick searches are based on the interests you've added in your Facebook profile.
Putting things together:
The value of a library cooperative
Web-scale Management Components

Cooperative
Intelligence
Deaccession &
Preservation
Circulation &
Access
Access, Circulation, &
Delivery
WorldCat Local
Discovery
Library
Workflow
Engine
Identification
& Selection
Acquisitions &
License Management
Acquisition
Accession &
Description
Users
Suppliers
Partners
Heart of the System - 170M Records

- Member library records (75%)
- National library records (17%)
- Library of Congress records (6%)
- Vendor supplied records (2%)
- Data feeds from publishers for WorldCat and OCLC Knowledge Base (will become key part)

Simplifies identification and selection
Web-scale Management Components: Unified Acquisitions & License Management

Unified Acquisitions & License Management

Acquisitions for today’s collections

- Shared vendor data
- Cooperative collection building
- Physical and electronic in same system
- Built-in negotiation and evaluation
- Integrated license management
- Rights and resolution services

Makes process more efficient - saving time and expense
Web-scale Management Components: Cataloging

Shared tools for data creation and enrichment

- Insert metadata management into the library supply chain
- Automated workflows for physical materials
- Automated workflows for electronic materials
- Automated loading of records from digital repositories

Simplify description and accession of materials
Discovery as users expect it

- Single search of all library collections - physical, electronic and digital
- Smart delivery resolver for best access
- Workflow tools that aid users in organizing and re-using information
- Integration with search engines and widgets to weave library into the Web

Increases usage of library materials
Circulation for 21st century

- Intuitive staff interface that simplifies routine tasks
- No hardware or software to manage locally
- Foundation for building on cooperative collection development to lead to simplified collection sharing

Enables all forms of resource sharing to become network circulation tasks
Web-scale Management Components: Cooperative Intelligence

Making your data work harder

- Cooperative collection development
- Better recommender services
- Cooperative storage and preservation
- Usage statistics and cost per use
- Collection profile sharing

Allows for better decision making
Flexible workflows

- Defined processes using abstractions in the librarian’s domain (Subscriptions, orders, etc.)
- No hard-coded knowledge of the process definitions or controllers
- Institutions customize their processes or define new processes

Simplify integration of current and future services
A Sea-change

Web-scale management services is to today’s ILS as the first ILS was to the card catalog.
Thank you and questions

Questions/comments about Web-scale management services

OCLC Product Works

• http://www.oclc.org/productworks/

Register for email updates:

• https://www.oclc.org/email/subscribe.htm

Contact your Library Services representative

pacea@oclc.org