Ex Libris Primo Central

Abstract

Publicly released in mid-2010, Primo Central extends the Primo next generation discovery layer, released by Ex Libris several years earlier. This chapter provides a brief history, overview, and a few insights into the future development path of Primo Central, describes the local and remote content associated with Primo Central, and highlights some of the features, functionality, and flexibility associated with the Primo Central interface.

Overview

Ex Libris began development of its next-generation discovery layer, Primo, in 2005, with official public release occurring in 2007; Primo version 3 was released in spring 2010. Hundreds of libraries worldwide have implemented Primo. The Primo discovery platform harvests and indexes local library collections, such as bibliographic records, digital collection materials, and items within institutional repositories, and provides a common interface for discovery of these materials. In addition, Primo can be configured to search remote repository indexes and blend the library's local collections with the remote index results. Primo Central, Ex Libris's Web scale discovery component, was officially released in mid-2010. Primo Central extends the base Primo discovery experience by also searching a large preharvested central index of article-level content from a variety of publishers and aggregators. For the remainder of this chapter, *Primo Central* and *Primo* will be used interchangeably; many of the points discussed apply equally to the Primo next-generation discovery layer with or without the Primo Central service. Given that Primo Central is an extension of Primo, the interface and many of the features are the same. At the time of this writing, late summer 2010, approximately fifty customers have signed on as subscribers to the Primo Central service, with several customers already live on Primo Central. While academic libraries make up the large proportion of customers, public library customers are also present and will likely become more numerous in the future. For example, Ex Libris recently announced that the National Library of Finland, representing various library types, research institutes, archives, and museums, had chosen the Primo/Primo Central platform.

The Primo discovery layer can be hosted by Ex Libris or the local library; in either case, the central, preaggregated index associated with Primo Central is offered as a managed service and hosted by Ex Libris in a cloud environment. Primo Central is offered as a subscription service. Pricing considerations for Primo include whether an ExLibris hosted or locally installed instance is chosen, the institution's full-time equivalent (FTE) student count, and the number of local records (such as local library catalog and digital collections records) harvested into the system. Consortial discounts are possible. Ex Libris provides minor application and interface enhancements approximately every three months; major release updates occur approximately every fourteen to sixteen months. Ex Libris customer support is available 24/7, and a variety of communication options are supported.

Content and Scope

Publisher Content

At the time of this writing, the hosted and centrally managed Primo Central index numbers approximately

300 million items obtained from primary and secondary publishers and aggregators as well as open-access information repositories. Some notable examples include content sourced from Accessible Archives, the Association of Computing Machinery, BioOne, ebrary, Gale, IGI Global, LexisNexis, Oxford University Press, Springer, Web of Science (Thompson Reuters), and Wiley-Blackwell. A pilot project with Elsevier was slated to begin in fall 2010. A content focus for the Primo Central index has been scholarly journals, though e-books, newspaper articles, and reviews are also incorporated into the index. Open-access materials from sources such as the arXiv.org e-Prints, Hindawi Publishing , DOAJ (Directory of Open Access Journals), and the extensive HathiTrust materials are either already incorporated into the Primo Central service or on the road map for inclusion. Primo Central does not yet index the full text of major e-book content providers, though it may in the future.

Ex Libris seeks to negotiate and obtain full text from content providers when possible, and in such cases, the full text is indexed and available for search in the Primo Central index. Ex Libris indicates that in most cases, it has at a minimum the abstracts, if not the full text, for content. Ex Libris has additional information about its Primo Central Publisher Program on its website. As with other vendors, the central index continues to grow as additional content agreements are pursued and finalized. Ex Libris utilizes automated processes allowing new content to be added and indexed quickly. While different content providers provide new content on a variable basis, Ex Libris indicates that on average, updates occur weekly.

Primo Central Publisher Program
www.exlibrisgroup.com/category/PublisherProgram

Primo does not require offsite users to authenticate to be able to search the service, though the local library is in control of authentication requirements and at what point a user is asked to authenticate—typically either before the user conducts an initial search or when the user tries to retrieve a full-text item. In a typical configuration, Primo works with an institution's proxy server or other authentication method to provide offsite access and can interface with a single sign-on solution; Primo interfaces with all common link resolvers (including Ex Libris's own link resolver, SFX) to broker access to library-licensed full-text content.

Local Resources

As mentioned in the overview to this chapter, harvesting of local collections is a feature of the Primo discovery layer, and by extension, a Primo Central customer simultaneously searches both the local collection index and the Primo Central index, with the results blended together and presented to the end user. The local Primo index can incorporate local library collections, such as records from the library's ILS catalog, digital collections, and institutional repositories. Existing pipes and connectors exist, enabling harvesting of local resources, including pipes to major ILS platforms and other information repositories typically used at libraries or their parent institutions, such as ArchivalWare, bepress, CONTENTdm, Digital Commons, DigiTool, DSpace, Fedora, and Luna, as well as other institution-specific repositories (such as the Television News Archive at Vanderbilt University). Primo can ingest content utilizing various schema, including MARC/MARC XML, Dublin Core, and EAD. With the release of Primo version 3 in April 2010, Ex Libris indicates that basically any kind of structured XML can be accommodated with the Primo experience. Customers can define custom harvesting rules and determine how often harvest updates occur (daily if necessary), and Primo supports various harvesting and delivery methods, including OAI-PMH and FTP. Harvested content is normalized into an underlying Primo record format.

Relevancy

By default, a Primo search is a keyword search conducted across both metadata and full text, with items returned ranked by relevancy. Primo's proprietary relevancy-ranking algorithm includes but is not limited to factors such as term frequency, field weighting, number of times a record has been accessed, and currency. Peer-review status is taken into account as part of the relevancy of an item when the Peer-Reviewed Journals facet is employed. Libraries can choose to define boosting metrics for the relevancy-ranking algorithm based on metadata normalization rules; choosing to have an item boosted places that item higher in the relevancy ranking. Boosting rules include but are not limited to such mechanisms as setting the importance of particular record fields. In addition, Primo allows for boosting by synonym. Typically, a record that contains a synonym to the search term is ranked below a similar record that contains the search term; the degree to which the record that contains the synonym should be pushed down is configurable by the library. If libraries subscribe to content-enrichment services, this data, such as table of contents, is incorporated as part of the relevancy ranking. Ex Libris regularly tunes the relevancy ranking for Primo. As content for a single unique item can be sourced from multiple content providers, Ex Libris utilizes a routine that "merges" duplicate records for the purpose of search and then groups the records when presented for display to the end user; the publisher record (if available) is used as the default record for display.

Interface Features: Overview, Results, and Navigation

General

Primo allows for extensive library customization of the interface. Customers can choose to use a basic template out of the box, or libraries with appropriate staffing and skill sets may tap into Primo Central's available APIs and Web services layer and choose to essentially completely redesign or integrate a locally developed interface. Thus, there is no hard-and-fast description of the Primo interface, as it is quite flexible. For example, a library customer could choose to configure multiple views with different look-and-feel elements and facet categories and configure display defaults. Primo can be configured to define a search by location (such as a campus or branch), topical area of interest (such as a particular set of science databases), or particular material types (such as books or articles). Different elements can often be configured to appear as tabs or radio buttons or presented in pull-down menus. Many customers choose to build off a basic

template, and the description that follows applies to the basic features and look and feel of the Primo platform based on this basic template. As mentioned, Ex Libris offers a local library hosted option and several Ex Libris hosted options, and in part, the level of customization is dependent on which hosting package is chosen. Among other things, libraries can choose a color scheme, add their library logo and branding elements, and provide library-specified hyperlinks to other pages (such as the library homepage). Libraries can choose to develop different views within a single instance—for example, to give a different look and feel to a different member within a consortium or a different branch library at the same institution. Ex Libris provides various read/write APIs that are available within Ex Libris's user support community, the EL Commons portal. The Primo interface currently offers local language support for approximately two dozen languages, including a broad mix of European and Asian languages.

By default, Primo Central offers a single search box (figure 37). Once an initial search is executed, a returned results screen provides brief item results, detailed below. Users may also choose an advanced search option (figure 38). In both the basic and advanced search modes, users can choose particular indexes, usually presented through a pull-down menu. In a typical installation, the library may offer pull-down menus that allow the user to specify whether the record is an exact match for the terms, starts with the term, or contains the term somewhere within a specified field (such as title, author, subject, or user tag field). Advanced search also allows users to predefine parameters, such as publication date, material type, and language, or to search a particular collection or library. Such choices are defined by the local library.

Returned Results—Brief View

Once a user has conducted a search, returned results occupy the majority of screen real estate; a refinement pane providing faceted navigation (described shortly) occupies the left side of the screen. By default, results are ranked and presented by relevancy; a library can choose which other sort options, and how many, are presented through a drop-down box (such as date, author, and title, as well as other fields within the Primo-based underlying record). In the returned results, icons exist for each item type (book, article, video, etc.). For books (figure 39), information provided includes title, author, and publication information (city, publisher, date). If the library subscribes to an enrichment service and a match exists, book cover images are provided in place of the book icon. Primo supports a variety of enrichment sources and providers, such as Syndetic Solutions, Content Café, and Amazon. For books, the library can configure which

Figure 37
Primo Central single search box
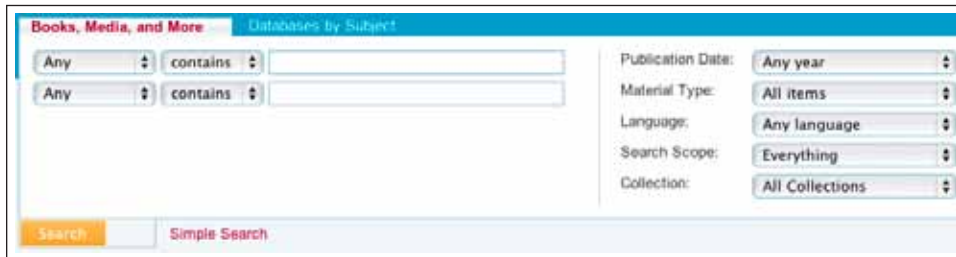
Figure 38
Primo Central advanced search

Figure 39
Primo Central brief result: book

Figure 40
Primo Central brief result: article

elements are included in a real-time status call to the underlying ILS. For example, a library can configure this real-time status call to indicate a status (such as Available in the Library, Not Available, Online Access, or Restricted Online Access), call number, and location information (such as collection title and library, branch, or floor). For multiple formats of the same item, a link in the brief record will appear: There Are *X* Versions of This Item. Clicking on this link will display the various versions, such as a hard-copy book and an e-book.

For articles (figure 40), returned information includes article title, author(s), journal title, publication date, volume and issue, page numbers, and an indication of whether the publication is a peer-reviewed journal. In addition, the user is alerted to whether the full text is available. Regardless of content type, Primo offers several options within the brief record for obtaining more detailed information. Users can click on the brief record title or on one of several links appearing at the bottom of each brief record. Libraries can configure which links are available, set the order of the links, and name the link labels; since libraries can modify Primo's cascading style sheets, other options can be provided as well. Typical links used in current Primo installations include Details, Reviews and Tags, Additional Services, and for items in the library's ILS, Locations and Holdings List. For online resources, such as e-books and articles,

Figure 41
Primo Central facets

an Online Resource link is typically provided. Each of these links is also available in the detailed record view, should a user click on an item title directly, and are described in more detail below.

By clicking on the item title in the brief record view, the user is typically taken to the full item information displayed on the full screen (similar to clicking the Details link and expanding the frame, described below). Alternatively, depending on the configuration chosen by the library, clicking on the title can take the user directly to the full-text resource. In addition to the links described below, other link options include Request, which allows a user to place a hold or document delivery request (directly from within the Primo interface or through linking to another system at the library, depending on the library's local configuration and systems in place). If the library subscribes to Ex Libris's bX Recommender service (described below), users can view such recommendations by clicking a Recommendations link.

Faceted Navigation and Search Refinement

Primo Central offers faceted navigation, and in a typical configuration, facet categories display within a Refine My Results pane along the left side of the screen (figure 41). Once one or more facets are selected, a Refined By header appears at the top of the results list, along with the facets, providing a breadcrumb trail, which allows the user the option of individually undoing each facet refinement to backtrack and expand the results. By default, Primo Central includes many predefined facet categories. In addition to the out-of-the-box categories, libraries can define new facet categories. Libraries can choose which facet categories to display, customize the facet category labels, and control the order of the facet categories within the pane. A typical configuration includes a Show Only category, with choices such as Peer-Reviewed Journals, Online Resources, and Available. The Online Resources facet choice might typically include e-books, digital collections, streaming video, e-journals, and so on; the Available facet choice might include items such as e-books and physical books held at the local library. Other usual facet categories include Topic, Creator, and Collection (with choices such as a physical library collection—for example, Main Library—and Publisher Collections—for example, University of Chicago Press

Figure 42
Primo Central detail view: book

Figure 43
Primo Central detail view: article

Journals). Additional facet categories include Creation Date (each choice providing a date range), Resource Type (books, maps, scores, etc.), LCC Classification, Genre (e.g., biography, electronic books, interviews, case studies), and Journal Title. In a typical configuration, the top five choices for each facet category will be displayed. If more choices exist for that category for a user's given search, a Show *X* More link provides a list of more choices. For all facet categories, the number of corresponding items matching each facet choice refinement is shown in parentheses next to the choice.

Returned Results—Detail View

Clicking on an item title or one of the links within a brief record retrieves more information for the item. With the exception of clicking on the Holdings List link, the user stays within the full brief record results set. Upon clicking a link, a frame is opened, expanding the record and providing more information. The main user interface (search box, refinement pane, and other brief records) remain in view. A small icon in the frame allows the user to choose to display the frame in a full new browser tab. Clicking on the Locations link in the brief record expands the record to show library name,
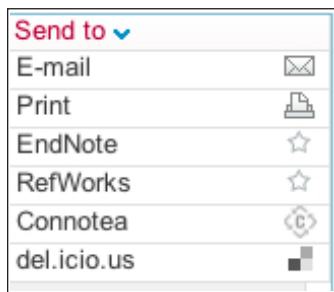
Figure 44
Primo Central export options:
send to menu
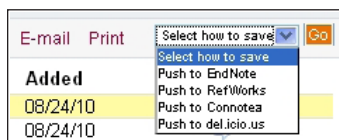
Figure 46
Primo Central e-shelf export
options

Figure 45
Primo Central e-shelf shopping cart

location, call number information, and real-time status information (which the library can also configure to show automatically in the brief results view).

Clicking on the Details link for a physical library holding, such as a book (figure 42), provides item information, such as subjects, format, related titles, and ISBN. It also provides a description one or more sentences long, which may include summaries and table of contents. It also allows for providing contextualized links to external resources, such as Amazon and WorldCat, allowing the user to connect to these external sites for more item information; clicking on one of these external links will open up a new browser window or tab with the item-level information from that external resource. For articles and similar content (figure 43), typical information retrieved from the Details link includes title, author, subjects, journal information (title, date of publication, volume and number, page numbers, peer-review status), and language. It may also include a description one or more sentences long.

Primo supports user-generated tags, ratings, and reviews. The Reviews & Tags link provides user-contributed reviews and a tag list or tag cloud (assuming reviews and tags exist for that item). In a typical configuration, a library may have the user log in to the user's Primo account (described below) to contribute tags, ratings, or reviews. The library can review submissions first, if it prefers. The Additional Services and Online Resources links invoke the library's link resolver to broker the connection to the full text within the resulting frame or to otherwise provide a list of aggregators or content providers

providing the full text from which the user can then choose (depending on the local library's link resolver configuration). For physical items harvested from the library catalog, selecting the Holdings List link opens a new browser window or tab. Because libraries can configure which links are displayed, a library may opt to not include a Holdings List link in either the brief or the detailed record view and instead display the real-time status information (status, call number, location) without the need for an extra click. Should a library choose to include the Holding List link, it can be configured to open up a framed view of the full item record—displayed within the native ILS—while still maintaining the user's presence within the Primo experience (with the Primo search box and the various links pulling up additional information about the item still present).

Exporting Options, Shopping Carts, RSS Feeds

Primo offers a variety of export options that can be accessed via a variety of avenues. One avenue is through a Send To pull-down menu (figure 44) accessed from the detailed record view, or the brief record view (once a user has clicked on a link for more information), or the e-shelf shopping cart. Options include e-mailing, printing, and exporting items to citation management programs (such as EndNote or RefWorks) or social bookmarking sites (such as Connotea or Delicious). Also included is an Add to E-shelf option, which acts as a consolidated shopping cart basket (figure 45). Items can be marked—added to the e-shelf—by clicking on the star icon appearing next to each item title or by

choosing the Add to E-shelf option from the Send To pull-down menu. Unauthenticated guest users can retrieve their session-based e-shelf by clicking on the My Items link at the top of the interface. The e-shelf information lists each item and includes item type, author, title, and the date on which the user added the item to the e-shelf. Highlighting an item pulls up more detailed item information. From the e-shelf, users can mark which items they wish to export and how (figure 46). Users can also review a list of session queries from the e-shelf.

Primo allows users to create a username and password account. The e-shelf provides additional functionality for signed-in users. They can save their e-shelf item list to access later, set default session preferences, tag and review items (if allowed by the library), and so on. Depending on local library configuration and other underlying systems in place, accounts may also be linked to or used to perform traditional ILS functions, such as requesting or recalling items, renewing books, reviewing fines, and making some updates to the user account (e-mail address, phone, etc.). Users can create folders to help manage items (for example, by topic).

Users can automate future searches for information by configuring alerts and RSS feeds from their e-shelf. An alert automatically runs a query at selected future intervals and sends results via e-mail. As an alternative to configuring feeds from within the e-shelf, an RSS feed icon is present at the bottom of the left-side refinements pane.

Figure 47
Primo Central bX Recommender

Figure 48
Primo Central mobile view

Additional Features

Did You Mean? Spelling Suggestions

Primo provides various measures to help prevent dead-end searches. Alternate suggestions are offered with Did You Mean? functionality, which helps address spelling variations as well as misspelled words. A library can influence when Did You Mean? appears; for example, the library can configure the message to appear only when fifty or fewer results are returned for a search. At the bottom of the refinement pane in the brief results view, a facet category exists for

Suggested New Searches. This choice provides various hyperlinked additional suggested searches, such as author and subject suggestions, with the suggestions (obviously) dynamic to the search. Clicking on any suggestion automatically executes that search.

Embedding in Other Resources

Primo Central's search box can be embedded in other online venues, such as library subject guides, course management systems, social networking sites such as a Facebook account, and so on. Primo utilizes persistent URLs, so "canned searches" with preconfigured

and defined search parameters can be constructed and embedded in other webpages. As mentioned above, users can push items to social bookmarking sites, such as Delicious.

Searching of Additional Remote Resources

While not the focus of this issue of *Library Technology Reports*, additional components are offered by Ex Libris to search additional publisher content not presently available within Primo Central (or otherwise allowed by publishers). These tools predate development of Primo Central, and include Primo Deep Search, which uses API frameworks to access and search remote resources, and MetaLib, Ex Libris's federated search product, which uses metasearch standards such as Z39.50 to search remote information. These components can be incorporated into the Primo/Primo Central experience.

Recommender Service

In mid-2009, Ex Libris introduced an optional scholarly recommender service, the bX Recommender service, which can be integrated into the Primo Central service. Users can view article-level recommendations by clicking on a Recommendations link within the brief or detailed item view. This link retrieves a list of recommended related items—"Users interested in this article also expressed an interest in the following"—generated from the analysis of extensive SFX link resolver usage logs. An analogy to this service is Amazon's feature: "Customers who bought this item also bought . . . ." The bX Recommender service is offered as an on-demand, hosted service by Ex Libris.

Statistics

A variety of statistics are available through Primo's administrative interface, using the open-source Eclipse

---

Vendor Perspective: Ex Libris Primo Discovery and Delivery Solution

Already the choice of more than 700 institutions worldwide, the Ex Libris Primo discovery and delivery solution is a library platform that provides a single, intuitive interface through which end users search the library's entire collection—print, electronic, and digital resources—and obtain one result list, sorted by relevance. This Google-like search interface, a sophisticated search engine, and a variety of options for narrowing down result lists combine to help users focus on relevant materials in a way that is familiar to them. Tight, standards-based integration with OpenURL link resolvers and integrated library systems enables users to obtain online materials and perform OPAC operations through the Primo interface in a comprehensive, one-stop-shop environment. The modern user interface design, the comprehensive content, and the seamless integration with services such as citation-management tools and library recommender services are fully controlled by the library.

An open, flexible, and scalable system, Primo helps libraries disambiguate the complex information landscape by creating a unified view of the information that they manage—primarily their library catalog, digital repositories, and course materials. With the Primo Web-based administration tools, librarians can easily select the content that they wish to offer, customize all aspects of the user interface—including views for mobile devices—and integrate Primo with user environments. Furthermore, libraries can control the search options, the display of results, and the relevance ranking algorithm to best tailor the system to their users' needs.

Primo leverages the library's local collection by offering it as part of a global or regional information landscape that is indexed by the Primo Central mega-aggregate index of scholarly materials. Primo Central, covering hundreds of millions of scholarly materials obtained from primary and secondary information providers, is hosted by Ex Libris in a cloud computing environment. Available with every Primo installation, Primo Central expands end users' search scope to encompass the entire library collection, including licensed and open-access materials. Libraries can define Primo Central's scope to match their subscription offering and disciplinary focus. Users searching via Primo obtain one result list, with items from the local library collection seamlessly blended with global and regional items and displayed instantaneously, sorted by relevance.

A true Web 2.0 system, Primo is integrated with a variety of services to enhance the user experience. For example, bibliographic information is augmented with additional data such as book covers and tables of contents obtained from third-party suppliers; the Ex Libris bX article recommender and the Karlsruhe Institute of Technology BibTip book recommender enable users to find items of interest that the system suggests on the basis of selections made by other users; and OpenURL link resolvers, such as the Ex Libris SFX link resolver, offer not only the delivery of library-licensed full text but also a variety of other context-sensitive services.

A rich set of open interfaces enables libraries to extend Primo with code that they develop or download from the Ex Libris customer-collaboration Web site (EL Commons). Furthermore, through the use of these open interfaces, libraries can embed Primo services where the users are, such as in institutional or library Web sites and Facebook.

Like all other Ex Libris products, Primo operates in a multilingual and multicultural environment and supports a range of consortial models.

BIRT (Business Intelligence and Reporting Tools) project report engine. Such statistics populate various usage reports, including total number of searches per day, number of results per search, and top searches with no results. Statistics exist for facets, so designers can gather insights into which parts of the interface are being used most. System response statistics are available, and Primo provides access to several raw log files for additional processing and analysis. Many statistics are definable by date range, and various sort, graphing, and export options are available.

Mobile Interface

With Primo version 3, Ex Libris offers an out-of-the-box, Web-based mobile interface (figure 48) accessible on various smartphone platforms, formatting results and allowing users to search and retrieve materials, including content within the Primo Central index. Real-time status is available for catalog ILS materials. Users can also send materials from a PC-based session to a smartphone via SMS, allowing them to retrieve the materials later, away from a PC. In addition, customized mobile views of Primo have been developed by other Primo customers, such as BYU and Northwestern, and often such sites may share their work on the EL Commons community website.

Upcoming Directions

While limited explicit details can be shared to the broad public, Ex Libris provided some directions that the company is currently exploring. These include additional enhanced support for consortia, enhanced display of text snippets from the brief results view, continued refinement to the service's ranking algorithms, full-text usage statistics from within Primo (usually, full text statistics are available from a library's link resolver), and continued development of the Primo mobile interface.