Construction of a one-stop document supply service platform

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Abstract
Purpose – The purpose of this paper is to provide a detailed overview of the China Academic Library and Information system (CALIS) document supply service platform (CDSSP) – its historical development, network structure and future development plans – and discuss how its members make use of and benefit from its various components.

Design/methodology/approach – The authors provide a first-person account based on their professional positions at the CALIS Administrative Center.

Findings – CDSSP comprises five application systems including a unified authentication system, Saas-based interlibrary loan (ILL) and document delivery (DD) service system, ILL central scheduling and settlement system, File Transfer Protocol (FTP) service system and a service integration interface system. These systems work together to meet the needs of member libraries, other information service institutions, and their end users. CDSSP is widely used by more than 1,100 libraries based on a cloud service strategy. Each year more than 100,000 ILL and DD transactions are processed by this platform.

Originality/value – The development of CDSSP makes it becomes true for CALIS to provide one stop information retrieval and supply service. At the same time, it promotes the resource sharing among member libraries to a great degree.

Keywords China, Document delivery, Interlending, Consortia, CALIS, CALIS Document supply service platform (CDSSP)

Paper type Case study

Introduction
China Academic Library and Information system (CALIS) provides academic libraries with a system for acquiring external resources, effective service policies and subsidy support that, in turn, promotes the development of interlibrary loan (ILL) and document delivery (DD) service among academic libraries nationwide. The ILL and DD service has gradually become one of the most important information services in academic libraries and is a significant means of obtaining scarce resources for users (Yao and Zeng, 2012).

The CALIS document supply service environment comprises a resource discovery system, CALIS document supply service platform (CDSSP) and a powerful support service team. CDSSP integrates the functions of document delivery (DD), ILL, pay-per-view (PPV), e-book lending and leasing and electronic resource links.

As part of its ongoing development, CALIS adopted a multi-tiered cloud computing approach at the national, regional and local levels to provide more libraries with ILL and DD services, thus providing users with one-stop access to literature resources. That would be a significant stride toward realizing the goal of acquiring resources just with one account.

CDSSP comprises five subsystems:
1. A unified authentication system.
2. An Saas-based ILL/DD service system.
3. A centralized ILL scheduling and settlement system.
4. An File Transfer Protocol (FTP) service system.
5. The service integration interface system.

This paper describes each system, in turn, and how together they form the foundation of a modern Chinese ILL/DD network. Recommendations for its future development are given.

CDSSP overview
CDSSP provides a powerful resource and gateway for document supply services. After logging in through a unified...
authentication process, users are able to find what they need through the CALIS resource discovery system and request materials through their library’s interlibrary loan service. What’s more, with the CALIS ILL scheduling system, they are able to access resource collections from all over the world. The seamless interoperability between service systems creates a user-friendly document supply environment. The document supply system is illustrated in Figure 1.

CALIS unified authentication system
As one of the foundations of CALIS’ cloud-based computing services, the unified authentication system has changed the old way of CALIS user authentication. Through its multistage authentication system all users, including readers and library staff members, experience the benefit of single sign-on access to local networks and resources. As for users in different systems, the unified authentication system can also manage their user information and access permissions, so that the information is consistent in different systems.

CALIS unified authentication system consists of the National Center version and the SaaS version. Each user has a unique ID and the systems supporting joint certification deliver real-time, customizable, and finely detailed permissions control and management. The system manages its users hierarchically and is integrated with other systems of CALIS. Users can access authorized services just after a single sign-on and enter the CALIS national central Web site or their own library Web sites. CALIS unified authentication system is integrated with CALIS ILL/DD service system, so that if readers log into any other integrated CALIS system, they can enter the ILL and DD service system directly.

CALIS ILL/DD service system
CALIS ILL/DD service system is based on the international ILL transaction management system, ILL gateway system, and the ILL protocol machine. It provides librarians with a standard and automatic workflow to deal with the interlibrary loan requests. The system interacts seamlessly with various retrieval systems to search and locate the resources accurately, and manages the requests submitted by users and deals with the ILL transactions in accordance with the ISO10160/10161 protocol.

In phase one and phase two, member libraries needed to install and maintain the CALIS ILL/DD system locally; as a result the system was not popular among libraries at that time. To reduce the system’s usage and maintenance costs for libraries, CALIS introduced SaaS technology during phase three. With the cloud service mode, it just needs to be installed on servers at the CALIS provincial centers or regional centers instead of each library, and it can serve multiple libraries or institutions at the same time. The regional system is maintained by CALIS administrative center in an effort to reduce maintenance costs and difficulties for member libraries, thus fostering usage and promotion of the ILL/DD service platform.

When it comes to system usage and functional setting of the systems, the SaaS-based ILL & DD service system is exactly the same as the old distributed system. Furthermore, the new one does much better in the usability, conveniences, attractive appearance and so on. The new system has become an indispensable platform and plays an important role in promoting document supply service among academic libraries nationwide.

CALIS ILL central scheduling and settlement system
Because of the multifaceted service systems in China, users generally need to maintain different accounts. With the purpose of improving the user experience, CALIS created the ILL scheduling system which centralizes the scheduling function of academic libraries’ document supply service nationwide. As the hub of ILL and DD requests from academic libraries, the scheduling center distributes requests to the libraries or some other cooperative institution such as the National Library of China (NLC), Shanghai Library and National Science and Technology Library (NSTL). This is a big step towards realizing the goal of acquiring resources just with one account. In addition, the scheduling system provides management of scheduling policy and subsidies to make the subsidy funds effectively used by member libraries.

Document supply services may incur some costs, so member libraries settle up with each other periodically. The more ILL/DD business a library transacts, the heavier the workload is and settlement costs will be much higher. To reduce the settlement workload and cost to libraries, CALIS Administrative Center provides a centralized settlement service. That is, based on the data from the settlement center, member libraries can complete all the settlement work by settling with CALIS only once.

CALIS FTP service system
Although we generally provide DD services by emailing electronic documents to the users directly, they sometimes can’t receive documents because of file size or the security settings of their mailbox. In such cases, the supplying library directly uploads the document to the CALIS FTP server, then the central system automatically sends an email notice to the reader, and the reader can download the document by clicking the link in the email. What’s more, the service system will determine how long the link of the document is to be made accessible to the user to protect the copyright. When that period ends, the document will be automatically deleted (Zeng, 2013).
The service integration interface system

As with the document supply service, the digital library information service is based on cooperative work among various systems. Through integration of its various component systems, CALIS creates a one-stop document access service for academic end users. For example, the CALIS literature retrieval systems represented by “edu” (an academic search engine of CALIS) integrate the collections of member libraries, including various electronic resources such as Apabi e-books, Chongqing Vei Pu (VIP) Company’s e-journals, EBSCO and JSTOR[1]. The CALIS CDSSP also integrates the resource discovery system, user authentication system, ILL/DD system, ILL scheduling and settlement system and some other systems to provide the users with the one-stop service operation.

In CALIS Phase Three, we introduced a web portal called “ede”, a gateway for document supply which provides one-stop retrieval services and national access with a single account[2]. With the resource scheduling and service scheduling as its core, integration of DD, interlibrary loan, PPV, e-book lend and lease and the electronic resource links, “ede” has become an established means through which users obtain resources faster, more accurately and more conveniently.

The Web portal of “ede” integrates with “edu” to streamline the document retrieval and supply services among academic libraries and allow users to directly download the electronic documents with permissions. “ede” has also integrated a retrieval interface with National Library of China, National Science and Technology Library, and Shanghai Library, so users can search the collections of these institutions, and even submit the requests to obtain what they need.

In addition, “ede” is integrated with the CALIS billing center and PPV systems such as VIP, China National Knowledge Infrastructure (CNKI), etc. Users can buy and download the resources they need by paying per view online. In the Apabi e-book lend and lease system, users can directly browse the e-books as well as borrow them online.

A schematic diagram of the “ede” portal is shown in Figure 2.

Figure 2 The structure of the “ede” portal

CDSSP in the real world

In this section, we will discuss how the CDSSP meets the daily research needs of its member libraries and their end users. The homepage of “ede” is shown in Figure 3.

Member libraries

The CALIS ILL/DD service system is used by member libraries to provide document supply services to their own users and those at other CALIS member libraries. In 2006, Phase Two of CALIS successfully passed a national examination required for systems that were part of China’s “211 project”. At that time, there were just 42 ILL/DD service-provider members, but by 2009, the number of service-provider libraries approached 60. Construction of CALIS Phase Three started in 2010; this phase included an SaaS-based ILL/DD service system which each CALIS member library can access freely through the cloud. After several years of promotion, the number of members has increased significantly and now totals about 1,100 members, covering 31 Provinces.

Of the 1,100 member libraries, > 300 of them are service-provider libraries, others are service-request libraries. After implementation of the CDSSP, the number and type of service-provider libraries changed significantly which has greatly expanded the service’s scope and available resources, which is seven times what it was in Phase Two. Most service-provider libraries are affiliated with universities, vocational colleges and independent colleges and also include document supply service institutions such as the National Library of China, Shanghai Library and NSTL. Together they make up a strong service team which is the foundation of a national resource sharing network and single account access to its vast resources.

Central scheduling service

On June 1, 2011, the CALIS ILL scheduling center was established. After several years of development, it has become a transfer station for member libraries to submit their resource requests and deal with these ILL and DD transactions. As of May 31, 2014, 329,033 requests have been submitted to this system, the fill-rate of the transactions is 85.85 per cent in average. CALIS central scheduling service deals with more than 100,000 requests every year. Details are shown in Figure 4.

Service cooperation

During CALIS Phase Three, we strengthened cooperation with resource sharing partners at home and abroad to develop the document supply service, and added new services such as nationwide interlibrary loan, PPV and e-book lend and lease. CALIS had only provided DD services in Phase Two, but in Phase Three implemented a national ILL service through CALIS and the Shanghai Library. CALIS held a series of free ILL events to promote the new service, and as a result academic users submitted 4,090 requests in October 2012 alone, 3,774 of which were satisfied by Shanghai Library. The fill-rate was 92.2 per cent.

A PPV service is available to users who just need a single article of the journal and are willing to pay for it. CALIS collaborates with Chongqing VIP Information Company to offer this service for domestic journal articles; it is a means of...
providing access to journals to which the libraries do not already subscribe.

Through the e-book lend and lease service, users are able to read e-books online or download to their personal computer; the e-book will be automatically deleted on the due date as long as they pay for the rental. CALIS reached an agreement with Apabi Technology Limited to provide 360,000 Chinese e-books through its lend and lease service.

With respect to international cooperation, CALIS conducted a five-month pilot project with Online Computer Library Center (OCLC) in 2012 to provide document supply services; this project showed considerable promise for future international cooperation. In 2013, we entered into a cooperative agreement with Harvard’s Yenching Library for document supply services, thus providing academic users with a new way to obtain collections from abroad.

Future development

System improvement

Because CALIS document supply service involves the cooperation of various systems, the depth of integration, system performance, functionality and other aspects may have an effect on member libraries’ use of the system. According to the suggestions from member libraries, CALIS needs to improve its system performance, simplify operational processes and reduce complexity to help members develop their skills and facility with the system. At the same time, CALIS should generally improve the central systems’ performance, such as the scheduling system, settlement system and “ede” Web portal.

Strengthening the promotion and the training

When we publicize CALIS services to the academic member libraries, we should first let member libraries become familiar with the services, and then promote those services to academic users through a variety of promotional channels. To expedite and strengthen cooperation between libraries, CALIS should expand and perfect its existing training methods and employ a variety of channels for delivering this training, including:

- face-to-face instruction;
- online instruction;
- short-term special profession courses;
- senior seminars;
- academic conferences; and
- onsite visits at member libraries (Zhu and Feng, 2013).

CALIS should include the training modules in all the main services so that the librarians will have more opportunities to participate. However, relying on CALIS is not enough. CALIS regional and provincial information service centers should also shoulder more responsibility for the service training.

Conclusion

CALIS needs to build on past achievements to strengthen communication and cooperation with other document supply institutions and database providers at home and abroad. This will expand the range of resources available to member libraries and their users. Meanwhile, new services should be created, such as print on demand. In the future, CALIS will continue to develop its service systems. Access to subject and special collections should be included, and a new service center for providing access to these specialized collections should be established. The goal of deeply integrated document supply, reference and subject services will then be realized.
Notes

1 See CALIS search interface at: www.yidu.edu.cn/
2 The “ede” gateway can be found at: www.yide.calis.edu.cn/

References


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