

Construction of an interlending and document delivery system platform for one- stop information retrieval and supply service

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Abstract

After more than ten years of construction, CALIS built a complete set of document supply service environment for one stop information retrieval and supply service. CALIS InterLibrary Loan and Document Delivery (ILL & DD) platform provides reliable technical support and friendly service environment. It is one of the most key parts for CALIS to promote document supply service among domestic academic libraries in China.

CALIS document supply service platform is composed by five application systems, including unified authentication system, Saas-based ILL/DD service system, ILL central scheduling and settlement system, FTP service system, as well as service integration interface system. These systems work together to meet the needs of member libraries, other information service institutions and their end users. Now CALIS ILL & DD service platform has widely been used by about 1000 libraries based on cloud service strategy. Each year, more than 100,000 ILL and DD transactions have been handled by this platform.

In this paper, CALIS ILL & DD service platform is introduced, its advanced functional characteristic is emphasized and its implementation situation is summarized. The future development plan on this platform is released in the end.

1 Introduction

After fifteen years of construction, China Academic Library and Information system (CALIS) has been able to provide academic libraries with the service environment of external resources acquisition, the effective service policies and the subsidy support. That promotes the development of the interlibrary loan (ILL) and document delivery service among the nationwide academic libraries. The ILL and document delivery service has gradually become one of the important literature services in academic libraries and it is one of the significant ways to obtain scarce resources for users.

The Document supply service platform established by CALIS comprises the resource discovery system, the software sharing platform, the literature acquisition system and the powerful support service team. At the core of the resource discovery system is a unified data exchange platform, and in the same way, the software sharing platform with a unified authentication. The literature acquisition system considering the resource scheduling and service scheduling as the center contents integrates the services of document delivery, interlibrary Loan, pay per view, e-book lend & lease and the electronic resource links.¹

CALIS, as a project, in phase three adopts the technologies of cloud computing to establish the multi-cloud service systems including CALIS national central cloud platform, regional cloud Platform and local cloud platform.² As an important member of the resource discovery and access system, CALIS Document supply service platform adopts the cloud service to conveniently provides more libraries with the interlibrary loan and document delivery service, and it guarantees that users can enjoy their one-stop literature access services. That would be a significant stride towards realizing the goal of acquiring resources just with one account.

CALIS Document supply service platform composes five subsystems, the unified authentication system, the SaaS-based ILL and DD system, ILL central scheduling and settlement system, FTP service system, and the service integration interface system. This paper describes them one by one. in order to sketch out CALIS Document supply service platform. According to the usage and service effectiveness of the system, the recommendations for its future development are given.

2 CALIS Interlibray Loan and Document Delivery

Service Platform Overview

CALIS Document supply service platform provides powerful guarantee for the service of document supply. Users will be able to find what they need through the CALIS document discovery system and login through the local library account to utilize the Interlibrary loan service after unified authentication. What's more, with CALIS ILL scheduling system they are able to obtain the resource collections from all over the world. The cooperative work between service systems creates a friendly document supply environment. The mode of document supply system is shown in figure ¹.

¹ Zeng L. Construction of CALIS Document Supply Service Environment, Digital Library Forum ,2013(1):54-61

² Wang W, Zhang Y, Chen L. A Technical Overview of China Academic Digital Library Information System of CALIS, Digital Library Forum, 2013(1):29-36

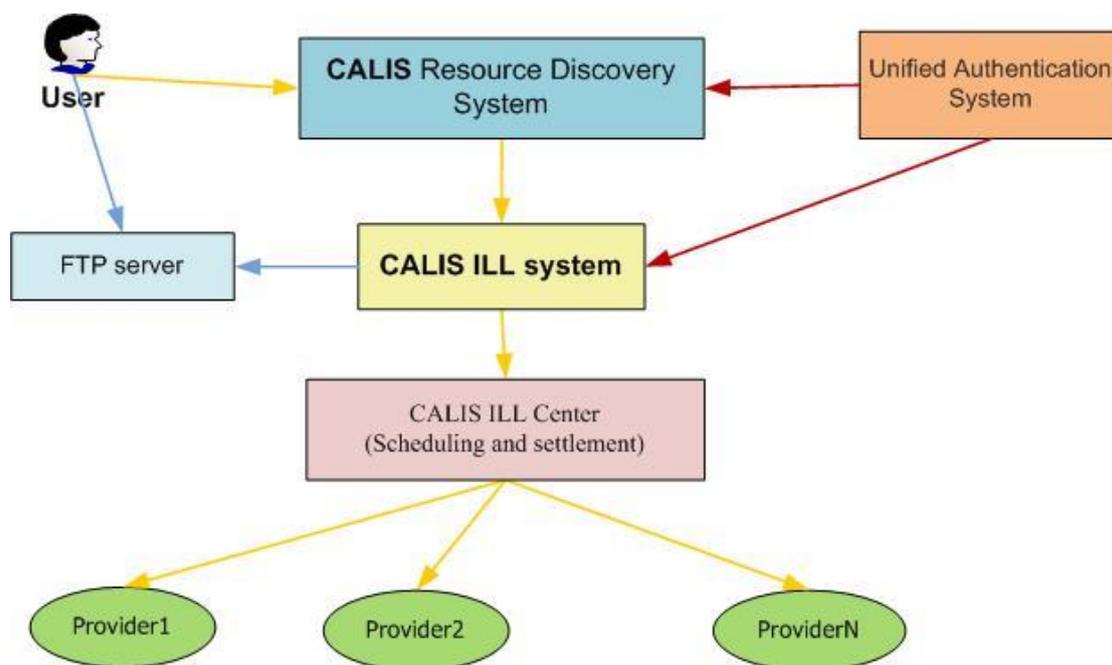


Figure 1 CALIS Document Supply System Mode

2.1 CALIS Unified Authentication System^{3 4}

To be one of the foundation of CALIS cloud services, the unified authentication system have changed the old way of CALIS user authentication. Through multistage authentication system, all users, including the readers and librarians, could experience the service of single sign-on, domain access and roaming around the country. And their authentication information will be managed by CALIS unified authentication system. As for the users in different systems, the unified authentication system can uniformly manage their user information and access permissions, so that the information can keep synchronous and consistent in different systems.

CALIS unified authentication system consists of the National Center version and the SaaS version. Every user has a unified ID and the systems supporting joint certification, which achieves the dynamic, flexible and fine-grained permission control and management. The system manages its users hierarchically, it can integrate with any other systems of CALIS, at the same time, it has added the registration and authentication interfaces with Rest style and the IPv6/IPv4 user authentication. Users can make use of the authorized services just after a single sign-on whatever to enter the CALIS National Center website or their own library websites. CALIS unified authentication system has integrated with CALIS ILL and DD system, that is, if readers log in CALIS other system which is interfaced with the

³ Wang W, Zhang Y, Chen L. A Technical Overview of China Academic Digital Library Information System of CALIS, Digital Library Forum, 2013(1):29-36

⁴ Zeng L. Construction of CALIS Document Supply Service Environment, Digital Library Forum ,2013(1):54-61

unified authentication system, they can enter the ILL system directly.

2.2 CALIS ILL and DD System⁵

CALIS ILL and DD system is a standard and automatic network system based on the international standard ISO10160/10161. It consists of the ILL transaction management system, ILL gateway system, and the ILL protocol machine. It provides librarians with a series of standard and automatic modes to deal with the interlibrary loan requests. The system contacts with various retrieval systems through a seamless interface, so that it can search and locate the resources accurately. And it manages the requests submitted by users and deals the ILL transactions according to the ISO10160/10161.

In phase one and phase two, CALIS ILL system is distributive. The member libraries need to install and maintain it locally, the system is not popular among the libraries during that time. In order to reduce the usage and maintenance cost of the system for libraries, during CALIS Phase three we use SaaS technology to develop an ILL and DD system called CALIS SaaS-based ILL System. With the cloud service mode, it just needs to be installed on the provincial center or regional center instead of every library, and it can serve various libraries or institutions at the same time. The regional system is maintained uniformly by the National Center Administrator, so the member libraries may reduce the maintenance cost and difficulties. That would be in favor of the usage and promotion of the ILL and DD service platform.

When it comes to the usage and the function setting of the systems, the SaaS-based ILL system is exactly the same as the old distributive 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 around the nationwide academic libraries.

2.3 CALIS ILL Central Scheduling and Settlement System

Because of the multifaceted service systems in China, the operations and procedures are different from each other, and the users generally need to in charge of different accounts. With the purpose of promoting the user experience, CALIS creates the ILL scheduling system which can realize the central scheduling function of the nationwide academic libraries' document supply service. As the pivot of ILL and DD requests from the academic libraries, the scheduling center can distribute the requests to the libraries or some other cooperative institutions such as the National Library of China (NLC), Shanghai Library, National Science and Technology Library (NSTL), etc. That would be a significant stride towards realizing the goal of acquiring resources just with one account. In addition, the scheduling system provides the management on scheduling policy and subsidies to make the subsidy funds under the

⁵ Ibid

fair use.

The Document supply service may cause some costs, so every balance sheet date, the member libraries existing business relationship will make the settlement with each other. The more the businesses occur, the heavier the workload is, and the settlement costs will be much bigger. In order to reduce the settlement workload and the costs of the libraries, CALIS Administrative Center provides central 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.⁶

2.4 CALIS FTP service System⁷

Actually, we generally provide the document delivery service by emailing the electronic literatures to the users directly. However, the users sometimes can't receive the literatures because of reasons on the room size or security settings of their mailbox. After CALIS ILL scheduling and settlement center is established, the service-provider library directly uploads the literature to the FTP server set by CALIS, then the center system will send an email automatically to tell the literature link to the reader, and the reader can download the literature by clicking the link in the email. What's more, the service system will reserve the available times and date of the literature accessing for the reader to protect the copyright. If it is out of the reserved date, the literature will be automatically deleted.

2.5 The Service Integration Interface System

Digital library information service is based on the cooperative work among various systems, so is the document supply service. Through the integration with systems, CALIS creates a one-stop literature access service environment for the academic end users.

For the resource integration, CALIS literature retrieval systems represented by edu integrates the collections of the member libraries, further, the various electronic resources, for example, Apabi ebooks, VIP e-journals, EBSCO, JSTOR and so on. It fulfills the one-stop retrieval on a single platform.

For the system integration, it integrates the resource discovery system, user authentication system, ILL and DD system, ILL scheduling and settlement system and some other systems to provide the users with the one-stop service operation.⁸

For the comprehensive integration, we make an influential achievement during CALIS Phase three by establishing the web portal called "ede". "ede" is a gateway for document supply which endeavors to provide one-stop services of retrieval for obtaining and national access with a single account. Its website is <http://www.yide.calis.edu.cn>.

⁶ Ibid

⁷ Ibid

⁸ Ibid

Considering the resource scheduling and service scheduling as the center contents, based on CALIS document supply service, through integration of the services of document delivery, interlibrary loan, pay per view, e-book lend & lease and the electronic resource links, “ede” has been established as an integrated distributive literature acquisition system with various cooperation and resources to help the users obtaining resources faster, more accurately, and more conveniently.

The web portal of “ede” integrates with “edu”, CALIS Current Content Database, Thesis and Dissertation Database, Special Collection Database and Union Catalogue Database to realize the literature obtaining and document supply services among academic libraries. With the integrated resource scheduling system, users can directly download the electronic literatures under the permissions. “ede” has also integrated the retrieval interface with NLC, NSTL and Shanghai Library, so users can search the collection resources of these institutions, and even submit the requests to obtain what they need.

In addition, “ede” integrates with CALIS billing center and PPV system such as VIP, CNKI, etc. Users can buy and download the resources they needs by paying per view online. In the Apabi e-book lend & lease system, users can directly browse the e-books as well as borrow them online.

The mode of ede platform is shown in Figure 29.

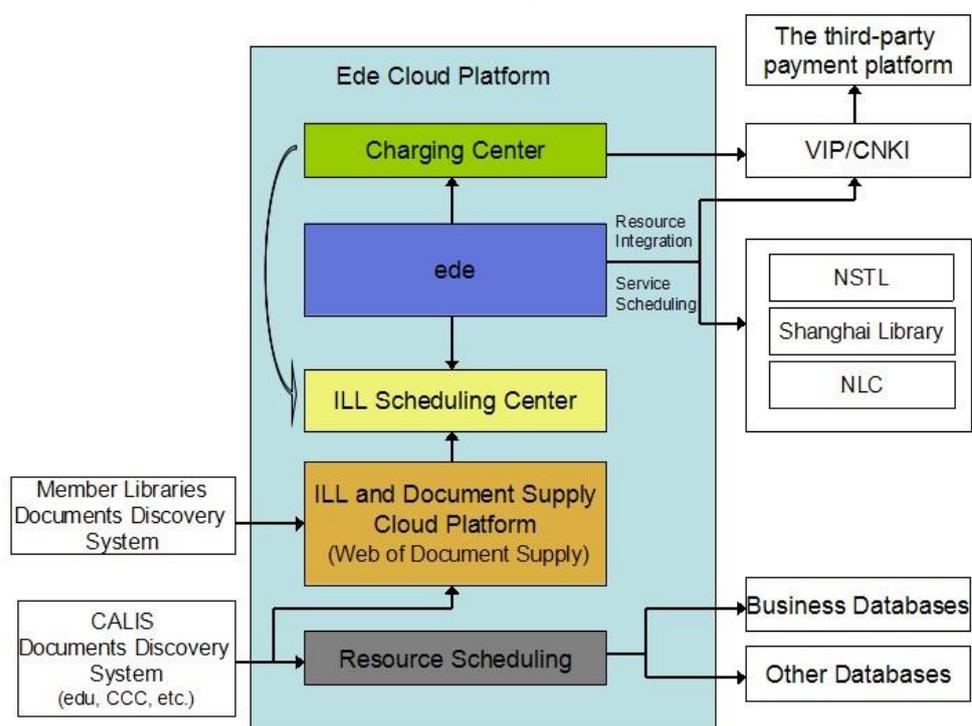


Figure 2 The Mode of “ede” Platform

⁹ CALIS Administrative Center. CALIS Project of 211 in Phase III. The Special Report of China Academic Library and Information System(CALIS), 2012

3 Actuality of System Application

3.1 Service Mode of CALIS

“ede”, the gateway for CALIS document supply, is an entrance of the document supply service. From this entrance, users will be able to retrieve the collections of academic libraries as well as the other domestic resource service institutions such as NLC, Shanghai Library, NSTL, etc. Furthermore, “ede” is also providing e-book lend & lease service and pay per view service by the cooperation with Apabi and VIP. So according to the current situation, “ede” has already become one of the important sources of obtaining the literature documents from non-academic libraries. The homepage of “ede” is shown in figure 3.



Figure 3 Homepage of Ede

3.2 Member Libraries

CALIS Document supply service member library is the one who use CALIS ILL and DD system to provide document supply service to users of its own and other CALIS member libraries. In 2006, as one of the public service system of “211 project”, the

program CALIS constructed in phase two had successfully passed the national acceptance with just 42 ILL and document supply members. During 2007 to 2009, the project was in pause, but the Document supply service among academic libraries was not interrupted. The number of member libraries had been reached nearly 60. In 2010, the construction of CALIS Phase three fully started with the support of SaaS-based ILL and DD system, the libraries updated their systems to this new version one after another. After two years of effort, the number of members increased rapidly, it is about 1000 members covering 31 Provinces, nearly 24 times compared with the number of CALIS phase two.

According to the statistic, among the 1000 member libraries, 300 of them are able to offer resource to others. They are called service-provider libraries. After the generation and usage of CALIS Document supply service platform, service-provider libraries has changed a lot in quantity and structure type for service libraries and has greatly enlarged the coverage area of service, which is 6 times compared with those of phase two. The types as mainly diversified to universities, vocational colleges and independent colleges, and supplemented by some document supply service institutions including National Library of China, Shanghai Library, NSTL, OCLC etc. They cooperate together to make up the strong service team to help reducing the pressure of libraries and taking fully advantages of the resources. It would be the basement of achieving resources sharing and guaranteeing the service of resource access nationally with a single account.

3.3 Central Scheduling Service

On June 1st, 2011, CALIS ILL scheduling center was established. After two 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. Up to May 31th, 2013, there are 211,178 requests submitted to this system, the fill-rate of the transactions is 85.78% in average. CALIS central scheduling service deals with more than 100,000 requests every year. Details are shown in figure 4.

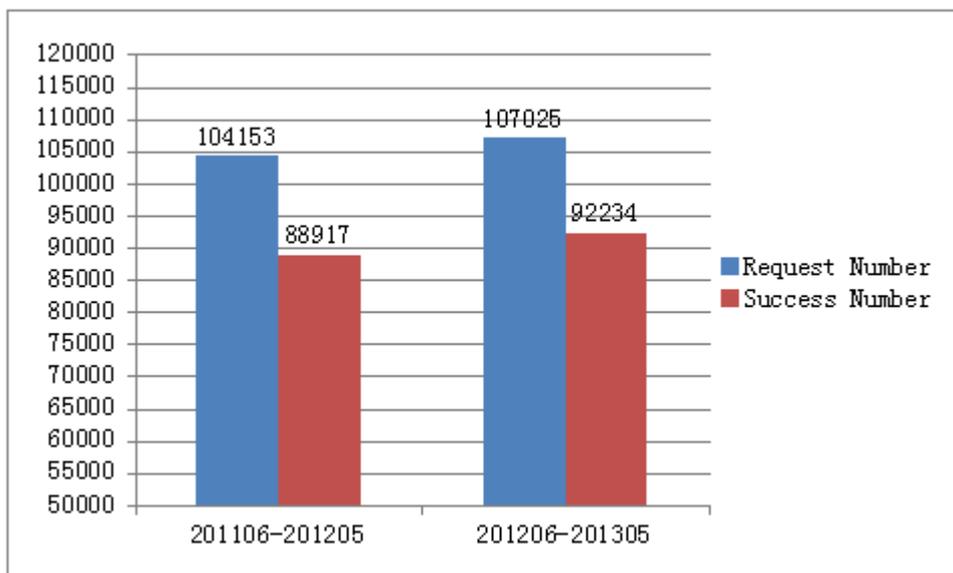


Figure 4 the statistic on ILL and document delivery transactions amount handled by CALIS central scheduling system

3.4 Service cooperation

During CALIS Phase three, we strengthened the cooperation with the resource service institutions at home and abroad to develop document supply service. At the same time, we added some new types of services, including nationwide interlibrary loan, pay per view, e-book lend & lease service and so on.

CALIS only provide document delivery service in phase two. Interlibrary loan is a national service carried out by CALIS and Shanghai Library in phase three. CALIS held a series of free interlibrary loan activities for advertising. In the course of activity in October 2012, there were 4090 requests submitted by academic users in one month, and the 3774 of them were satisfied by Shanghai Library. The fill-rate was 92.2%.

Pay Per View (PPV) Service is the service that If users just need a single article of the journal, they can apply for it separately and pay it in real time. Cooperating with VIP company, CALIS implements PPV service of domestic journal article. It offers a new way of using the electronic resources to the libraries which have not purchased the journals.

E-book lend & lease Service means that users are able to read the e-books online or download to the personal computer, and the literature will be automatically deleted when the reserved date is arrived as long as they pay for the rental. CALIS reached an agreement with Apabi Technology Limited on 360 thousand Chinese e-books' lend & lease service, it is more convenient for users to make use of e-books.

On the respects of international cooperation, in 2012, CALIS conducted the document supply service cooperating with OCLC for five months. It is a beneficial attempt for long international cooperation in future. From 2013, we build the bridge of cooperation with Harvard Yenching Library for document supply service, providing academic users with a new way to obtain the collections abroad.

4 Development in the Future

4.1 System Improvement

As CALIS document supply service involves the cooperation of various systems, the integration level, the system performance, the system function and other aspects may have an influence on the use of the system for member libraries. According to the suggestions from member libraries, CALIS needs to improve the system performance, simplify the operation processes, and reduce the complexity to help them gain the usage skills as soon as possible. At the same time, CALIS should generally improve the performance and the function of the central systems, for example, the scheduling system, settlement system, “ede” web portal etc.

4.2 Strengthening the Promotion and the Training

When we publicize the services of CALIS to the academic member libraries, firstly, we should let member libraries comprehend the services, then, we should let the academic users know the services clearly through a variety of propagandist methods. The training is of great importance to improve the service business skill. CALIS should further perfect the existing training authentication system to accelerate the cooperation of libraries. Based on the various measures including face to face training and remote training online as well as the training methods such as short-term special profession courses, senior seminars, academic conferences, and visiting library plan, CALIS should expand the training contents into all the main services so that the librarians will have more opportunities to participate in the training.¹⁰ However, only relying on CALIS is not enough. Regional and provincial information centers should stand closely together to shoulder more responsibility for the service training.

4.3 Services Cooperation

Based on the achievement of integrating the systems, the resources and the services, CALIS needs to strengthen the communication and cooperation with other document supply institutions and database providers at home and abroad. It will enlarge the range of resource origins. Meanwhile, new types of services should be created, such as print on demands.

¹⁰ Zhu Q, Feng Y. The Future Development of CALIS, Digital Library Forum, 2013(1):10-14

4.4 Service System Innovation

In the future, CALIS will pursue a new attempt and exploration on its service systems. The service of subject and special collections should be included, and the service center of subjects and special collections should be established. The goal of deeply integration of document supply service, reference service and subject service will be realized.