Application Service Providers: 
An Alternative Model for IT Services Delivery

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Application service providers (ASPs) offer another way for organizations to make IT resources available to users. Essentially, ASPs host and manage software applications and the related hardware, networking, and operating software from a remote location. ASPs make these applications available to users on an as-needed basis. Applications managed by an ASP may be as simple as a single type of software or as complex as an enterprise resource planning (ERP) system. ASPs also often provide services such as ongoing support, maintenance, and upgrades to their customers.

The benefits of this service delivery model most frequently cited by ASP customers include access to superior technical solutions, lower risk, cost reduction, streamlined operations, easier upgrades, and better use of internal resources. Concerns about ASPs range from loss of control over applications and processes to security issues, the vendor’s viability, and service level performance.

Since ASPs provide access to products and services that are housed off campus, the ASP often takes responsibility for the associated hosting and maintenance. Users “rent” the applications over the Internet or on a virtual private network (VPN). While this may reduce significantly, or at least manage, costs, higher education institutions must give up control over these software applications and, perhaps, related sensitive user data or interconnecting system security.

Generally, the rate of IT outsourcing and the move to ASPs has been slower in higher education than in the commercial and government IT sectors. Many higher education institutions have been reluctant to outsource IT functions for fear of losing control over vital resources. This fear is even more acute when IT is no longer a back-room support activity but an integral part of delivering the product or service that is the mission of the organization.

The purpose of this Research Bulletin is to provide background on ASPs and to help institutions understand factors they should consider when making decisions about using an ASP.

Highlights of Application Service Providers

The designation “ASP” is often used to define a rather broad group of companies offering differing and fluid combinations of products and services for a variety of markets. Understanding what they have in common and where they diverge, as well as learning the history of ASPs, can provide valuable insights to institutions considering the use of an ASP, as well as those already employing an ASP for IT operations.

Evolution of ASPs

ASPs have existed for almost a decade. Early ventures were called service bureaus or time-sharing operations. Initial services revolved around network-based services, such
as e-mail and collaboration. The outlines of today’s ASP market began taking shape in 1998, with the arrival of firms such as USInternetworking (USI) and Corio.

Selective outsourcing is one trend that has led to the evolution of the ASP market. Outsourcing options have evolved to provide increasing levels of granularity in the choices offered to users. Instead of handing over responsibility for the complete IT infrastructure to an outside provider, organizations have selectively outsourced specific components of their IT environments. Initially, these were base-level infrastructure components such as data networking or system services. With the move to include network services infrastructure and user applications, application outsourcing and application management are increasingly indistinguishable from what ASPs deliver.

The next evolutionary stage for ASPs appears to be linked to the emergence of portals and Internet-based enterprises. Many of today’s informational Web sites have become portals that incorporate additional applications to create dynamic, interactive user experiences. At the same time, a new generation of software vendors is bringing applications to market as Web-based services, accessed directly over the Internet. The complexity and the expense of equipping and operating enterprise Web portals has driven some organizations to outsource them.

**Definition and Characteristics of ASPs**

Characterizing an ASP is important, but industry literature provides numerous and sometimes contradictory definitions. INPUT classifies ASPs as value-added resellers of various types that make the software applications provided to them available to their clients on a pay-as-you-go basis, either for a fixed price or on a “pay-by-the-sip” basis. From the customer’s point of view, the key is to be able to pay only for the amount and level of services actually used—and to have the flexibility to scale up or down rapidly as business conditions change.

Although they might differ, almost all ASP definitions focus on the following characteristics:

**Organization**

- ASPs are resellers that deliver software applications (and/or value-added services) to remote end users for a fee.

**Services**

- Users have access to the applications, usually under a service level agreement (SLA), without the responsibilities of management or maintenance.
- Either the vendor or the customer may own the software license.
- The vendor is responsible for application maintenance and upgrades, end-user billing, provisioning, and overall systems management.
“Full-service” vendors may also provide end users with integration services, application customization, training, help-desk and technical support, and even business process analysis.

**Pricing**
- The ASP charges end users a fixed price subscription or a variable usage fee based on either transaction count or number of users.

**Delivery**
- Vendors offer both a one-to-many delivery channel and a distribution mechanism for software.
- The vendor assumes responsibility for the underlying delivery networking infrastructure and host hardware, either by providing them directly or through outsourcers.
- Connection between the vendor and the user may be over the Internet or a VPN.
- The vendor manages, supervises, or monitors the operation of these delivery mechanisms, usually under an SLA.

**Customization**
- The vendor supplies minimal customization for integration with the customer’s legacy IT infrastructure.

**Types of ASP Services**

Most ASP offerings are processing services. Vendors of processing services provide computer/communications infrastructure or applications services to a customer on a varying usage basis. This contrasts with traditional outsourcing, where the commitment is more fixed and longer term.

Most processing services include three subcategories: applications services (usually transaction processing); infrastructure or platform services, also known as utility processing (computers, operating environment, network); and other processing services.

**Applications Services**

Application services are primarily transaction processing (TP) services such as payroll or accounting records. However, application services increasingly include other activities, such as analysis, aggregation, reporting, distribution, and interfacing. The customer uses a vendor-provided information systems platform—including equipment, systems software, and data networks—located at a vendor site to process specific applications and update customer databases. These services usually run on a proprietary software platform that processes transactions for multiple customers through the same core (shared) software. This arrangement delivers economies of scale in the use of the
software. Single-image processing, where each customer has its own version of the software, is almost never successful.

Transaction processing systems have been a mainstay of businesses for more than 30 years, through vendors such as Automatic Data Processing (ADP). In some areas, such as credit card processing, services vendors execute a majority of transactions compared to in-house systems. As business challenges become more complex and the volume of transactions grows, TP systems will play a larger, not smaller, role in business operations.

Internet or Web applications services are similar, but the focus often differs. Many newer ASPs provide these types of services. Where IT applications services tend to focus on the transaction itself (cost of processing, reliability), Internet or Web applications services focus on flexibility, scalability, ease of use, timeliness, overall cost, and so on. This category includes single and multiple applications hosting services. Applications may not be transaction-oriented. They may be aligned, however, with an industry-specific or cross-industry function—for example, messaging services that focus on office communications or employee application services that support the hiring process.

In electronic business applications services, the vendor provides a set of services to enable an electronic business to operate, but the services are not provided under an outsourcing contract.

**IT Infrastructure Services**

Infrastructure or platform services are sometimes called utility services. The customer uses a vendor-provided information systems platform to develop and/or operate its own applications software. The applications software owned by the customer may have been obtained from any of a variety of sources, including third parties such as ERP vendors.

Many ASPs provide such services. The platform is a combination of equipment, systems software (server systems, applications development tools, database management systems, graphics packages, security systems, mathematical models, communications software, and others), and communications networks.

IT infrastructure services include the provision of data center services. This market includes the purchase of computer/communications resources for project-based activities, such as running advanced models on a supercomputer, and process-oriented activities, such as weather forecasting. Many of the expenditures are for research purposes.

Internet or Web infrastructure services are very much like time-sharing, an industry that disappeared in the early 1980s with the advent of the PC.

- The lowest level above access services is that of Web hosting, in which the vendor operates the customer’s Web site and provides access services to the site, monitors performance, maintains processing, software, storage and communications facilities, provides security, and so on. In simple Web site hosting, the vendor provides access to the information in the Web page.
Applications hosting is one level up from simple Web hosting. The vendor hosts applications related to the Web site, such as transaction handling.

At the next level, the vendor provides a full electronic business applications service environment. These services are built around commerce servers, allowing a customer to transact business.

The highest level is where the vendor actually operates the electronic business for the customer. This falls outside the IT processing service industry category and is considered electronic business process operations (eBPO).

In all of the above services, the vendor does not provide the applications; these are always provided by the customer or a third party. If the vendor provided the applications, the service would be categorized as applications services.

Other Processing Services

In the case of other processing services, the vendor provides a service—usually at the vendor site—such as scanning or other data entry services, laser printing, computer output microfilm, CD preparation, or other data output services.

A small but potentially very important service in this category is storage. The explosion in demand for digital storage is driven by the need for multimedia storage and for storage of the vast quantities of information being generated from online activities. Storage services provide scalability, rapid response, security, and technology refreshment.

Multiple types of IT vendors service the higher education market. Some examples that illustrate the range of IT outsourcing and ASP services available to higher education institutions are provided in Appendix 1.

Balancing the Benefits and Risks of Using ASPs

Before adopting an ASP model, institutions should understand the model’s benefits as well as its risks. The importance of these factors varies based on the size of the institution, budget, availability of trained IT personnel, and institutional culture.

Benefits of an ASP model include

- **Provisioning of turnkey solutions.** ASPs bundle software, hardware and systems development, integration, and management into a single, turnkey offering.

- **Speed of implementation.** ASPs already have the equipment, applications, and expertise to provide rapid market access, so implementation can be rapid.

- **Existing experience base.** ASPs can apply their experience to implement best IT practices to ensure availability, security, backup, disaster recovery, and help-desk support.
• **Opportunity to focus on core competencies.** When outsourcing application management to an ASP, an organization can focus critical resources on its core functions. In the case of IT organizations, existing personnel can focus on more critical issues while a third party provides basic installation, maintenance, and support for day-to-day applications.

• **Ability to scale economically.** Additions to the existing user base and applications leverage the initial investment and have diminishing marginal costs.

• **Easier upgrade cycles.** Because ASPs handle the software, upgrades can be handled easily.

• **Financial flexibility.** The ASP model reduces fixed costs and lowers expenditures for hardware, applications, and management. Lower upfront ASP costs can give an institution access to more sophisticated products than if purchased outright on a license basis.

• **Reduced risk.** Organizations can test new technologies with minimal risk (operational or financial) because no capital expenditures are required for in-house software, hardware, and IT personnel.

• **Potentially lower cost.** Studies indicate that leasing an application from an ASP can save customers 33 to 53 percent over purchasing and managing the hardware and software themselves. Whether these cost savings apply to higher education remains unclear.

Generally, outsourcing has been adopted more slowly in higher education than in other sectors. Some of the barriers to widespread adoption of the ASP model in higher education are

• **Control of assets and resources.** Colleges and universities have traditionally controlled their own operations internally. Many hesitate to relinquish even partial control.

• **Security.** Many organizations express concern over the security of data. This can include the secure transfer of data without interception, monitoring, or data corruption. Security concerns also relate to protecting confidential records, whether of personnel, students, donors, or others.

• **Specificity of the higher education outsourcing market.** A robust higher-education–specific ASP market does not yet exist. Colleges and universities have concerns about losing functionality when they buy into a service that has not been proven.

• **“Going commercial” and job security.** Many colleges and universities differentiate themselves from the commercial environment by emphasizing job security and workplace quality. ASP use or other outsourcing solutions that imply layoffs are often viewed as counter to this culture.
• **Stability.** Executives in higher education, like their peers in the commercial market, are extremely wary of entrusting important IT functions to a vendor that may not be viable financially and, as a result, unable to fulfill its contractual obligations.

### What It Means to Higher Education

The ASP market continues to evolve, and private-sector experiences with ASPs can be useful guides for higher education. However, using an ASP takes on unique qualities and carries different implications for higher education compared to the commercial sector.

### The ASP in the Higher Education Market

Higher education users are becoming increasingly aware of services provided by ASPs. In a recent EDUCAUSE Center for Applied Research (ECAR) survey, a large majority of survey respondents (77 percent) stated that they are familiar with the ASP model (see Figure 1).

**Figure 1. Familiarity with ASP Model**

Of those familiar with the ASP model, a small majority of institutions (53 percent) report having selected an ASP to outsource IT functions (see Figure 2).
The next few years will see the need for “resource rationalization”—increasing investments in software and content, as well IT infrastructure, to support a variety of nontraditional channels for delivering education. In this environment of rising demand—assuming continued limitations on resources—the ASP model of processing services, IT outsourcing, or applications software delivery services may become more attractive.

However, the ASP market still lacks consistent definition and is full of immature services and providers, particularly in higher education. Some ASPs specialize in certain services, while others try to provide services across a broad architecture and range of subjects. Not all will succeed.

Recent bankruptcy announcements by some ASPs and the poor performance of others have lent credence to the idea that ASPs are just IT industry hype. Executives in higher education are generally more conservative than their peers in the commercial market and extremely unlikely to entrust important IT functions to vendors that may not be financially viable. However, within the next few years, certain types of ASPs will emerge that are financially strong and viable for higher education.

### ASP e-Learning Services

ASP services may be particularly useful for e-learning. This is a relatively new area without a large array of established vendors or many in-house operations. Forty-nine percent of the respondents to the ECAR survey considered e-learning and distance learning applications to be the most suitable functions to source from an ASP.

Education is viewed by many as not bound by time and place. As education providers move beyond face-to-face instruction within the traditional classroom environs to

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**Figure 2. Use of ASP Model**

<table>
<thead>
<tr>
<th>Type of Institution</th>
<th>Signed with an ASP</th>
<th>Did Not Sign Because Unfamiliar</th>
<th>Did Not Sign Even Though Familiar</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>53%</td>
<td>18%</td>
<td>30%</td>
</tr>
<tr>
<td>Public</td>
<td>51%</td>
<td>14%</td>
<td>36%</td>
</tr>
<tr>
<td>Private</td>
<td>55%</td>
<td>24%</td>
<td>21%</td>
</tr>
<tr>
<td>Research</td>
<td>53%</td>
<td>6%</td>
<td>41%</td>
</tr>
<tr>
<td>MA</td>
<td>53%</td>
<td>17%</td>
<td>30%</td>
</tr>
<tr>
<td>BA</td>
<td>35%</td>
<td>41%</td>
<td>24%</td>
</tr>
<tr>
<td>AA</td>
<td>60%</td>
<td>13%</td>
<td>27%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Percent of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
</tr>
</tbody>
</table>

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ECAR
delivering real-time instruction when and where it is most convenient and needed, IT infrastructures will be modified. Institutions are increasingly moving from the relatively simple acquisition and adoption of technology to the more complex task of integrating that technology into teaching, learning, and administration to facilitate innovative learning. These challenges are likely to make outsourcing in general, and the ASP model in particular, attractive for e-learning.

The ASP Experience

For those colleges and universities that currently use an ASP, experience equals expectations in 50 percent of the cases and exceeds expectations 8 percent of the time (see Table 1). Ensuring that even more institutions have positive experiences will require learning by institutions as well as vendors. As higher education institutions better understand what characteristics to look for in a vendor and how to negotiate necessary SLAs, vendor selections will better suit institutional needs. On the other hand, as vendors understand customer expectations and the needs of higher education as a sector, their services and offerings will improve.

Table 1. ASP Experience versus Expectations

<table>
<thead>
<tr>
<th>ASP Experience</th>
<th>All</th>
<th>Public</th>
<th>Private</th>
<th>Research</th>
<th>MA</th>
<th>BA</th>
<th>AA</th>
</tr>
</thead>
<tbody>
<tr>
<td>As expected</td>
<td>50%</td>
<td>54%</td>
<td>31%</td>
<td>50%</td>
<td>52%</td>
<td>20%</td>
<td>62%</td>
</tr>
<tr>
<td>Better than expected</td>
<td>8%</td>
<td>12%</td>
<td>0%</td>
<td>7%</td>
<td>10%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Worse than expected</td>
<td>10%</td>
<td>0%</td>
<td>17%</td>
<td>7%</td>
<td>10%</td>
<td>20%</td>
<td>0%</td>
</tr>
<tr>
<td>Liked ASP, wrong vendor</td>
<td>4%</td>
<td>0%</td>
<td>2%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>15%</td>
</tr>
<tr>
<td>Needed more customization than expected</td>
<td>14%</td>
<td>5%</td>
<td>14%</td>
<td>7%</td>
<td>10%</td>
<td>13%</td>
<td>8%</td>
</tr>
<tr>
<td>Regretted using ASP</td>
<td>6%</td>
<td>5%</td>
<td>5%</td>
<td>7%</td>
<td>5%</td>
<td>7%</td>
<td>0%</td>
</tr>
<tr>
<td>ASP too ill-defined</td>
<td>3%</td>
<td>0%</td>
<td>5%</td>
<td>0%</td>
<td>0%</td>
<td>13%</td>
<td>0%</td>
</tr>
<tr>
<td>ASP too limited</td>
<td>6%</td>
<td>0%</td>
<td>2%</td>
<td>7%</td>
<td>0%</td>
<td>0%</td>
<td>8%</td>
</tr>
<tr>
<td>Other</td>
<td>0%</td>
<td>14%</td>
<td>21%</td>
<td>14%</td>
<td>14%</td>
<td>27%</td>
<td>8%</td>
</tr>
</tbody>
</table>

Contracting for Services

Prior to contracting for services with an ASP, institutions need to answer some questions to ensure successful outsourcing of IT functions:

- For what functions might an ASP model be appropriate?
What characteristics should we look for when evaluating an ASP?
What kind of SLA would make sense?
Who should be involved in the decision-making process?
Are our expectations for what we might gain from the use of an ASP in line with the experience of other institutions?
If we were to use an ASP, what cultural changes or barriers for using an ASP exist within our organization?

A critical component in determining success of the ASP process is the selection of a vendor. When evaluating potential ASPs, certain questions should be considered:

- How are user service issues handled? If there are questions or problems, who do we contact?
- Does the vendor have internal experts to support the applications?
- How secure is the data? What are the safeguards against internal and external attack? What are the backup policies?
- How secure is the connection between the user and the ASP? What tools are in place to ensure security?
- How secure are redundancy, disaster recovery, and application problems resolved? How does the vendor ensure service availability and continuity?
- Who owns the data? Although it is often assumed that the institution owns its data, is this stated in the contract? What happens if the institution decides to switch to a different ASP or bring the IT function back in-house?
- How do the services provided by the ASP interconnect with legacy systems? Can the ASP link to legacy systems without the need for costly and time-intensive data conversion?
- Are there end-user bandwidth requirements?
- Does the ASP provide training?

Beyond knowing which vendor to select, understanding how to negotiate the contract is essential. SLAs are critical to both higher education institutions and the vendor because they define expectations and responsibilities. Below are some questions to consider when negotiating an SLA:

- Is there a guaranteed level of system performance (such as subsecond response time)?
- What “up time,” system availability, and bandwidth are guaranteed?
- Are there well-defined benchmarks and performance measures?
Can the contract and pricing structure be modified to account for growth or changes in usage?

What security is guaranteed?

What customer support is provided? 24 x 7? 12 x 6?

Is there a pilot period when the institution can try out the ASP services?

Is the SLA a one-size-fits all or can it be tailored to institutional needs?

What are the enforcement provisions if the vendor does not deliver?

Can the relationship be terminated without a penalty?

Conclusion

Over the past two years, the ASP form of processing services has been in the early adopter stage, characterized by initial growth, continuous refinements to business models, many failed companies and initiatives, missionary sales activities, and significant swings in sentiment. However, ASP options are becoming a part of the application selection landscape. Buyers are becoming increasingly aware of the ASP model, although adoption rates, overall, still remain relatively low.

With the continued maturation of the ASP model, signs point toward accelerated growth and higher mainstream market penetration based on improvements in software technology, rapid growth in bandwidth, shorter sales cycles, and penetration in traditional industries. It is likely that within the next few years an increasing number of higher education institutions will enter into ASP agreements to conserve internal resources and ensure consistent delivery of IT services. For those exploring this option, familiarity with ASP models, vendor evaluation, and contractual terms will improve the odds that ASP experiences are positive.

Where to Learn More

- Information Technology Association of America (ITAA) ASP Home Page <www.itaa.org/asp>
- ASP Industry Consortium <www.allaboutasp.org>
- ASPnews.com <www.aspnews.com>
About the Author

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Appendix 1

IT Vendors Active in Higher Education

Several methods of IT product delivery are available to higher education clients today:

- Fully outsourced delivery (application and infrastructure)
- Do-it-yourself (D-I-Y) delivery (buyers are responsible for product implementation and operation)
- ASP (hosted application) delivery

Table 2 summarizes the service categories of a select group of vendors active in the higher education market.

<table>
<thead>
<tr>
<th>Functions</th>
<th>ASP</th>
<th>Outsourcer</th>
<th>D-I-Y/Software Provider</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-Learning/Distance Learning</td>
<td>CollegisEduprise</td>
<td>eCollege, Embanet, CollegisEduprise, Blackboard, Embanet, Timecruiser</td>
<td>eCollege, Embanet, CollegisEduprise, Timecruiser, Jenzabar, WebCT, eCollege</td>
</tr>
<tr>
<td>Processing Services</td>
<td>UNISYS, IBM Global Services</td>
<td>UNISYS, IBM Global Services</td>
<td>CollegisEduprise, ADP</td>
</tr>
<tr>
<td>BPO</td>
<td></td>
<td>KPMG Consulting, PWC, SCT</td>
<td></td>
</tr>
<tr>
<td>Network Services</td>
<td></td>
<td>UNISYS, IBM Global Services, CollegisEduprise, SCT, Blackboard, Embanet, Qwest</td>
<td>CollegisEduprise, SGT, Genuity, Qwest</td>
</tr>
<tr>
<td>Distributed Systems</td>
<td></td>
<td>UNISYS, IBM Global Services, CollegisEduprise</td>
<td>CollegisEduprise</td>
</tr>
<tr>
<td>Application Services</td>
<td>UNISYS, IBM Global Services, CollegisEduprise, Datatel, infiNet Solutions</td>
<td>UNISYS, IBM Global Services, SCT, CollegisEduprise, Blackboard, Timecruiser, PeopleSoft, eCollege</td>
<td>SCT, Campus Pipeline, CollegisEduprise, Timecruiser, Jenzabar, Microsoft, Datatel, PeopleSoft, WebCT, infiNet Solutions, Brio, eCollege</td>
</tr>
<tr>
<td>Application Management</td>
<td>UNISYS, IBM Global Services, CollegisEduprise, Corio</td>
<td>UNISYS, IBM Global Services, CollegisEduprise, Blackboard, SCT, KPMG, PeopleSoft, eCollege</td>
<td>SCT, Campus Pipeline, CollegisEduprise, Datatel, Jenzabar, Microsoft, Datatel, PeopleSoft, WebCT, Brio, eCollege</td>
</tr>
<tr>
<td>IT Infrastructure</td>
<td></td>
<td>CollegisEduprise, UNISYS, IBM Global Services, eCollege</td>
<td>CollegisEduprise, UNISYS, IBM Global Services, Hewlett Packard, eCollege</td>
</tr>
</tbody>
</table>