Evaluating The Application Service Provider (ASP) Business Model: The Challenge of Integration

Dr Philip Seltsikas and Prof. Wendy L. Currie

Centre for Strategic Information Systems, Department of Information Systems and Computing
Brunel University, Uxbridge, Middlesex, UK.
{phil.Seltsikas|wendy.currie}@brunel.ac.uk

Abstract

The paper evaluates the application service provider (ASP) business model. It draws from a large scale research program funded by the European Union and Engineering and Physical Sciences Research Council (EPSRC), into the emerging ASP industry where software is delivered as a service, priced on a per-seat, per month basis. Tracking a taxonomy of ASPs (pure-play, vertical, horizontal, enterprise and enabler) through longitudinal case study research, the paper suggests that two major inhibitors have contributed to the slow growth of this market. The first is economic conditions evidenced by the dot.com downturn, and the second is lack of education in the potential customer marketplace. The paper tracks the strategies of two major players within the ASP industry: Cable & Wireless, a traditional UK telecoms company moving into the IP market, and Jamcracker, a recently established US enterprise web services company. Through careful evaluation of key performance indicators (KPIs) for evaluating ASPs and customer perceptions of the software-as-a-service proposition (and e-business broadly conceived), the paper argues what integration of applications will be the major challenge if the ASP business model is to survive in the overcrowded and intensely competitive e-business sector.

1. Introduction

The last three years has seen unprecedented interest in the Application Service Provider or ASP business model which promotes the use of software as-a-service, rented on a per-seat, per month basis. Predictions of the growth of this fledgling industry have varied considerably with IDC and Ovum [1] forecasting a $25bn global market by 2003 and Dataquest suggesting the same growth by 2004 (see Figure 1). The western European market is also predicted to grow to $5.8bn by 2005 [2].

Assuming these figures are correct, ASPs will have a significant impact on IS strategies and outsourcing practice, not only for large companies, but equally for the under-exploited SME sector [3]. The promoters of the ASP business model, which is mostly vendor-driven, argue that the *value proposition* for the SME sector is attractive since the scope and scale of ASP offerings including enterprise (CRM and ERP), horizontal (functionally-focused), vertical (industry-specific) will reduce the total cost of (IT) ownership (TCO) [4]. Using cost benefit rhetoric of this kind, however, poses problems as many SMEs do not have a high IT spend, nor do they tend to measure or quantify the benefits and risks of their IT capabilities through TCO models [5].
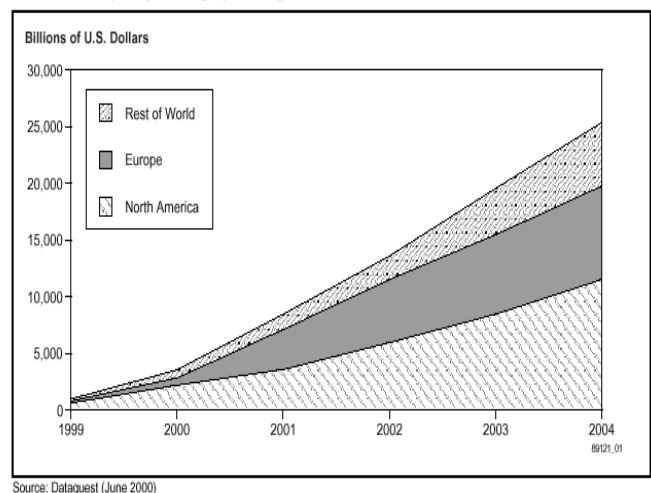

Figure 1. The emerging global ASP market (Source: Dataquest, 2000).

The paper evaluates the emerging ASP business model by drawing on the preliminary results of a $2m research program funded by the European Union and EPSRC on the software-as-a-service business model. Previous papers by the authors focus on the implications of ASPs for the supply-side of IS outsourcing [6] and the development of a taxonomy of ASPs [7]. It tracks how companies are developing their ASP strategies to compete more effectively in this volatile market place. In particular, it argues that integration will be the key challenge for ASPs and their strategic partners. The paper is divided into three parts. First it outlines the research work-in-progress. Second it identifies the key players within the ASP industry, including independent software vendors (ISVs), telecoms firms, hardware manufacturers, infrastructure and data center providers, and pure-play ASPs. Third it outlines the strategies of two very different companies for competing in the ASP space. Cable & Wireless, a traditional teleco now focusing upon delivering ASP offerings, and Jamcracker, a US-based enterprise web services company.

1. Research Study

Against a background of the changes in IT outsourcing in the last four decades, a research study was developed to compare and contrast traditional outsourcing practices with the recent phenomenon of application outsourcing via ASPs. Whilst much of the previous academic research has focused upon the client-side of IT outsourcing [8,9], with particular emphasis upon identifying success and failure scenarios through case study analysis [10], this research study was designed to explore the supply-side of IT outsourcing [11] using ASPs for two reasons. First, the supply-side of IT outsourcing remains under-researched in the academic literature. Yet a deeper knowledge of client strategies and outcomes of IT outsourcing may only be gained through an understanding of how IT vendors, together with their channel partners, develop and define their IT outsourcing business. Second, the emerging ASP industry, currently vendor-driven with few customers adopting ASP solutions, is a phenomenon which may have significant implications for global IT outsourcing policy and practice, particularly as web-enabled or remote outsourcing contracts may be more difficult to manage and control.

Initial survey research carried out by the authors found that out of 250 potential SME customers, 70% claimed they had not even heard of the term ASP. Only 6% claimed to use the services of an ASP, with 52% claiming they did not even outsource any of their IT work. However, 70% said they believed companies would rent rather than buy software in the future, and 57% said outsourcing had increased in their firm over the last three years. This small survey found that ASPs would need to target resources at educating the SME customer, as little knowledge or understanding of outsourcing and ASP offerings was apparent in this sample of SME respondents. Using the results of the pilot study into 250 UK SMEs, a research study was developed to investigate the supply-side of IT outsourcing using a cross-national case study approach.

2.1. Research methodology

The research study is an empirical investigation into software and computing companies offering ASP services in the US and Europe. An inductive-descriptive approach is used with fieldwork continuing over a four year period, beginning in July 1999. The first phase of the fieldwork was conducted in Silicon Valley, California and in the United Kingdom. A case study approach was used to elicit responses from key personnel responsible for developing an ASP strategy, rather than to test or validate a specific theory. Thus, 'Complex problems differ in all sorts of ways. By concentrating on the kinds of problems that arise in case studies, a more specific and therefore useful approach is possible' [12]. Exploratory research prior to the fieldwork being carried out suggested that the emerging ASP industry was complex, comprising of many established and *start-up* companies, all attempting to develop an ASP business. Case studies were therefore the most appropriate method of capturing rich and meaningful data from a wide range of ASP scenarios.

A semi-structured questionnaire was used to elicit data and information on the three key themes outlined in Table 1. The interviewees in most cases were founding members, CEOs and senior managers responsible for developing ASP strategies and services within their own organisations[1]. Interviews lasted between one and three hours and were tape-recorded. An ASP taxonomy was developed as it became apparent that the scale and scope of ASP offerings was wide in terms of market opportunity, company size, applications requirements, complexity of solution, integration and security issues. However, even the sub-division of the ASP industry into a taxonomy (enterprise, horizontal, vertical, pure-play and enabler) was merely an exercise in classification rather than one designed to pinpoint similarities or dis-similarities both between and within different types. Rather, the benefit of using the ASP taxonomy was to recognize the inherent complexity of the ASP model, with each type of ASP pursuing strategic alliances, channel

---

[1] Job titles of interviewees have included: CEO, CIO, COO, director of technology, business development director/manager, chief operating officer, VP, European and Asian operations, marketing director, product marketing manager, technology strategist.

IEEE
COMPUTER
SOCIETY

partnering and market opportunities relevant to its own position within the ASP industry.

The evaluation of different ASP business models was divided into four broad categories of delivery, integration, management and operations and enablement, currently used by the ASP Industry Consortium in their ASPire Awards program. The performance criteria may vary across different ASP types, with data security being a major priority where ERP applications are delivered by enterprise ASPs. The research is particularly keen to track the strategies of ERP vendors and relate the findings to existing work on the implementation of ERP systems in contemporary organisations[13,14].

Key Themes	Types of ASP Business Models	Evaluation of ASP Business Models
Three waves of IT outsourcing	Traditional outsourcing Enterprise outsourcing Application Outsourcing	Outsourcing versus insourcing Core competency debate Economics of IT outsourcing IT skill shortages
Taxonomy of ASPs	Enterprise ASPs Pure-play ASPs Vertical ASPs Horizontal ASPs ASP Enablers	Strategic alliances Channel partnering Market opportunities (Vertical and horizontal) Cross-national comparisons
Performance criteria for ASPs	Delivery Integration Management and operations Enablement	Customer satisfaction, time to market Pricing models Reliability, availability and scalability Data Security Service level monitoring Bandwidth requirements

Table 1. Key themes in the emerging ASP business model

Along with survey methods for tracking ASP performance, the case study method was the most appropriate means of generating rich and insightful data and information on ASP experiences. Although case studies produce data of varying quality, this was not seen as problematic but often indicative of the experience, priorities and capabilities of the ASPs themselves within this marketplace.

2.2. Case study sample

Twenty-eight companies were selected for interview. The choice of these companies was based upon two important criteria. First, initial exploratory work on the ASP industry found there was a plethora of ASP offerings in the marketplace. These ranged from companies offering collaboration tools, infrastructure support to enterprise solutions, among others. Whilst some of these companies were traditional ISVs who were developing an ASP strategy to compete within this marketplace, others

were new entrants seeking to establish a specific enterprise, horizontal or vertical offerings in the ASP space. For example, enterprise applications were offered by J.D. esourcing[2], which was a subsidiary of J.D. Edwards. J.D.esourcing had targeted eight vertical sectors to offer web-enabled ERP software, but was also using channel partners, such as Aristasoft (a vertical ASP). Horizontal ASPs, such as Wyzdom.com in the US and E.Carisma.com in the UK, tended to offer a business solution to customers. In both cases, these ASPs offered fixed asset management solutions, among others, and were seeking additional venture capital (VC) funds. The advantage of the horizontal ASP was breadth rather than depth since their web-enabled applications were relevant to most companies, thus giving them ample market opportunities without having to acquire vertical (industry-specific) knowledge of their customers' business sector. Vertical ASP, Aristasoft, perceived a market opportunity in the US high-tech equipment manufacturing and healthcare sectors, respectively. Aristasoft partners with J.D.Edwards (see above), Clarify and Agile to host an integrated portfolio of enterprise applications in addition to offering industry-specific business process expertise.

Pure-play ASPs offer web-enabled solutions only. This is unlike enterprise ASPs who may offer their solutions over the Internet or a virtual private network (VPN). In the UK, Netstore claims to be 'Europe's leading ASP'. Netstore was set up in 1996 and is a 'special partner' to Microsoft. Netstore offers a range of products and services to its key customers: Cisco, Avon Cosmetics Ltd and the Opus Group. These range from hosting Microsoft Exchange; on-line back-up, secure PC Refresh™ to weekly management reports and web hosting consultancy. Aspective is another UK-based pure-play ASP. This company was only formed in 1999 and describes itself as a 'Wireless ASP'. This is in recognition that, with the growth and development of mobile phones, ASPs will need to offer applications remotely.

The final role that is critical to the ASP model is the enabler. These companies may provide telecommunications, hardware, or internet connectivity and co-location services. ASP enablers have the advantage of partnering with a range of existing (enterprise, vertical, horizontal and pure-play) ASPs and those seeking to become ASPs (ISVs) to offer a range of web-enabled applications. Cable & Wireless plc has moved away from its traditional telecommunications background to become a major provider of ASP offerings. In a recent deal with Microsoft and Compaq, the company

---

[2] J.D.esourcing was set up by J.D.Edwards in 1999 to offer web-enabled ERP systems targeted to the midsize market. In 2001, J.D.Edwards announced it was closing J.D.esourcing and setting up ASP Solutions to be offered by the main company rather than a subsidiary.

has set up a-Services to offer Microsoft Exchange and Office applications. It is currently exploring opportunities with ISVs and others to offer additional applications. Another company is Jamcracker which recognizes the shortcomings of some ASP's strategies by becoming an ASP aggregator. This strategy will support existing ASPs to deliver their offerings through an IT platform used by strategic partners. Both these companies will be discussed below.

Second, companies were selected according to their ability to reach the customer market. One of the initial observations from conducting a full-scale search of ASPs was that many companies claiming to be an ASP did not have any specific or definable application or service offering. Some web-sites, for example, had lists companies claiming to be ASPs, although many of them were simply fledgling companies staffed with only two or three founding members. It was therefore important to acquire some key background information about the company in terms of its commercial history, size, market strategy, application and service offerings, and existing and potential customer-base (if any). As a result, companies were selected on the basis that they had more than ten members of staff, could demonstrate they had a customer market, and a distinctive application and service offering.

2. ASP Delivery and Enablement

The ASP business model emerging at the end of the century focused upon delivery and enablement as the two key challenges. Much of the focus was on how ASPs could penetrate new markets, notably the SME with web-enabled applications for enterprise, functional or vertical domains. Numerous ASPs were established, many soon realizing that they needed to develop strong partnerships with a range of business and technical product and service providers. The ASP had to reconcile two competing forces. First, whether the ASP should attempt to *own* the customer relationship through establishing a direct relationship with the customer. Second, how ASPs can avoid channel conflict when they offer the same applications as ISVs, the main problem being confusion in the customer marketplace.

Field research conducted in the US and UK found that the ASP ecosystem was a complex and dynamic phenomenon incorporating many different types of company within the software and computing services industry. Many of these companies were seeking a major role within the ASP sector, with some actively developing ASP offerings from their existing businesses, whereas others were start-up ASPs, or companies seeking an enabling role within the ASP industry as IT services

companies, co-locators, ASP aggregators, network service providers, and security specialists. Other key players in the ASP ecosystem were ISVs, systems integrators, data center equipment manufacturers, telecommunications companies, Internet Service Providers (ISPs) (access and connectivity) and other support firms (security, application customisation, software support, and management tools). Such diversity further led to confusion for existing and potential customers. The key players are described below:-

Independent Software Vendors (ISVs): Traditional software vendors include the large Enterprise Resource Planning (ERP) vendors such as the top five JBOPS companies: J.D.Edwards, Baan (now Invensys), Oracle, Peoplesoft and SAP. The Customer-Relationship Management (CRM) company, Siebel Systems is another leading software vendor. In addition to the enterprise-wide software vendors, many other horizontal, vertical and niche players are looking towards the ASP business model with a view to offering their software over the Internet or via a virtual private network (VPN).

With the growth of the ASP industry, the traditional ISVs have been presented with both an opportunity and a threat. The ASP space offers ISVs (large and small) to offer their software to new customers, notably the SME sector, via the services of an ASP. Microsoft has also entered the ASP market with it's .Net strategy and now has many strategic alliances with infrastructure providers and ASPs. In recent months, many ISVs have considered becoming ASPs, although they recognise that delivering and integrating their software is a different business than developing software. The result has been that many ISVs have partnered with an ASP. This is witnessed in the ERP sector where many partnerships and alliances have emerged between vendors and specialist ASPs. The downside of the emerging ASP industry for ISVs is the threat of new competition from specialist or niche market ASPs, many of which may develop software capabilities to compete with the large ISVs.

Many ISVs are now concerned that they must seek ways to web-enable their software if they are to remain competitive. Field research found that whilst some ISVs were reluctant to invest in web-enabling their software, their customers were interested in the rental model of procuring software-as-a-service, as opposed to purchasing it as a product. This may force ISVs to move to an ASP model, particularly if rival companies offer customers a more attractive value proposition. Figure 2 depicts how the dual roles of ISVs and ASPs deliver and enable software applications through partnerships with ISPs, NSPs and data center companies. Whereas some ISVs will become ASPs, others will partner with ASPs to speed up time-to-market to deliver their software applications.

IEEE COMPUTER SOCIETY

One UK ASP is currently negotiating with a large ISV serving the SME market with accounting software to web-enable this product and offer it as a service.

Research into the partnerships between ISVs and ASPs found that many ISVs were reluctant to web-enable their software due to customer worries (however misplaced) about data security and reliability [15]. Potential customers were also concerned about the survival prospects of ASPs offering web-enabled software. These factors were not insignificant in delaying the progress of the ASP market. In addition, the lack of education in the SME sector about the benefits and risks of the ASP model was a major impediment to the take-up of ASP offerings. Surveys have already pointed to the lack of understanding about the term *ASP,* notwithstanding its business value [16].

Software Infrastructure Partners: Enabling the ASP solution is a key role, particularly as many ASPs do not own their own data centers. The range of companies in this category is wide. It includes companies which enable an ISV to become an ASP such as Digex; companies which offer co-location services like AboveNet, Digital Island (recently bought by Cable & Wireless) and Exodus, thus enabling ASPs to co-locate their servers; and companies that enable their customers to improve their computing environments to embrace the ASP business model, such as Centerbeam. ASPs will need to carefully select their channel partners as part of their delivery model will need to address important issues of data security, reliability and 999.99 service availability.
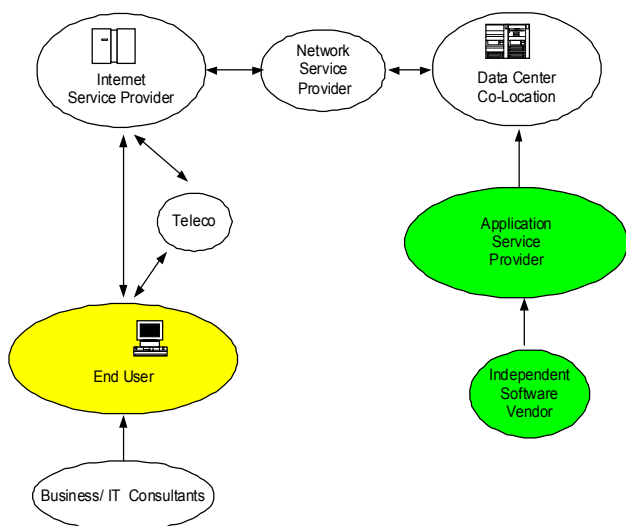

Figure 2. Software Provider ASP

Software and Complementary Technology Partners: Hardware manufacturers and networking companies are a major element of the ASP ecosystem. Data centre equipment manufacturers (storage, servers, etc) like IBM,

Compaq, Sun and HP. The deal between Cable & Wireless, Microsoft and Compaq is an example of how one of the largest suppliers of computing systems (Compaq) can benefit from the ASP market. Compaq NonStop™ eBusiness solutions comprise the building blocks, the network system architectures and the service professionals, to enable customers to build, deploy and support their e-business initiatives. This enables customers to benefit from a 24 x 7 x 365 service through faster deployment, reduced risk and higher availability. Compaq's role in the a-Services deal is to provide iPAQ Internet PCs along with the internet access provided by Cable & Wireless and applications from Microsoft. As the ASP industry consolidates, ISPs, NSPs, data center and co-locators will come together to offer web-enabled applications. Many ASPs will go out of business as ISVs instead choose to work with full service providers (FSPs) which may be telcos with established relationships with ISPs, NSPs and hardware manufacturers.
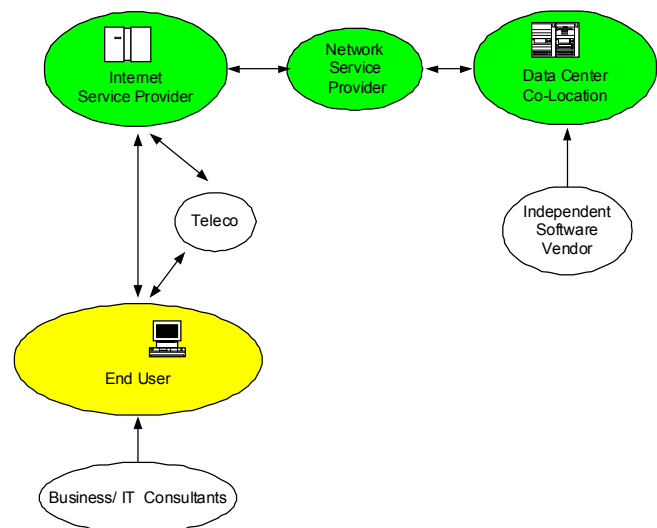

Figure 3. Application Infrastructure Provider

Research found that ASPs were developing strategic alliances and partnerships with other companies with the aim of providing a seamless service to their customers. This was becoming more important as the first phase of ASP (1999-2000) tended to focus upon delivery and enablement with management and operations and integration of applications not fully on the agenda. For example, during the dotcom downturn of 2001, numerous high profile ASPs such as Pandestic went bankrupt. Even Futurelink, seen as a major player the year before, filled for Chapter 11 in the United States.

Many ASPs, having secured first-round venture capital funding found themselves unable to secure further

funding. One reason was that many enterprise, horizontal (functionally-focused) and vertical (industry-specific) ASPs had thin business plans. Customers were waiting for *best practice* case studies before committing to an ASP investment. But the lack of these examples created further damage to fledgling ASPs, many of which had to merge with other ASPs, be taken over by larger firms or go out of business. As Figure 3. depicts, the application infrastructure provider exemplified by companies like Cable & Wireless may contribute to the further elimination of pure-play ASPs, since they will establish partnerships with ISVs thus cutting out the middle-man. This strategy is discussed in the next section by focusing upon two very different companies currently operating within the ASP or software-as-a-service marketplace. Cable and Wireless, a UK-based traditional telecommunications company is now focusing upon building an Internet business, one strand of which is the provision of a-Services, to providing ASP offerings. Jamcracker Inc, a US-based enterprise web services company is also pursuing an ASP aggregation strategy focusing upon integration of applications. These companies are discussed in the next section.

3. THE CHALLENGE OF INTEGRATION

4.1 Cable & Wireless

Cable & Wireless is a leading supplier of Internet services to the carrier and service provider sector, with a revenue of €17bn in 2000 and customers in 70 countries. The company carries over 2,000 Internet service providers (ISPs) world-wide, and commands a 28% share of the dominant US backbone market. It delivers one in 10 of the worlds emails and handles over 400 Tbytes of data every week. The company is a market leader in the provision of mobile IP solutions, offering, through its dedicated Mobile Carrier Services team, specialised understanding of the mobile sector backed by the resources of one of the worlds only global Tier 1 Internet carriers.

It is currently building a €1.2bn network that will connect 40 European cities across 13 countries. With more than €952m of investment and the combined sales forces of C&W and Compaq, C&W a-Services is going to become a major ASP. With the advent of Internet Protocol (IP), the traditional, voice-based circuit switched networks are giving way to a new order in which markets are becoming global and business customers demand advanced new services. Cable & Wireless is at the forefront of this revolution. Having invested over €3.5

billion in IP, Cable & Wireless has one of the world's largest and secure IP backbones. The company provides its customers with the local support and end-to-end capability The mission statement of the company is: *'To be the world's leading provider of IP and data services to business customers'*.

Cable & Wireless has an operational infrastructure that is unrivalled in terms of geographic reach. It has wide-ranging skills gained from working across many different cultures and is able to use its global experience to transfer best practice from one market to another. The company has one of the fastest, most advanced, and most secure IP networks in the world. End-to-end business IT solutions combines Cable & Wireless networking for small and medium-sized businesses, Compaq Internet technology and services, and Microsoft applications. The first product now available from C&W a-services, a-Workspace, delivers end-to-end, fully managed collaborative computing services from a single source for SMEs combining C&W Internet access, Compaq Internet PCs, Microsoft Corp. applications, and support for a single per user monthly fee. The total solution comprises:-

- A-Workspace – the platform for delivering software as a service
- Microsoft Windows 2000 with Internet Explorer
- 800MB of secure online storage with backup
- On-line training
- On-line administration services
- Microsoft applications including Office 2000 and Exchange 2000
- Compaq iPAQ Internet PC with 17" monitor
- Network connectivity with managed firewall and unlimited Internet access
- 24x7 customer support via helpdesk, email and web

The key challenge for Cable & Wireless is in moving away from its traditional telecommunications background to compete in the overcrowded ASP market. With an impressive infrastructure, the company is well positioned to deliver and enable a variety of web-enabled applications from enterprise, horizontal and vertical ASP firms. However, as the company has already witnessed, potential ASP customers are demanding additional services such as management, operations and integration of applications. Many SMEs are reluctant to replace their existing software packages, having already committed to licenses and maintenance costs in favour of *untried-and-test* ASP offerings. As such, Cable & Wireless needs to develop partnerships with a range of potential players from ISVs and ASPs focusing upon a market segmentation strategy to target specific industrial sectors. Such a strategy is unlikely to be implemented in the short

COMPUTER SOCIETY

term since the scale and scope of partnerships needed to develop a profitable business is large.

When Cable & Wireless first developed it's a-Services offering, it believed that the TCO model would attract the interest of SMEs. However, it found that many SMEs had a low IT spend and did not even quantify their IT costs on an annual basis. As such, the TCO model did not prove to be the most value way of educating the SME market about the potential benefits of the ASP model.

4.2 Jamcracker

Jamcracker Inc, based in the US was founded in 1999. It is an enterprise web services company, providing access, management, integration and support of web-enabled applications from any source to assist customers to rapidly and affordably deploy and manage new IT and business capabilities. Through key partnerships with leading infrastructure, enterprise services and implementation companies, Jamcracker delivers enterprise-class capa-bilities. The Company serves emerging and established businesses in a breadth of industries, including software, business services, communications, insurance and financial services. It focuses on the evolution from traditional outsourcing to managed hosting using ASPs to enterprise web services.

The company has set up a strategic alliances program to assist channel partners to deliver web services on a single platform, the benefits of which are improved flexibility, reduced time to market, increased market share, and cost reduction. The IT management platform uses leading edge XML-based web services delivery platform to deliver integrated web-services, support, and content. The program was developed in response to demand from large business services providers, including software and hardware distributors, telcos, system integrators, platform and infrastructure providers and value added resellers, that want to quickly and flexibly develop and expand their web services offerings. This is accomplished by using Jamcracker Enterprise, a next-generation sourcing solution that eliminates a key barrier to entry into the web services market. Jamcracker enables the quick and easy deployment, provisioning, management and support of web-enabled applications. According to the company,

"Through the Jamcracker Strategic Alliances Program, our partners will be able to leverage leadership in their existing markets with our IT Management Platform, Applications Catalog, 24x7 Support Services, snap-in ASP services and integration support to more easily extend their value proposition by offering fully-integrated web services on a single platform."

The Jamcracker IT Management Platform aims to enable real-time business process integration among customized, packaged and net-sourced ASP offerings. The Platform eliminates the problems of point-to-point integrations by providing a hub-based infrastructure that simplifies the integration of each new application of a company's IT portfolio. An example of integration is for a net-sourced financial application can share information with an in-house order management system, or when new customer information entered in a net-sourced sales force automation (SFA) application can be synchronized real-time with in-house ERP and CRM systems. By providing a platform with pre-built components and a highly repeatable implementation methodology, such information exchanges are made possible. For example:-

Business Process Management: Allows the set up and management of business processes within an enterprise and across the extended enterprise.

Pre-configured Adapters: Pre-configured adapters to a myriad of applications including SAP, PeopleSoft, Oracle, Siebel, and a number of ASP applications simplify the communication of information to these applications.

Industry Standards Support: Support for a large number of industry standards for information exchange between companies including various dialects of XML like cXML, ebXML, xCBL, RosettaNet, and Jamcracker's own ITML.

Transaction Monitoring and Tracking: Web-based tools to monitor the status of specific integration transactions that are processed through the Jamcracker Platform. Automatic notification of critical events is also a standard feature that is offered.

Reliable and Secure Messaging: Guaranteed delivery of information that is flowing across applications ensuring that messages are eventually delivered to intended destination, even if the receiving application is temporarily unavailable.
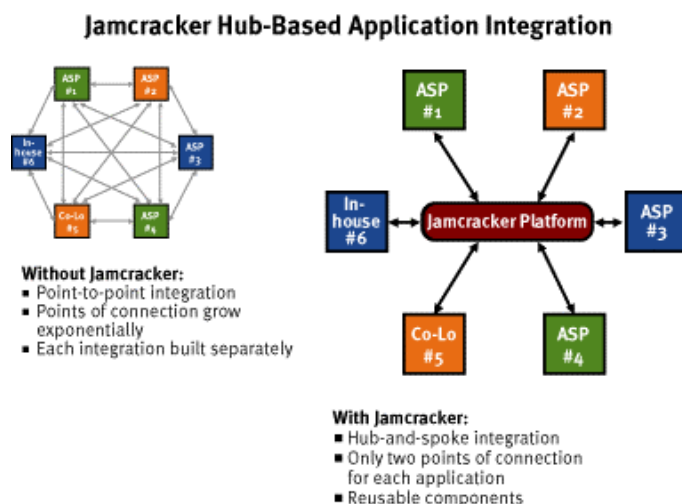
Figure 3. Jamcracker ASP Integration
Source: Jamcracker

4. Conclusions

This paper has considered the evolution of the ASP business model from an initial focus on delivery and enablement of software applications via the Internet to one where companies are now focusing upon integration. As we saw above, the first phase of the ASP industry saw the proliferation of ASPs, most of which were narrow enterprise, horizontal or vertical focused web-enabled offerings. This strategy proved to be unsustainable as many of these ASPs went out of business. In the second phase of the ASP industry (post 2001), companies operating in this market are recognizing the need to establish strong partnerships with the aim of providing customers with integrated applications. Yet this will prove to be a challenge as customers decide whether to invest in expensive software integration work or maintain the status quo.

Whilst the success of ASPs remains in the non-mission critical applications of email, billing, on-line back-up and automated virus checking, the more sophisticated ERP and CRM applications have proven less amenable to the ASP model. Two reasons are paramount. First, customers that have already invested heavily in ERP systems are unlikely to explore the ASP alternative unless there are cost and quality benefits. Second, SMEs, without a history or experience of outsourcing and a range of disparate software applications may be reluctant to adopt the ASP model unless they are presented with best practice scenarios.

Whilst software-as-a-service has some compelling advantages, the key problem facing vendors is how to sell the concept both within and across industrial sectors. A *one-size-fits-all* approach is inappropriate, particularly as SMEs tend to look for examples of IS best practice within their own industrial sectors. Even traditional outsourcing theory and practice focusing upon strategic partnerships [17, 18], cost benefit analysis [19] and management issues [20] may provide few clues to negotiating industry-centric outsourcing contracts where applications are delivered remotely through a web of complex partnerships. ASP vendors will therefore need to entice new customers with strategic benefits rather than simply focusing upon reduced TCO or improved economies of scale. Strategic benefits may involve more secure data, remote access to applications, integration of systems and better communications. It is likely that ASPs will only survive in the marketplace if they can provide applications from more than one ISV, each with its specific terms and conditions for usage of an application. Such a strategy is used by Cable & Wireless and Jamcracker. ASPs will also need to differentiate their offerings from other providers and may therefore need a market segmentation strategy, perhaps focusing upon specific vertical sectors. This will be difficult for traditional infrastructure providers such as Cable & Wireless without the strong channel partnerships across industries. To this end, systems integrators and value added resellers (VARs) with industry-specific knowledge will be useful in linking applications infrastructure providers (AIPs) with ISVs.

In conclusion, it is apparent that the ASP industry remains immature and will likely evolve into a more consolidated market where the term *ASP* is likely to be superseded by *software-as-a-service*. Customers are likely to evaluate ASPs on the basis of their partnerships with key players; the service level agreements (SLAs) they provide; and the range and quality of their web-enabled applications. It is unlikely that ASPs will avoid the issue of customization, as customers will demand integration across applications and business processes. Customization will therefore deter vendors from targeting the SME and SOHO customer for enterprise applications, although this sector will still demand commodity type ASP offerings (email and calendaring). Whilst predictions of a $25 bn global ASP market look ambitious in the present economic climate, it is likely that, as ISVs re-write their software for the Internet, procuring software-as-a-service will, over time, become more attractive to companies than the traditional product-based approach.

5. References

[1] Ring, C. (2000) European market research: A report to the ASP Industry Consortium, Ovum, March.

[2] ASP Industry Consortium 2000. Industry news. aspindustry.org.

[3] Bender-Samuel, P. (1999) 'A fork in the road for ASPs'. Outsourcing-Journal.com/issues/apr2000.

[4] Lauchlan, S. (2000) ASPs: Are you ready to play?. Computing, 3 February, p.29.

[5] Currie, W., Seltsikas, P. 2001. A market segmentation strategy for developing an ASP business. International Conference on Outsourcing Information Systems, Beyreuth, Germany, June.

[6] Currie, W., Seltsikas, P. 2001. Exploring the supply-side of IT outsourcing: the emerging role of application service providers'. European Journal of Information Systems, Vol. 10. No.3.

[7] Currie, W., Seltsikas, P. 2001 'Delivering business critical information systems as a service: a taxonomy of application service providers'. International Journal of Innovation Management', (Forthcoming, September).

[8] Quinn J. B., Hilmer, F.G. (1994) 'Strategic outsourcing'. Sloan Management Review, Summer, pp. 43-55.

[9] McLellan, K., Marcolin, B., Beamish, P. (1995) 'Financial and strategic motivations behind IS outsourcing'. Journal of Information Technology, 10, 4, pp. 299-321.

[10] Venkatraman, N. (1997) 'Beyond outsourcing: managing the IT resources as a value center'. Sloan Management Review, Spring, pp. 51-64.

[11] Mitchell, V., Fitzgerald, G. (1998) 'The IT outsourcing market place: vendors and their selection'. Journal of Information Technology, 12, 223-237.

[12] Easton, G. (1992) Learning from case studies. Prentice Hall, London.

[13] Scheer, A.W., Habermann, F. (2000) 'Making ERP a success'. Communications of the ACM, April, 43, 4, pp. 57-61.

[14] Saunders, C., Gebelt, M., Hu, Q. (1997) 'Achieving success in information systems outsourcing'. California Management Review, Vol. 39, No. 2. Winter, pp. 63-79.

[15] Seltsikas, P., Currie, W.L. 2001. Developing strategic alliances to compete in the ASP industry, 14th Bled Electronic Commerce Conference, Bled, Slovenia, June.

[16] ASP Special Report. 2001. Computer Weekly, 20 September, pp. 27-44.

[17] Henderson, J.C. (1990) 'Plugging into strategic partnerships: the critical IS correction'. Sloan Management Review, Spring, pp. 7-18.

[18] Klepper, R. (1995) 'The management of partnering development in I/S outsourcing'. Journal of Information Technology, 10, 4, pp. 249-258.

[19] Holland, C., Light, B. (1999) 'A critical success factors model for enterprise resource planning implementation'. IEEE Software, 16 (3) May-June, pp. 30-35, ISSN 0740-7459.

[20] Adler, P.S., McDonald, D.W., McDonald, F. (1992) 'Strategic management of technical functions'. Sloan Management Review, Winter.

IEEE COMPUTER SOCIETY