TreeWorks

ASP (Application Service Provider) Solutions

ASPs deliver computer-based services – including the deployment, integration, access, training, management, and support of the applications – usually with no up-front investments in application licenses, servers, people and resources, and at guaranteed service levels.

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Content

ASP Definitions and Characteristics

The term ASP has been defined by several organizations from different points of view. Based on these definitions, we will attempt to outline the characteristics of the ASP model.

- The **Information Technology Association of America (ITAA)** agreed to the following definition:

"An Application Service Provider, or ASP, is any company that delivers and manages applications and computer services to subscribers/clients remotely via the Internet or a private network."

- According to **Aberdeen's,** an IT market analysis and positioning services firm, the application service provider's definition is:

"An application service provider (ASP) is a business that provides its customers with access to software hosted at a centrally managed location. The ASP manages, maintains, and monitors the application and some or the entire computing, storage, and network infrastructure needed to deliver it."

- According to the online dictionary **Webopedia**, the application service providers are**:**

"…third-party entities that manage and distribute software-based services and solutions to customers across a wide area network from a central data center."

All these definitions emphasize that an ASP delivers and centrally manages applications for clients via a network. Based on the definitions given above, we can extract five distinguishing characteristics for the application service providers:

- **Delivery over a network.** The ASP offers access to the application over a network: the Internet, a virtual private network, or leased lines.
- **Externally managed.** The application service is managed externally by the service provider from a central location rather than at each customer's site.
- **One-to-many service.** The ASP model is designed to be an one-to-many service. The ASP typically offers standardized or minimally customized applications to a large number of users, a much more cost effective solution. The ASP may cooperate with other vendors to package standardized offerings, providing minimal or no customization.
- **Contract fulfillment.** An ASP assumes responsibility for the delivery of application access, including the underlying delivery mechanisms and related services, as stipulated in the customer contract. The ASP manages, supervises, and monitors the performance of these delivery mechanisms, usually under a service level agreement (SLA) that guarantees a specific level of application availability and performance to customers with a penalty for non-compliance. The ASP is furthermore responsible for the application maintenance and the upgrades, the end-user billing, the provisioning, as well as the overall system management.

An ASP "rents" applications by providing access to them to customers that cannot or do not want to make an investment in application licenses, hardware, IT staff or other resources needed to support the software in-house.

According to www.ASPnews.com, ASPs are broken down into four subcategories:

- Enterprise ASPs - they deliver high-end business applications;
- Local/Regional ASPs - they supply a wide variety of application services for smaller businesses in the local area;
- Specialized ASPs - they provide applications for a specific need: website services or human resources;
- Vertical Market ASPs - they provide support to a specific industry, the real estate industry for example;

Components and Services

ASPs deliver transparent software services - including the deployment, integration, access, training, management, and support of the applications - usually with no up-front investments in application licenses, servers, people and resources, and at guaranteed service levels.

Whether provisioned by the ASP alone or in conjunction with partners, the customer purchases a single service from a single point of contact: the ASP. Behind the scenes however, there is a complex ASP supply chain that delivers a variety of solutions in different areas such as services, networking, and applications. An overview of the various roles in the ASP market is given in Figure 1:

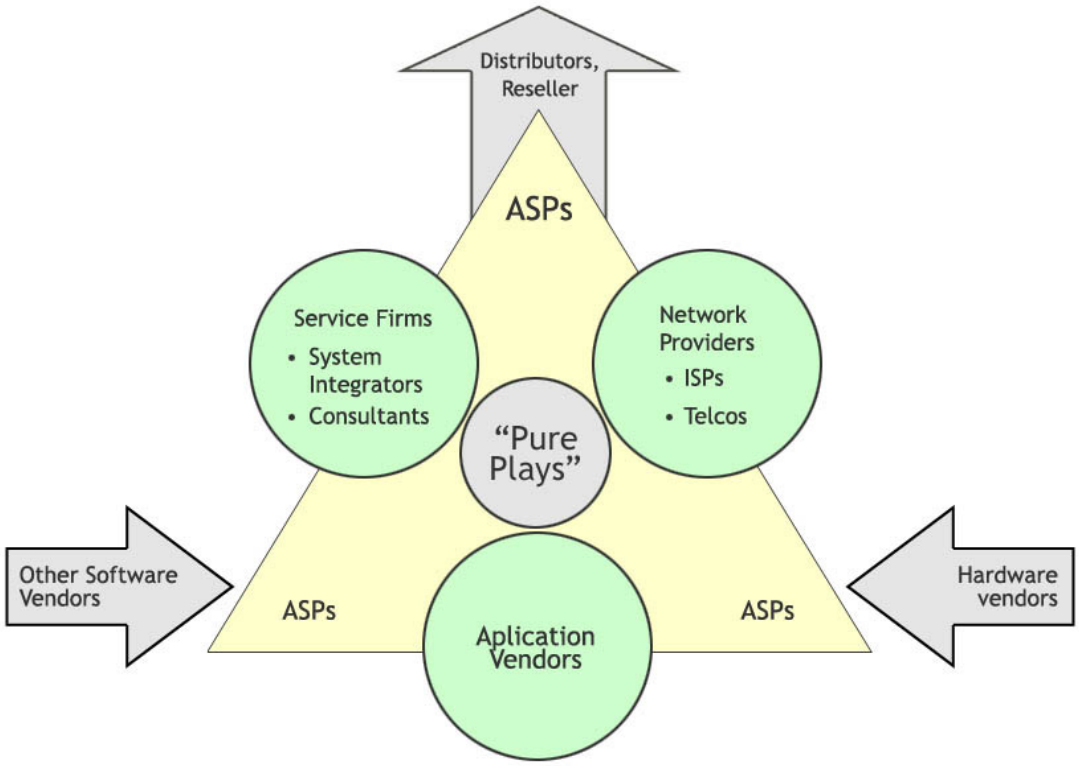

Figure 1. ASP Players

The ASP business model assumes that an ASP provides enterprise applications remotely via a wide area network, e.g. the Internet, to one or more clients (Susarla, et al., 2003). This one-to-many ASP hosting model lends itself to certain ASP economies-of-scale by providing standard applications to multiple clients (Gillan, et al., 2000). This model dramatically changed the software delivery mechanism from purchasing licenses to leasing web services (Greene, 2001). In the ASP business model, an ASP will generally take the full responsibility for the software purchase, the application maintenance and the ongoing updates, while the clients may require only a Web browser to access its applications online. To acquire these services, an ASP's clients are commonly charged a fixed minimum cost plus a variable fee based on usage time or user sign-on activities (Koch, 2000). One practitioner characterized acquiring ASP services to buying voice mail services from a telephone company (Kearney, 2000).

An ASP or Applications Service Provider provides software applications and hosting services to customers, generally on a contract or subscription basis, from a remote server location, using the Internet or a private network to reach the customer site(s).

Full-service ASPs provide the computing power, software systems and trained personnel to cover all the necessary aspects. Companies that choose an ASP are looking for fast access to core applications, a lower total cost of ownership and operation, the advantages of the best practice models, a low investment in hardware, access to IT skills not easily maintained within the organization, predictable annual costs, and access to regularly upgraded applications. The rationale is that an ASP concentrates on these elements and thereby maintains a higher level of expertise and service at a lower cost, than the ones that can be maintained internally by an institution.

The ASP may also provide a targeted service rather than a full range of services. Application infrastructure providers (AIP) concentrate on the data organization and storage aspects of the service, and the provision of such data to applications throughout the organization, but not necessarily under the ASP contract. Independent software vendors (ISV) provide suites of software, but rely on hardware and networking provided by the institution. Network services providers (NSP) manage the hardware and the software of a network, but not the applications or the data housed on the servers within the network. System integrators (SI) work with an organization to insure that the data can be shared across multiple applications, and that the updates are coordinated among systems. Value-added resellers (VAR) bring services to an organization in bundled groupings that allow for savings in cost and maintenance, beyond that obtained through individual purchases. Depending upon your perspective, all may be considered within the definition of an ASP.

The overall ASP market is expected to grow by nearly 70% in the US by 2004, and by 121% in the rest of the world (interpath ASP Resource Guide 2000). Clearly the major target for this growth is for-profit corporations. Colleges and universities have not, as yet, obtained ASP services in large numbers. However, as the cost of maintaining internal services grows and the ability to maintain the high salaries of IT professionals frustrates academic administrations, we may be seeing a growing movement toward ASP in academics.

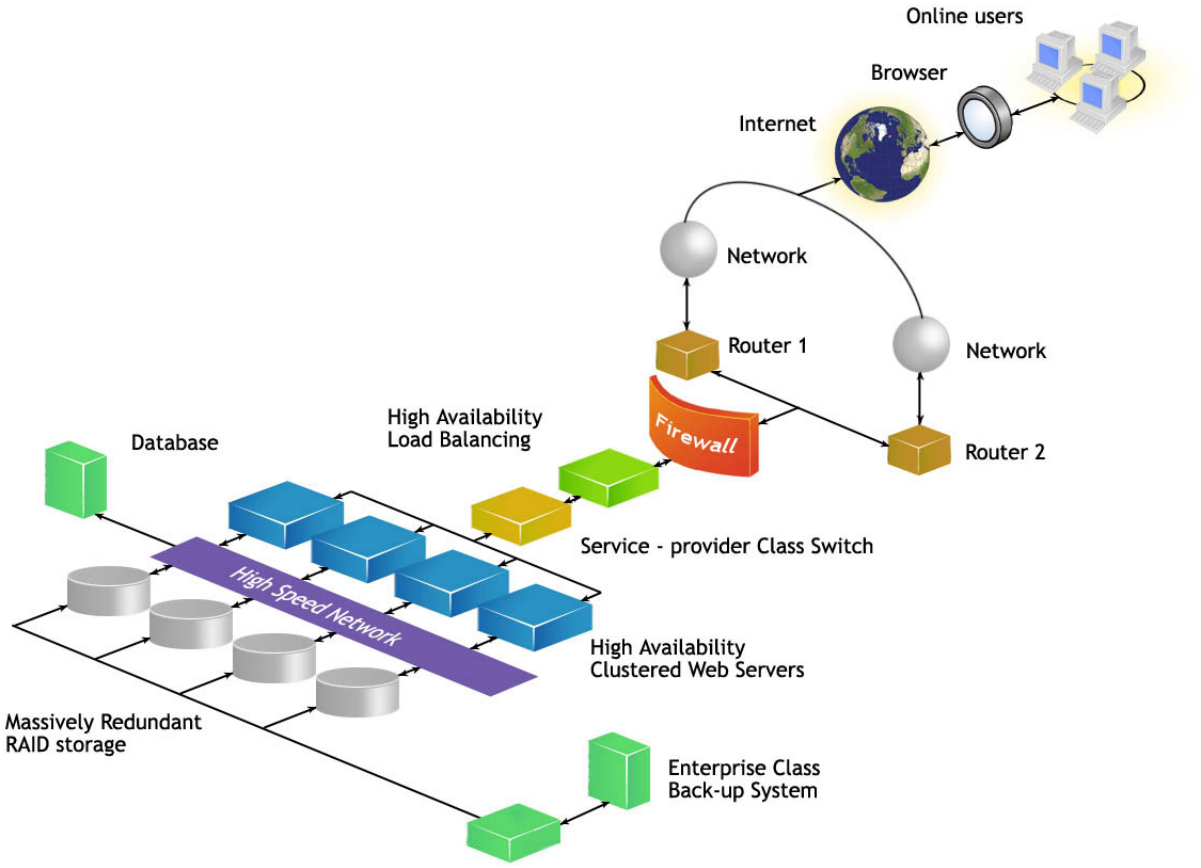

Figure 2. ASP Delivery Model (Source: Frontera Corporation)

ASPs use network-based computing as a platform to deliver business services. Figure 6 shows how online users connect through the Internet using the ASP's Web servers, behind a firewall. The Web server accesses the database's information through a network. Using the following image, we will present the technical aspects: firewalls, load balancing, hosting environments, monitoring, application access, as well as the requirements for the service delivery.

The customer expects and depends on a reliable service. Reliability includes these attributes: availability, security, integrity, and maintainability. Furthermore, the service has to be scalable so that it can be adapted to changing customer requirements.

Application Availability and Performance

To achieve high service performance and service availability for the customer, ASPs have to constantly monitor their infrastructure, applications and databases.

They must be able to react immediately to solve possible problems that may occur for any component.

Ensure Application Uptime

The key factors affecting the reliability and performance of Internet applications are: bandwidth limitations, latency, and server response times. It is important to consider these factors when designing and deploying Internet applications.

Since customers usually rely on high application availability, ASPs have to employ a set of products and methodologies including load balancing, dynamic failover, content delivery, as well as performance testing, to ensure the application uptime that is stipulated in the service level agreement.

Load Balancing

It is difficult to foresee the amount of requests a server gets at any given time. The prediction of the network traffic is very difficult due to the great number of devices and traffic involved, especially if services are provided via the Internet. Furthermore, at times of high usage, the performance of the application might be affected since servers may be unavailable due to overloading.

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Dynamic Failover

Since computer failures are not always preventable, data center providers should deploy dynamic failure solutions that provide back-up capacity for all the hardware, software, and databases. In case of a system failure or a temporary shutdown, the backup operation automatically switches to an alternate standby database, server or network without interruption.

Dynamic failover is an important fault tolerance function of all the systems that rely on constant availability. Requests from/to the failed system are automatically redirected to the backup system that takes over the operations of the primary system. This failover process is usually hidden to the user.

Content Delivery

Companies have developed content delivery technologies to prevent net congestions on the Internet, by reducing the amount of data that is transferred, since the direct causes for net congestions – fixed bandwidth and high latency – cannot be changed. Content delivery is the service of copying the pages of a website to geographically dispersed servers, in order to move content closer to the end users, or to enable rerouting to net segments with lower traffic. When a page is requested, content delivery technologies dynamically identify and serve page content from the closest server to the user, enabling faster delivery by intelligently routing requests.

Performance Testing

To measure the capacity of the server configuration, companies might conduct a performance test of their solutions in a lab environment before going 'online' with the ASP offering. The results are analyzed to check if the server configuration is appropriate for the companies' needs and to predict the number of user hits that can be handled simultaneously. Companies can eventually save money by optimizing hardware, software and database requirements.

Conclusions

The ASPs are a new model of software delivery.

While most of the companies are using the ASP model, only few are directly interested in production and distribution. There are a lot of reasons why the ASPs are so popular these days.

Looking beyond the technological aspects and benefits which ASPs are offering, we conclude that some companies are using them because of the financial aspect involved. This is shown in the graphic below (figure 3):

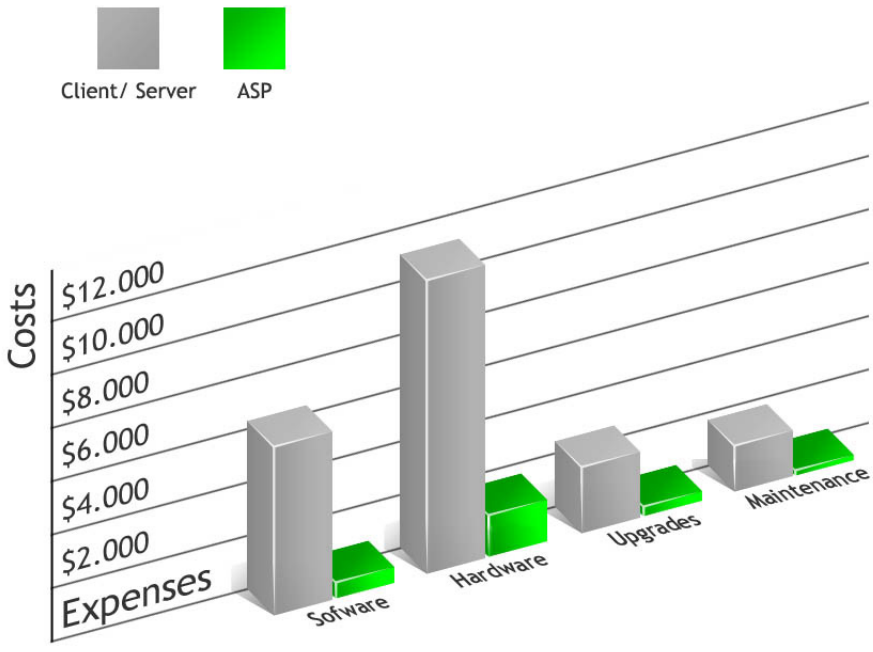

Figure 3

While it is a cost effective solution for the user, we can't say the same thing for the firms who create and manage ASP projects, and need a large capital to get started.

Reports of specialized statistics companies such as IDC, Gartner Group or Forrester Research show that the ASP market is still at the beginning, with an annual growth from $2 billion to $50 billion, in 2003 alone.

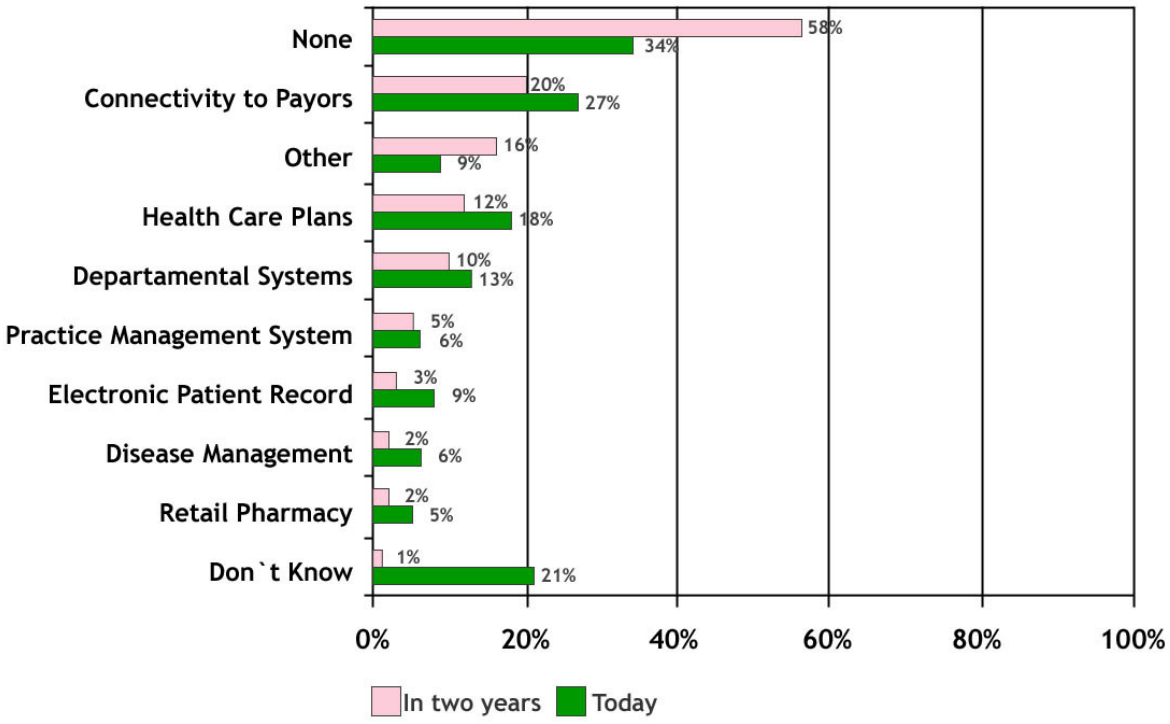

Figure 4

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