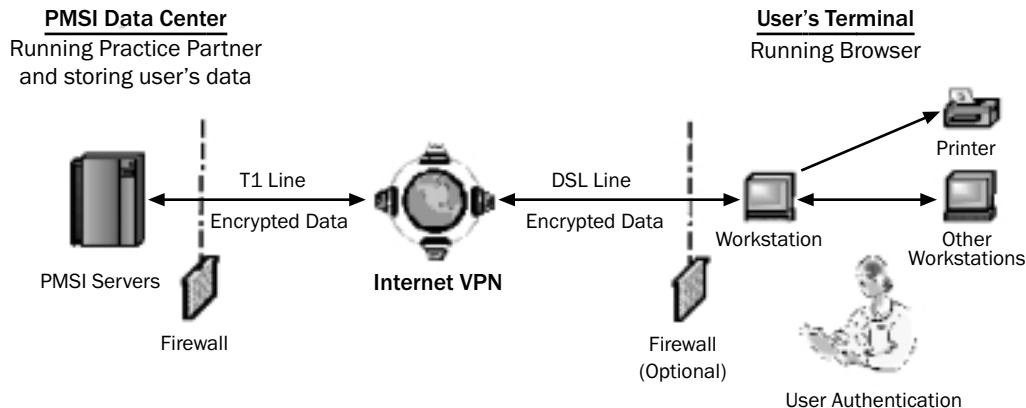


ASP 101: A Beginner's Guide to Internet-based Healthcare Applications

The Application Service Provider (ASP) model is a new way of providing software to medical offices and enterprises that take advantage of the worldwide connectivity provided by the Internet. ASPs offer an alternative to traditional client-server applications with the promise of lower cost of ownership, easier implementation, and easier maintenance. The ASP also offers a new service-based model of purchasing, which typically involves monthly fees. This is in contrast to the traditional client-server model, in which applications are purchased outright.

However, the ASP also raises a number of new questions involving security and privacy of patient data, reliability and response time of the applications, and ownership of data. This Forum will focus on providing a basic primer to the advantages of and technology behind ASPs, and will discuss the issues and trade-offs that should be carefully considered in the decision-making process.

A schematic view of an ASP network: Practice Partner ASP



The Data Center provides a server with a virtual private network (VPN) connection to the user's office. The VPN helps insure the security of the data to and from the customer site.

Users provide a network of workstations and printers. Their workstations log on to the Data Center via a VPN connection to work with the software application. All the actual processing of the application is accomplished at Data Center.

What is ASP and how is it different than traditional client-server applications?

An Application Service Provider (ASP) is simply another way of accessing and utilizing software applications. Instead of installing the software on a dedicated server at a physician's office, applications are remotely installed and managed at a central data center. Physicians and office staff connect to the applications utilizing a secure link across the Internet called a virtual private network (VPN). Unlike the conventional client-server model in which vendors license their products to users, the ASP model typically charge the end-user a fixed or transaction-based monthly fee.

How does it work?

The diagram on the front page provides a basic overview of how an ASP works with the Practice Partner applications. Typically, the customer is responsible for securing hardware (PCs, printers, wireless devices) and a connection to the internet. The ASP vendor provides a Data Center (consisting of high-powered computers and software with specialized telecommunication connections) where the application is actually run, plus the VPN to ensure secure transmission. To use the applications, physicians and staff simply logon to the Data Center via their internet connection. All processing and storage of data is done at the Data Center.

What are the advantages of an ASP vs. traditional client-server systems

The following are some advantages that are stimulating interest in ASPs:

- **Easier to Install and Maintain.** With an ASP, there is reduced hardware and software system administration. ASP vendors purchase and maintain all server-related functions, including software installation and set-up, routine maintenance, backups, updates, and troubleshooting. Given the current shortage and expense of dedicated IS personnel, organizations can help lower labor costs by outsourcing some of these functions to the ASP. For small practices that do not have dedicated IS personnel, this can make the entire process of utilizing complex applications much easier. Please note that the practice still retains responsibility for setting up and maintaining their local network and workstations.
- **Lower Cost of Ownership.** Cost of ownership includes cost of software, hardware, annual maintenance fees, and IS manpower necessary to support the applications. Some experts project that an ASP offers up to 30% lower cost of ownership based on reduced hardware expenses (servers are purchased and maintained by the ASP), lower labor costs (all IS administration related to the server, including backup, database, technical support and maintenance utilities are outsourced to the ASP), and lower support costs (upgrades are typically included in the monthly ASP fee). An ASP also helps a practice conserve capital by eliminating the need to purchase the application outright.

- **Remote access to data via the Internet.** Users will be able to log on to the virtual private network from any remote location, such as home or hospital, with an Internet connection and a PC. This capability is particularly useful for clinical applications such as electronic medical records for physicians on call or at remote locations. While client-server configurations also allow remote access, they require the use of third party emulation tools such as PC Anywhere.
- **Flexibility.** After completion of the initial service contract, which is typically 1 year, subscribers should have the option to discontinue the service. This allows an organization to evaluate the effectiveness of an application without necessarily committing to a purchase. In the case of Practice Partner ASP users have the option to purchase the client-server software at the end of the service contract and transfer their data to their on-site server.
- **Lower hardware investment.** Since most processing is done at the Data Center, ASP users can use relatively less powerful workstations or laptops and simple peer-to-peer networks. An ASP also helps extend the useful life of workstations, reducing the need for replacement as applications increase in complexity.

What are some of the trade-offs of an ASP vs. traditional client-server systems?

By utilizing an ASP, you are relying not only on the ASP provider, but also on the Internet and Internet connections such as the DSL line which connects the site to the Internet. Access to an ASP is dependent on the reliability of the DSL line. In the event that a DSL goes down, back-up phone connections, which

are slower, can be used. Another consideration that can limit ASP use is that not all geographical locations have high-speed access to the Internet. Availability is thus in a patchwork pattern, which will expand over time.

Note that while the ASP service frees users from system administration, it limits the system administration options that a customer will have relative to the traditional client-server model.

Is my data secure in an ASP?

Accessing your applications remotely at a vendor's Data Center over the Internet raises justifiable concerns about the security and privacy of sensitive clinical data. The security objective is to prevent unauthorized users from accessing and tampering with any aspect of a practice's data. Leading ASPs use a number of security measures to help meet this objective, including the following:

- **Network security.** Network security ensures the security of the data as it passed from the practice to the ASP vendor over the Internet. Most ASPs utilize a Virtual Private Network (VPN) architecture, in which data travels through a secured, encrypted pathway to and from each site. The encrypted data (making it unintelligible to unauthorized users) is decrypted at the ASP server.

A minimum standard of security is triple DES (Data Encryption Standard). While the VPN provides security for data transmission, firewalls at both ends of the connection (optional at the

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user's end) further safeguard the integrity of both the customer's and the ASP's internal network.

- **Proof of identity.** ASPs use many different methods to establish proof of identity and prevent unauthorized users from entering the system. For example, Practice Partner ASP employs an authentication technology that establishes a much stronger barrier than a conventional password system. The technology involves the following components:
 - **VPN Client:** Software that is necessary for a PC or other user device (i.e. CE device) to access the ASP.
 - **User Name:** All users must be registered with the ASP to permit access.
 - **PIN Number:** All users will have a personal identification number that is associated with the user name.
 - **Dynamic Access Code:** Each user will be given a key-chain like device that generates six digit codes that change every 60 seconds and are specific to the user. Access is granted only when a user combines user name, PIN number, and dynamic access code across the VPN link.

Even given these strong security measures, it will be important for ASP customers to establish their own protocols and procedures to define both receipt and discontinuation of access rights.

Is the functionality of the ASP applications the same as the client-server application?

It depends. Some ASP vendors may not offer a client-server alternative. Some will offer both. In the event that the ASP vendor does offer both options, you should determine if there are any feature deficiencies in the ASP option. One of the advantages of Practice Partner ASP is that the ASP application is identical to the client-server application.

How do I decide what is right for me?

While the ASP model presents a number of advantages, each practice and enterprise should complete a self-assessment to determine if the ASP is an intelligent choice. The assessment should focus on three main components:

- **Capital Availability:** One of the primary advantages of an ASP is that the capital requirements and the long term capital commitments are lower than a traditional client-server model because the applications are provided as a monthly service. In addition, hardware expenses are lower because a server is not required and existing hardware may be used. Therefore, an ASP may make sense for an organization that is capital constrained but has a sufficient operating budget to finance the monthly fees.
- **IT Resource Availability:** An ASP essentially outsources a number of routine tasks that support complex mission-critical applications. These tasks include back-up, maintenance, installation of upgrades, and technical support. An ASP makes sense for organizations that lack access to these resources, yet still want to deploy exciting new applications, like electronic medical records.

- **Flexibility Requirements:** Because an ASP is a service that can be discontinued, it offers greater flexibility than a traditional client-server purchase. This flexibility allows an organization to determine if a particular application or vendor is a good fit. Note that each ASP vendor will likely require a minimum commitment prior to the discontinuation of the service. These terms are typically detailed in the service level agreement (SLA) that must be signed prior to initiation of the service.

Who owns the patient data?

It is critical that ownership of data is established within the Service Level Agreement or any other relevant documents so that ASP users will be able to retrieve their data upon termination of their subscriptions. As an example, with Practice Partner ASP, users have complete ownership of their data and can request to have it sent to them on a CD, if for any reason they decide to discontinue the service.

What do I need to get started?

While an ASP is intended to make it easier to implement applications, there are a number of activities that need to be completed prior to initiating use. The following are some of the likely requirements:

- **Dedicated Connection to the Internet.** ASP performance is contingent upon high-speed continuous access to the Internet. For Practice Partner ASP customers, we recommend digital subscriber line (DSL) service to insure high performance and high reliability connections. Initiation of DSL service involves installation of the line (which appears similar to a simple phone jack

connection) and installation of a DSL modem. Note that DSL service is not universally available in all locations. PMSI's DSL vendor, UUNET, will assist customers in determining DSL availability in their areas and the appropriate connection speed to suit their needs. Customers can also obtain detailed UUNET DSL information and check DSL availability at the following web pages:

General DSL info: <http://www.us.uu.net/products/access/dedicated/link/dsl/>

Service availability: <http://www.us.uu.net/products/access/dedicated/link/dsl/info.cgi>

If you currently have a dedicated Internet connection (T-1, T-3, ISDN), you can use this connection to access Practice Partner ASP.

- **Hardware and Networking.** An ASP reduces, but does not eliminate, the need for hardware and networking at the customer site. For instance, in an ASP electronic medical record (EMR) installation, workstations are typically configured in each exam room and at nurses' stations. Printers for both general reports and prescriptions are also required. While a server is not necessary, a simple network is required to link the workstations and printers together. A hub is typically used as the hardware for the physical connection of the workstations and printers. While you may be able to use some of your existing hardware, check with your ASP vendor for recommended workstation configurations.

- **Implementation and Training.** Most sophisticated applications delivered via ASP will require implementation and training. For both practice management and electronic medical records, implementation will involve customers making decisions about how the software should be configured to meet their specific needs. It may also involve on-site training (inquire about the fees associated with implementation and training before signing a contract). As an example, Practice Partner ASP charges a flat implementation and training fee depending on the number of physicians and the applications purchased. Travel expenses to and from the site are extra.

How reliable is an ASP? What if the system goes down?

ASP reliability is a function of both telecommunication reliability and the ASP's hardware stability. While our increasingly Internet-based economy has shown a very high level of stability in providing maximum up-time, check with your ASP vendor to determine specific steps being taken to ensure reliability. For instance, Practice Partner ASP has secure redundant T-1 lines that are dedicated high speed connections to the Internet. In the event that a T-1 connection goes down, a redundant line is able to receive and transmit data. Hardware stability at the ASP Data Center can also be maximized by the redundant servers and hard drives. In the event of system failure, the ASP does offer the advantage of on-site technical personnel that can quickly troubleshoot system problems.

How long does it take to go live with an ASP system?

This will vary greatly depending on the applications and the size of the practice. However going live generally involves three steps:

- a) Purchase and installation of local hardware, networking, and telecommunications. This is performed locally by the practice with advice and assistance from the ASP.
- b) Configuration of the software to optimize performance for the practice. This is a cooperative effort between site and ASP.
- c) Training physicians and staff on the applications.

For small practices, assuming that hardware, networks, and telecommunication links are installed in a timely manner, implementation should take about 8 weeks from contract signing to go-live. Particularly for physician centric applications like electronic medical records, implementation times are directly correlated to the number of physicians at a practice—the more physicians, the longer the implementation time.

What do the ASP fees include?

This depends on the ASP vendor. For healthcare applications like practice management or electronic medical records, fee structures are commonly based on the number of physicians at a site. Typically, the monthly fee per physician will include user licenses and software for a defined number of workstations. For instance, Practice Partner ASP includes software for 3 workstations in its base fee. Additional workstations per physician are an extra charge. Besides the software, the monthly fees should include

all software updates, technical support, and IS administration (backups and routine maintenance). Carefully peruse the ASP vendor's Service Level Agreement (SLA). This document details the contractual obligations, including applications, training, support, updates, termination clauses, and other important service and business issues.

What happens if users choose to discontinue?

Again, this will depend on the ASP vendor. Typically, ASPs require a minimum time commitment, after which termination can be initiated without penalty (for instance, Practice Partner ASP requires a minimum contract of one year). In the event of termination, check with your ASP vendor to determine the mechanism for the return of patient data, which is particularly critical for applications like electronic medical records. You should also confirm whether or not an option is offered in which you can convert from the ASP to a client-server application in the event you decide you want to run the application locally.

Summary

We hope that this guide to Application Service Providers has helped educate you on this newly emerging form of computing. To help further educate you on the types of healthcare applications offered via an ASP (and via the traditional client-server model), we have created a library of additional educational materials, including EMR 101: A Beginner's Guide to Electronic Medical Records and The Dollars and Sense of Electronic Medical Records: The Bottom Line Case for an EMR. These and other resources can be found on our web site at www.pmsi.com.

Practice Partner ASP provides access to the industry leading line of electronic medical record (EMR) and practice management applications from Physician Micro Systems, Inc.

- **Practice Partner Patient Records** provides a host of innovative tools to improve both office and clinical efficiency, while helping improve patient care. **Patient Records** provides a complete patient chart electronically, eliminating the need for a paper chart. Some of **Patient Records** features include: patient education handouts which can be printed or e-mailed, health maintenance templates set by the patient's age and sex, a laboratory data section which can be updated via laboratory interfaces, patient querying tools, and a host of other features which have helped make **Patient Records** one of the leading EMRs.
- **Practice Partner Appointment Scheduler** allows the "appointment book" to be available to any authorized user with access to a workstation. And since **Practice Partner Appointment Scheduler** is a true multi-user solution, more than one person can schedule the same providers on the same day without inadvertent double-booking. The bottom line for staff: appointments can be made more quickly and more completely, with less stress, while providing better service to both patients and providers.
- **Practice Partner Medical Billing** is a complete management system, specifically designed to handle your intricate billing needs in an era of increasingly complex insurance and managed care plans. **Practice Partner Medical Billing** lets you easily track co-pays, capitated patients, and non-covered services. All charge information can be entered from a single screen. The system allows for quick and easy corrections with the security of an audit trail. With on-screen electronic encounter forms to capture charges at the point of service, electronic claims submissions and electronic remittance with automatic claim postings, **Practice Partner Medical Billing** is designed to boost office productivity.

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