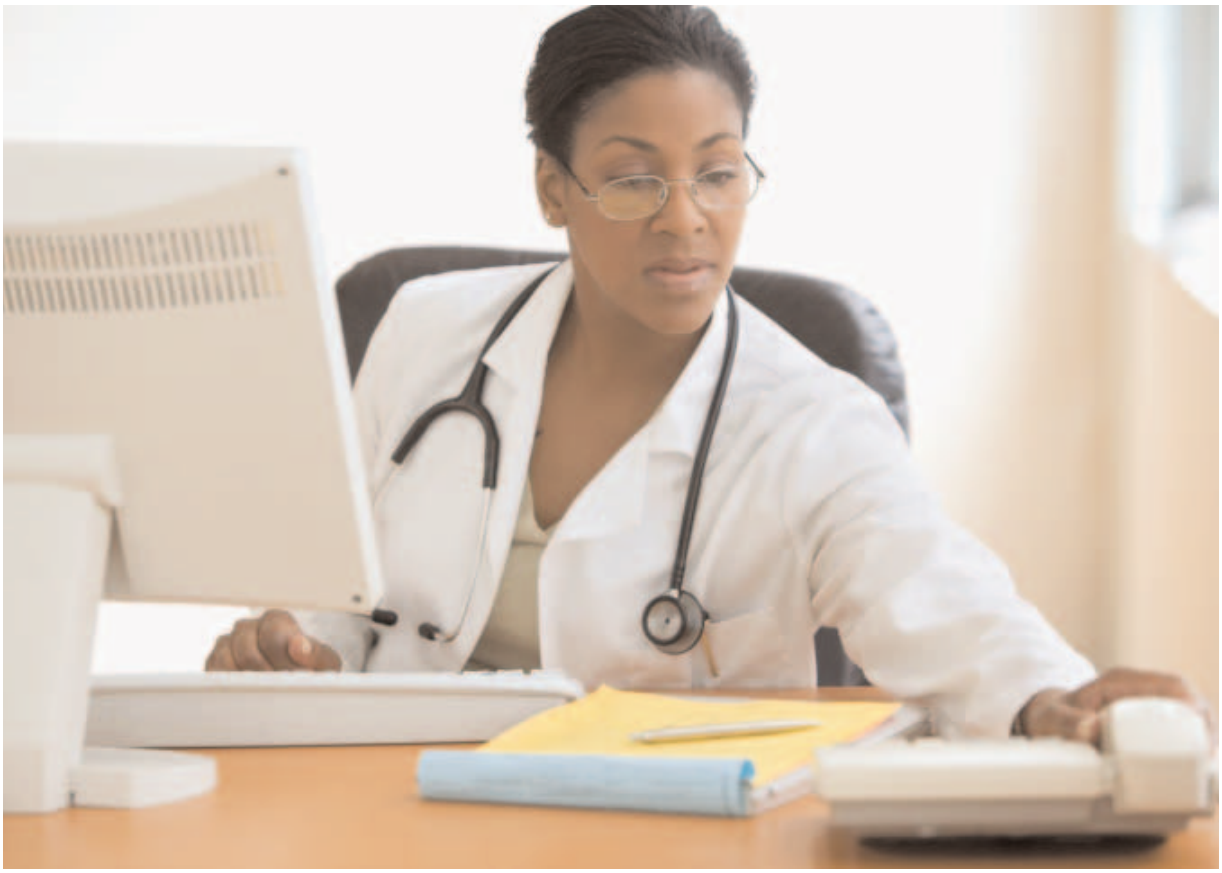
California HealthCare Foundation



# Physician Practices: Are Application Service Providers Right for You?

October 2006

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*Prepared for*

California HealthCare Foundation

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## About the Foundation

The **California HealthCare Foundation**, based in Oakland, is an independent philanthropy committed to improving California's health care delivery and financing systems. Formed in 1996, our goal is to ensure that all Californians have access to affordable, quality health care. For more information about CHCF, visit us online at **www.chcf.org**.

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# I. Executive Summary

THE BENEFITS OF ADVANCED CLINICAL SOFTWARE such as electronic health records (EHRs) are well-documented. However, the up-front costs, information technology resources, and expertise necessary to implement and support these applications can be burdensome for small physician practices.

Over the last few years, with wider availability of broadband connections, more sophisticated vendor solutions, and a growing number of options for hosting software, the application service provider (ASP) model has emerged as an alternative to purchasing, installing, and maintaining EHRs and other software at physician practices. In this approach, another organization houses and maintains the application and related hardware; physicians simply access it remotely over a network connection and pay a monthly user fee.

But the ASP model is not right for all practices. Deciding whether it or the traditional approach is best depends on a number of factors, including the practice's information technology goals, its financial resources and IT expertise, whether it has a reliable and fast Internet connection, and how willing the practice is to have another organization host its data.

In addition to explaining the major differences between the ASP model and the traditional software approach, this report discusses important issues that physician practices should consider when weighing the two options, and looks at ASP clinical solutions on the horizon. Scenarios representing six different types of practices offer guidance on choosing the most appropriate model.

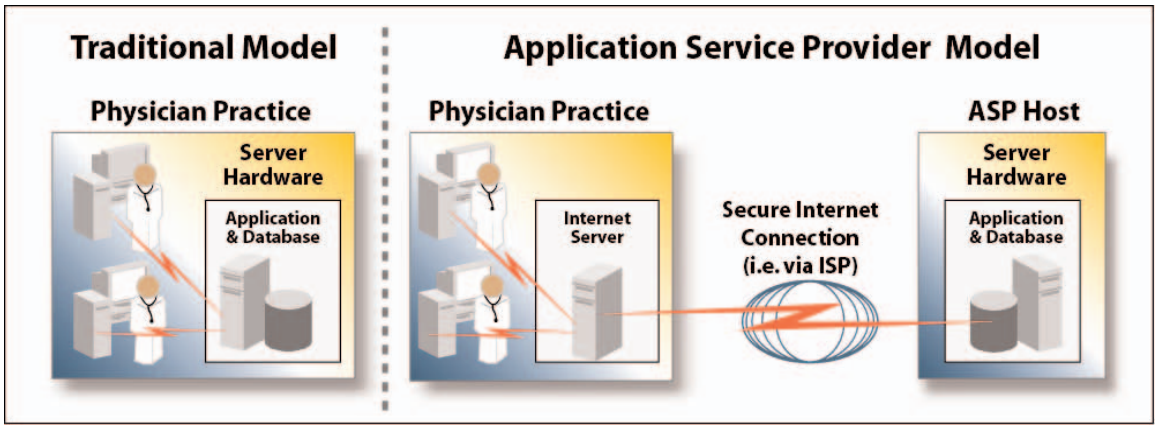
# II. Background

SMALL PHYSICIAN PRACTICES AND COMMUNITY clinics are giving ever-more thought to adopting EHRs and other applications that will help them address some of the key clinical challenges they face. Also fueling interest in EHRs are the continued expansion of pay-for-performance incentives, recent EHR certification standards, state and regional IT initiatives, and pending relaxation of Stark restrictions, which prohibit hospitals from giving information technology to physicians who refer patients to them.

An alternative to the traditional approach of purchasing, installing, and maintaining EHR and other software at physician practices has gained attention in the last few years. It is called the application service provider (ASP) model.

Two main characteristics distinguish this model. First, the clinical application in an ASP-based solution is not housed at the physician practice; instead, another organization assumes responsibility for hosting it and supporting the server hardware on which the application runs, and physicians access the software via a secure network or Internet connection (Figure 1). Second, the medical practice pays a monthly fee to "rent" the application, avoiding the need to purchase software licenses up-front and to service and maintain the software they might otherwise install in-house.

**Figure 1. The Traditional Software Model vs. the ASP Model**



While the ASP model is not new to health care, it is relatively new to the clinical arena. Vendors have sold ASP solutions to health care organizations since the mid-1990s, but up until a few years ago, remote applications focused largely on billing and claims. In the late 1990s, companies such as The TriZetto Group, Physician Micro Systems Incorporated (now Practice Partner), MedicaLogic (purchased by GE Healthcare), and Abaton.com (purchased by McKesson) began offering EHRs on an ASP basis.

Many physicians need round-the-clock access to clinical applications, and back then, high-speed Internet connections were expensive and unreliable. Only 10 to 15 percent of U.S. medical centers had "excellent connectivity to the Internet" in 2001, according to one estimate.[1] In addition, privacy concerns reached a peak early in the decade with the uncertainty surrounding pending regulations under the Health Insurance Portability and Accountability Act of 1996.

The emergence of reliable broadband technology since then has made ASP applications a more viable option for small and medium-size physician practices. Nearly 70 percent of practices now have broadband connections.[2] Moreover, health care providers are becoming increasingly comfortable with IT.

### The EHR Divide Between Large and Small Group Practices

Fewer small physician practices than large practices adopt EHRs.[3] According to a September 2005 survey by the Medical Group Management Association of 2,879 medical groups, only 12.5 percent of practices with five or fewer full-time-equivalent physicians have implemented an EHR, compared to 15.2 percent of practices with 6 to 10 FTE physicians, 18.9 percent with 11 to 20 FTE physicians, and 19.5 percent with 20 or more FTE physicians.

The study also found that the most widely cited barrier to implementing an EHR was a lack of capital resources.

Many large practices have begun to adopt EHRs. For small practices, however, purchasing, implementing, supporting, and maintaining an EHR or other advanced clinical application are more difficult. Buying an EHR application can be expensive—as much as $44,000 per provider on average, with estimated ongoing costs of $8,500 per provider per year.[4] Small—and even some medium-size—practices simply do not have sufficient capital or personnel to make this kind of investment. And once EHRs are in place, supporting and maintaining them requires significant expertise and resources (see sidebar above).

The next wave of EHR adopters will likely seek solutions that entail lower up-front costs, offer predictable payments, and require minimal application support and maintenance.

**Table 1. Obstacles to EHR Adoption among Physician Practices**

| Barriers to Implementing an EHR | Mean Rating on Scale of 1 (No Value) to 5 (Extremely Important) |
|---|---|
| Lack of capital resources to invest in an EHR | 3.54 |
| Concern about loss of productivity during the transition to an EHR | 3.21 |
| Inability to easily input historic medical record data into an EHR | 3.20 |
| Lack of support from practice physicians | 3.18 |

Source: Gans D., Kralewski J., Hammons T., et al. "Medical groups' adoption of electronic health records and information systems." *Health Affairs* 2005; 24(5):1323-1333

Despite the ASP model's benefits, reservations about this approach linger. Physicians have long been concerned about data ownership, security, and privacy—worries that increase when another organization hosts their clinical data and software. Furthermore, because physicians can only access an ASP application via a reliable, high-speed Internet connection, they want assurances that the application will always be available and perform optimally.

The California HealthCare Foundation commissioned First Consulting Group to explore the latest developments, approaches, benefits, challenges, issues, and concerns related to the ASP model for ambulatory clinical applications, and to get a sense of where this model is headed. FCG reviewed published research and spoke with more than two dozen health care leaders and vendors of leading EHR, e-prescribing, and disease-registry applications (Appendix A).

# III. Evaluating the ASP Option

A NUMBER OF KEY QUESTIONS ARISE WHEN physician practices begin exploring the ASP option. How do ASP solutions differ from traditional licensing arrangements? What are the implications of remote hosting? What support can practices expect? What are the ASP payment terms and will they meet a practice's needs?

Addressing these and other questions requires a clear understanding of two major differences between the traditional software model and the ASP model: hosting and support, and ownership and payment.

## Hosting and Support

Unlike traditional software, an ASP solution is not housed at the physician practice; rather, another organization is responsible for hosting it and for supporting and servicing the associated hardware. Users access the application remotely via a secure network or Internet connection.

While traditional software licensing agreements typically include some level of implementation, customization, and software maintenance, the ASP model goes further: it provides full support for "back-end" functions such as product upgrades, server maintenance and troubleshooting, daily data back-ups, and security.

For physician practices, the ASP model entails a number of important considerations regarding the network connection, software, hardware, and support.

One consideration is ensuring there will be real-time, continuous access to patient information. This typically is not an issue with traditional, locally installed software. With ASP solutions, on the other hand, physicians may not be able to access the remote application if the network that connects them to it becomes unavailable and they do not have a local back-up solution, which some ASPs offer.

A second consideration is whether the ASP provides a client/server solution—as in traditional software set-ups in which an application is installed on each end user's computer—or a Web-based solution, which allows access to the application from any Internet-connected computer by means of a browser. The latter solution is common for e-prescribing applications and can also be useful for EHRs.

Client/server ASP applications are typically "thin." This means they have been designed so that the main hardware server and each workstation on which the application runs share processing tasks. Thin applications can help minimize the need for a continuous network connection, but users may only access them from computers on which the software has been installed.

Some vendors offer both client/server ASP applications and Web-based ASP applications, allowing practices to decide if having a continuous network connection is more important than having access from any computer anywhere. For example, EHR products from eClinicalWorks include a client/server version as well as a Web-based version that does not require any additional desktop software.

A third consideration has to do with where the application hardware is located. The traditional approach is to install it in the physician practice, usually in a secure data closet, whereas ASP application servers and related hardware, such as that necessary for data back-ups, reside off-site and another organization manages them.

Typically, physicians need only a workstation and Internet access to use an ASP application effectively. Some ASP set-ups involve installing an additional back-up server at the practice if, as in many rural areas, Internet connectivity is unreliable.

Finally, there is the issue of support and service. In traditional software installations, vendors usually provide implementation and training support plus access to a help desk when problems arise. However, the physician practice incurs additional costs when the software is enhanced. It assumes responsibility for installing and testing a newer software version and for providing all hardware-related support and service, including diagnosing and fixing server problems, addressing interface issues, and backing up data. In some cases, practices outsource these tasks to a third party, such as a local computer support specialist.

In the ASP model, the practice assumes up-front implementation and training costs, but the ASP bears all other responsibility for supporting the application and related hardware. A monthly ASP fee covers software maintenance and enhancements, testing and installation of software upgrades, server maintenance, data back-ups, and help desk support.

## Ownership and Payment

The second major difference between the traditional-software and ASP approaches involves owning versus "renting" an application.

When a physician practice buys clinical software, it owns the software. This is a *capital* expenditure. The practice pays the full cost up-front or finances the purchase through a third-party lender and pays regular installments plus interest over a defined period of time, much like a mortgage. In either case, licensing agreements often entail annual maintenance fees, which entitle the buyer to software support and upgrades. These fees are usually 18 percent of the up-front licensing cost. Like someone who buys a home, a physician practice that buys clinical software is responsible for most service and troubleshooting.

In the ASP model, a practice leases the application on a subscription basis, paying a monthly fee for the right to use it, usually under a contract that requires a three-year commitment (although, as this report confirmed, terms of as few as one year and as many as five years are available). This is typically an *operating* expense. Again, maintenance is included in the monthly lease payments.

The ASP model is akin to renting an apartment: the tenant lives there and pays rent each month, but someone else owns the building and is responsible for resolving any problems that arise. Just as a tenant only owns the furniture in his unit, the physician practice only owns items such as workstations, printers, and handheld devices that physically reside within its walls.

ASP contracts stipulate that the physician practice has the right to use particular software over the course of the contract period. In contrast, even if a physician practice finances a software purchase over the long term, it still ultimately owns the product through a perpetual licensing agreement.

The monthly fee for an ASP subscription is typically lower than the cost of long-term financing of a software purchase—but only for the finance period. Once a practice has paid the initial licensing costs to buy an application and the finance period ends, its monthly maintenance expenses usually are lower than monthly ASP fees would be. Both models always entail ongoing fees: an 18 percent annual maintenance fee in the case of traditional software, and monthly (usually higher) fees for maintenance and support in the case of ASP. The latter fees are a result of additional services the ASP provides—for hosting, support, and electronically delivering the clinical application.

Tables 2 and 3 show the differences in these payment models for an EHR application.

In the ASP model, physician practices retain ownership of their clinical data, even though the data reside outside their walls. Virtually all ASP contracts include provisions for returning the data to the practice when the agreement expires. Vendors often charge for the time and materials necessary to do this. One vendor gives practices the option of buying a stand-alone, read-only version of the company's EHR product if they decide to stop using it; physicians can view, but not update, their data until they transfer the information to another system.

Table 4 summarizes major differences between the ASP and traditional software models.

## Table 2. EHR in the ASP Model*

| Price | Rate | Approximate Cost for Five-Physician Practice |
|---|---|---|
| **UP-FRONT COSTS** | | |
| **Software and Services** | | |
| Up-front licensing | Not applicable | $0 |
| Implementation and configuration | Flat fee | $3,500 |
| Training | $800 per day | $4,000 |
| **Hardware** | | |
| Hardware and hardware-associated software (servers, desktops, and third-party licenses) | Not applicable | $0 |
| Interfaces | $5,000 per interface† | $10,000 |
| **ONGOING COSTS** | | |
| Monthly subscription | $250 per month, per physician | $15,000‡ |
| Maintenance and support | Included in monthly subscription; also includes ongoing support for hardware and third-party software | — |
| | **TOTAL FIRST-YEAR COSTS** | **$32,500** |
| | **ANNUAL COSTS THEREAFTER** | **$15,000 ($1,250/month)** |

* In Tables 2 and 3, models are representative examples of payment options for a five-physician practice. Individual vendors vary considerably. These are approximate costs rather than specific examples.

† Interface costs for lab and practice management systems only.

‡ Minimum five-year contract required.

### Table 3. EHR in the Traditional Software Model

| Price | Rate | Approximate Cost for Five-Physician Practice |
|---|---|---|
| **UP-FRONT COSTS** | | |
| **Software and Services** | | |
| Up-front licensing | Per provider | $30,500* |
| Implementation and configuration | Flat fee | $3,500 |
| Training | $800 per day | $4,000 |
| **Hardware** | | |
| Hardware and hardware-associated software (servers, desktops, and third-party licenses) | Flat fee | $7,500 |
| Interfaces | Per interface† | $10,000 |
| **RECURRING COSTS** | | |
| Monthly subscription | Not applicable | $0 |
| Maintenance and support | Only includes maintenance for clinical application; does not include hardware and third-party software maintenance | $8,490‡ |
| | **TOTAL FIRST-YEAR COSTS IF PAID UP-FRONT** | **$63,990** |
| | **ANNUAL COSTS THEREAFTER** | **$8,490 ($707.50/month)** |
| | **COSTS FOR YEARS 1–5 IF FINANCED** | **$25,248 ($2,104/month)§** |
| | **ANNUAL COSTS THEREAFTER** | **$8,490 ($707.50/month)** |

* $8,500 for first provider, $5,500 for each additional full-time provider.

† Interface costs for lab and practice management systems only.

‡ 18% of up-front purchase price plus $600 per year per provider.

§ Assumes 18% annual interest over five years.

### Table 4. Key Differences Between ASP and Traditional Software Models

| Key Differences | ASP | Traditional Software |
|---|---|---|
| **Hosting and Support** | *Summary:* The application is hosted at a remote location. Another organization assumes full responsibility for supporting the application and related hardware. | *Summary:* The application is installed locally at the physician practice. The practice is responsible for server maintenance, troubleshooting, data back-ups, and security. |
| Network differences | Accessed via a network connection. Requires 100% connectivity to the Internet. | Accessed locally. Internet or network connection not required. |
| Hardware differences | Same hardware, but hosted remotely. | Same hardware, but installed locally. |
| Software differences | Requires either a Web browser or a small software application that is installed on all local workstations or computers. | Requires the application to be installed on all local workstations or computers. |
| Support differences | Includes implementation, training, and help desk support. Application service (e.g., implementation of upgrades) and hardware support (e.g., application server maintenance) also included. | Typically limited to implementation, training, and help desk support. |
| **Ownership and Payment** | *Summary:* The practice "rents" the application and makes regular monthly payments during the contract period. | *Summary:* The practice has a perpetual license to use the application and makes payments up-front or it finances the initial licensing costs over a period of time. Maintenance costs are typically 18% of initial licensing fees. |
| Contract terms | Typically a three-year commitment. | Contract covers initial purchase and ongoing maintenance. No term commitment. |
| Data ownership | Physician practice owns its data. | Physician practice owns its data. |

# IV. Is an ASP the Right Choice?

## Four Questions to Ask

Although today's reliable broadband technology has made ASP applications a more viable option, many small practices still cannot easily determine if the ASP approach is right for them. Answers to the following four questions (summarized in Table 5) should help in this regard.

### How will the application fit into the practice's overall IT plans?

Whether physicians are interested in a full-fledged EHR or an interim solution such as e-prescribing or a disease registry, they must consider the level of integration that will be necessary among the core applications in their larger IT strategy. Integrating a remote solution with applications or functions that reside at the physician practice can be more difficult than integrating all of the solutions where they reside at the practice site. Examples of local applications include those for practice management; medical equipment, such as EKGs and pulmonary function tests; speech recognition tools; and personal digital assistants.

A first step should be determining how essential it is for an ASP application to share data with the practice's existing applications, then asking vendors if other practices have successfully integrated that particular ASP product with physicians' locally installed software. Locally installed applications that must be integrated with other practice-based software can exchange data more easily via a local area network than they can via an Internet connection.

In the future, more ASPs may offer remotely hosted integrated EHR and practice management applications (see sidebar on page 16). Practices considering this option will need to decide if they are willing to give up their existing practice management system for the benefits of an integrated, remotely hosted solution that can manage both of those functions.

### Table 5. Primary Considerations for Physician Practices

| Primary Consideration | The ASP model may be right if the practice… | The ASP model may *not* be right if the practice… |
|---|---|---|
| **How will the application fit into the practice's overall IT plans?** | • Is considering only an e-prescribing application.<br>• Has a locally installed practice management system, but is willing to relinquish it for a remotely hosted, integrated EHR and practice-management solution.<br>• Has a limited need to integrate a remotely hosted solution with other locally installed applications, such as those for EKGs and speech recognition. | • Has a locally installed practice management system and is unwilling to relinquish it.<br>• Is considering a high-end EHR that tightly integrates with locally installed applications, such as those for EKGs. |
| **To what extent can the practice support locally installed software?** | • Does not have any IT resources.<br>• Does not have any experience troubleshooting and maintaining servers, making upgrades to third-party software, performing daily data back-ups, etc.<br>• Has not successfully hosted and supported clinical IT solutions on-site in the past. | • Has in-house capabilities to provide necessary support for the locally installed software and associated hardware, such as servers. |
| **How willing is the practice to have another organization host a clinical application?** | • Has no concerns about another organization hosting its data. | • Is uncomfortable with the idea of another organization hosting its data. |
| **What financial resources does the practice have?** | • Must pay predictable monthly fees instead of higher up-front costs. | • Has the capital and/or borrowing power to purchase the application, and can pay for any additional FTEs or new hardware that will be necessary.<br>• Prefers to own rather than "rent" the application. |

### To what extent can the practice support locally installed software?

Implementing and supporting clinical applications, particularly EHRs, as well as troubleshooting software and hardware problems and performing daily back-ups, are a big undertaking. Many practices lack these essential skills and the necessary experience. For them, ASPs may be one of few realistic options for moving forward with advanced clinical applications.

Indeed, most EHR vendors interviewed for this study indicated that small physician practices and clinics without the resources to host and maintain complex clinical systems have the greatest interest in ASP-based solutions.

### How willing is the practice to have another organization host a clinical application?

This concern varies and may depend on who the host would be. A practice concerned about data privacy and security should visit the ASP's data center to become comfortable with its security procedures. Vendors interviewed for this study acknowledged that some physicians have reservations about losing control of their data, and said they encourage such visits.

### What financial resources does the practice have?

ASP vendors offer a financially feasible alternative to an expensive clinical application that a practice might otherwise pay for upfront. In the ASP model, practices have the option to forego high up-front costs in exchange for predictable monthly payments. They can "rent" rather than buy a clinical application and its associated hardware. Payments may be lower on a monthly basis during the first few years, but they continue until the contract expires—similar to the lease on an apartment. Maintenance and support are included in these fees.

#### New Clinical ASP Models on the Horizon?

Remotely hosted practice-management systems are available. In fact, ASP-based scheduling and billing applications have been in place longer than ASP clinical applications have. In some instances, the vendor also provides integrated services, such as billing and collections along with hosting and IT support. One billing and claims ASP vendor, athenahealth, is also about to release its ASP-based clinical product.

The benefits of a well-integrated EHR and practice management system, such as better documentation and revenue capture, and the challenge of having just one rather than both of those components remotely hosted, might prompt more vendors to offer such application suites. At this point, however, the vendor options are limited.

These benefits also might spur some ASP vendors to consider new models of application hosting—for example, bundling EHR implementation and support with billing services in such a way that the vendor assumes some of the risks and reaps some of the rewards. Alteer, which sells ASP solutions for EHRs and medical practice management, does this (among other things). The company estimates increases in revenue through the use of its product, and it does not collect payment (a percentage of new revenue the system generates) until those increases are achieved.

When physician practices compare the ASP and traditional software models, they should not overlook the costs of application maintenance and customer support. While payments for an ASP solution continue throughout the term of the contract, service and support along with use of the application are covered. Hardware costs and the IT support that traditional software requires should also be factored in for an accurate price comparison of the ASP and traditional software models.

## Other Considerations

Secondary factors also warrant attention. These include knowing what ASP options are available; the amount of experience an ASP has; the extent of implementation, support, and customization an ASP offers; the accessibility and performance of an ASP system; and if an ASP can prevent disasters and recover data.

### ASP Options

In this report, "application service provider" is defined as "an organization with whom customers contract on a subscription basis to deliver an application and provide the associated services to support it." Importantly, the term does not necessarily apply to the organization that physically hosts the application. Rather, an ASP is the organization that provides services—full support for the software and the hardware on which it runs—to a physician practice. Whether the ASP hosts an application at its own facility or contracts with a third-party data center to do so, the ASP is the practice's primary point of contact for any issues related to application service and support.

Many different organizations serve as ASPs, depending on the product they offer and the local market. The hosting and support options available in a particular geographic area and a practice's comfort with a potential ASP are important considerations. Not all ASP options are available in all markets and for all vendor products. A physician practice needs to investigate the options in terms of the application it wants hosted and what is available locally.

In the past, the product vendor served as the ASP host and provided IT service. Today, a vendor's capacity or desire to be an ASP depends largely on the selected product. Some EHR vendors, for example, focus on selling software and do not have the resources to host or support it. A vendor may have a technology partner that hosts an application and associated hardware for the vendor's ASP physician clients, but the vendor itself still provides all associated support directly to those clients.

Another approach for vendors that do not offer an ASP option is to refer clients to a trusted and experienced third party, often a computer data center, reseller, or consulting organization. Typically, this third party not only serves as the point of contact for all service and support, but also hosts the vendor's application.

Independent physician associations increasingly are becoming ASPs for clinical applications. Free from anti-kickback regulations, IPAs can spread application and support costs among a broad group of physician practices. One example is Brown & Toland, an IPA in the San Francisco area that hosts, services, and supports Allscripts TouchWorks EHR for affiliated physicians. Brown & Toland, which has a large and experienced IT department, decided to host TouchWorks based on the success it had providing timesharing practice-management applications to physicians in the late 1990s.

Although relatively rare, hospitals and integrated delivery networks (IDNs) have been an ASP option for community physicians in some areas for a number of years. In this model, the hospital offers to extend an EHR (typically the in-house application) to physicians in the community on an ASP basis, charging fair market value rates in compliance with Stark and Office of the Inspector General rules. With the recent publication of final regulations providing exemptions for e-prescribing and the costs of software and training for EHRs, interest among hospitals and IDNs to serve as an ASP for community physicians will likely increase.

Health plans have a vested interest in physicians using clinical applications, particularly e-prescribing and disease management registries, because in many markets payers reap most of the benefits of better formulary compliance and improved disease management. Indeed, health plans have become the primary customers for e-prescribing vendors such as ZixCorp. Partnership HealthPlan of California is an example of a payer that hosts and supports a disease management registry for local physician practices and clinics.

Regional health information organizations or statewide consortia, as aggregators of health care delivery and services, could serve as ASPs as they mature, offering one or more vendor options, including a migration path from basic capabilities such as e-prescribing to more advanced applications such as EHRs, as well as connections to other local data sources. The Massachusetts eHealth Collaborative and Rhode Island Quality Institute now facilitate group purchases from vendors, but in the future they might also serve as ASPs.

Table 6 summarizes a half-dozen ASP options.

### Experience of the ASP

Before choosing a particular ASP, it is important to carefully assess its experience maintaining and supporting clinical applications—particularly the ASP's experience with the same application and vendor the physician practice is considering, as different products require different skills. The ASP should have proven success supporting that application. It also should have an established client base.

For complex, highly customized applications such as EHRs, ASPs often contract with specialized data centers to provide the physical hosting. In these cases, a practice should thoroughly appraise the data center to ensure it has successfully hosted the same application the physicians want.

Finally, practices shopping for an ASP solution should always speak with and visit one of the ASP's clients. The perspective of a similar size practice will be invaluable in anticipating challenges and uncovering hidden costs.

### Implementation, Support, and Customization

An ASP assumes full responsibility for supporting and maintaining an application and the hardware on which it runs. This responsibility includes product upgrades, third-party software upgrades, server maintenance, and routine data back-ups. Levels of service vary, however, so a physician practice needs to know exactly which services the ASP will assume responsibility for up-front and continuously.

### Table 6. ASP Options

| Option | Typical Model | Prevalence | Examples This Study Identifies |
|---|---|---|---|
| **Application vendor** | A vendor provides hosting and/or application and hardware support. | More common for e-prescribing and patient registries. | Alteer, DocSite, DrFirst, eClinicalWorks, Practice Partner, ZixCorp |
| **Third party** | Often a data center, reseller, or consulting organization instead of the vendor serves as the primary point of contact for service and support. | Just emerging for EHRs. | Perot Systems |
| **Independent physician association** | Is the primary point of contact for service and support. Depending on the IPA's experience with hosting and supporting IT systems, it either hosts the application on-site or contracts with a third party to do this. | Common in communities where there is a strong managed care presence. | Brown & Toland, Hill Physicians, Humboldt-Del Norte |
| **Hospitals and integrated delivery networks** | The hospital or health system offers to extend and support an EHR (often the in-house system) to community physicians at fair market value rates. | Relatively rare at this point though expected to increase, as exemptions to Stark laws have only recently been finalized. | None identified |
| **Health plans** | The payer provides hosting and support for e-prescribing or a disease registry. | Not common at this point. | Partnership HealthPlan of California |
| **Regional entity or aggregator** | The entity typically offers one or more product options, including a migration path from basic (e.g., e-prescribing) to advanced (e.g., EHR) capabilities, as well as connections to other local data sources. | Not prevalent. However, as regional aggregators become more mature, a regional health information organization or statewide consortium could serve as the ASP host. | Potentially, the Massachusetts eHealth Collaborative, Rhode Island Quality Institute |

For example, similar to the traditional software model, most of the ASPs that participated in this study provide some initial implementation support and end user training. But unlike the traditional model, the ASP also supports all associated hardware, such as the application server, that is outside the practice's walls. Physician groups should identify and address any gaps around implementation and support that will ultimately be their responsibility, like installation and service of local network connections.

From clients' perspective, maintenance, upgrades, and updates are easier in the ASP model than in the traditional software model. When an ASP upgrades an application, for example, physician involvement is minimal. Because clients can access Web-based applications using an Internet browser, the ASP need only update the software on the central application server in order to make the new release available to them.

Upgrades to client/server-based solutions may appear to be more complicated because the software must be installed locally on each physician's desktop. Yet ASPs now can easily update these, too, from their remote location. Practices should be sure to ask an ASP how it typically handles updates and what, if anything, end users will need afterward.

A growing number of ASP solutions can be customized to meet a practice's specific workflow. Even Web-based clinical applications offer different views and workflows, depending on the practice that accesses them. A practice should work closely with an ASP to determine what level of customization will meet the physicians' needs.

### Accessibility and Performance

Physicians may need to have access to an ASP-based clinical application 24 hours a day. The ASP should clearly spell out the provisions it has made to ensure such accessibility as well reliability of the system and fast application response times. Importantly, problems accessing an application may be the Internet service provider's fault, not the ASP's. Round-the-clock access is a bigger challenge in rural locations where network connections are unreliable.

### Disaster Prevention and Data Recovery

To minimize downtime, ASPs should have clear plans for preventing disasters and recovering data. A redundant server and a remote back-up site that is accessible if the primary server becomes unavailable must be in place. A physician practice should confirm that the application will quickly be accessible again if the data center goes down. In the case of some EHR applications, a local data server is installed at the practice so physicians can still access patient data if the Internet connection fails.

Another important issue is the frequency of data back-ups. One ASP interviewed for this report backs up data hourly. Other key considerations include whether the ASP complies with best practices for fire detection/prevention, water damage protection, and climate control, and whether it has liability insurance.

For a list of detailed questions to ask ASPs, see Appendix B.

# V. Six Physician-Practice Scenarios

IN THIS STUDY, MANY COMMON THEMES emerged from interviews with physician practices and ASPs. The following scenarios, in which practices weigh the advantages and disadvantages of the ASP model and traditional, locally installed software, represent six different kinds of medical groups in terms of the applications they currently have and their goals, resources, values, and fears.

Although fictitious, these scenarios accurately reflect the perspectives of participants in this study.

## Practice 1

***Practice type/characteristics:*** Small group, limited experience with technology.

***Current applications:*** Locally installed practice management system.

***Goal of practice:*** To have an EHR eventually (no definitive timetable). Would consider other clinical IT applications.

***Resources:*** Limited cash, no IT resources.

***Values/fears:*** Recognizes the importance of an EHR, but is concerned that the changes in workflow will be too drastic and affect the practice's productivity.

***Recommendation:*** Not all practices are ideal candidates for an EHR. Physicians at this practice have little or no technology experience and believe that migrating from paper records to electronic records will disrupt productivity too much. Consequently, they should consider an interim solution, such as e-prescribing or a disease management registry, that will provide a more measured transition to an EHR. Many applications other than EHRs are available via ASPs; e-prescribing applications are almost exclusively offered this way. This practice should focus on selecting the product that best meets its unique needs and goals at this point.

## Practice 2

***Practice type/characteristics:*** Small group, limited experience with technology.

***Current applications:*** Locally installed practice management system, which the practice is willing to relinquish.

***Goal of practice:*** To have an EHR. Timetable is sooner rather than later.

***Resources:*** Limited cash, no IT resources.

***Values/fears:*** An EHR is very important to the physicians. They have no reservations about changes in workflow.

***Recommendation:*** This practice is an ideal candidate for an ASP-based EHR. It would not make sense for the practice to purchase EHR software, install it on-site, and assume responsibility for troubleshooting and supporting the application and related hardware, given its limited cash and relative inexperience with technology.

## Practice 3

***Practice type/characteristics:*** Medium-size group located in a rural area. Has some experience with technology.

***Current applications:*** Locally installed practice management system.

***Goal of practice:*** To have an EHR. Timetable is sooner rather than later.

***Resources:*** Limited cash, a few IT resources.

***Values/fears:*** Concerned that Internet connectivity is not adequate for an ASP-based EHR solution.

***Recommendation:*** The biggest issue for this practice is an unreliable Internet connection, a common concern in many rural areas. Because ASP-based clinical applications require nearly 100 percent connectivity to a network, and even though the practice has limited financial resources, a locally installed EHR is probably the best option. To reduce the up-front payments for this software, the practice should consider a financing agreement with an EHR vendor that would spread the cost of licensing, associated hardware, and third-party software over a number of years.

## Practice 4

***Practice type/characteristics:*** Medium-size practice, limited experience with technology.

***Current applications:*** Locally installed practice management system, which the practice is willing to relinquish.

***Goal of practice:*** To deploy an EHR, but minimize the hassles associated with product support.

***Resources:*** Sufficient cash on hand, limited IT resources.

***Values/fears:*** Has some reservations about another organization hosting its data.

***Recommendation:*** The biggest issue for this practice is data ownership. The physicians have limited IT resources and little experience troubleshooting hardware and software, and they are not comfortable having another organization host their data. The best approach for this practice is to arrange financing through a vendor that will install an EHR application locally. Given its lack of IT experience, the practice should consider outsourcing support for software and hardware to a local services company.

## Practice 5

***Practice type/characteristics:*** Medium-size practice, solid experience with technology.

***Current applications:*** Locally installed practice management system, which the practice is willing to relinquish.

***Goal of practice:*** To deploy an EHR, but minimize the hassles associated with product support.

***Resources:*** Sufficient cash on hand, has IT resources.

***Values/fears:*** Has no reservations about another organization hosting its data.

***Recommendation:*** Although this practice has the capital necessary to purchase EHR software and enough experience to install it on-site, the ASP option may still be reasonable. Typical ASP customers are smaller practices with limited financial resources and IT experience, but the ASP option is not restricted to that group. According to ASP vendors interviewed for this study, medium-size and large medical groups that want to avoid the hassles associated with performing daily data back-ups and server maintenance also are strong candidates for an ASP solution.

## Practice 6

***Practice type/characteristics:*** Medium-size practice, has solid experience with technology.

***Current applications:*** Locally installed practice management system.

***Goal of practice:*** To deploy an EHR that can tightly integrate with a number of locally hosted applications, such as those for EKG and speech recognition.

***Resources:*** Sufficient cash on hand, has IT resources.

***Values/fears:*** Tight integration of clinical applications is the highest priority.

***Recommendation:*** This practice is a good candidate for a locally installed EHR. First and foremost, the practice has sufficient cash to purchase the software and has enough experience to implement and support it. Second, the physicians put a high priority on having an EHR that is tightly integrated with a number of locally installed applications—not an impossible task, but certainly a more challenging one in the ASP model. To minimize hassles associated with building interfaces between remote and locally installed applications, this practice should purchase EHR software and install it on-site. The practice may need to consider bringing in outside resources for this purpose, as integrating local clinical applications can be fairly complicated.

# VI. Conclusion

Increasingly, the ASP model is a realistic option for physician practices that are considering clinical software applications. Outsourcing the hosting and maintenance of an application to another organization—that is, "renting" rather than buying a product—gives physicians more choices in their search for clinical solutions.

As the ASP market continues to mature, the options will likely increase. More EHRs will soon be available on an ASP basis and many vendors will start to package additional services with bundled, remotely hosted EHR and practice-management applications.

In the future, there will be greater choice of organizations serving as ASPs. Hospitals and integrated delivery networks have expressed interest in playing this role along with vendors, data centers, resellers, consulting firms, and independent physician associations, especially given the pending relaxation of Stark restrictions.

But physician practices must be cautious. While some clinical ASP applications, such as e-prescribing, have been deployed effectively for many years, the history of other ASP solutions, such as EHRs, is much shorter. Success stories abound, yet they may not apply to a specific practice and its unique needs. Determining if the ASP model is the right choice requires a careful, honest assessment of the application in question, the practice's ability to pay for and support it, and an ASP's experience and track record.

The ASP model may not be the right solution for many practices. But for some, especially those with limited capital and IT resources, it may be the only practical strategy for migrating to EHRs. That alone ensures a place for ASPs in the health care market, both today and in the future.

# Appendix A: Interviewees

**Peter Alperin, M.D.**
Director, medical informatics
Brown & Toland

**Cindi Ardans**
Quality manager
Partnership HealthPlan of California

**Zan Calhoun**
Chief information officer
HealthCare Partners Medical Group

**Chris Camissa**
Chief medical officer
Partnership HealthPlan of California

**Tim Day**
Network administrator
Humboldt-Del Norte IPA

**Lyman Dennis**
Chief information officer
Partnership HealthPlan of California

**Jessica Fefferman**
Program manager
Blue Cross and Blue Shield of Massachusetts

**Nancy Griest**
Vice president and chief information officer
Brown & Toland

**Chris Jioras**
IT manager
Humboldt-Del Norte IPA

**Craig Lanway**
Vice president and chief information officer
Hill Physicians Medical Group Inc.

**Martin Love**
Chief executive officer
Humboldt-Del Norte IPA

**Tom MacMillan**
Associate vice president, information technology
Brown & Toland

**Margaret E. McCahill, M.D.**
Medical Director, St. Vincent DePaul Village, and clinical professor, family medicine and psychiatry, University of California-San Diego School of Medicine

**Debra Spindel**
Vice president
Hoag Practice Management Inc.

**Jeffrey Tannenbaum, M.D.**
Caritas Good Samaritan Medical Center

## Vendors

**Derek Baird**
Marketing manager
Practice Partner

**Nancy Brown**
Sr. VP Business Development & Government Affairs
athenahealth

**James Chen**
Chairman, chief executive officer, and president
DrFirst

**G. Cameron Deemer**
Senior vice president and general manager
DrFirst

**Ike Ellison**
Vice president, business development
NextGen

**Joseph Grane**
Chief operating officer
Alteer Corporation

**John Haughton, M.D., M.S.**
Chief executive officer and chief medical officer
DocSite

**Bruce Kleaveland**
President
Kleaveland Consulting

**David Qu**
Vice president, product development, clinical solutions group
Allscripts

**Frank Rhie, M.D.**
Chief medical officer
Alteer Corporation

**Ken Rosen**
Vice president, business development and sales
eClinicalWorks

**Daniel Sands, M.D., M.P.H.**
Independent HIT consultant and former chief medical officer of an e-prescribing company

# Appendix B: Questions for ASP Vendors

1. **How much experience does the vendor have supporting remotely hosted applications?**
   - How long has it been doing this?
   - Does it work with or subcontract with any implementation or support partners? If so, how long has the partner been doing this?
   - How many client sites and users does the vendor currently support?
   - Is it OK to speak with one of the vendor's clients?

2. **What is the vendor's approach to disaster prevention and data recovery?**
   - Does it have a remote failover hot site for when the server goes down?
   - How quickly will the ASP application be available again if the data center becomes inaccessible?
   - Does the vendor back up data each night?
   - Does it comply with industry standards for fire detection/prevention, water damage protection, and climate control?
   - Does it have liability insurance?

3. **How does the vendor protect patient confidentiality and privacy?**
   - Does it comply with industry standards for physical security and access?
   - Are data for each client stored on separate servers?
   - Does the system maintain an audit trail, accessible to the client, of all accesses to the system, including both edits and views of patient data?

4. **What are the contract terms?**
   - How many years does the contract cover?
   - What are permissible causes for terminating the contract?
   - What provisions has the vendor made for data transfer when the contract expires or is terminated?

5. **What implementation and support services does the vendor provide?**
   - If a client needs additional support, how is that distinguished from support covered under the contract?
   - To what extent can the ASP application be configured to support specific workflows at a particular physician practice?
   - What provisions are there for ensuring system availability, reliability, and quick software and hardware response? How frequently does planned downtime or unavailability occur? What factors affect a practice's connectivity with the remote data center? Are there penalties when the vendor does not maintain minimum levels of availability?
   - How often does the vendor release upgrades? What do upgrades require from the client?
   - What types of ongoing support does the vendor provide (Web-based, telephone, on-site)? What are the hours of support? What provisions are there for ensuring fast service and response?

6. **What costs are associated with the application and other needs?**
   - Are costs calculated on a per-user, per-physician, or per-visit basis?
   - Is user hardware included?
   - Are there any third-party licensing costs?
   - What costs are associated with integrating a particular practice management system with the ASP application? With other applications?
   - Are there any transaction-based or connectivity fees?
   - Are implementation services included? If they are an extra expense, what is the billing rate?
   - Are application upgrades included?
   - Are support services included? If they are an extra expense, what is the billing rate?

# Endnotes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