The Application Service Provider model for picture archiving and communication

New models for acquiring a PACS are emerging, especially in Europe. Traditionally, PACS hardware and software components were bought outright by the end-user enterprise, managed and upgraded by the healthcare institution or the radiology department and serviced in-house. A totally different and innovative concept is the application service provider (ASP) model. With ASP, the PACS application is provided as a ‘service’ that is more or less comprehensive depending on the requirements of the users. Another new business model that has also emerged is the so-called managed imaging service. In this model, the PACS components are purchased by the end-user, but a third-party company is used to integrate and take the total responsibility of the imaging services. The common feature of these two innovative procurement approaches is the ‘service’ element, which can be called upon to a greater or lesser extent or exploited to the full, according to the needs of the customer.

PACS as a ‘service’ (1) the ASP model

In the ASP PACS model, the application and the medical image data are respectively installed and stored on a remote file server that is not owned by the healthcare delivery enterprise. Only the result of an operation is transferred to the client computer and displayed for the end-user. Several levels of ASP PACS can be purchased, ranging from a single archiving application to comprehensive packages where the total PACS service solution is bought, i.e. modality interfaces, networking, diagnostic workstations, web servers for the delivery of images to the clinicians and general practitioners, short-term archives, databases and any other application that is related to the efficient management of a PACS.

Some ASP services are for disaster recovery (back-up) or redundancy purposes only. The fee of the ASP service is usually based on either the number of examinations stored per year or on the Mbytes used per year. If the former of the two solutions is chosen, the client is charged a flat fee, irrespective of the size of the files or the type of examination to be stored. Images can be fetched without extra charge. If web servers are included in the ASP model, there can be a fee per general web access to an examination stored or a fee per transaction. The number of examinations as well as the redundancy, quality of service and bandwidth of the network affect the service charges. In other words, it is the service level agreement (SLA) that determines the fee. The SLA is imbedded within the ASP contract.

The service scope of this outsourced model has gradually been increased from long-term archiving to short-term archiving and web viewing of images. Some providers already offer turnkey solutions, where the whole digital environment can be outsourced, including the imaging modalities themselves. The service provider in the early stages of PACS was usually the local radiology department or the hospital IT department. Today, some hospitals or some hospital groups offer storage space to their own archiving solutions to smaller healthcare delivery entities. Some PACS retailers have developed their own ASP solution; other have done so in partnership with integrators or independent service providers.

PACS as a ‘service’ (2) the managed imaging service model

The managed imaging service model is a hybrid of the traditional investment PACS approach and the new ASP PACS model. In the managed imaging service model, the PACS components are purchased by the hospital as an investment, but a third-party company is appointed to integrate the various components and take the total responsibility of the imaging service.

Benefits and disadvantages of ASP PACS

In investment PACS the onus is on the customer to purchase the PACS components they believe they require to deliver an optimal working solution. The customer also carries the responsibility to find the budget for the technical upgrades. With the ASP model, however, this responsibility is transferred to the party that is best placed to manage that risk, leading to proactive risk management rather than a reactive ‘fixing of a problem’ approach.

One of the most common reasons for choosing the ASP PACS model is that archiving is not the core business of a healthcare delivery enterprise. The ASP solution eliminates or at least reduces the risk of choosing wrong archiving media or technology, and the cost of archiving can be easily calculated. Furthermore, the PACS costs are removed from the client’s investment budget and allocated to the operational budget (ongoing costs).

Other advantages include the utilisation of off-site IT expertise and the easy upgrading and deployment of new technologies, scalable to the needs of the customer. Last, but not least, the operational ‘headaches’ are transferred from the hospital scene to the ASP vendor.

Possible disadvantages or features that make the ASP solution less attractive include the lack of control over medical imaging data that are not physically on-site. There may be uncertainties regarding the ownership of the patient data and the stability of the provider of the ASP solution, e.g. in the event of a business merger, acquisition or bankruptcy. Furthermore, should the information management process fail in terms of confidentiality, integrity or availability of information, it may be difficult to establish the accountability of the responsible party.

Managed imaging services reduce risks associated with ownership issues and the selection of the vendor. On the other hand, there is still the need for continuous refreshing of PACS technology and software by the hospital to keep the PACS up to date.

Discussion

The majority of the installations in Europe today are investment based, but the number of managed service models and ASP-type solutions is increasing. It is anticipated that the second-generation PACS solutions in countries that are already saturated with PACS will most likely be ASP based. For these second-generation PACS, long-term archiving issues are to be solved. Typically,
this includes archiving of medical data other than images, e.g. laboratory results, electrocardiograms, etc.

ASP PACS has been more popular in Nordic countries than in the rest of Europe. In those countries, networks have traditionally been broad-bandwidth solutions, which facilitate the creation of off-site archives. However, the market situation is changing and both ASP as well as managed service models are being weighed up throughout Europe. The emerging market in Eastern Europe is particularly interesting as some of the new EU countries will make a technology jump from miniPACS to nation-wide ASP solutions.

New approaches to purchasing PACS have already been applied or are in the course of being implemented in some European countries. At the moment, there are at least ten ASP PACS installations in Europe, mostly in Nordic countries. A managed-service approach is currently being installed in Scotland and Northern Finland. One of the most recent places to choose the ASP model is Scanner de Turin, a private radiology centre in France. They are archiving two TB of image data (i.e. 20 000 CT examinations) annually to a Kodak service centre in Paris with a predefined service level agreement that specifies retrieval times, availability and other functional aspects.

To our knowledge, large turnkey ASP versions covering the entire breath and width of PACS do not exist today. Those ASP programmes that are currently operational still require that an extensive list of conventional PACS components be located in-house. On the other hand, some applications, such as long-term archiving or the total archiving operation, are increasingly provided remotely as an ASP service. The service usually covers archiving of the images for the legally required period, back-ups and maintenance and management services. Diagnostic workstations and modality interfaces are still commonly bought in-house.

**Conclusion**

ASP PACS is an innovative business approach. Like all new ideas, it takes some time before it can be fully adopted. PACS customers need to come to grips with the specifications and the service levels provided by an ASP package. PACS vendors, who have been in the business of selling hardware and software components, need to develop the ‘service’ concept. Some vendors are still in the transition phase from films (analogue) to filmless (digital) while at the same time they are trying to move from components to service solutions. Effective communication and consultation is required at both ends of the service line for ASP PACS to be firmly established as a viable alternative to traditional PACS purchasing models.

* Dr Tech. Hanna Pohjonen is Healthcare IT Consultant with Rosalieco Oy in Espoo, Finland. Contact: hanna.pohjonen@rosalieco.fi Tel. +358-50-3744785.

** Professor Dr Hans Blickman, MD PhD PACS, is Paediatric Radiologist at the UMC St Radboud in Nijmegen, The Netherlands. Contact: Tel. 31-24-3616473.