

WEB-BASED VERSUS CLIENT/SERVER DATA SYSTEMS

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This month I want to take a look at two competing models of database systems and give a brief overview of the pros and cons of each. The models I refer to are the newer web-based data collection systems and more traditional client/server data collection systems.

Historically since the 1980s, most data collection and management systems have followed the client / server model. This means there is a central server that houses the actual database and there are client PCs that connect to that server. The client PC runs the user interface application that allows the user to manipulate that database such as adding, editing, or deleting records, or generating reports on those records. Obviously there are variations of this theme, but what I've described is the classic client/server data system.

Since the late 1990s when general acceptance of the Internet as a business tool was established, a new industry segment has developed that is known as Application Service Providers or ASPs. The general idea of an ASP is to house the data and the user interface controls remotely at the ASP's location which typically is an environmentally controlled data center. To use the application and access the data a user only needs Internet access and a web browser. In theory this allow for less expense because all of the complicated components are at the ASP end and it allows for rapid deployment because users or sites only need a PC and Internet access to use the data system.

Both client/server and ASP models are reliant upon networking technology to some degree for the successful operation of the data system. Typically in the client/server setting one tends to think of the network being contained to a single building or campus in a traditional local area network or LAN although that scope has expanded with the advent of inexpensive digital subscriber lines and cable modem technologies. It is now common to have client/server systems with remote sites located many miles from the server with the connectivity to the

network provided by virtual private networks or VPNs over inexpensive high speed Internet connections. The traditional ASP model is reliant upon the remote sites having a functioning Internet connection. No Internet connectivity, no access to the data system with the traditional ASP.

In the client/server setting, some data systems aren't negatively impacted by network downtime in regards to record entry. Many times the records being entered can be held locally on the PC and then spooled out to the server side database when connectivity returns. This type of approach isn't available in the ASP model data system as it would defeat the cost savings aspect of keeping all of the storage and complicated processes at the server side.

The ASP model can allow an agency to deploy a data collection and reporting system very rapidly and typically for much less money than is required by the client/server model. The real downside to the ASP model is that you become dependent on segments of network that are not under your control, the Internet. If you lose Internet connectivity you are unable to use your data system. While in most areas Internet reliability is quite high, there are times it does go down and I'm thinking specifically of ice storms, hurricanes, tornadoes, earthquakes, and other large scale natural events. As an EMS service how do you continue to create records at that point, some contingency must be in place? Do you have a simple local database, do you resort to paper records that are then keyed into the data system when the network is restored, etc... These are the issues that have to be addressed up front with any data system and certainly with an ASP model.

Three states that I'm aware of are deploying or working towards deploying statewide data systems that are ASP models, they are North Carolina, Mississippi, and Minnesota. Several regional EMS and Trauma Registry groups around the country have or are deploying ASP model data systems. Many individual EMS agencies are now using or evaluating ASP products for data collection.

I've counted at least sixteen different commercial vendors that are offering EMS data systems in the ASP format. One that has a unique twist to it is the HealthEMS by ScanHealth. Their system uses a paper form that is scanned at the local end and digitized and then sent

over the Internet to the ScanHealth hosted servers where the data is stored and is accessible as with any other ASP system. The HealthEMS product is unique in that it is paper based at the technician end of the process so temporary Internet or power outages are not a problem. In that situation the forms accumulate and are scanned when connectivity returns. Even in the middle of storms with no power and no connectivity the HealthEMS product allows the actual data collection process to continue normally with no concerns of lost or forgotten information. It is a unique and interesting twist to the traditional ASP model and solves the contingency problem with its native design.

If your agency currently has no data system or you are evaluating building or buying a new data system, the ASP model does deserve some consideration because of the speed of deployment and the lower cost per site by simply requiring a PC with Internet connectivity. If you are expanding or renewing an existing client/server data system it is worth looking into developing a web based interface for the system for the same reasons. I believe the best of all options would be to have a triple tiered data system that operates normally in an ASP mode but also has the ability to run in client/server mode or even just in local client mode with records accumulating on individual PCs until connectivity returns, and then, the failsafe option for situations with no power and no connectivity would be to have scanable paper based forms. Those of you with existing systems deployed might be able to pursue this option as the basic infrastructure is there and functioning. Those of you with no data system would likely find the triple tiered approach too cost prohibitive for a single phase project.

Another popular and growing area of ASP technology in EMS is the continuing education services that are offered online. You as a participant only need a PC with Internet connectivity to log into your account online and use the CE services, take examinations, and view your transcripts or records. I've talked with many people that think that a lot of EMS education will move to this online format and save actual classroom face time for special lectures or meetings, or hands on events. If you are interested in online CE there are two ways to approach it as an agency. You can sign up with a full service EMS CE ASP for a certain amount per year per person typically, or you can use the tools available to create your own online CE that you would host or contract someone else to host. Obviously developing your own CE

program online is a time and cost intensive process but might be cost effective for large agencies.

Be aware that there are some very interesting EMS related ASP services available. There are usually data and CE ASPs exhibiting at most regional and national EMS conferences. I would encourage you to take a look and ask serious questions if you are in the market for a data or CE system. Hopefully you will now be better informed on the two different data models out there and have some understanding of the pros and cons of each.

I welcome your comments, criticisms, feedback, and ideas. You may contact me at ejems@cpcstech.com

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