software solutions

A STORM WATER PROFESSIONAL'S GUIDE FOR MATCHING COMPLIANCE TECHNOLOGIES TO DISTINCT NEEDS

By Lawrence Goldenhersh, Esq.

Managing storm water requirements can be overwhelming. Besides monitoring, inspecting, completing discharge monitoring reports and renewing permits, environmental professionals need to aggregate water data for other important reports, such as Form R and compliance action and sustainability reports. Furthermore, they need to ensure compliance with the obligations of their storm water pollution prevention, spill prevention control and countermeasure plans.

With all these demands, storm water professionals risk losing important information or missing critical deadlines, especially if using PC-based applications. In order to manage all of the data efficiently, companies need an environmental management system.

Environmental management information systems should be able to integrate data input, collection and reporting into one system to manage all programs—including the National Pollutant Discharge Elimination System, Significant Industrial User, Safe Drinking Water Act and wastewater pretreatment compliance programs—more efficiently and confidently than by simply using PC-based applications.

With a fully integrated system, lab results can be entered directly into the system, and storm water compliance professionals can automatically track and respond to exceeded permit limits since appropriate calculations are configured into it.

The Internet has substantially expanded storm water industry professionals' options when it comes to using environmental, health and safety (EHS) compliance software. These technologies help users manage important information. Yet with a set of acronyms like SaaS, ASP, BTF and BAD, plus mixed messages about their applications, confusion about available and applicable options abounds.

The EHS compliance software market offers four basic solutions: software as a service (SaaS), application service provider (ASP), client-server/behind the firewall (BTF) and build and deploy (BAD). Because multiple technology options exist for storm water compliance management, relevant companies should understand the benefits and requirements of each in order to select the best solution to fit their needs.

As a professional in a storm water-related field, consider the application information and cost considerations outlined in this article when selecting an appropriate compliance technology.

SOFTWARE AS A SERVICE (SAAS)

SaaS is the newest model of software delivery with the Internet as its backbone. In the SaaS model, a software company delivers its application directly to the desktops of users via the Internet. Beyond an Internet connection, a user does not need to install additional hardware or software.

All SaaS clients use the same software code base—a "one-to-many" architecture. The SaaS application resides on servers in a central location, managed by a provider who develops, maintains and upgrades the software. It is designed for highly scalable use across a potentially infinite user base.

A user can implement this software over a computer screen, and the process does not require any programming. Upgrades are made by changing one central code base, which is then instantly available to all customers.

SaaS systems are sold on a subscription basis, allowing each client to purchase precisely the number of users required for the solution, thus avoiding the overbuy forced by the one-size-fits-all sales approach that has characterized the software market since the 1980s. Also, SaaS providers typically have deep domain experience in the area addressed by the

application (i.e., storm water management compliance).

Application Service Provider (ASP)

The ASP model emerged around 1999, before the introduction of Internet-native software architecture. It was designed to use the Internet to drive cost reduction by allowing companies to outsource the maintenance and distribution of nonInternet-native applications.

In the ASP model, companies pay a provider to host and maintain applications that previously ran behind the company firewall. These third-party providers promise that applications will be made accessible over the Internet and maintained and updated as needed. Many customers pay additional fees for related hardware. Generally speaking, ASP providers have limited to no domain experience with the applications they are hosting.

For the most part, the storm water management market has rejected this model because the costs and risks inherent in having a third-party host nonInternet-native technologies are at least as high as those of leaving the application inside the company's firewall. In general, most ASP models died with the burst of the dot-com bubble early in the new millennium.

Client-Server/Behind the Firewall (BTF)

Client-server/BTF software delivery has been available since the mid-1980s. Prior to the Internet era, BTF was necessary because there was no infrastructure for centrally hosted software that could be accessed remotely and no software architecture to cost-effectively accommodate centralized one-to-many deployments.

In the client-server/BTF model, software applications reside on hardware behind an organization's firewall, and customers or their hired help become responsible for maintaining the system and managing its performance. These applications are typically intended to be used by one unique user group.

Installation and upgrades of BTF software often require software specialists. Client-server/BTF applications are traditionally sold in prepackaged modules, which do not afford customers the option of picking and choosing functionality within a module; many require buyers to purchase more functionality than is needed.
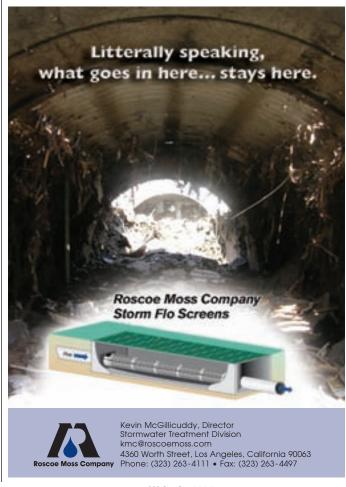
Build-and-Deploy (BAD)

Internal IT teams specify, design, build, support, maintain and upgrade BAD applications. But with the prevalence of off-the-shelf solutions and considering the storm water industry's rededication to core capabilities (and thus the outsourcing of noncore functions), the BAD model, while still in existence, is rarely selected.

SaaS v. Client-Server/BTF

Given the exorbitant cost of BAD and the failed ASP model, companies looking for an EHS compliance system ultimately have two choices: SaaS or client-server/BTF. The remainder of

this article will explore the differences between these two fundamentally different software delivery models.

Ownership Costs

In evaluating total cost of ownership for an EHS compliance system, storm water-related companies should evaluate at least the following cost variables.

Licensing. In terms of license costs, the single biggest issue with client-server/BTF solutions is that the software functionality is broken artificially into modules. A customer is required to buy the whole module, including the purchase of unnecessary functionality. In contrast, the SaaS customer selects the exact portions of the application needed.

The disadvantages of the modular approach used by client-server/BTF applications are exacerbated in the EHS world, where successful compliance requires integration of air, water and waste compliance activities. This need for integration magnifies overbuy by forcing multiple module purchases in order to get the subset of multimedia functionality needed.

Also, in order to achieve the compliance system necessary to address

Most compliance systems today are SaaS or client-server/BTF.

storm water issues, customers frequently incur the cost of integrating various modules. This integration cost and risk is avoided in the SaaS world, where all functionality sits inside one centralized system for optimal efficiency.

Finally, because many client-server packages do not allow customers to add and remove users, a customer is forced to overbuy on users to ensure individual needs are met.

Hardware/Infrastructure. With SaaS solutions, a customer need not buy hardware or software or worry about compatibility, obsolescence, upgrades or performance. These concerns and risks are retained by the SaaS provider.

In the client-server/BTF world, on the other hand, the cost of hardware—and all the staffing dollars associated with ensuring that the hardware is current and running properly—is imposed on the customer. As cited by Tim Chou, former president of Oracle on Demand, in his book *The End of Software*, according to global analyst firm Gartner Inc., these costs are four times those of the software license.

Implementation. SaaS applications are set up by clicking buttons that appear on a computer screen. This process can be done by the ordinary user or a trusted consulting partner. In contrast, most client-server/BTF applications were built on the assumption that software specialists would install the application and make it operate as desired.

The lower cost and risk levels and reduced implementation time that SaaS offers makes it a less complex investment from which customers can benefit more quickly.

Maintenance. Included in the SaaS subscription is the promise that the functionality purchased will constantly be optimized and upgraded. With client-server/BTF, exactly the opposite is true; unless maintenance is purchased, the customer's application will remain frozen in time.

SaaS upgrades are performed on one centralized set of computers and completed overnight, without burdening IT staffs and inducing costs. Client-server/BTF product upgrades, however, require software experts to manually replace old code and check compatibility across hundreds of installations.

Second, because SaaS companies upgrade all users to the same version simultaneously, each upgrade is less complex and the cycle is shortened—two to three upgrades per year in the SaaS world versus one upgrade every 18 months for the client-server/BTF.

Client-Server/ Accountability

In the BTF model, a provider can virtually disappear after software is purchased. But because the SaaS application is accessed via the Internet, the provider and customer are in touch every day. The SaaS provider is constantly accountable to the customer to honor performance promises made during the sales process. And rather than being locked in by an upfront purchase, unhappy customers are free to decline renewal and go elsewhere.

The shift in leverage has, for the first time, empowered the customer to enforce accountability in terms of performance requirements, timeliness and service levels.

Choosing a System

In the client-server/BTF world, products have been around for more than two decades, and reputable providers will have qualified, deployed reference customers to substantiate their claims. And over the last several years, at least one leader in the various SaaS categories, including EHS compliance management, has been established. Each of these leaders launched its products in the new millennium and has at least five years of operating experience.

While the choice to implement EHS compliance software may not be so difficult in light of the sheer number of regulations facing storm water companies, selecting which technology best suits individual needs seems complex. With leaders in both SaaS and client-server/BTF categories, there should be no reason to add risk by selecting a new company that is attempting to catch up with well-established industry visionaries and leaders. The risks to career and compliance are overwhelming, and the disruption from failure can be catastrophic.

The good news is that with leaders in both categories, you do not have to add risk. **SWS**

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