



## IJIS INSTITUTE INFO BRIEF:

# CLOUD COMPUTING FOR THE COURTS

One of the biggest challenges for courts today is providing information in real time to constituents and justice partners (e.g., attorneys, law enforcement, and judicial officers). At the same time, courts need to be able to minimize the cost of acquiring and maintaining information technology (IT) systems that run efficiently.

Courts today are plagued with rising upfront software licensing costs and operational expenditures that make it difficult to take the next step to modernize their information systems, mainly the case management system. Cloud computing, more commonly known as the cloud, provides alternative solutions to address this issue while providing ease of access to information for citizens and judicial officers in a secure and efficient manner. However, cloud computing comes with some inherent challenges that need to be addressed in implementing a cloud solution. This *Info Brief* provides an introduction to cloud computing for courts along with benefits and challenges.

### Background

Typical information management applications found in a court's IT infrastructure include:

- case management systems (CMS),
- electronic filing (eFiling),
- document management systems (DMS),
- financial software (e.g., SAP),
- human resources (HR) applications,
- collaboration software (e.g., SharePoint),
- courtroom applications (e.g., courtroom recorder, transcript generator, etc.), and
- call center/help desk applications.

Of these applications, the CMS has the most predominant role and can account for 70-75% of the total IT capital expenditure and 30-40% of total operational costs – both at county and state levels. These costs present a significant challenge to IT managers and CIOs.

Today, software licensing costs for a typical trial court case management system for a large- to medium-size county (processing more than 500,000 cases per year) can range anywhere from \$800K to \$1M. It does not end there, as there can be professional fees (implementation costs) and maintenance costs as well, taking the total investment to upwards of \$4M for a five-year period.

A second challenge IT managers and CIOs have to deal with is a scalability issue – being able to accommodate growing demands without any performance degradation – whether they be increases in user base, increased storage, or computing power (especially in a

statewide system). A third challenge is reliability – being able to keep applications and systems running 24-hours-a-day, 7-days-a-week.

Cloud computing is becoming the new mantra of providing IT and software services to employees, extended partners, constituents, and the general public. According to *CIO Insight* magazine, 77% of enterprises are in the initial stages of cloud adoption: standardization, consolidation, and virtualization.<sup>i</sup> *Business Insider* notes that 84% of CIOs have cut application costs by moving to the cloud.<sup>ii</sup> With cloud computing gaining much traction in the IT industry, it is time for courts and the justice community to ride this new technology wave.

## What is Cloud Computing?

Cloud computing, according to Gartner is a, “style of computing in which scalable and elastic IT-enabled capabilities are delivered as a service using Internet technologies.”<sup>iii</sup>



Cloud computing offers different models to choose from – Software-as-a-Service (SaaS), Platform-as-a-Service (PaaS), and Infrastructure-as-a-Service (IaaS). These models can be implemented as private, public, and community clouds.

In a private cloud, the service offered (application, storage, etc.) is 100% dedicated to a customer, while the public model is shared between customers. In a community cloud, the service – in this case the infrastructure and platform – is shared by customers who share a common domain. PaaS and IaaS are predominantly implemented as community clouds.

While PaaS and IaaS provide options for courts to host their applications, the most widely used model is the SaaS model, where the application software is hosted in the cloud (in the form of a private cloud), and provides application services over the Internet to subscribers. Some examples of SaaS solutions used in courts today include electronic case filing (eFiling) and court CMS.

In SaaS, the cost model is different from the traditional cost model in which courts don't have to pay for the traditional software licensing costs upfront; instead, they use a pay-as-you-go approach. CMS vendors that provide SaaS hosting services charge an annual or monthly subscription fee for hosting the application. This pricing model frees up courts from locking in a huge investment up-front, which can be especially valuable for small- to medium-sized courts where budgets are very tight.

## Clear Benefits

Cloud computing offers solutions that address the three challenges discussed above: cost, scalability, and reliability.

**Cost:** With cost being the number one challenge, SaaS allows courts to switch their capital expenditures to operational expenditures by freeing up huge upfront software licensing costs and investments in hardware and operating system software. Since hardware configuration changes so rapidly, it is difficult and costly to keep up with software and hardware upgrades and patches. Training and re-training of IT staff can also be minimized

with respect to hardware and software configuration changes. With SaaS, all of this is taken care of by the hosting provider.

Additionally, unlike the traditional annual software maintenance cost, SaaS providers typically offer cost-effective maintenance (since the maintenance cost of the application can be shared across multiple customers) that is included in the subscription fee.

**Scalability:** With a SaaS environment, applications can be scaled up and down on demand. For example, in an integrated e-filing, CMS, and DMS environment, document filings grow over a period of time, creating a need to provision for the growing file size. In a traditional data center, this provisioning requirement would mean estimating growth and planning for additional data storage – typically by adding SAN disks or by adding more disk storage. In a cloud computing environment however, the infrastructure is instantaneous and automatically provides storage capability that grows based on user needs; this infrastructure is often referred to as Dynamic/Elastic Storage (ES). Additionally, it allows IT departments to downsize their servers dynamically if there is not much demand. Thus, cloud computing platforms provide greater flexibility to scale IT infrastructure, dynamically (both up and down) with minimum manual intervention.

**Reliability:** Most cloud computing or SaaS providers maintain a reliability of 99.99% with system recovery in almost zero downtime. Court data can be backed up in multiple sites for a quick disaster recovery. This reliability ensures that CMS or other mission-critical applications are available 24-hours-a-day, 7-days-a-week, and relieves the court IT staff from having to run tape or remote back-ups in the data centers and perform data recovery tasks.

## Cloud Challenges

Although, cloud computing offers significant benefits, it is not a silver bullet, and, therefore, comes with challenges that need to be addressed. One of the challenges is Quality of Service (QOS) from vendors offering SaaS services. QOS affects the performance, reliability, and availability of the applications running on the cloud environment. One way to address the QOS is by ensuring the implementation of strict Service Level Agreements (SLAs) that include QOS parameters – performance, reliability/availability, and Continuity of Operations (CONOPS) – back-up and recovery procedures.

Another major challenge with cloud computing is ensuring that court data is secured and only authorized users are able to access the data. For private cloud implementations, having robust, role-based security data encryption standards and periodic security audits is key to ensuring data security and preventing unauthorized access. For community and public cloud implementations, security can be addressed by ensuring that hosting vendors offer top-of-the line security that conforms to standards like SOC 1 (formerly SaaS 70), the Federal Bureau of Investigation (FBI) Criminal Justice Information Services (CJIS) 5.3 Security, PCI 3.x, the Health Insurance Portability and Accountability Act (HIPAA), FedRAMP, and the Department of Defense Cloud Security Model (CSM). The application and data security offered by top cloud computing and SaaS providers is often better than what small- to medium-sized courts can achieve with their limited IT resources.

## Conclusion

Cloud computing, especially SaaS, offers the potential for a more robust, flexible, and scalable solution for the future of courts at a cost that can be lower than the total cost of hosting and maintaining applications in-house, running on your own hardware. More importantly, it allows courts to switch capital expenditures to operational expenditures. While cloud computing does come with some inherent challenges, they can be addressed by careful planning and accurate selection of cloud computing strategies and solutions.

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<sup>i</sup> Enterprise Technology News and Opinions on Storage, Security, Business Intelligence and IT Management for CIOs. "Enterprises Slowly Adopting Cloud Computing." <http://www.ciainsight.com/it-strategy/cloud-virtualization/slideshows/enterprises-slowly-adopting-cloud-computing>.

<sup>ii</sup> <http://www.businessinsider.com/infographic-its-not-easy-to-be-a-cio-2012-2>.

<sup>iii</sup> Technology Research | Gartner Inc. "Gartner Says Cloud Computing Will Become the Bulk of New IT Spend by 2016." <http://www.gartner.com/newsroom/id/2613015>.