The IJIS Institute Emerging Technologies and Courts Committees Present:

The Secure Justice Cloud

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The IJIS Institute

- Non-profit consortium representing leading companies that supply IT solutions and services to the justice, public safety and homeland security sectors.
- Funded by industry contributions and grants from federal agencies.
- Provide training, technology assistance and program management services to state, local, tribal and federal organizations to help them realize the power of information.
The IJIS Institute unites the private and public sectors to improve critical information sharing for those who provide public safety and administer justice in our communities.
...is at the heart of everything we can do to reduce crime, prevent terrorism, and improve the quality of public safety in America
...is the most prolific enabler of secure information sharing across all levels of organizational, jurisdictional and geographic boundaries
...promote economical and accelerated deployment of technology standards
“The biggest driver for interoperability in mission fulfillment – being able to responsibly share information with adequate safeguards.”

Kshemendra Paul, PM-ISE
Discussion Points

- Cloud Computing in Simple Terms
- Cloud Computing and Digital Justice
- Taking Advantage of Cloud Computing
- The Secure Justice Cloud
- Policy, Procedures and Governance
- Execution
- Q&A
What is Cloud Computing?
What is Cloud Computing?

(Business definition)
A method to address scalability and availability concerns for large scale applications
What is Cloud Computing?

(Engineering definition)
Providing convenient, on-demand network access to a shared pool of configurable computing resources that can be rapidly provisioned and released with minimal management effort or service provider interaction.
What is Cloud Computing?

a) A way to access applications hosted on the web through your web browser
b) A pay-as-you-go model for IT resources accessed over the Internet
c) Use of computer resources, distributed throughout an internet, to perform parallel processing, distributed storage, indexing and mining of data
d) Gartner: “Cloud computing is a style of computing where massively scalable IT-related capabilities are provided “as a service” across the Internet to multiple external customers”
e) Commercial: An IT buzzword that assures potential clients that your product is on the cutting edge of technology
f) All of the above
What is Cloud Computing?

• Internet is the democratization of information
• E-commerce is about the democratization of business
• Blogging is the democratization of news
• Cloud Computing is about the democratization of servers
Software as a Service

SaaS
A way to access applications hosted on the web through your web browser

Examples: A web application for minutes entry
Impacts: Your data may not be locally stored
Issues: Security and Availability, Customization
Benefits: Cost, maintenance, upgrades, hardware
Platform as a Service

**PaaS**

The delivery of a computing platform and solution stack as a service. A pay-as-you-go model for IT resources accessed over the Internet.

**Examples:** A for developing for deploying applications

**Impacts:** Your data is not locally stored, but scalability and flexibility is increased.

**Issues:** Security and Availability

**Benefits:** Cost, expertise and specialized services
Infrastructure as a Service

IaaS

Use of distributed computer resources across the internet to perform parallel processing, distributed storage, indexing and mining of data

Examples: A hosted hardware environment (including servers, databases, applications)

Impacts: Your data is not locally stored, but scalability and flexibility is increased. Enterprise services for exchanges, workflows, indexing, searching on a single tier

Issues: Security and Availability

Benefits: Cost, enterprise services on a commodity basis
Cloud Computing has introduced a number of value-added services which enable accelerating the realization of the value of cloud adoption and deployment.
Why Move into the Cloud?

**Big for Little** -- The access to infinite computing resources available on demand, thereby eliminating the need for users to plan far ahead for provisioning. Small agencies, with big system resources.

**Pay As You Go** -- The elimination of an up-front commitment by Cloud Users, thereby allowing agencies to start small and increase hardware resources only when there is an increase in their needs.

**Elastic** -- The ability to pay for use of computing resources on a short-term basis as needed (e.g., processors by the hour and storage by the day) and release them as needed.
Common Cloud Themes

- They’re **BIG** – massively scalable
- **Elastic** - Use what you need – no upfront commitments, use on short-term basis
- **Ubiquitous** - Out there on the network somewhere – accessible via Internet, location independent
- **Transparent** – complexity concealed from users, virtualized, abstracted
- **Service-oriented** – easy to use, SLAs, accessible

*Simple Metaphor:*  
Like Power Company

*Better Metaphor:*  
Cooperatively Owned Semiconductor Lab
Commercial Cloud Formation

Amazon Elastic Compute Cloud (Amazon EC2) - Beta

POWER OF NETWORK.COM
Cloud Deployment Models

- **Private cloud.** The cloud infrastructure is operated within the consumer’s organization, or external but exclusively used.
- **Community cloud.** The cloud infrastructure is jointly owned by several organizations and supports a specific community that has shared concerns (e.g., mission, security requirements, policy, and compliance considerations).
- **Public cloud.** The cloud infrastructure is owned by an organization selling cloud services to the general public or to a large industry group.
- **Hybrid cloud.** The cloud infrastructure is a composition of two or more clouds (internal, community, or public) that remain unique entities but are bound together by standardized or proprietary technology that enables data and application portability.

NIST working definitions
Cloud Standards Customer Council

The goal of the council is to separate the hype from the reality on how to leverage what customers have today and how to use open, standards-based cloud computing to extend their organizations.

Key considerations outlined by the council:

- Security
- Portability
- Interoperability
A cloud implementation introduces security risks and at the same time security advantages.

Selecting a migration path is a key strategy to reduce the risks and maximize the advantages.
Security Challenges

- Moving **personally identifiable and sensitive data** to the cloud
- **Turing** vendor’s security model
- **Data ownership** issues and indirect administrator accountability
- **Proprietary** implementations cannot be examined
- Large clouds are attraction to **hackers**
- Possibility of **massive outages**
- Loss of **physical control**
Security in the Cloud

Security Advantages

- Greater **investment** in security infrastructure
- Cloud **homogeneity** makes security auditing/testing **simpler**
- Clouds enable **automated security management**
- Simplification of **compliance analysis**
- Data held by an **unbiased party**
- **Dedicated** Security Team
- **Redundancy / Disaster Recovery**
Cloud computing is more than just the latest in a series of attempts to pare down government spending — it’s a gateway to unprecedented innovation in a sector known more for bureaucratic inertia.

Rick Holgate, president of the American Council for Technology (ACT)

The experience over the past five years has proven some tangible benefits:

- Hybrid cloud enables balance between cost and risk reduction
- Cloud enables agility and scalability
- Value added services such as Machine Learning and Media Services are key to innovation

A Community Cloud based on NIST Definition:
The cloud infrastructure is provisioned for exclusive use by a specific community of consumers from organizations that have shared concerns (e.g., mission, security requirements, policy, and compliance considerations).

Compliance with the CJIS security policy and other national standards.
Key Cloud Questions

- Support for national standards for protecting criminal justice information
- Data center location and resilience
- Collaboration with state CSO’s in the area of compliance with national standards
- Fully isolated network and hardware instance
- Employees in data center subject to the FBI background check
- Auditability to demonstrate full compliance with the CJIS Security Policy
Challenges facing Courts today

- Growing demands for information and real-time access
- Needs to reduce cost
- Aging systems, aging experts
- Difficulty in attracting and retaining talent

How can the Cloud help me?
Potential Cloud Solutions

- Case Management Systems
- Electronic Filing
- Document Management
- Human Resources
- Financials
- E-mail, Office Productivity
- Collaboration
- Audio and Video solutions
- Storage, Backup, Disaster Recovery
- EaaS (Expertise as a service – Interpreting, etc.)
Benefits

- Cost
- Scalability
- Reliability
- Upgrades
Barriers

Bandwidth  Performance
Change Management  Change Acceptance
Concerns

- Security and Privacy
- Vendor Stability
- Data Ownership
- Contract Termination
The **Challenge** was that Users felt like IT was developing in a vacuum.

Lack of priority, accountability, insight, oversight.

Different tools for requirements, source control, development, testing, and release management (if any).

No consistent SDLC.
Cloud Case Studies

Kentucky – Software Projects

The **Solution** was Adopting a formal Application Lifecycle Management (ALM) with Microsoft Team Foundation Server (TFS) Online, and moving to a Scrum/Agile development and delivery model.

Cloud-based Visual Studio Development Environment, Online planning and collaboration, development and version control, build and release, testing and defect correction, and reporting.
Cloud Case Studies
Kentucky – Software Projects

The Results

- Users are more involved and see products early and often.
- “User stories” are easier communication tools.
- Projects are more successful.
The **Challenge** was that it was just too slow!

Users complained that everything took too long.

Legacy MPLS network with central, single Internet connection with firewall and content filter was a bottleneck and couldn't keep up with the growing need for access to online resources.
Cloud Case Studies

Kentucky – Network

The Solution

- Cisco Cloud Web Security (CWS).
- A router in each county with a secondary, inexpensive, high-speed internet connection.
- Cloud-based management console for central security, control, management and reporting.
- Layered with Dell Secure works intrusion detection monitoring.
The **Results**

- Internet traffic can be routed directly out the shortest path in a safe manner.
- Allows for central management and control from a single console.
- Access is much faster.
Cloud Case Studies

Kentucky – Training

The Challenge

- It was too expensive to deliver training in person.
- Video training was the answer, so we needed to deliver video training to the counties and record completion centrally, but again, the bandwidth issue!
Cloud Case Studies

Kentucky – Training

The Solution

- Distributed Network Attached Storage (NAS) devices in the counties
- Coupled with a Cloud-based Meridian Learning Management System (LMS) to centrally manage courseware, registration, testing, completion, and reporting from the AOC.
Cloud Case Studies
Kentucky – Training

The Results

- Training is available anywhere, anytime, self-serve.
- No travel time or cost are incurred.
- Minimal network bandwidth is required.
The **Challenge**

Upgrades came with significant server-side requirements and complexity, and all at a time when staff to maintain were becoming harder and harder to attract and retain, and certainly very unpredictable going forward.

Exchange 2013 and SharePoint 2013 are incredibly complex server environments to establish and maintain.
Cloud Case Studies

Nationally – Office 2013 Upgrades

The Solution

Office 365! Hosted Exchange = Cloud-based e-mail. Significantly larger mailboxes, online archive capabilities. Hosted SharePoint. Flexible licensing includes home computer use. One Drive Cloud-based file storage. Cloud-based versions of Office products like Word, Excel, Outlook, and PowerPoint that you can access from a browser anywhere. Skype for Business (formerly Lync) provides online collaboration, meeting and conferencing capabilities. PCs, Macs, iPads, Windows and Android tablets can now all run Microsoft Office. Upgrades are applied automatically.
Cloud Case Studies

Nationally – Office 2013 Upgrades

The Results

- Guaranteed 99.9% uptime
- 24/7 support
- Contract ensures security and privacy
- Always up to date
- Available anywhere, anytime
These are just a few examples.

As you can see, there has been a rapid shift towards Cloud-based solutions.

Many jurisdictions have implemented Cloud-based electronic warrants systems like we have in Kentucky.

Many other states have Cloud Computing as part of their Strategic Plans.

In Kentucky, when we approach a new challenge, we think cloud first, and we build cloud-ready.
Don’t Allow Technology to Get Ahead of Policy!

- Common Big Data Definition for Law Enforcement
- Adoption of a Common Governance Model
- Clear and Compelling Business Case
- Development of Common Standards
- Address Privacy and Security Concerns
- Identification of Implementation Models
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.
SEARCH, in partnership with BJA, developed the first Privacy Impact Assessment (PIA) tool to assist agencies when developing or reviewing their privacy and civil liberties policies.
Questions?
**Resources**

- NIST: Effectively and Securely Using the Cloud Computing Paradigm, Peter Mell and Tim Grance

- NIEM and the Cloud
  [http://www.kms.ijis.org/traction/permalink/Public4049](http://www.kms.ijis.org/traction/permalink/Public4049)

- Above the Clouds: A Berkeley View of Cloud Computing
  [Electrical Engineering and Computer Sciences
  University of California at Berkeley

- Public Technology Institute: Local Government and the State of Cloud Computing

- Cloud Computing for the Courts