City of Houston
HITS Cloud Strategy and Body Worn Camera Project

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Overall HITS Goals

• Provide Enterprise Services
  • Voice
  • Network
  • Email
  • Communications platforms
  • Shared Enterprise applications

• Provide Outstanding Customer Service

• Provide Responsive and Timely Solutions
Definitions - On-Premise Storage

- Storage that has all components on-premise, locally to provide local access to data
- Includes Storage Area Networks (SANs) or Network-Attached Storage (NAS) devices
- Includes a data switch fabric that connects the servers to the storage
Cloud Storage:

- Based on a highly virtualized infrastructure providing near-instant elasticity and scalability, multi-tenancy and metered resources.
- Made up of many distributed resources that appear as one, single resource.
- Can be highly fault-tolerant through redundancy.
Types of Cloud Storage

• Personal Cloud - also known as mobile cloud storage, consisting of public storage of personal data that is accessible to an individual from anywhere

• Public Cloud - storage provider fully manages the enterprise’s public cloud storage

• Private Cloud - storage provider has infrastructure in the enterprise’s data center managed by the provider

• Hybrid Cloud - combination of public and private cloud storage where critical data is stored separately from public data

• Government Cloud - secure cloud reserved for government entities with security and compliance at the forefront of solutions
Advantages - On-Premise Storage

- City retains complete management and control of their environment in secure data center areas
- City data is stored/handled internally
- Back-up, archiving and maintenance of data are done locally
- Redundancy and failover are set up and maintained by local technical staff
- Complete control of data rests within the City
- Hardware purchase and maintenance are the main costs
- No up/down costs for data transfer to and from on-premise hardware
Disadvantages - On Premise Storage

- Larger initial investment in infrastructure for current need and anticipated growth
- Some resources remain unused for long periods of time
- Complex to architect, deploy, maintain, and support
- Hardware needs to be refreshed periodically
- Costs for data center space to house the storage infrastructure
- Redundancy requirements drive up the costs substantially
- Downtime due to failures are reliant upon having spares or ability to get spares in a timely fashion
Advantages - Cloud-based Storage

- Customizable and expandable on-demand
- Pay for what you consume only versus purchasing infrastructure for anticipated growth that may not be consumed for long periods of time
- Potential reduction in licensing costs
- Maintenance and hardware upgrade costs are built-in to the overall price
- Provider becomes responsible for Service Level Agreements (SLA) and hardware replacements
- Potential reduction in costs for initial purchase
- Ideal in areas where IT staffing is an issue
Disadvantages - Cloud-based Storage

- Third-parties are handling confidential data
- Contracts are often difficult to negotiate for data return should there be a need to change providers
- Need to ensure redundancy and back-up of data is included in set up
- Compliance with legislation and regulation needs to be monitored
- Customization and integration with existing solutions can be difficult
- Lack of full control over data and processes
- May include an increase in circuit costs as well as other “hidden” costs
Other Considerations?

• Storage and bandwidth prices continue to drop fast
• Cloud-based services are attractive
  • Reduce licensing costs
  • Avoid adding IT staff unnecessarily
  • Allows for responsiveness to customer needs in a way never before possible

• How do we balance maximizing the benefits of existing platforms with cloud or hosted solutions?
• Not all data is equal with regard to requirements.
Where do we go?

- National Institute of Standards and Technology (NIST)
  - Promotes US economy and public welfare by providing technical leadership of the nation’s measurement and standards infrastructure.
  - Development of standards for IT in industry, government and academic organizations.

- Cloud computing strategy should have a positive balance with regard to costs of IT while improving IT capabilities, securing data and offering innovation.

- Time to Completion - hardware procurement for on-site solutions takes time
Where do we go?

- Cloud services need to be secure, interoperable and reliable
- City needs to be able to move between providers easily while maintaining ownership of data
- Factors for cloud solutions include:
  - City policy
  - Technology requirements
  - Security of data, including vetting of employees handling City data
  - Information Technology standards
  - Costs of both on-premise and hosted solutions
Hybrid Solution

• Hybrid solutions offer a balance between both delivery models and adapt according to the needs of the City and the application being considered.
• Balance the life left in existing hardware and utilize on-site hardware until it is end of life/end of support.
• Maximize what we have today versus what we are moving to tomorrow.
Hybrid Solution - Advantages

• Flexible storage options that exist both on-premise and in the cloud
• Scalability to increase storage or application output on-demand
• Ability to maintain control over data when compliance and security cannot be compromised
• Solutions are not governed by skill level of IT staff or size of IT department
• Outages and time lost due to equipment failures can be mitigated
• More choice options for planning for existing and future IT needs
• Consolidation of vendor platforms
What’s Next?

• Many choices exist for both on-premise and hosted storage
• Lower costs for both on-premise and hosted storage.
• Thorough vetting by project is needed to ensure requirements are met within cost.
• Considerations for types of data must be made before architecture can be designed for both on-premise and hosted solutions.
Houston Police Department
Body Worn Cameras Project

• Procurement of 4,500 Body Worn Cameras
  • 4100 will be used for officers
  • 400 will be used as spares/replacements

• The project will be deployed to each division individually, starting with Central Patrol.
  • Rollout will take approximately 12-18 months.

• Cameras will be deployed to patrol/supervisory first responders, investigative first responders (IFR) up to Lieutenant level and all officers on uniformed extra job assignments.
Request for Proposal

• January 23, 2015 - Strategic Purchasing released the RFP from the City’s e-bidding website.
• 372 prospective bidders downloaded the RFP
• March 16, 2015 - SPD delivered 12 proposals to HPD for evaluation
• March 23, 2015 - HPD began the evaluation process
Where will the videos be stored?

• Videos will be downloaded through a transfer station and then transferred to the HPD data center and stored on City owned storage.

• A duplicate copy of the video will be stored at the City’s Disaster Recovery Center, separate from the primary data center location.
Project Costs

• Total project cost is $7,963,360 for five years. (capital)
  • Servers will be purchased through DIR in the amount of $236,109 using Asset Forfeiture funds.
  • Storage will be purchased in the amount of $1,390,946 and will represent an on-site solution designed to cover storage needs for five years.
  • Purchase of body worn cameras, Video Evidence Management Systems (VEMS), accessories, software, maintenance repair and training are in the amount of $6,332,747.
On-Premise versus Hosted

• A thorough evaluation was conducted by the evaluation team for both on-premise and hosted solutions for storage.
• Only three vendors out of twelve provided a hosted solution for storage.
• The final vendor selected offered pricing for both on-premise and hosted solutions.
Responses from RFP respondents show that compared to on-premise data storage, hosted storage would have an incremental cost of $9.06 million over five years. Of this, $7.62 million would be the incremental cost of cloud storage and $1.44 million would be for the needed increases in bandwidth circuit costs for HPD’s 24 locations.
Conclusion

• For this application and project, on-premise storage is the better option

• On-premise storage meets the technical requirements, security requirements and within the budget of HPD

• Consideration for potential, future hosted options for storage will be evaluated as HPD nears hardware replacement in 3-5 years
Questions?