Cloud Security—Myths and Reality

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OVERVIEW

- My Background
- Cloud Security Myths
- Cloud Models
- Cloud Security Considerations
- Cloud and Smart City
- Final Takeaway
MY BACKGROUND

• Over 20 years experience in Cyber Security
  ➢ Head of Cyber GRC for DarkMatter
  ➢ Head of Security Regulations for SalesForce.com
  ➢ PwC – Cyber Security Practice Lead

• Editor – ISO 27007
CLOUD SECURING MYTHS

- I don’t have to worry about Compliance or Security
- Cloud is insecure by default or for that matter – Cloud is secure by default
- My data is encrypted – All the time
- It’s my data – I will get it back when I need it
- It’s CHEAP
- I have to do it because everyone else is doing it
WHAT ARE VARIOUS CLOUD MODELS AND SERVICES?

- IaaS
- PaaS
- SaaS
- Private Cloud
- Public Cloud
- Hybrid Cloud
USES OF CLOUD

- Consumer
- Enterprise
- City
- Country
Infrastructure as a Service

• IaaS

• What does it entail?
• Why would an Enterprise or a City use it?
• What will be the Security considerations?
Platform as a Service

- PaaS

  - What does it entail?
  - Why would an Enterprise or a City use it?
  - What will be the Security considerations?
Software as a Service

- SaaS
  - What does it entail?
  - Why would an Enterprise or a City use it?
  - What will be the Security considerations?
Private Cloud

- Private Cloud
  - What does it entail?
  - Why would an Enterprise or a City use it?
  - What will be the Security considerations?
Public Cloud

- Public Cloud
  - What does it entail?
  - Why would an Enterprise or a City use it?
  - What will be the Security considerations?
Smart City on a Cloud

- Municipal Command & Control Center
- Stadium
- Smart Grid
- Hospital Optimization
- Comms Network Optimization
- Traffic Flow Optimization
- Factory Optimization
- Logistics Optimization
- Connected Ambulances
- Intelligent Medical Devices
- Automated Car System
- Traffic Cameras
- Smart City
- SMART CITY
- Hospital
- SMART HOSPITAL
- Highway
- SMART HIGHWAY
- Factories
- SMART FACTORY

Source: Intel
Smart City – Cyber Security Effects

- SMART Cities = Larger Attack Surface
- SMART Convenience = Interconnection = Attack Surface
- Huge Cascading effects and Consequences
Smart City – Cyber Security Effects

- SMART Cities = Larger Attack Surface
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In case of a Breach

- Citizens are deceived
- Performance degradation
- Delay certain functions
- Destroy certain capabilities
- Disruption
- Divert resources
Risk assessment and posture of a City is different from an organization.
Cascading Effects

Factors/Forces Contributing to Energy Crisis in California

- Deregulation Policies
- New Energy Marketplace Dynamics
- Tight, High-Cost Gas Supplies
- Utility Financial Crisis
- Substantial Load Growth
- Lack of New Generating and Transmission Capacity
- Aging Fleet of Power Plants
- Low Hydro Conditions
- Transmission/Environmental Constraints
MANAGE SECURITY AND COMPLIANCE RISKS

• Moving to the cloud requires ongoing preparation, planning, management and oversight

• You still maintain responsibility or security and compliance after the move
# CLOUD SECURITY CONSIDERATIONS

<table>
<thead>
<tr>
<th>Domain</th>
<th>Consideration/Discussion Point</th>
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<tbody>
<tr>
<td>Compliance and Risk Management</td>
<td>Cities shifting part of their business to the cloud are still responsible for compliance, risk, and security management</td>
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<td>Identity and Access Management</td>
<td>Identities may come from different providers and entities, and providers must be able to federate from on-premise to the cloud, as well as enable collaboration across organization and country borders</td>
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<td>Service Integrity</td>
<td>Cloud-based services should be engineered and operated with security in mind, and the operational processes should be integrated into the City’s security management</td>
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<td>Endpoint Integrity</td>
<td>As cloud-based services originate – and are then consumed – on-premise, the security, compliance, and integrity of the endpoint have to be part of any security consideration</td>
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<td>Information Protection</td>
<td>Cloud services require reliable processes for protecting information before, during, and after the transaction</td>
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SMART CITY – CLOUD FEASIBILITY ASSESSMENT

- Application architecture
- Security and compliance requirements
- Performance requirements
- Connectivity requirements

- Technical capabilities
- Service capabilities
- SLAs
- Strategic fit
- Projected vendor capability evolution
- Application dependencies
- Adoption timing

- Custom private
- Virtual private
- Public

- Cloud adoption of interdependent application deployments
- Approach to address critical connectivity, latency, and throughput requirements

- Economic benefits
- Operational benefits
- Transition costs
- Business, operational, and technical risks
WHAT GOES IN CLOUD?

Step 1: Application Risk Assessment

- Virtualization Support: Yes
- Shared Infrastructure: Yes
- International Data: No
- Regulated Data: No
- Mission Critical: Yes
- Brand Protection Impact: Yes
- Tax Implication: Yes

Are There Compensating Controls?

- Yes
- No

Not a Cloud Candidate

Step 2: Application Profile Assessment

- Performance Needs
- Network Sensitivity
- Application Dependency
- Security
- Operations
- I/O Needs

Scores:
- Custom Private Cloud: 0 — 3.3
- Virtual Private Cloud: 3.4 — 7.5
- Public Cloud: 7.6 — 10

Applications:
- Application 2
- Application 4
- Application 5
- Application 1
- Application 3
- Dev / Test
- Application 4
- Application 1
FINAL TAKEAWAYS

• Cloud can be a great enabler for a Smart City
• Security breach in a Cloud environment can be a huge detractor for citizens using Smart city services and a huge blow to city’s reputation
• Cloud is not one size fits all – specially when it comes to City wide support and implementation
• Don’t start with – I want to do Cloud; Start with – What do I want to achieve and what’s my success factors
QUESTIONS?