

Cloud Computing and GIS

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Goal of this presentation

- Describe and demystify "The Cloud"
 - What is it?
 - How is it different from web services?
 - ROI and TCO case studies

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What is The Cloud

- Once upon a time...
 - Sam the server man discovered his servers were underutilized
 - To optimize their utilization rate, he made his servers available to others
 - This was really nothing new, as ISP's had been around for decades

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But...

- Sam's Servers did more than just host HTML pages, they also:
 - Provided infrastructure solutions
 - And hosted services that his customers were not capable of hosting
 - Essentially, they were "servers for rent"
- This commercialization of web service hosting became known as...

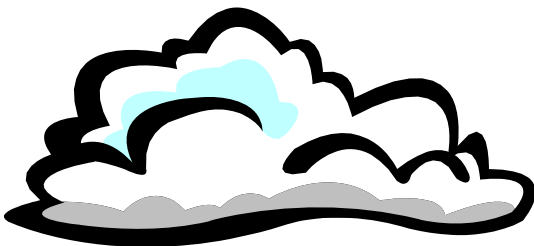
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Cloud Computing

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By Definition

- Cloud computing is...
 - On-demand
 - Self-service services
 - Delivered in a metered fashion via a network (i.e., the Internet)
- Cloud computing follows...
 - A multi-tenancy model
 - Within a virtualized, elastic environment

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TERMS

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Multi-tenancy

- Virtualized servers are used by many



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Virtualization

- Similar to logical hard drives, virtualization converts one physical server into many (virtual) servers
- Doing this requires:
 - Physical host server
 - Host OS + Virtualization software (e.g., Hypervisor)
 - Management suite software

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Elasticity

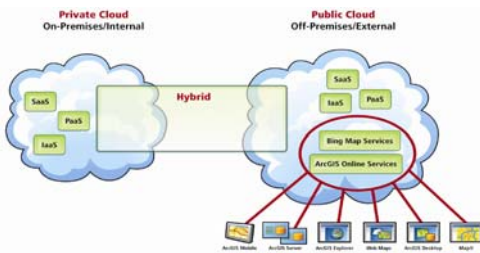
- Similar to *scalability*



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Cloud Deployment Models



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The Hybrid Model



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What services are offered in the Cloud?

- If its not html hosting, what services are offered?



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aaS

- as a Service



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Where does GIS fit aaS?

• Brainstorm...

- **Software as a Service:**
 - ArcLogistics Online
 - Business Analyst Online
 - ArcGIS Explorer Online
- **Platform as a Service**
 - ArcGIS.com / ArcGIS Online
 - ArcGIS Web Mapping
 - ArcGIS Server with Cloud Infrastructure
- **Managed Services**

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How does *The Cloud* differ from Web Services we already learned about?

- **Brainstorm**
- By definition cloud computing is...
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- Cloud computing follows...
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Let's Compare

Cloud Servers

- On-demand
- Self-service
- Delivered in a metered fashion
- Multi-tenancy
- Virtualized
- Elastic

Virtualized Servers

- On-demand
- Self-service
- Delivered in a metered fashion
- Multi-tenancy
- Virtualized
- Elastic

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ROI and TCO Scenarios

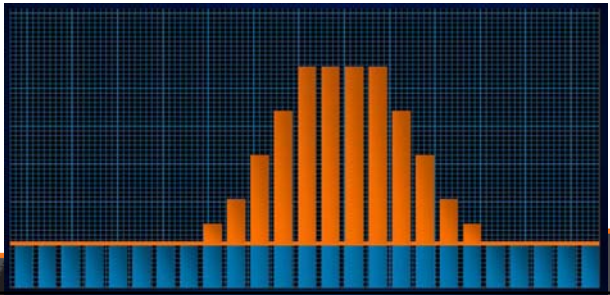
- TCO?
- ROI...
 - Case study #1, a small Idaho county wants to make GIS maps of the county available via the web
 - Case study #2, large research university wants to make GIS maps available via the web

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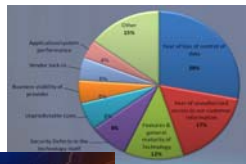
The Partly Cloudy Approach

- Own the base, rent the spike



Considerations

- Reasons people are not using the cloud
- Security
- Service Level Agreement



Security and SLAs are always a factor

- Physical Security
- Cyber Security
- Government Regulations
- Geographic Location
- SaaS 70 Auditing
- Privacy
- Availability

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Questions?



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