**CS551 Advanced Software Engineering**

Feb. 25 (T), 2014

In-Class Exercise

<http://cloud-computing.findthebest.com/compare/5-15-17-24/Amazon-EC2-vs-Google-App-Engine-vs-Microsoft-Windows-Azure-vs-IBM>

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|  | | **Amazon**  **AWS** | **Google**  **AppEngine** | **Microsoft**  **Azure** | **IBM**  **Smart Business Dev.** |
| Focus | | Infrastructure as a service. | Platform as service. | Platform as a service. | Infrastructure as a service. |
| Infrastructure & Virtualization Architecture | | Elastic cloud compute and Xen Hypervisors. | Provided by google. | Can be specified based on the user needs. | Virtual machine instances |
| Platforms | | Linux and Windows | NA | Linux and Windows | Linux and Windows |
| Persistent Storage | | Amazon EBS, Simple DB,S3, RDS | Persistent storage with queries, sorting and transactions.(Disk storage) | Virtual machine | Bulk storage |
| Monitoring | | Amazon CloudWatch | System status Dashboard | Setting the level to Verbose in Windows Azure Management portal. | IBM smart cloud monitoring |
| Load Balancing | | Elastic load balancing. | Layer 3Load balancing on compute engine. | KEMP Azure Load Balancer | Available |
| Message Queues | | Amazon simple queue service | Push queues and Task queues. | Service bus queues | Available |
| Development Tools | | AWS management console, AWS tool kit for eclipse, AWS tool kit for Microsoft Visual Studio  Java, PHP. | Java plugins and python. | Microsoft SQL and .NET. | IBM Rational tools and Java plugins for eclipse. |
| Integration with other services | | Possible | Possible | Possible | Possible |
| Web APIs | | Exist | Do not Exist | Exist | Exist |
| Programming  Framework | | Java, PHP, Python | Java, python, visual studio | Java, PHP, Python, visual basic, Microsoft .net | Java, PHP, Python, C# |
| Pricing | Machine | $0.145 per hour | $0.1 per hour | 2 cores: $0.18/hour  8 cores: $0.72/hour | $0.0965 per hour |
| Storage | $0.125 per GB/month | $ 0.18 per GB/month | $0.095 per GB/month | $0.19 per GB/month |
| I/O | $3.580 per hour | $0.08/hour | $0.072/hour | $0.125/hour |
| Bandwidth | Inbound- 0cents per GB.  Outbound- 12 cents per GB | Inbound- 0cents per GB.  Outbound- 12 cents per GB | Inbound- 10cents per GB.  Outbound- 12 cents per GB | Inbound- 15cents per GB.  Outbound- 15 cents per GB |