**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>

Name:

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| --- | --- | --- | --- | --- | --- |
|  | | **Amazon**  **AWS** | **Google**  **AppEngine** | **Microsoft**  **Azure** | **IBM**  **Smart Business Dev.** |
| Focus | | Infrastructure | Platform | Platform | Infrastructure |
| Infrastructure & Virtualization Architecture | | OS level running on a Xen hypervisor | Application container | OS level through fabric controller | Hypervisors |
| Platforms | | Windows server 2003, Windows server 2008, Linux, Amazon Linux, OpenSUSE Linux, Oracle Enterprise Linux, Ubuntu Linux | Linux, Windows server 2008, Mac OS X | Oracle Enterprise Linux, Red Hat Enterprise Linux, Ubuntu Linux, Windows Server 2003, Windows Server 2008 | Windows server 2008, Red Hat Enterprise Linux, Suse Linux |
| Persistent Storage | | Simple DB, 160GB 48TB High across 24 HDD | DataStore, 500MB | Azure Table, 225GB | 60GB |
| Monitoring | | Yes--free  Done with Amazon Cloud Watch to monitor your throughput and I/O sizes. | No | Yes--free | Yes--extra charges |
| Load Balancing | | Yes--extra charge  Elastic load balancing | Yes--free  Automatic Scaling and Load Balancing | Yes--free  KEMP Azure Load Balancer | Yes |
| Message Queues | | Yes  Done through Amazon SQS | Yes  Task Queue REST API | Yes | Yes |
| Development Tools | | Amazon EC2 AMI Tools, Amazon Cloud Watch Command Line Tool, Web Console, Rails and Python | Google Accounts, URL Fetch, Image Manipulation, APIs for DataStore, Email Services | Microsoft.Net Services, Microsoft SQL services, Microsoft SharePoint Services, Microsoft Dynamics CRM services, Live Services | IBM Rational Tools |
| Integration with other services | | Yes, they can integrate with other services | Yes, they can integrate with other services | Yes, they can integrate with other services | Yes, they can integrate with other services |
| Web APIs | | Yes | No | Yes | Yes |
| Programming  Framework | | PHP, Python, Ruby, WinDev, AMI(Amazon Machine Image), APL, Java | Java, Python | Java, Ruby, Visual Basic, C#, Microsoft.Net, Python | Java, Ruby, Visual Basic, WinDev, PHP, Python, APL |
| Pricing | Machine | $0.145 per hour | $0.10 per hour | 2 Cores $0.18/hour  8 Cores $0.72/hour | $0.0965 per hour |
| Storage | $0.12 per GB/month | $0.18 per GB/month | $0.095 per GB/month | $0.19 per GB/month |
| I/O | $3.580/hour | $0.08/hour | $0.072/hour | $0.125/hour |
| Bandwidth | Inbound-- 0₡ per GB  Outbound--12₡ per GB | Inbound-- Free  Outbound--12₡ per GB | Inbound -- 10₡ per GB  Outbound--12₡ per GB | Inbound-- 15₡ per GB  Outbound--15₡ per GB |