**CS551: Cloud Computing Services Comparison**

**Problem Set 5 (PS-5)**

Deadline: April 17 (T), 2017

Submit your report Through Blackboard/ProblemSet

Name/ClassID:

The objective of this work is to compare cloud computing providers in terms of some important aspects.

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|  | **Amazon AWS** | **Google App Engine** | **Microsoft Azure** | **IBM Smart Business Dev.** |
| Focus |  |  |  |  |
| Infrastructure and virtualization architecture | Elastic Block Store (EBS) and QuickSight | Google Persistent Disk and Google Data Studio (Beta) | Azure Storage Disk and PowerBI, PowerBI Embedded | Block Storage |
| Platforms |  |  |  |  |
| Persistent Storage | S3, EBS, EFS, Glaciers | Cloud storage and persistent Disk | Blob, Queue, File, Disk storage | Object, File, Mass, Block storage, and servers |
| Monitoring | CloudWatch, CloudTrail, AWS X-Ray, AWS Usage and Billing Report, AWS Management Console | Google StackDriver, Monitoring, Logging, Error Reporting, Trace, Debugger | Azure portal, Azure Monitor, Azure Application Insights, Azure Billing API, Log Analytics | - |
| Load Balancing | Classic Load Balancer, Network Load Balancer, Application Load Balancer | Google Cloud Load Balancing | Load Balancer, Application Gateway | Load Balancer |

Compare the major cloud service providers (Amazon, IBM, Microsoft, Google)

Click here for [Cloud Computing Active Learning References](https://docs.google.com/spreadsheets/d/1b6CCWjxU33VfiaySHD4961BqmsmeVusr4pV2D6auv-4/edit#gid=616249735)

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|  | | **Amazon AWS** | **Google App Engine** | **Microsoft Azure** | **IBM Smart Business Dev.** |
| Message Queues | | Simple Queue Service (SQS) | Google Cloud Pub/Sub | Azure Queue Storage, Service Bus Queues, Topics, Relays | Compose for RabbitMQ |
| Development Tools | | GameLift, Lumberyard | - | Visual Studio | - |
| Knowledge Service  (Machine Learning) | | Machine Learning, SageMaker | Google Cloud AI, Google Cloud Datalab, Google Cloud Machine Learning Engine | Azure Machine Learning Studio, Azure Machine Learning Workbench | Watson |
| Web APIs | | API Gateway, Elastic Beanstalk, CodeDeploy, CodeCommit, CodePipeline, AWS Developer Tools | Google Cloud Endpoints | API Management, Web Apps, API Apps, Cloud Services, Visual Studio Team Services, Azure Developer Tools, Power Apps | API Connect |
| Programming Framework | | Command Line Interface | Cloud Shell | Azure Command Line Interface (CLI), Azure PowerShell | - |
| Pricing | Machine CPU |  |  |  |  |
| Storage |  |  |  |  |
| I/O |  |  |  |  |
| Bandwidth |  |  |  |  |