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| --- | --- | --- | --- | --- | --- |
|  | | Amazon AWS | Google AppEngin | Microsoft Azure | IBM Smart Business Dev. |
| focus | | Educational Institutions and public sectors, Infrastructure, targeting Government Agencies. | Platform | Platform | Platform , allowing enterprise and government clients to develop and test. |
| Infrastructure and virtualization architecture | | EC2: Elastic compute cloud upon which you can instantiate 32 or 64 bit Amazon Machine Images(AMIs) or upload your XEN virtual machine images. | Specification provided by Google. | Servers at back end runs in virtual machines on windows Azure while front end is in .net servers can be customized according to your specifications. | Virtual Machine Instances – multiple sizes for 32 and 64 bit architectures. |
| Platforms | | Linux and Windows servers | Language Specific | Microsoft Server 2008 | Redhat, SUSE and Windows |
| Persistent Storage | | EBS: Elastic Block Storage,  S3: Simple Storage Service. | Gdisk – bulk storage. | Standard Application Storage | IBM Persistent Storage |
| Monitoring | | Cloud watch | App Engin System Status Dashboard. | MP – Management Pack | IBM Smart Cloud Monitoring. |
| Load Balancing | | ELB: Elastic Load Balancing | Google Compute Engine , (gcloud – command line interface) | Their two levels of load balancing   1. DNS level 2. Network level –done with Azure load balancer. | Load balancing achieved by Hadoop Map Reduce and virtualization. |
| Message Queues | | SQS: Simple Queue Service.  SMS: Simple Message Service. | Push Queues. (these are written in Java) | Azure Data Queues. | Not Available |
| Development Tools | | Web console, Command line API’s for all Services, SDK’s for Java, PHP, Rails & Python, and several Eclipse Plugins. | Java plugin for Eclipse and Python software development kit (SDK) | Visual Studio and SDK for .NET | Java plugin for Eclipse |
| Integration with other services | | All services are designed to work together like the pieces on a chessboard. | A number of API’s available like maps, contacts , calendar etc. | Large number of .NET services including line services. | Not Available |
| Web APIs | | Yes | Yes | Yes | Yes |
| Programming Framework | | Amazon Machine Images (AMIs) | Python | Microsoft .NET | Java , Node.js and Ruby |
| Pricing | Machine CPU | Pricing depends on the location.  $0.100 /GHz/hr | $0.100 /GHz/hr | $0.150/GHz/hr | $0.10/GHz/Hr |
| Storage | $0.055 /GB/Month | $0.150/GB/Month | $0.150/GB/Month | $0.150 /GB/ Month |
| I/O | $0.01 / 1000 operations | $0.01 / 1000 operations | $0.01 / 1000 operations | $0.01 / 1000 operations |
| Bandwidth | $0.10 / GB | $0.10 / GB | $0.10 / GB | $0.10 / GB |

Cloud Computing Platforms Comparison