|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | Amazon AWS | Google AppEngin | Microsoft Azure | IBM Smart Business Dev. |
| focus | | Public sectors,  Government agenesis ,educational institutes | Rapid develop, deploy and iterate application without system administration., | Public cloud, Infrastructure and Platform | Platform, allowing enterprise and government clients to develop and test. Hybrid cloud, |
| Infrastructure and virtualization architecture | | Flexibility to launch application regardless of use case or industry | Specification provided by Google. Uses search engine infrastructure with redundancy, global network and products like spanner, Flume | 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.  Consumed via self service or managed service.  It is a private which can enjoy the benefits in secure environment. |
| Platforms | | IAAS.(Infra structure as a service) | PAAS(platform as a service). | IAAS.(Infra structure as a service)  PAAS(platform as a service) | IAAS.(Infra structure as a service) |
| Persistent Storage | | Amazon Elastic Block store (EBS)  S3: Simple Storage Service. | Gdisk – bulk storage.  Google Cloud Storage. | Uses Azure SQL database in virtual machines, | IBM Persistent Storage , Blue Mix and Web Sphere. |
| Monitoring | | Cloud watch | Google cloud uses the monitoring API in the developer’s console | MP – Management Pack  Azure management portal makes the monitoring done. It can be set to minimal and verbose for each service role. | IBM Smart Cloud Monitoring used for monitoring health and performance of cloud infrastructure. |
| Load Balancing | | ELB: Elastic Load Balancing | Google Compute Engine , (gcloud – command line interface) | Their two levels of load balancing   1. DNS level which uses round robin and traffic manager methods   2.Network level –done with Azure load balancer. | Load balancing achieved by Hadoop MapReduce and virtualization. |
| Message Queues | | Amazon simple Queue Service(SQS) a fast, reliable service | Push Queues. (these are written in Java)  Pull queues. | Azure Data Queues. Service Bus Queues | Web sphere and Soft Layer Message Queues |
| Development Tools | | Web console, Command line API’s for all Services, SDK’s for Java, PHP, Rails & Python, and several Eclipse Plugins. | Java plug-in for Eclipse and Python software development kit (SDK) | Visual Studio and SDK for .NET  Azure SDKs, Azure Powershell command line tools for management and deploying activities. | Java plug-in for Eclipse , IBM Domino Designer, Connector for SAP solutions, Expeditor, Workflow, Enterprise Integrator for Domino |
| Integration with other services | | All services are designed to work together like the pieces on chessboard., Dynamo DB is integrated with other AWS | A number of API’s available like maps, contacts , calendar etc. | Large number of .NET services including line services. Microsoft Azures Biz Talk Services. | CRM, Arriba, sandbox, open clove, team point |
| Web APIs | | Yes | Yes | Yes | Yes |
| Programming Framework | | .NET  Java  PHP  Python  Ruby | Python | .NET  Java  Node  PHP  Python  Ruby | Java  Node  Ruby |
| Pricing | Machine CPU | $0.14 / hour | $0.10 / hour | $0.12 / hour | $0.10 / hour |
| Storage | $0.25 / GB / month | $0.15 / GB / month | $0.15 / GB / month | $0.15 / GB / month |
| I/O | $0.01 / 1000 requests | $0.12 / GB / month | $0.01 / 1000 requests | $0.01 / 1000 requests |
| Bandwidth | $0.10 / GB for incoming and $0.15 for outgoing traffic | $0.10 / GB for incoming and $0.152for outgoing traffic | $0.10 / GB for incoming and $0.15 for outgoing traffic | $0.10 / GB for incoming and $0.15 for outgoing traffic |

Cloud Computing Platforms Comparison

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