Report on

Cloud Computing Platform Comparisons

Submitted by,

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	Amazon AWS	Google App Engine	Microsoft Azure	IBM Smart Business Dev.
Focus	Public Sector	Rapid Development and deployment Public Cloud	Public Cloud	Hybrid Cloud Private and Fast
Infrastructure and virtualization architecture	Uses AWS Connect, XEN Para-Virtualization Architecture. Application launch is flexible	Google Computing Engine is used as infrastructure for virtualization.	Hyper-V virtualization on Azure Compute infrastructure. Azure Express route is used. All the VMs are managed by Fabric controller.	IBM Cloud Computing Reference Architecture is used. For virtualization, IBM offers IBM WebSphere application infrastructure solutions.
Platforms	IAAS	PAAS	PAAS , IAAS	IAAS
Persistent Storage	Elastic Block storage, Dynamo	MySQL using Cloud, standard application storage	AZURE SQL Database	Bulk Storage.
Monitoring	Amazon Cloud Watch	Google Cloud Monitoring	Verbose, Load balancer, AZURE Ops	IBM Smart Cloud
Load Balancing	Elastic Load Balancing	Google compute Engine	Azure load Balancer	Elastic Load Balancing
Message Queues	Single Queue	Push Queue is used to share information.	Azure Data Queue.	IBM Web Sphere, Soft layer message queue.
Development Tools	AWS Management Console AWS Toolkit for Eclipse AWS Toolkit for Microsoft Visual Studio.	Eclipse, Netbeans, IntellIJ, Maven, Git, Jenkins, Google Web Toolkit (GWT), GAE SDK for python.	SDKs for Java, Node.js, PHP, Ruby, Python. Azure command-line interface; Azure PowerShell.	IBM Domino Designer. IBM Smart Cloud Application Services. IBM Pure Application Systems. IBM Smart Cloud Provisioning.

Integration with other services		Dynamo DB. Simple Storage Service and EC2. Easily integrated with other services.	API's available like Maps, Contacts, Calendar, etc. Integrate other familiar technologies such as Node.js, Scala, Hadoop, MongoDB etc.	.NET services including live services. Integration with many SaaS. BizTalk Services	Sandbox, CRM. Live chat, Phone.
Web APIs		Yes EC2 API, Java etc.	Yes Blob Store API, Mail API.	Yes .NET web API, ASP .NET API.	Yes REST Java API.
Programming Framework		.NET, Java, PHP, Python, Ruby.	Go, Java, PHP, 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	$0.18/GB/ month	$0.15/GB/month	$0.15/GB/month
	I/O	$0.01/1000 requests	$0.02/1000 requests	$0.02/1000 requests	$0.01/1000 requests
	Bandwidth	$0.10/GB	$0.10/GB	$0.10/GB	$0.10/ GB

References:

1. Amazon web services: https://aws.amazon.com
2. Google App Engine: https://**appengine**.**google**.com/
3. Microsoft Azure: https://azure.microsoft.com
4. IBM Smart Business: www.**ibm**.com/**cloud**-computing/us/en/