Implementing Remote Desktop Computing Services using Amazon EC2
An IaaS Example

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1

Executive Summary

- Propose a viable Cloud solution for IPFW ET building computer labs

- Propose a budget for $5,000

- Problem Statement

- Demonstrate the activity outlined in the budget

- Teach ourselves and others how to connect to the Cloud

- Research major Private and Public Cloud providers

2

6/27/2013

Remote connection distinguish based on activity requirement

- 500 megahertz (MHz) processor or higher
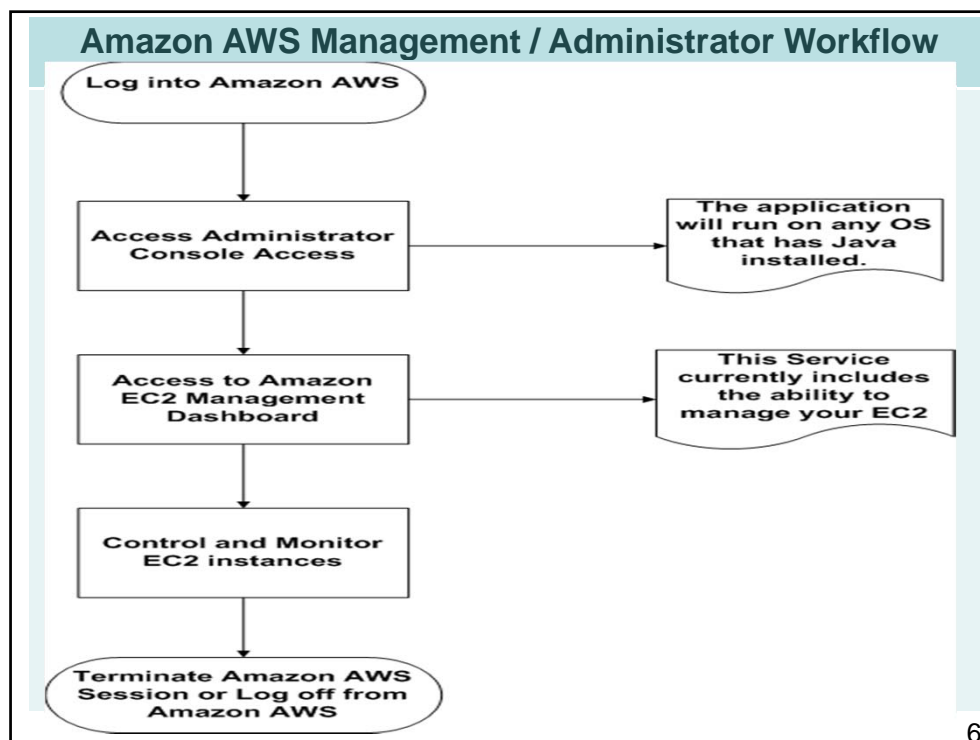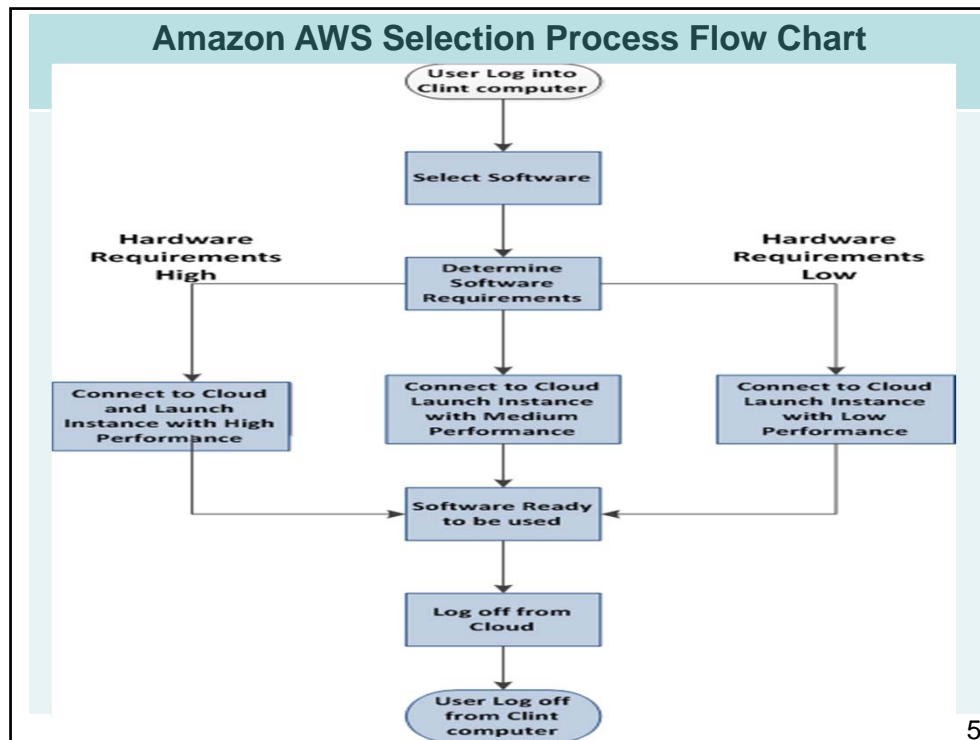- 256 megabyte (MB) RAM or higher
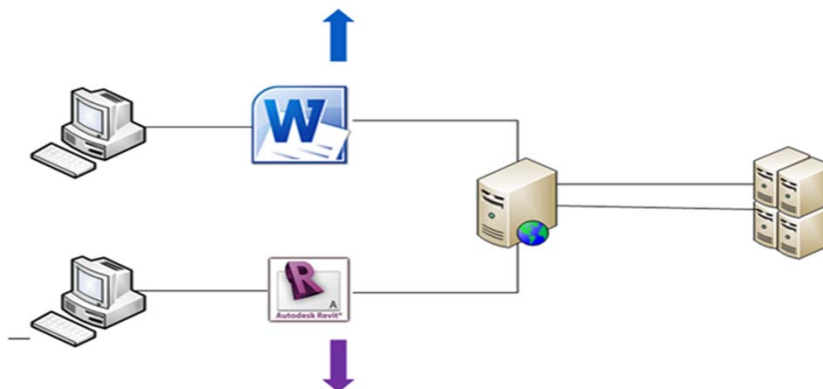
- Intel Core 2 Duo 2.40GHz or equivalent AMD processor
- 8 GB RAM
- Dedicated video card with hardware support for DirectX 9

3

Potential Solutions

Product Name	Service Type	Service Description
Amazon EC2	Elastic Compute Cloud	Web service that provides resizable compute capacity in the cloud
Amazon S3	Simple Storage Service	Highly-scalable, reliable, and low-latency data storage.
Amazon RDS	Data Pipeline	Managed MySQL, Oracle and SQL Server databases.
Amazon CloudWatch	CloudWatch	Monitoring for AWS cloud resources and applications.
AWS Data Pipeline	Data Pipeline	Orchestration for data-driven workflows.
Amazon DynamoDB	DynamoDB	Fully managed NoSQL database service with seamless scalability.
Amazon EBS	Simple Notification Service	Highly available, highly reliable, predictable storage volumes.
Amazon ELB	Simple Notification Service	Web service that provides scalability and high availability.
Amazon ElastiCache	Elasticache	Managed scale-out caching.
Amazon SNS	Simple Notification Service	Web service to set up, operate, and send notifications from the cloud.
Amazon Elastic Transcoder	Amazon Elastic Transcoder	Convert your media files easily, at low cost and at scale.
Amazon SQS	Simple Queue Service	Scalable queue for storing messages as they travel between computers.
Amazon SWF	Simple WorkFlow	Workflow service for building scalable, resilient applications.

4

2

Amazon AWS Selection Process Flow Chart

User Log into Clint computer

Select Software

Hardware Requirements High

Determine Software Requirements

Hardware Requirements Low

Connect to Cloud and Launch Instance with High Performance

Connect to Cloud Launch Instance with Medium Performance

Connect to Cloud Launch Instance with Low Performance

Software Ready to be used

Log off from Cloud

User Log off from Clint computer

5

Amazon AWS Management / Administrator Workflow

Log into Amazon AWS

Access Administrator Console Access

The application will run on any OS that has Java installed.

Access to Amazon EC2 Management Dashboard

This Service currently includes the ability to manage your EC2

Control and Monitor EC2 instances

Terminate Amazon AWS Session or Log off from Amazon AWS

6

Advantages for IPFW

Financial Advantages	Operational Advantages
Move IT assets off the balance sheet	Improve agility of IT and IPFW units
Avoid and Reduce cost	Drive innovation from gain or save budget from IT investment
Increase Capital Efficiency and Return on investments	Simplified manage and administrative work

7

Cloud Monitoring

Cloud monitoring terminology means monitoring tools running in the cloud and the tools that is useful to monitor applications running in the cloud environment. In consideration of monitoring performance of a Cloud, it can be broadly classify it to two categories:

1. Monitoring from Service providers view

2. Monitoring from Cloud Consumer's view

Two broad areas for Cloud performance monitor are:

1. Infrastructure Performance

2. Application Performance

8

Project Specifications and Budget for Private Cloud with New Thin Clients

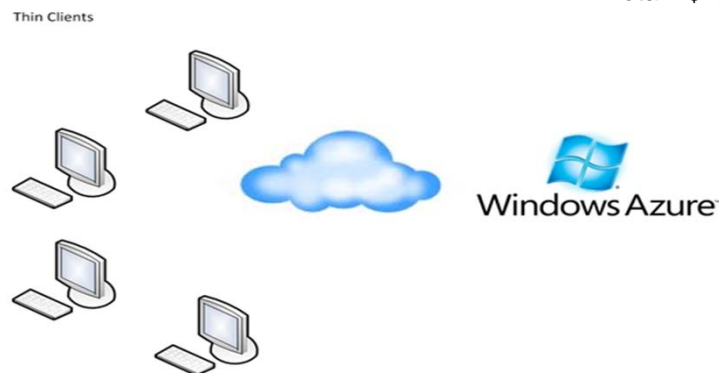| Purchase Item	Ammount	Cost
HP ProLiant BL420c Gen8 Server Blade	1	$2,688
HP t510 Flexible Thin Client	4	$1,356
HP W2371d 23-inch Diagonal LED Backlit Monitor	4	$596
VMware Workstation 9	1 license	$249

Total : $4,889
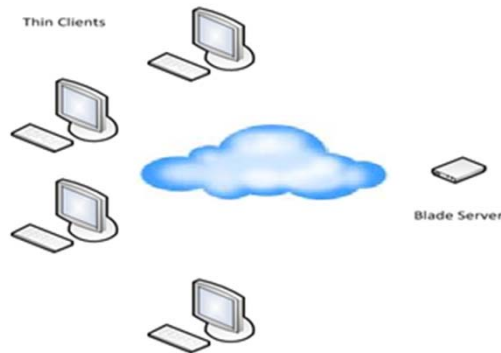
9

Project Specifications and Budget for Public Cloud with Thin Clients

Purchase Item	Ammount	Cost
Windows Azure Virtual Computer	4 instances	$2,764 for 6 months of always on instances.
HP t510 Flexible Thin Client	4	$1,356
HP W2371d 23-inch Diagonal LED Backlit Monitor	4	$596

Total : $4,716

10

Table 10 – **FINAL BUDGET** Project Specifications and Budget for Public Cloud

Purchase Item	Ammount	Cost
ITS Support Staff for students	100 hours	$800
IT Specialist/Consultant to lead group demonstrations	40 hours	$2,000
Upgraded EC2 Instance hours for student led remote HPC testing	1,200 instance hours	$1,200
Upgraded Azure Instance hours for student led feasibility testing	1,000 instance hours	$1,000
Existing IPFW workstations	Any amount	No cost
Student owned smart devices	Any amount	No cost
Lite Amazon Instance hours	Up to 750 hours/student/month	No cost
PocketCloud App	Limit one saved connection per user, unlimited unique users	No cost
		Total Cost = $5,000

Future Work and Consideration

	Private Cloud	Public Cloud	Hybrid Cloud	Community Cloud
Software as a Service	VMware virtualization software, Ariba , ADP Time and Attendance system	SalesForce.com, Facebook,BaseCamp	SAP and Email system, Oracle BS	ADP Financial system,Innotas Project Managmenet system
Platform as a Service	Cisco Systems networking hardware	Google Code, Salesforce PaaS and Windows Azure.	Combination Amazon and Google services with Cisco network	NetSuite,CDC Software, Microsoft & Oracle CRM
Infrastructure as a Service	Vblock system includes EMC storage	Rackspace, GoGrid	Virtual Bolck and Rackspace	Vmware, Rackspace for educational institute

12

Demonstration

Amazon EC2-based Remote Desktop Infrastructure
Demonstration

13

Conclusion

- The Final proposed budget multiplies the number of students and employees that are familiar with remote desktop connection

- Multiplies the number of people familiar with Cloud Services

- Seed money produces a core knowledge within the campus community

- Takes advantage of free services of Amazon EC2 and Azure to allow community to familiarize itself to Cloud Services at little to no cost

14

6/27/2013

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[12] 5 Great Android Apps for Cloud Admins. [Online]. Available: http://www.pcworld.com/article/255573/5_great_android_apps_for_cloud_admins.html.Retrieved on April 10, 2013.

17