





Understanding AWS Pricing

@LynnLangit

 EC2 |  Glacier |  S3 |  RDS |  Elastic MapReduce |  DynamoDB |  Elastic Beanstalk

Data Expertise / Lynn Langit

Industry awards

- Microsoft – MVP for SQL Server
- Google – GDE for Cloud Platform
- 10Gen – Master for MongoDB

Practicing Architect

Technical author / trainer

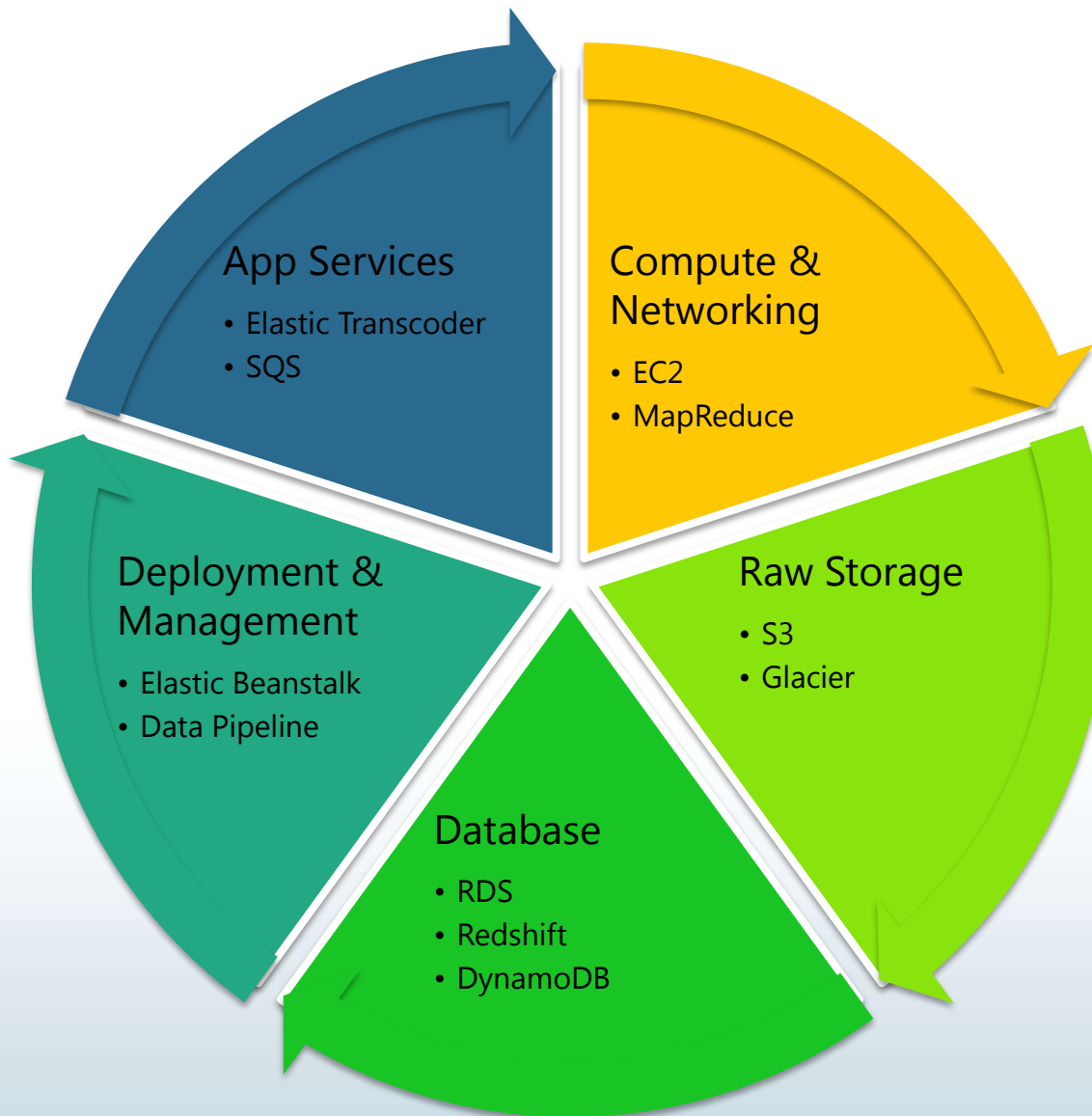
- Google Cloud Series
- SQL Server Series
- Cloudera certified Developer
- 2 books on SQL Server BI

Former MSFT FTE

- 4 years



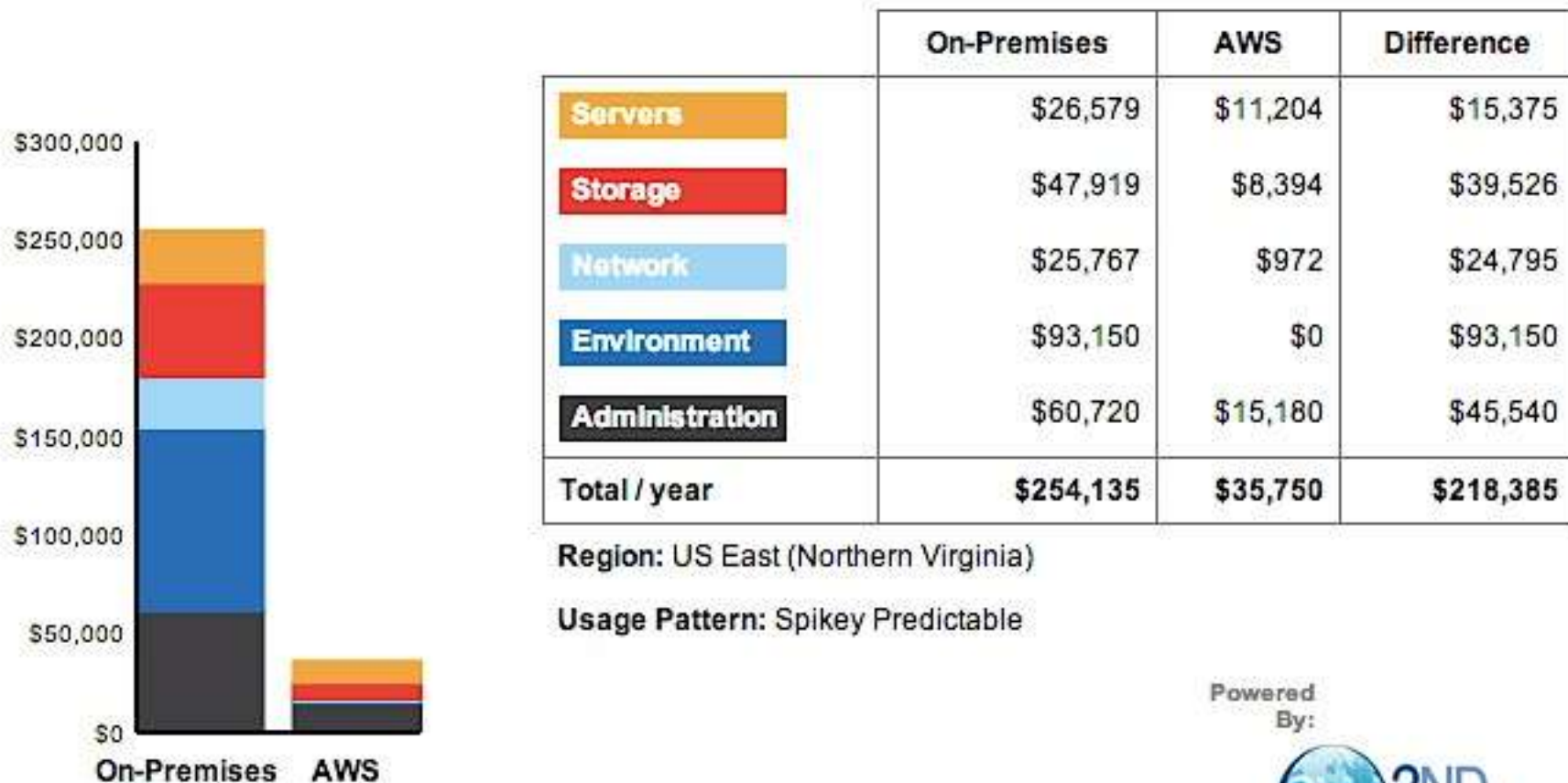
Common AWS Services



TCO Comparison Calculator for Web Applications*(Beta)

[<< Adjust Calculator Settings](#)

You could save **\$218,385 per year** running on AWS.



Powered
By:





Services ▾

Edit ▾

Amazon Web Services

Compute & Networking

-  **Direct Connect**
Dedicated Network Connection to AWS
-  **EC2**
Virtual Servers in the Cloud
-  **Elastic MapReduce**
Managed Hadoop Framework
-  **Route 53**
Scalable Domain Name System
-  **VPC**
Isolated Cloud Resources

Storage & Content Delivery

-  **CloudFront**
Global Content Delivery Network
-  **Glacier**
Archive Storage in the Cloud
-  **S3**
Scalable Storage in the Cloud
-  **Storage Gateway**
Integrates On-Premises IT Environments with Cloud Storage

Database

-  **DynamoDB**
Predictable and Scalable NoSQL Data Store
-  **ElastiCache**
In-Memory Cache
-  **RDS**
Managed Relational Database Service
-  **Redshift** NEW
Managed Petabyte-Scale Data Warehouse Service

Deployment & Management

-  **CloudFormation**
Templated AWS Resource Creation
-  **CloudWatch**
Resource and Application Monitoring
-  **Data Pipeline**
Orchestration for Data-Driven Workflows
-  **Elastic Beanstalk**
AWS Application Container
-  **IAM**
Secure AWS Access Control
-  **OpsWorks** NEW
DevOps Application Management Service

App Services

-  **CloudSearch**
Managed Search Service
-  **Elastic Transcoder** NEW
Easy-to-use Scalable Media Transcoding
-  **SES**
Email Sending Service
-  **SNS**
Push Notification Service
-  **SQS**
Message Queue Service
-  **SWF**
Workflow Service for Coordinating Application Components

What is the pricing model?

Core Service
Pricing

Add-on
services

Vanity
services

About AWS Free Tier

- First Year (new) customers only
- Does not include all AWS services

Free Tier*

As part of AWS's Free Usage Tier, new AWS customers can get started with Amazon EC2 for free. Upon sign-up, new AWS customers receive the following EC2 services each month for one year:

- 750 hours of EC2 running Linux/UNIX or RHEL Micro instance usage
- 750 hours of EC2 running Microsoft Windows Server Micro instance usage
- 750 hours of Elastic Load Balancing plus 15 GB data processing
- 30 GB of Amazon EBS Standard volume storage plus 2 million IOs and 1 GB snapshot storage
- 15 GB of bandwidth out aggregated across all AWS services
- 1 GB of Regional Data Transfer

What are the types of pricing?

Type	Name	Notes
Core	On-demand	Standard pricing
Core	Reserved	Higher pricing
Core	Spot	Cheapest pricing, not guaranteed to be available
Core	Data Transfer	Charges for In (nearly free) and Out
Add-on	EBS-Optimized	Required for Provisioned IOPs
Add-on	Elastic IPs	Static IPs
Add-on	Provisioned IOPs	Performance SLA
Add-on	Monitoring / Alarms	Cloud Watch
Vanity	Gov't Cloud	Private cloud, must qualify for participation
Vanity	Introductory Free Tier	First-year, new customers only, does not include all AWS services

<http://aws.amazon.com/ec2/pricing/>

On-demand vs. Reserved EC2

Size	Cost On-Demand / hr	Cost Reserved / 1 yr
Small	.09	.06
Medium	.18	.11
Large	.36	.23
Extra-Large	.72	.47

NOTES:

*for US-East (N. Virginia) for Windows machines

*Cost comparisons for reserved is based on 'light-usage'

*Usage charges vary for light, medium or heavy usage

--light and medium usage reservations require an upfront deposit

*Costs for 3 yr reserved are lower than for 1 yr

Reserved Instance Offering Types	Savings over On-demand Instances (up to)	
Light Utilization Reserved Instances	42% 1-year	56% 3-year
Medium Utilization Reserved Instances	49% 1-year	66% 3-year
Heavy Utilization Reserved Instances	54% 1-year	71% 3-year

More About Reserved Instance Types

- Full documentation - <http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/reserved-instances-offerings.html>
- You can sell/buy in the AWS Reserved Instance Marketplace

Type	Upfront Cost	Hourly Cost	Notes
Light	Lowest	Highest, but you are NOT if you turn your machine off	If using 11-19% of total time, best value
Medium	Average	Medium, but you are NOT charged if you turn your instance off	Best for use 19-35% of total time
Heavy	Highest	Lowest, but you are charged for every hour	Best if you plan to use more than 35% of the time

Purchasing Reserved EC2 Instances

Purchase Reserved Instances

[Cancel](#) 

Platform:

Instance Type:

Availability Zone:

Term:

Tenancy:

Offering Type:

[Search](#)

Seller	Term	Effective Rate	Upfront Price	Hourly Rate	Availability Zone	Offering Type	Quantity Available	Desired Quantity	
3rd Party	6 months	\$0.015	\$7.29	\$0.013	us-east-1d	Medium Utilization	1	<input type="text" value="1"/>	Add to Cart
3rd Party	12 months	\$0.015	\$20.00	\$0.013	us-east-1c	Medium Utilization	1	<input type="text" value="1"/>	Add to Cart
AWS	12 months	\$0.017	\$23.00	\$0.014	us-east-1c	Light Utilization	Unlimited	<input type="text" value="1"/>	Add to Cart
AWS	12 months	\$0.017	\$23.00	\$0.014	us-east-1b	Light Utilization	Unlimited	<input type="text" value="1"/>	Add to Cart
AWS	12 months	\$0.017	\$23.00	\$0.014	us-east-1e	Light Utilization	Unlimited	<input type="text" value="1"/>	Add to Cart
3rd Party	15 months	\$0.016	\$29.17	\$0.013	us-east-1c	Medium Utilization	1	<input type="text" value="1"/>	Add to Cart
3rd Party	13 months	\$0.016	\$29.51	\$0.013	us-east-1c	Medium Utilization	1	<input type="text" value="1"/>	Add to Cart

[Cancel](#)

You currently have no items in your cart.

[View Cart](#) 

Why use Spot Instances?

Use Case	Types of Applications
Batch Processing	Generic background processing (scale out computing)
Hadoop	Hadoop/MapReduce processing type jobs (e.g. Search, Big Data, etc.)
Scientific Computing	Scientific trials/simulations/analysis in chemistry, physics, and biology
Video and Image Processing/Rendering	Transform videos into specific formats
Testing	Provide testing of software, web sites, etc
Web/Data Crawling	Analyzing data and processing it
Financial	Hedgefund analytics, energy trading, etc
HPC	Utilize HPC servers to do embarrassingly parallel jobs
Cheap Compute	Backend servers for Facebook games

Source: <http://www.slideshare.net/AmazonWebServices/optimizing-for-cost-in-the-aws-cloud-5-ways-to-further-save-aws-summit-2012-nyc-jinesh-varia>

Purchasing Spot EC2 Instances



Services

EC2 Dashboard

Events

Tags

INSTANCES

Instances

Spot Requests

Reserved Instances

IMAGES

AMIs

Bundle Tasks

ELASTIC BLOCK STORAGE

Volumes

Snapshots

NETWORK & SECURITY

Security Groups

Elastic IPs

Placement Groups

Request Instances Wizard

CHOOSE AN AMI

INSTANCE DETAILS

CREATE KEY PAIR

CONFIGURE FIREWALL

REVIEW

Provide the details for your instance(s). You may also decide whether you want to launch your instances as "on-demand" instances.

Number of Instances:

1

Instance Type:

T1 Micro (t1.micro, 613 MIB)

Launch as an EBS-Optimized instance (additional charges apply):

☐ Not supported for this instance type

☐ Launch Instances

☒ Request Spot Instances

Spot Instances let you pay for compute capacity by the hour at a Spot Price that fluctuates based on supply and demand. You specify a maximum price you are willing to pay per hour, and your instance only runs when the Spot Price is below that price. This allows for cost reduction on compute tasks with flexible start and end times.

Current Price:

\$0.006

Request Valid From:

any time edit

Max Price:

\$ (Ex: 0.045 = 4.5 cents/hour)

Request Valid Until:

any time edit

Launch Group:

Persistent Request?

☐

Launch Into:

☒ EC2-Classic

☐ EC2-VPC

Availability Zone:

No Preference ▾

Availability Zone Group:



AWS Pricing Calculator

Demo

TCO calculator -- <http://aws.amazon.com/tco-calculator/>

Cross-Cloud Pricing Calculators

RightScale has PlanForCloud



Helps with vendors, servers and services



AWS Cost cheat sheet

<https://blog.cloudvertical.com/2012/10/aws-cost-cheat-sheet-2/>



Others...























RS Plan for Cloud

Demo

RIGHT SCALE Need to design **High Availability** and **Disaster Recovery** cloud deployments? Let the experts help. [Get a free quote](#)

Add Server

Select a resource type using the filter table below, then select the other options using the form below.

<input checked="" type="checkbox"/> Select All	Server Type	CPU	RAM	HDD	Base Hourly Cost
<input checked="" type="checkbox"/>  AWS	 small	 02xCPU	2GB	60.0GB	\$0.07
<input checked="" type="checkbox"/>  Rackspace	 n1-standard-1	 03x1.1GHz (X64)	3.75GB	0.0GB	\$0.115
<input checked="" type="checkbox"/>  Windows Azure	 2GB server	 02xCPU (X64)	2GB	80.0GB	\$0.12
<input checked="" type="checkbox"/>  Google	 VM Role Medium	 02x1.6GHz (X64)	3.5GB	135.0GB	\$0.12
<input checked="" type="checkbox"/>  SoftLayer	 m1.medium	 02x1.0GHz (X86/X64)	3.75GB	410.0GB	\$0.12
<input checked="" type="checkbox"/>  HP	 n1-highcpu-2	 06x1.1GHz (X64)	1.8GB	0.0GB	\$0.131
CPU Count	 n1-standard-1-d	 03x1.1GHz (X64)	3.75GB	420.0GB	\$0.132
<input type="range" value="2"/> 1 2 4 8 16 32 >32					
RAM (GB)					

Reading Your Bill

Demo

*Tip: Set pricing Alerts

AWS Service Charges	\$17.11
Usage Charges and Recurring Fees (More Info)	\$17.11
+ View estimated charges	
Total new charges for this statement	\$17.11
No payments received to date.	
Outstanding balance for this statement	\$17.11

Details

[Expand All Services](#) | [Collapse All Services](#)

[Printer Friendly Version](#)

AWS Service Charges	\$17.11
+ Amazon Elastic Compute Cloud Download Usage Report »	\$16.05
+ AWS Data Pipeline Download Usage Report »	\$1.02
+ Amazon Simple Storage Service Download Usage Report »	\$0.02
+ Amazon Glacier Download Usage Report »	\$0.01
+ AWS Data Transfer (excluding Amazon CloudFront)	\$0.01
+ VAT to be collected	\$0.00
+ GST to be collected	\$0.00
+ US Tax to be collected	\$0.00

† Usage and recurring charges for this statement period will be charged on your next billing date, September 1, 2013. Estimated charges shown on this page, or shown on any notifications that we send to you, may differ from your actual charges for this statement period. This is because estimated charges presented on this page do not include usage charges accrued during this statement period after the date you view this page. Similarly, information about estimated charges sent to you in a notification do not include usage charges accrued during this statement period after the date we send you the notification. One-time fees and subscription charges are assessed separately from usage and reoccurring charges, on the date that they occur.

All charges and prices are in US Dollars.

All AWS Services are sold by Amazon Web Services, Inc.

Previous Month's Activity

July 1 - July 31, 2013

[View Full Statement »](#)

Total Charges

23.98



Your account is enabled for monitoring estimated charges. Set your first billing alert to receive an e-mail when charges reach a threshold you define. [Learn More](#)

AWS Pricing Alerts

Demo

Billing alert information --

<https://portal.aws.amazon.com/gp/aws/developer/account?ie=UTF8&action=billing-alerts>

Other AWS Billing Tips

- TURN IT OFF
- Geography Matters
- Can purchase premier support (includes Trusted Advisors & Cost Optimization reports)
- Can download bills and perform analysis
- Can access bills programmatically
- Can consolidate multiple accounts to one bill

Cost Optimizing

This category of checks shows you how you can save money on AWS by eliminating commitments to reserved capacity.

⚠️ EC2 Reserved Instances Optimization

- ▶ Annual savings of up to \$125,644 (53.3%) are available with optimal reserved instance usage

⚠️ Underutilized EC2 Instances

- ▶ 31 of 34 EC2 instances are potentially underutilized. Annual savings of up to \$120,547 are available by minimizing underutilized instances.

⚠️ Idle Elastic Load Balancers

- ▶ 12 of 15 Elastic Load Balancers appear to be idle. Annual savings of up to \$0 are available by minimizing unused ELBs

⚠️ Underutilized EBS Volumes

- ▶ 22 of 85 EBS Volumes appear to be underutilized. Annual savings of up to \$2,169 are available by minimizing under used EBS volumes

⚠️ Unused Elastic IPs

- ▶ 1 of 8 Elastic IPs are not in use

⚠️ RDS Idle DB Instances New

- ▶ 11 of 15 RDS DB Instances appear to be idle. Annual savings of up to \$27,380 are available by minimizing idle RDS DB Instances

Summing Up and Other Resources

- Billing FAQ
 - <http://aws.amazon.com/billing/faqs/>
- AWS Pricing White paperhttp://d36cz9buwru1tt.cloudfront.net/AWS_Pricing_Overview.pdf
- Pricing Spreadsheet
 - <https://docs.google.com/spreadsheet/ccc?key=0AthwQzSGHFM1dGtKM3ppc2F6UHZrRGdHY1phdV96cWc#gid=0>
- AWS Cost Sheet
 - <http://s3.amazonaws.com/CloudVerticalBlog/CloudVertical-AWS-Cost-Cheat-Sheet.pdf>
- Netflix Ice (open source tool for monitoring AWS resources)
 - <https://github.com/Netflix/ice>

