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AWS Total Cost of Ownership (TCO) Calculator

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Are you satisfied with the AWS TCO Calculator?

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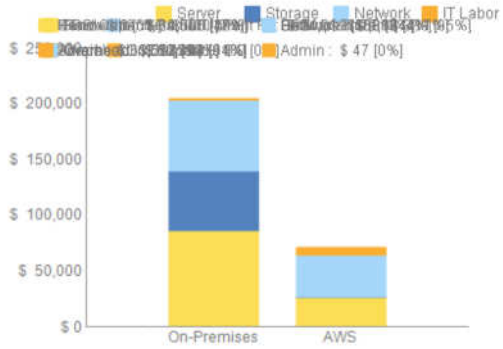
On-Premises vs. AWS Summary

You could save **65%** a year by moving your infrastructure to AWS.

Your three year total savings would be **$ 133,290**.

3 Years Cost Breakdown



3 Yr. Total Cost of Ownership		
	On-Premises	**AWS**
Server	$ 86,123	$ 26,421
Storage	$ 53,647	$ 450
Network	$ 63,568	$ 37,525
IT-Labor	$ 1,013	$ 6,664
Total	**$ 204,351**	**$ 71,060**

AWS cost includes business level support

Environment Details

Your On-Premises environment

Environment : Virtual					
# of VMs	**vCPU**	**RAM (GB)**	**OS**	**Avg. Utilization**	**Optimize by**
1	2	64	Linux	100%	RAM

Storage (TB)		
SAN	**NAS**	**Object**
1	0	0

Your AWS environment : US East (N. Virginia)

Closest AWS Instances					
# Instances	**Instance**	**vCPU**	**RAM (GiB)**	**Optimize by**	**Instance type**
1	db.m4.4xlarge	16	64	RAM	3 Yr. Partial Upfront RI

EC2 Instance Mapping Criteria	
Optimize by	**Description**
CPU	Option matches by VCPU count and then finds the lowest priced EC2 instance from the available choices
RAM	Option matches by RAM size and then finds the lowest priced EC2 instance from the available choices
Storage IO	Option matches by I/O requirements and then finds the lowest priced EC2 instance from the available choices

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Your On-Premises Cost Breakdown

Server

Storage

Network

Your AWS Cost Breakdown

Compute EC2

EBS

Calculations

Server

On-Premises - Server Costs

Server Hardware Costs

Virtual Host Sizing for Virtualized Environments

App	# VMs	Host Type	# Cores	RAM	# Servers	VM Density
	1	Host 1	16	96	1	1

Server Hardware Costs

# of Servers	# of Cores	RAM (GB)	Units (U)	Power (KW)	Unit Cost	Unit Discount	Total Cost
1	16	96	2	0.75	$ 9,263	25%	$ 6,947

AWS - EC2 Costs

EC2 Instance Costs (3 Yr.) – On-Demand and Reserved Instances

3 Yr. Partial Upfront Reserved Instance

AWS Instance	Upfront	Hourly	Total Costs
db.m4.4xlarge	$ 5,256	$ 0.712	$ 24,019
Total Cost:			**$ 24,019**

Total costs = (upfront cost + hourly cost*8,784 hours/yr.*3 years)* # of instances (Applied to the whole term whether or not you're using the Reserved Instance)

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Server Hardware Maintenance cost for 3 Yrs. (@15%/Yr.)	$	3,126
Total number of Racks required (1 Rack=42U, 28U occupied by servers, 4U by ToR switches and PDUs)		1
Total Peak power consumed (kW)		0.75

Rack Infrastructure Costs

Rack Chassis with PDU (@$3500/rack) cost	$	1,850
PDUs, dual 280V per rack (@$540 each, 2/rack for HA) cost	$	920
Top of Rack Switch (48-port 10/100/1G, $5,000 each, 2/rack for high availability)	$	10,000
Rack and Stack one-time deployment cost ($250/server)	$	250
Provision for spare servers for 3 Yrs. (@5% spare capacity/Yr.)	$	1,511
Total Rack costs (rack infrastructure and server hardware)	**$**	**24,605**

Virtualization Software Costs

Total number of VMware vSphere licenses required		2
VMware vSphere Enterprise Plus list price (unit per processor)	$	3,495
VMware vSphere discounted price (unit per processor)	$	2,621
Total VMware vSphere license costs	$	5,243
Total VMware vSphere support(SnS) costs	$	3,932
Total VMware vSphere license + support costs (3 Yrs.)	$	9,174
Total virtualization license and maintenance cost (3 Yrs.)	**$**	**9,174**

MySQL

MySQL License Cost per Server (List)	$	-
MySQL License Cost per Server (After Discount)	$	-
Number of Licenses Required		1
Total MySQL License Cost	**$**	**-**

Total 3-Year Database Software License Cost	**$**	**-**
Total Server Cost (Hardware and Software) - 3 Yr.	**$**	**33,779**

Facilities Costs (data center space, power and cooling)) - On-Premises

Total Power consumed by servers (kW)		0.75
Metered cost per kWH	$	0.10
Estimated power cost/month	$	54.00
Monthly cost to operate a rack	$	1,400.00
Total rack costs/month	$	1,400.00
Total monthly Facilities costs	$	1,454.00
Facilities costs - On-Premises (3 Yr.)	**$**	**52,344**

Server cost break-down

Server cost break-down

Category	Cost	% of Total Cost
Hardware	$ 24,605	28%
Software	$ 9,174	11%
Operating Costs (3 Yrs.)	$ 52,344	61%
Total	**$ 86,123**	**100%**

Total server costs, including operational cost (3 Yr.)	**$**	**86,123**

Storage

On-Premises - Storage Costs

HDD used based on input

AWS - Storage Costs

EBS Storage - Only Standard EBS used with no IOPS requirements

On-Demand

AWS Instance	Upfront	Hourly	Total Costs
db.m4.4xlarge	$ -	$ 2.802	$ 73,838
Total Cost:			**$ 73,838**

Total costs = (hourly cost*8,784 hours*3 years*utilization)* # of instances
(Hourly usage fee charged for each hour you use the instance)

Lowest Priced Instance

Instance	Cost	Type
db.m4.4xlarge	$ 24,019	3 Yr. Partial Upfront RI
Total Cost:	**$ 24,019**	

EC2 Reserved Instances

AWS Instance	Instance type	# Instances	Upfront fee	Hourly	Total Cost
db.m4.4xlarge	3 Yr. Partial Upfront RI	1	$ 5,256	$ 0.712	$ 24,019

Total fee	**$**	**24,019**
Discount Tier Applicable		0%
AWS Business Support (EC2)	**$**	**2,402**
EC2 Costs (3 Yr.) after discount and support	**$**	**26,421**

Server Software Costs (BYOL Only)

Total 3-Year Database Software License Cost	**$**	**-**

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Starting capacity/raw capacity (GB)		1,200
Capacity after OS Penalty (~7%, capacity OS recognizes) (GB)		1,080
Usable capacity based on RAID (RAID 10 assumed) configuration (GB)		216
$/raw GB purchase price	$	1.50
Discounted $/raw purchase price (50% storage hardware discount applied)	$	0.75
Acquisition Cost of SAN storage	**$**	**900**

Storage backup cost

Total amount of storage to be backed up (TB)		1.17
Total amount of storage to be backed up (GB)		1,200
Type of Tape Library used		LTO-6
Max uncompressed speed (MB/s) for Tape Library		160
Max uncompressed speed - TB/day		13.18
Backup Window Time(hr.)		8
TBs processed/drive for backup window		4.39
Number of Tape drives required		1
Tape Library price/drive	$	2,300
Backup cost (3 Yr.)	**$**	**2,300**

Storage Overhead cost (data center space, power, cooling, storage administrator)

Typical TB managed by a storage admin/Yr.		1000
Storage Admin Costs (3 Yr.)	**$**	**47**

Amount of TBs hosted by a single rack (TB)		1000
Number of racks required		1
Monthly cost to operate a rack	$	1,400
Total data center space, power, cooling costs (3 Yr.)	**$**	**50,400**

Storage cost break-down

Storage cost break-down

Category	Cost	% of Total Cost
Raw Capacity (Incl. IOPS)	**$ 900**	2%
Backup	**$ 2,300**	4%
Overhead (excl. storage admin)	**$ 50,400**	94%
Storage Admin	**$ 47**	0%
Total	**$53,647**	**100%**

Total Storage Costs (3 Yr.)	**$**	**53,647**

Equivalent EBS storage volume		General Purpose (Magnetic)
Number of EBS volumes required		1
EBS volumes cost/month	$	10.80
Initial snapshot cost(one-time)	$	20.52
EBS incremental snapshots cost/month	$	-
Total EBS cost /month	$	11
EBS Costs (3 Yr) - no IOPS	**$**	**409**
EBS Costs (3 Yr.)	**$**	**450**
AWS Business Support (EBS)	**$**	**41**
Total AWS Storage Costs (3 Yr.) including support	**$**	**450.25**

Network

On-Premises - Networking Costs

Networking Hardware and Software Costs

Network overhead cost as a % of server hardware acquisition cost		10%
Network hardware and software cost	$	2,460.45
Network hardware and software maintenance/Yr.		15%
Maintenance cost (3 Yr.)	$	1,107.20
Total Network Hardware and Software costs (3 Yr.)	**$**	**3,568**

Bandwidth Costs (On-Premises)

Size of Network Pipe (Mbps)	1000
Peak/Avg. Ratio	3

AWS - Data Transfer Costs

Monthly Data Transfer Out (TB)	10.3

Data Transfer Costs

	US East (N. Virginia)	Tier(GB)	Monthly Cost
First 1 GB per month	$ -	1	$ -
Up to 10 TB per Month	$ 0.09	10240	$ 921.60
Next 40 TB per Month	$ 0.09	306	$ 26.00
Next 100 TB per Month	$ 0.07	0	$ -

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Avg. data transferred per month (TB)- Inbound + Outbound		103
Avg. data transferred per month (TB)- North/South		20.6
Avg. data transferred per month (TB) - Outbound		10.3
Bandwith costs - On-Premises (3 Yr.)	**$**	**60,000**

Network Admin Costs

Network admin effort as % of total IT admin effort		8%
Avg. burdened salary for your Network Admin	$	13,500
IT labor cost (1 Yr.)	$	-
Network admin costs (1 Yr.)	$	-
Network admin costs (3 Yr.)	**$**	**-**
Total Networking Costs (3 Yr.)	**$**	**63,568**

Total monthly data transfer costs	$	948.00
AWS Business Support (data transfer)	**$**	**3,411**
Data Transfer Costs (3 Yr.) including support	**$**	**37,525**

IT Labor

On-Premises - IT Labor Costs

Database Admin Costs

Number of Databases managed by an Admin		40
Avg. burdened salary for your IT Admin	$	13,500
Colo On-Call Labor Cost	$	0
Number of Databases in your current environment		1
Admin effort required for your current environment		2%
3-Year IT DBA Labor costs	**$**	**1,013**
Total IT Admin Costs -based on number of VMs / Servers (3 Yr.)	**$**	**1,013**

AWS - IT Labor Costs

RDS Admin Costs

# of RDS instances managed by an admin		100
Avg. burdened salary for your IT Admin	$	13,500
# of RDS instances in your environment		2
Admin effort required for your current environment		2%
IT Labor costs (3 Yr.)	**$**	**810**
Total IT Admin Costs -based on number of VMs / Servers (3 Yr.)	**$**	**810**

AWS - Support Costs

Monthly EC2 Spend	$	521.19
Monthly EBS Spend	$	11.37
Monthly S3 Spend	$	-
Monthly S3IA Spend	$	-
Monthly Data Transfer Spend	$	947.60
Total monthly AWS Spend	**$**	**1,480.16**

Support Costs - All Services

Business Level Support	Cost
10% of monthly AWS usage for the first $0 – $10K	$ 148.02
7% of monthly AWS usage from $10K – $80K	$ -
5% of monthly AWS usage from $80K – $250K	$ -
3% of monthly AWS usage over $250K	$ -

Monthly AWS Support cost for all services	**$**	**148**
AWS Support cost for all services (3 Yr.)	**$**	**5,329**
EC2 Reserved Instances Upfront cost after discount	**$**	**5,256**

Support Costs - Reserved Instances

Business Level Support	Cost
10% of monthly AWS usage for the first $0 – $10K	$ 525.60
7% of monthly AWS usage from $10K – $80K	$ -
5% of monthly AWS usage from $80K – $250K	$ -
3% of monthly AWS usage over $250K	$ -

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Collapse

Methodology

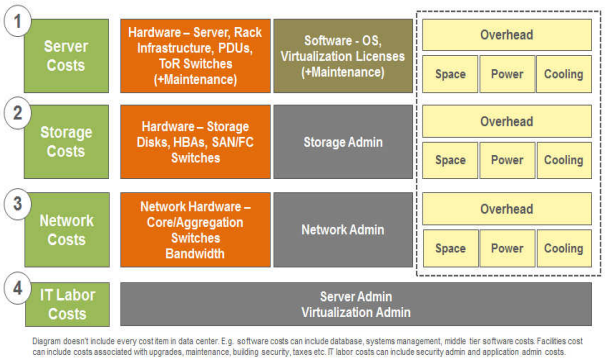
The AWS TCO calculator uses the following methodology when calculating on-premises, colocation, and AWS costs.

Our methodology defines Total Cost of Ownership (TCO) as below –

TCO = Acquisition Costs + Operational Costs

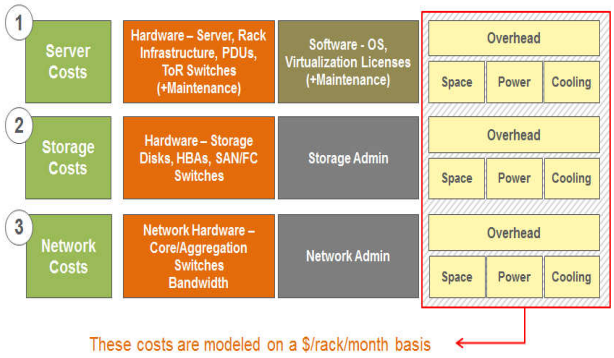
Operational costs include labor cost to manage the data center operations as well as overhead cost associated with running the data center equipment. A standard 3 year time frame is used for our calculations as the useful life for the data center equipment.

The following graphic shows the major cost categories in on-premises and colocation environments

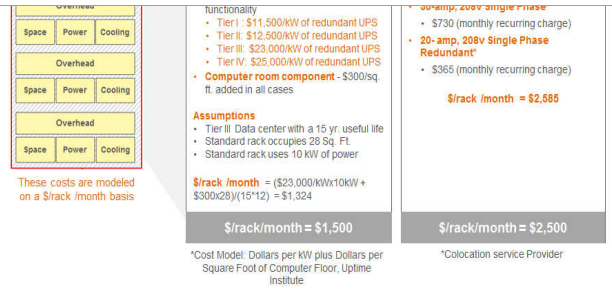


For On-Premises/Colocation, TCO = Server Costs + Storage Costs + Network Costs + IT Labor Costs

For on-premises and colocation environments, each of the major cost categories (server, storage, and network) include the cost of hardware, software (where applicable), and overhead costs. Overhead costs include the cost of data center floor space, and power and cooling required for data center equipment. For our calculations, a "standard rack" is considered to be the typical 19 inch rack that has a rack footprint of 28 sq. ft. (actual area covered by the rack) in the data center. Additionally, we assume average power density per rack to be 10kW in an on-premises data center and a cabinet to have a primary 20 amp, 120V single phase circuit and a redundant 20 amp, 120V circuit in a colocation environment. We use Uptime institute cost model to calculate overhead costs for on-premises and a publicly available price quote from a global colocation, interconnection, and managed IT infrastructure service provider for colocation environment.Since power and cooling expenses are billed on a monthly basis, we calculate our overhead costs on a monthly basis. We also use a "standard rack" as a common point for calculating overhead costs.



For On-Premises and Colocation environments, the $/rack/month is calculated differently -



As shown above, the logic by which the overhead cost is calculated for on-premises and colocation environments is different. Most of the other cost categories are handled similarly between these environments. On the network side, a colocation environment incurs recurring bandwidth costs where as an on-premises environment also incurs network capital expense and network operation expense.

	On-Premises	Colocation
Overhead (Space, Power, Cooling)	Default Cost/Rack/month = $1,500 Power/cooling charged separately	Default Cost/Rack/month = $2,500 Power/cooling included in this cost
Server (excl. overhead)	Same	Same (unless HW is leased)
Storage (excl. overhead)	Same	Same (unless HW is leased)
Network (excl. overhead)	Flat Bandwidth charge; Network overhead	Tiered Bandwidth charge; no network overhead
IT Labor Costs	Same	Same

Finally, on AWS side overhead costs is included in the publicly listed prices and customers don't have to pay extra for space, power, and cooling as shown below.

	Server & Network Hardware	OS + Virtualization Software	Data center /Colocation Floor Space	Power Cooling	Data Center Personnel	Storage Redundancy	Resource Mgmt. /SW Automation	Software Defined Networking
amazon web services	✔	✔	✔	✔	✔	✔	✔	✔
Hardware Vendor Offering	✔	✘	✘	✘	✘	✘	✘	✘

With AWS, we include AWS Business level support costs. AWS Business level support includes guidance on optimizing AWS products and configuration to meet your specific needs. Business level support provides discounts as your AWS usage grows

TCO Methodology for RDS

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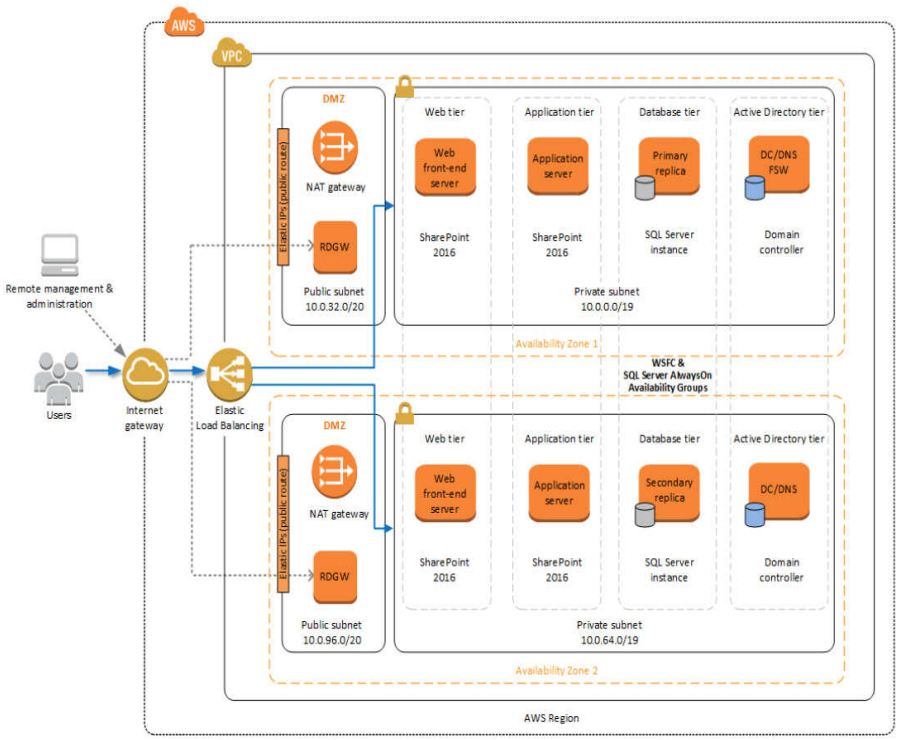
Server Costs Hardware:	Server Costs: Commericial List prices, less expected discount, plus operational burden for power/ cooling/ floor space.	EC2 Pricing Follows Existing Methodology: Server requirements Mapped to EC2 based on RAM/CPU/Storage constraints	RDS Pricing for DB • User defined Single v Multi-AZ replication • RI used for comparison
Database Pricing:	Database Costs Compare Database Pricing to comparable edition (non-Enterprise)	DB Mapped to AWS Support & CloudWatch: + AWS Business Level Support + 2 CloudWatch Custom Metrics (2x: Query Analyzer, Replication)	DB Mapped to AWS Support: + AWS Business Level Support
Block Storage:	DB Storage (SAN/NAS) Follows Existing methodology NAS/SAN Raw storage penalized for OS, RAID 10, over provisioning, and h/w performance capacity requirements to convert to usable. Backup: Follows Existing TCO Methodology: Assume Tape Backup	Mapping SAN/NAS to EBS (current methodology): Backup: Initial backup to S3 (100%), then incremental snapshots based on input for backup/month.	Multi-AZ vs. Single AZ Deployment: If Production, Multi-AZ; otherwise single-AZ. Backup: Same as EC2 Scenario.
Labor:	Compute, Storage, Admin: Follow existing TCO methodology DBA: 1 DBA can manage up to 40 DBs, under 1 TB in size Colo only: 10% additional labor cost for 'on-call DBA' for emergency maintenance issues	DBA Labor Savings of 10%, as a result of decreased time spent security planning, and performing installation, upgrading, migrating. 1 DBA can then manage 45 DBs on EC2.	DBA: Labor savings of 60%, as a result of decreased time spent doing patch mgmt., managing backups, performance, troubleshooting, and storage provisioning. 1 DBA can manage 100 DBs on RDS, versus 40 on prem.

SharePoint Architecture

Amazon Web Services – Microsoft SharePoint Server 2016 on the AWS Cloud May 2016



Collapse

Assumptions

FAQ

This Calculator provides an estimate of usage charges for On-Premises/Colocation and equivalent AWS services based on the information you provide.
AWS monthly charges will be based on your actual usage of AWS services, and may vary from the estimates the Calculator has provided.
Give us your feedback