

SAP on AWS Pricing Guide

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Abstract

For SAP customers and partners who are new to Amazon Web Services (AWS), the process of estimating the monthly AWS bill may seem a bit overwhelming at first. This guide explains how to estimate the cost of running your SAP environment on AWS.

Introduction

The number and types of services offered by Amazon Web Services (AWS) has increased dramatically, but the AWS philosophy on pricing has not changed: At the end of each month, you pay only for what you use, and you can start or stop using a service at any time. No long-term contracts are required.

This guide is intended for SAP customers and partners who need to estimate the monthly cost of running an SAP environments on AWS. For the purposes of this guide, we assume that you already know how to architect and size SAP solutions on AWS. If you do not, read the [SAP on AWS Implementation and Operations Guide](#) before continuing.¹

This pricing guide will help you understand how to effectively estimate the cost of running your SAP environment on AWS. We provide two SAP on AWS pricing examples (SAP ERP on AWS and SAP HANA on AWS) using the AWS Simple Monthly Calculator. For each example, we review the architecture on AWS, example usage of each service, cost breakdown for each service, and total estimated monthly charge.

AWS Pricing Overview

AWS offers a range of cloud computing services. For each service, you pay for exactly the amount of resources you use. There are no minimum commitments or long-term contracts required. This pricing model helps replace your upfront capital expense with low variable cost. For compute resources, you pay on an hourly basis from the time you launch a resource until the time you terminate it. For storage and data transfer, you pay on a per gigabyte basis. At the end of each month, you are charged only for what you've used that month.

For additional information on how AWS pricing works, see the following sources:

- [How AWS Pricing Works](#) whitepaper²
- [Pricing information for AWS services](#) on the AWS website³

AWS Simple Monthly Calculator

The [AWS Simple Monthly Calculator](#) is an easy to use online tool that enables you to estimate the monthly cost of AWS services for your use case based on your

expected usage.⁴ The AWS Simple Monthly Calculator is continuously updated with the latest pricing for all AWS services in all regions. Before continuing with this guide, please take time to watch the following video that provides an overview of how to use the AWS Simple Monthly Calculator:

[Video: Getting Started with the AWS Simple Monthly Calculator](#)⁵

SAP on AWS Pricing Fundamentals

AWS currently offers over 60 different products and services. This section provides an overview of the pricing characteristics for the AWS services most relevant for the implementation and operation of SAP systems on AWS.

AWS Region Pricing

AWS service pricing varies between different AWS regions. The first step in estimating any SAP environment on AWS is to select which AWS region you will deploy your SAP environment in.

Compute Pricing

Instances

Amazon Elastic Compute Cloud (Amazon EC2) provides a wide selection of instance types that provide varying combinations of CPU, memory, storage, I/O, and networking capabilities. You are charged by the hour for each running instance. The hourly fee of an instance is based on a combination of the following characteristics:

- **Instance type** – Specific virtual machine configurations that offer different CPU, memory, storage, I/O, and networking capabilities. For additional information about Amazon EC2 instance types, see <http://aws.amazon.com/ec2/instance-types/>.
- **Operating system** – Operating system licenses are included in the hourly price of an instance. Different operating systems are billed at different hourly rates.
- **Monitoring** – You can use Amazon CloudWatch to monitor your Amazon EC2 instances. *Basic monitoring* is included in the hourly cost of an instance and provides metrics at five-minute intervals. For an additional charge, you can use *detailed monitoring*, which provides metrics at one-minute intervals. Detailed monitoring is required for production SAP systems on AWS. For

additional information about Amazon CloudWatch pricing, see <https://aws.amazon.com/cloudwatch/pricing/>.

- **I/O throughput** – Amazon EC2 instance types offer different levels of I/O throughput. For production SAP systems, either Amazon Elastic Block Store (Amazon EBS) optimized instances or instances with 10 gigabit network connectivity are recommended. For additional information about Amazon EBS-optimized instances and instances with 10 gigabit network connectivity, see the [Amazon EC2 Users Guide](#).⁶

For additional information about Amazon EC2 instance pricing, see <http://aws.amazon.com/ec2/pricing/>.

Purchasing Options

Amazon EC2 offers multiple purchasing options that give you flexibility to optimize your costs. The *On-Demand* and *Reserved Instance* purchasing options are most relevant for SAP systems on AWS; each option is described in more detail in the following sections.

On-Demand Instances

The On-Demand purchasing option lets you pay for compute capacity by the hour with no long-term commitments or upfront payments. You can increase or decrease your compute capacity depending on the demands of your application, and pay only the specified hourly rate for the instances you use.

Recommended for:

- SAP test, demo, and proof of concept (POC) systems
- Recommended as the initial purchasing option for most SAP systems on AWS. When you have gained experience running your SAP system on AWS and have determined the optimal configuration, you can choose to purchase a Reserved Instance for that specific configuration.

Reserved Instances

The Reserved Instance purchasing option allows you to reserve Amazon EC2 computing capacity for 1 or 3 years, in exchange for a significantly discounted hourly rate (up to 75%), compared to On-Demand Instance pricing. You have the flexibility to pay all, part, or nothing up front. The more you pay up front, the more you save. If your requirements change, you can modify or sell your Reserved Instance. Reserved Instances also provide a capacity reservation so

that you can have confidence in your ability to launch the number of instances you have reserved when you need them.

Recommended for:

- SAP production (PRD), quality assurance (QAS), and development (DEV) systems
- Should be considered for any SAP system that will be online more than 60% of the time.

For additional information about the different Amazon EC2 purchasing options, see <http://aws.amazon.com/ec2/purchasing-options/>.

Storage Pricing

AWS provides flexible, cost-effective, and easy-to-use data storage options for your SAP systems. Each option has a unique combination of performance and durability. This section provides an overview of the primary components of AWS storage pricing.

Primary Storage

Amazon Elastic Block Store (Amazon EBS) provides persistent block-level storage volumes for SAP systems that are running on Amazon EC2. Each SAP Amazon EC2 system will require one or more Amazon EBS volumes to store system components such as the operating system, SAP software, SAP database data and log files, and local backup storage. For information about Amazon EBS pricing, see <https://aws.amazon.com/ebs/pricing/>.

Backup Storage

Multiple options are available for backing up SAP systems on AWS. For an overview of options, see [SAP on AWS Backup and Recovery Guide](#).⁷ Each option relies on storing backup files in Amazon Simple Storage Service (Amazon S3) to provide highly durable storage that is independent of primary storage. For information about Amazon S3 pricing, see <https://aws.amazon.com/s3/pricing/>.

The amount of backup storage required is dependent on the backup method, backup frequency, system size, and backup retention. How to calculate the amount of backup storage required is beyond the scope of this guide.

Network Pricing

Amazon VPC Connectivity

There is no additional charge for using Amazon Virtual Private Cloud (Amazon VPC), aside from the standard Amazon EC2 usage charges. If a secure connection is required between your on-premises network and Amazon VPC, you can choose one of the connectivity options described in the following sections.

Hardware VPN Connection

When you use hardware VPN connections to your Amazon VPC, you are charged for each *VPN Connection-hour* for which your VPN connection is provisioned and available. Additional information about hardware VPN connection pricing can be found at <https://aws.amazon.com/vpc/pricing/>.

Private Network Connection

AWS Direct Connect provides the capability to establish a dedicated network connection from your on-premises network to AWS. AWS Direct Connect pricing is based on per-port-hour charges and data transfer out charges. Additional information about AWS Direct Connect pricing can be found at <https://aws.amazon.com/directconnect/pricing/>.

Data Transfer

Inbound data transfer to Amazon EC2 is free. Charges do apply for data that is transferred out from Amazon EC2 to the Internet, to another AWS region, or to another Availability Zone. For details on AWS data transfer pricing, see the “Data Transfer” section at <https://aws.amazon.com/ec2/pricing/>.

AWS Support Pricing

AWS offers different levels of support, so you can choose the right level of support for your environment. AWS Basic support is included with all AWS services at no additional charge. If you require a deeper level of support, you can subscribe to Developer, Business, or Enterprise-level support. For additional information about the different AWS support plans and pricing details, see <http://aws.amazon.com/premiumsupport/>.

Note The operation of production SAP systems on AWS requires Business or Enterprise-level support; see [SAP Note 1656250](#) for additional information (requires SAP Support Portal access).⁸

Pricing Examples

This section reviews two sample SAP on AWS pricing estimates using the AWS Simple Monthly Calculator.

Note AWS pricing is updated frequently. The pricing in the following examples may not reflect current AWS pricing. For the latest information, see the [AWS Simple Monthly Calculator](#).

SAP ERP on AWS

Description

A sample SAP Enterprise Resource Planning (ERP) production environment on AWS integrated with on-premises users and systems.

Requirements

- SAP ERP three-system landscape: production (PRD) / quality assurance (QAS) / development (DEV)
- OS/DB platform: SUSE Linux Enterprise Server (SLES) / SAP Adaptive Server Enterprise (ASE) database
- High availability (HA) required for production system
- SAP Solution Manager system
- Secure VPN connection between one on-premises network and Amazon VPC
- Connection to SAP Support Network

System specifications:

System	SAPS	Storage	HA
SAP ERP – PRD	6,000	600	Yes
SAP ERP – QAS	6,000	600	No
SAP ERP – DEV	3,000	400	No
SAP Solution Manager	1,500	100	No

Architecture

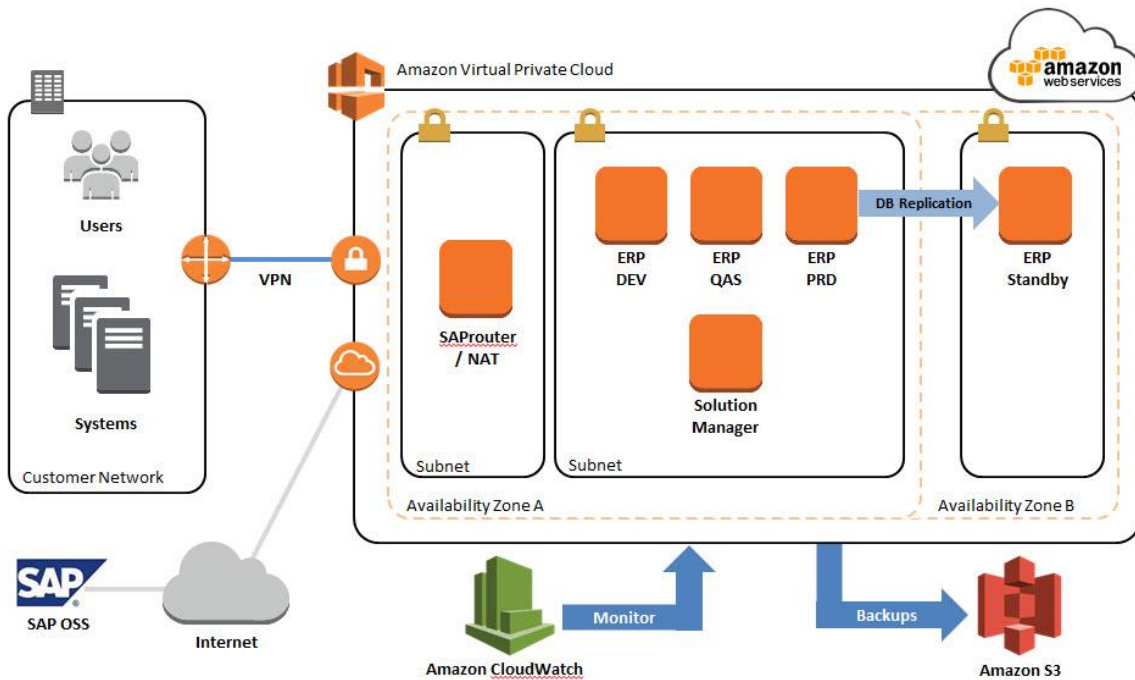


Figure 1: SAP ERP on AWS

AWS Simple Monthly Calculator

For an estimate of the SAP ERP architecture shown in Figure 1, see the [AWS Simple Monthly Calculator](#).⁹ The following sections explain each part of the estimate.

Amazon EC2

Description	Instances	Usage ³	Type	Billing Option ⁵	Monthly Cost
ERP - PRD ¹	1	100 % Utilized/Mor	SUSE Linux Enterprise Server on r3.2xlarge EBS Optimized ⁴	3 Yr Partial Upfront	\$ 120.55
ERP - Standby	1	100 % Utilized/Mor	SUSE Linux Enterprise Server on r3.2xlarge EBS Optimized	3 Yr Partial Upfront	\$ 120.55
ERP - QAS	1	100 % Utilized/Mor	SUSE Linux Enterprise Server on r3.2xlarge	3 Yr Partial Upfront	\$ 83.95
ERP - DEV	1	100 % Utilized/Mor	SUSE Linux Enterprise Server on r3.xlarge	3 Yr Partial Upfront	\$ 45.99
SolMan	1	100 % Utilized/Mor	SUSE Linux Enterprise Server on r3.large	3 Yr Partial Upfront	\$ 27.01
SAProuter / NAT ²	1	100 % Utilized/Mor	SUSE Linux Enterprise Server on m1.small	3 Yr Partial Upfront	\$ 14.60

(1) One Amazon EC2 instance for the PRD primary system and one Amazon EC2 instance for the PRD standby system to provide high availability.

- (2) EC2 instance to host the SAProuter and network address translation (NAT) system. The NAT system is required to enable instances in the private subnet to initiate outbound traffic to the Internet. For additional information about NAT instances, see the [Amazon VPC User Guide](#).¹⁰
- (3) All instances are set at 100% usage.
- (4) EBS-optimized instances are selected for production database systems.
- (5) The Partial Upfront payment option for 3-year Reserved Instances is selected for all systems.

Amazon EBS

Description	Volumes	Volume Type ²	Storage	IOPS	Snapshot Storage ³
ERP - PRD ¹	1	General Purpose (SSD)	600 GB	1800	0 GB-month of Storage
ERP - Standby	1	General Purpose (SSD)	600 GB	1800	0 GB-month of Storage
ERP - QAS	1	General Purpose (SSD)	600 GB	1800	0 GB-month of Storage
ERP - DEV	1	General Purpose (SSD)	400 GB	1200	0 GB-month of Storage
SolMan	1	General Purpose (SSD)	100 GB	300	0 GB-month of Storage
SAProuter / NAT	1	General Purpose (SSD)	10 GB	30	0 GB-month of Storage

- (1) High availability is provided by database replication between the primary and secondary systems. The secondary system requires the same amount of storage as the primary system.
- (2) The General Purpose (SSD) volume type is selected for all systems.
- (3) Native or third-party backup tools will be used to perform system backups. Amazon EBS snapshots will not be used, so there is no data in the **Snapshot Storage** fields.

Elastic IP, Data Transfers, and Elastic Load Balancing

Elastic IP:		
Number of Additional Elastic IPs:	<input type="text" value="0"/>	
Elastic IP Non-attached Time:	<input type="text" value="0"/>	Hours/Month ▾
Number of Elastic IP Remaps:	<input type="text" value="0"/>	Per Month ▾
Data Transfer:		
Inter-Region Data Transfer Out:	<input type="text" value="0"/>	GB/Month ▾
Data Transfer Out:	<input type="text" value="1000"/>	GB/Month ▾
Data Transfer In:	<input type="text" value="0"/>	GB/Month ▾
VPC Peering Data Transfer:	<input type="text" value="0"/>	GB/Month ▾
Intra-Region Data Transfer:	<input type="text" value="1000"/>	GB/Month ▾
Public IP/Elastic IP Data Transfer:	<input type="text" value="0"/>	GB/Month ▾
Elastic Load Balancing:		
Number of Elastic LBs:	<input type="text" value="0"/>	
Total Data Processed by all ELBs:	<input type="text" value="0"/>	GB/Month ▾

- (1) Only the SAProuter and NAT system will require a public Elastic IP address. One Elastic IP per running instance is provided at no charge. No additional Elastic IPs are required.
- (2) 1,000 GB/month is estimated for data transferred out to the Internet.
- (3) 1,000 GB/month is estimated for database replication between the primary system in Availability Zone A and the secondary database in Availability Zone B.

Amazon S3

Storage:
 Storage: TB
 Reduced Redundancy Storage: GB

Requests:
 PUT/COPY/POST/LIST Requests: Requests
 GET and Other Requests: Requests

Data Transfer:
 Inter-Region Data Transfer Out: GB/Month
 Data Transfer Out: GB/Month
 Data Transfer In: GB/Month

- (1) 4 TB of Amazon S3 storage is estimated for storing system and database backups. The actual backup storage required will depend on the backup method, frequency, volume, and retention policy.
- (2) 1,000 requests are estimated for Amazon S3 PUT, COPY, POST, and LIST operations, and 1,000 requests are estimated for GET and other operations.

Amazon VPC

Description	Number of Connections	Usage	Data Transfer Out	Data Transfer In
VPN	<input type="text" value="1"/>	<input type="text" value="100"/> % Utilized/Mor	<input type="text" value="1000"/> GB/Month	<input type="text" value="1000"/> GB/Month

- (1) One VPN connection with 100% utilization is specified for connection between an on-premises network and Amazon VPC.
- (2) 1,000 GB/month is estimated for data transfers out of Amazon VPC to an on-premises network.
- (3) There is no charge for inbound data transfers.

AWS Support

Select a Support Plan:

Basic (Free)
 1 Business

Developer (49.00 USD/Month)
 Enterprise

(1) The Business support tier is selected. SAP production systems on AWS require Business or Enterprise-level support.

Estimate of Monthly Bill

<input type="checkbox"/> <u>Amazon EC2 Service (US-East)</u>	1		\$ 18272.65
Compute:		\$ 412.65	
Intra-Region Data Transfer:		\$ 10.00	
EBS Volumes:		\$ 231.00	
EBS IOPS:		\$ 0.00	
Reserved Instances (One-time Fee):		\$ 17619.00	
<input type="checkbox"/> <u>Amazon S3 Service (US-East)</u>	2		\$ 121.37
Storage:		\$ 121.35	
Put/List Requests:		\$ 0.01	
Other Requests:		\$ 0.01	
<input type="checkbox"/> <u>Amazon VPC Service (US-East)</u>	3		\$ 36.60
VPN Connection:		\$ 36.60	
<input type="checkbox"/> <u>AWS Data Transfer In</u>	4		\$ 0.00
US-East / US Standard (Virginia) Region:		\$ 0.00	
<input type="checkbox"/> <u>AWS Data Transfer Out</u>			\$ 179.91
US-East / US Standard (Virginia) Region:		\$ 179.91	
<input type="checkbox"/> <u>AWS Support (Business)</u>	5		\$ 1602.43
AWS Support Plan Minimum:		\$ 100.00	
Support for Reserved Instances (One-time Fee):		\$ 1502.43	
Free Tier Discount:	6		\$ -4.43
Total One-Time Payment:	7		\$ 19121.43
Total Monthly Payment:	8		\$ 1087.10

(1) Total and detailed breakdown of Amazon EC2 costs

(2) Total and detailed breakdown of Amazon S3 costs

(3) Total and detailed breakdown of Amazon VPC costs

- (4) Total and detailed breakdown of data transfer costs
- (5) Total and detailed breakdown of support costs
- (6) [AWS Free Tier](#) discount¹¹
- (7) Total one-time payment for all instances using the 3 Year Partial Upfront Reserved Instance billing option
- (8) Total monthly charge for all AWS services

SAP HANA on AWS

Description

A sample SAP HANA environment provisioned by following the instructions for option 1 (end-to-end deployment) in the [SAP HANA Quick Start Reference Deployment Guide](#).¹²

Requirements

- SAP HANA test, demo, and POC system with 244 GB of memory
- SAP HANA scenario: data mart, analytics, native SAP HANA application
- SAP HANA system run in a private subnet and not directly accessible from the Internet
- Administrative and end user system access via a Windows Remote Desktop Services system running within a public subnet, which is accessible via a direct Internet connection (VPN connection not required)

System Specifications

System	Memory
SAP HANA	244 GB
RDP / SAP HANA Studio server	–

Architecture

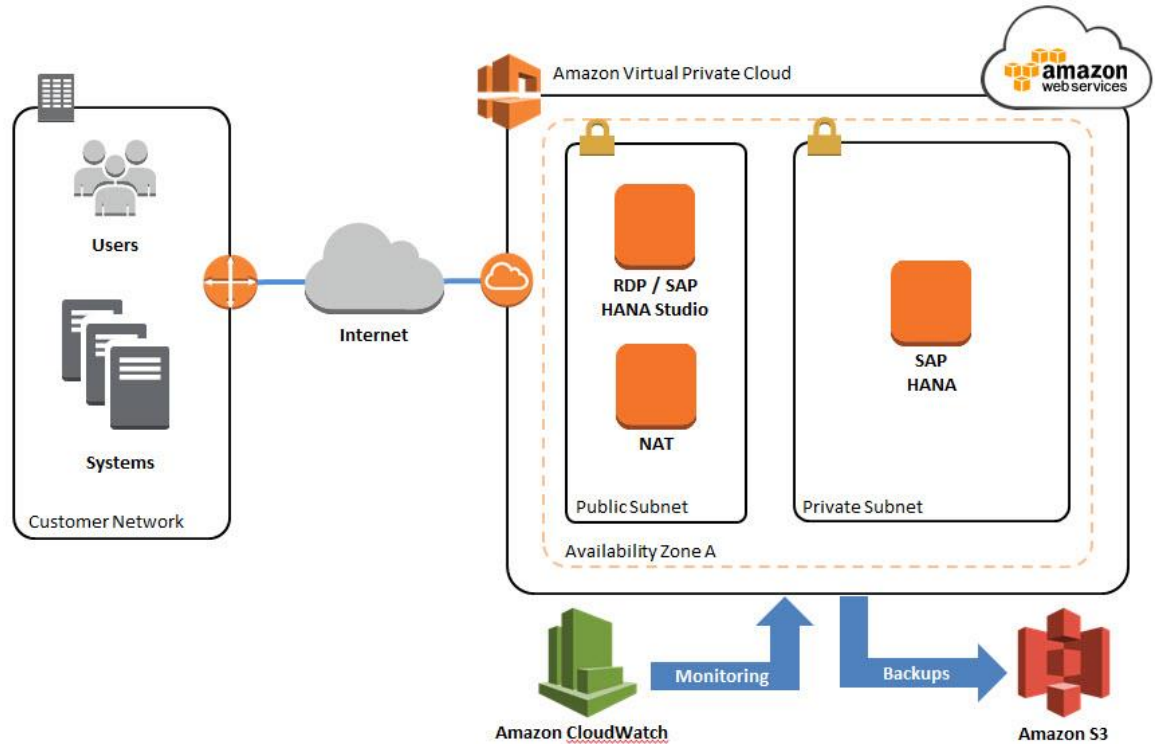


Figure 2: SAP HANA on AWS

AWS Simple Monthly Calculator

For an estimate of the SAP ERP architecture shown in Figure 1, see the [AWS Simple Monthly Calculator](#).¹³ The following sections discuss each part of the estimate.

Amazon EC2

Description	Instances	Usage ⁴	Type	Billing Option ⁵	Monthly Cost
SAP HANA (Single Node) ¹	1	100 % Utilized/Mor	SUSE Linux Enterprise Server on r3.8xlarge	1 Yr No Upfront Res	\$ 1311.08
RDP / SAP HANA Studio serv ²	1	100 % Utilized/Mor	Windows on m3.xlarge	1 Yr No Upfront Res	\$ 289.81
NAT instance ³	1	100 % Utilized/Mor	Linux on t2.small	1 Yr No Upfront Res	\$ 13.14

- (1) The SAP HANA system uses an r3.8xlarge instance with the SUSE Linux Enterprise Server.
- (2) The RDP / SAP HANA Studio system uses an m3.xlarge instance with Microsoft Windows Server.

- (3) The network address translation (NAT) system uses a t2.small instance with the Linux operating system. The NAT system is required to enable instances in the private subnet to initiate outbound traffic to the Internet. For additional information about NAT instances, see the [Amazon VPC User Guide](#).
- (4) All instances are set at 100% usage. If the system (for example, test or demo systems) will not be required to be online 24/7, you can choose the on-demand purchasing option and reduce usage to the hours you expect to keep the system online.
- (5) The No Upfront payment option for 1-year Reserved Instances is selected for all systems.

Amazon EBS

Description	Volumes	Volume Type ⁷	Storage	IOPS	Snapshot Storage ⁸
HANA root volur	¹ 1	General Purpose (SSD)	10 GB	30	0 GB-month of Storage
HANA SAP volur	² 1	General Purpose (SSD)	50 GB	150	0 GB-month of Storage
HANA LVM2 arra	³ 3	General Purpose (SSD)	400 GB	1200	0 GB-month of Storage
HANA LVM2 arra	⁴ 2	General Purpose (SSD)	250 GB	750	0 GB-month of Storage
RDP / SAP HAN	⁵ 1	General Purpose (SSD)	60 GB	180	0 GB-month of Storage
NAT instance roc	⁶ 1	General Purpose (SSD)	8 GB	24	0 GB-month of Storage

- (1) SAP HANA system root volume.
- (2) SAP HANA volume for SAP software (/usr/sap).
- (3) Three volumes are configured within the operating system in an LVM array for shared HANA data and log files. This EBS volume configuration has been tested and certified with SAP.
- (4) Two volumes are configured within the operating system in an LVM array for local backup storage.
- (5) RDP / SAP HANA Studio system volume.
- (6) NAT instance root volume.
- (7) The General Purpose (SSD) volume type is selected for all volumes.
- (8) Native HANA backup tools will be used to perform system backups to local EBS volumes, and then copied to Amazon S3. Amazon EBS snapshots will not be used, so there is no data in the **Snapshot Storage** fields.

Elastic IP, Data Transfers, and Elastic Load Balancing

Elastic IP:	
Number of Additional Elastic IPs:	<input type="text" value="0"/> 1
Elastic IP Non-attached Time:	<input type="text" value="0"/> Hours/Month ▾
Number of Elastic IP Remaps:	<input type="text" value="0"/> Per Month ▾
Data Transfer:	
Inter-Region Data Transfer Out:	<input type="text" value="0"/> GB/Month ▾
Data Transfer Out:	<input type="text" value="500"/> 2 GB/Month ▾
Data Transfer In:	<input type="text" value="2"/> 3 TB/Month ▾
VPC Peering Data Transfer:	<input type="text" value="0"/> GB/Month ▾
Intra-Region Data Transfer:	<input type="text" value="0"/> GB/Month ▾
Public IP/Elastic IP Data Transfer:	<input type="text" value="0"/> GB/Month ▾
Elastic Load Balancing:	
Number of Elastic LBs:	<input type="text" value="0"/>
Total Data Processed by all ELBs:	<input type="text" value="0"/> GB/Month ▾

- (1) RDP / SAP HANA Studio system will require a public IP address. One Elastic IP per running instance is provided at no charge. No additional Elastic IPs are required.
- (2) 500 GB/month is estimated for data transferred out to the Internet.
- (3) 2 TB/month is estimated for data transferred to AWS. There is no charge for inbound data transfers.

Amazon S3

Storage:	
Storage:	<input type="text" value="2"/> TB
Reduced Redundancy Storage:	<input type="text" value="0"/> GB
Requests:	
PUT/COPY/POST/LIST Requests:	<input type="text" value="1000"/> Requests
GET and Other Requests:	<input type="text" value="1000"/> Requests
Data Transfer:	
Inter-Region Data Transfer Out:	<input type="text" value="0"/> GB/Month
Data Transfer Out:	<input type="text" value="0"/> GB/Month
Data Transfer In:	<input type="text" value="0"/> TB/Month

- (1) 2 TB of Amazon S3 storage is estimated for storing system and database backups. The actual backup storage required will depend on the backup method, frequency, volume, and retention policy.
- (2) 1,000 requests are estimated for Amazon S3 PUT, COPY, POST, and LIST operations, and 1,000 requests are estimated for GET and other operations.

Estimate of Monthly Bill

Amazon EC2 Service (US-East)	1		\$ 1796.83
Compute:		\$ 1614.03	
EBS Volumes:		\$ 182.80	
EBS IOPS:		\$ 0.00	
Reserved Instances (One-time Fee):		\$ 0.00	
Amazon S3 Service (US-East)	2		\$ 60.95
Storage:		\$ 60.93	
Put/List Requests:		\$ 0.01	
Other Requests:		\$ 0.01	
AWS Data Transfer In	3		\$ 0.00
US-East / US Standard (Virginia) Region:		\$ 0.00	
AWS Data Transfer Out			\$ 44.91
US-East / US Standard (Virginia) Region:		\$ 44.91	
AWS Support (Basic)	4		\$ 0.00
Support for all AWS services:	5	\$ 0.00	
Free Tier Discount:	6		\$ -4.43
Total Monthly Payment:			\$ 1898.26

- (1) Total and detailed breakdown of Amazon EC2 costs
- (2) Total and detailed breakdown of Amazon S3 costs
- (3) Total and detailed breakdown of data transfer costs
- (4) Total and detailed breakdown of support costs. There is no support cost, because AWS Basic support was selected.
- (5) [AWS Free Tier](#) discount
- (6) Total monthly charge for all AWS services

Conclusion

In this guide, we provided an overview of how AWS pricing works and the fundamental characteristics of pricing SAP solutions on AWS. We provided several SAP on AWS pricing examples using the AWS Simple Monthly Calculator. For each example, we reviewed architecture, example usage of each service, cost breakdown for each service, and the total estimated monthly charge. The guidance provided in this paper should help SAP customers and partners understand how to effectively estimate the cost of running SAP solutions on AWS.

Contributors

The following individuals and organizations contributed to this document:

- Bill Timm, solutions architect, Amazon Web Services

Further Reading

- [SAP on AWS Implementation and Operations Guide](#)
- [SAP on AWS Backup and Recovery Guide](#)
- [SAP on AWS High Availability Guide](#)¹⁴

Notes

- ¹ http://do.awsstatic.com/enterprise-marketing/SAP/SAP_on_AWS_Implementation_Guide.pdf
- ² http://media.amazonwebservices.com/AWS_Pricing_Overview.pdf
- ³ <http://aws.amazon.com/pricing/>
- ⁴ <https://calculator.s3.amazonaws.com/index.html>
- ⁵ <https://www.youtube.com/watch?v=54TVCueOoAc&list=PLhr1KZpdzukcAtqF32cjGUNNT5GOzKQ8>
- ⁶ <http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/ebs-ec2-config.html>
- ⁷ <http://do.awsstatic.com/enterprise-marketing/SAP/sap-on-aws-backup-and-recovery-guide-v2-2.pdf>
- ⁸ <http://service.sap.com/sap/support/notes/1656250>
- ⁹ <http://calculator.s3.amazonaws.com/index.html#r=IAD&key=calc-88820A3A-C874-400F-BD6A-4063070BD5D5>
- ¹⁰ http://docs.aws.amazon.com/AmazonVPC/latest/UserGuide/VPC_NAT_Instance.html
- ¹¹ <http://aws.amazon.com/free/>
- ¹² <https://s3.amazonaws.com/quickstart-reference/sap/hana/latest/doc/SAP+HANA+Quick+Start.pdf>
- ¹³ <http://calculator.s3.amazonaws.com/index.html#r=IAD&key=calc-A2ACA855-C6B7-44DE-AC63-83C405ABBF9F>
- ¹⁴ http://do.awsstatic.com/enterprise-marketing/SAP/SAP_on_AWS_High_Availability_Guide_v3.2.pdf