

Specific Questions for Amazon Web Services

We recommend not modifying SAP Cloud Appliance Library appliances via the AWS Management Console because such actions can cause appliances to become non-functional or unsafe. SAP Cloud Appliance Library is not a managed service and therefore all further OS modifications and their consequences are only user's responsibility.

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How to create an AWS account?

You can use the procedure for creating an AWS account from the [AWS documentation](#). For isolation we recommend using a separate AWS account for SAP Cloud Appliance Library. Such type of accounts can be created with the consolidated billing in AWS. For more information about the consolidate billing, see the [AWS documentation](#).

How do I enable the Amazon EC2 Service for the user?

To enable AWS services for your account you have to associate a payment method to your account. Please see the AWS documentation for available payment options.

How do I get the Access/Secret Key for my AWS account?

You can use the procedure from AWS [documentation](#).

What are the prerequisites for configuring your AWS account?

To access any service offered by AWS, you must first create an AWS account at <http://aws.amazon.com>.

For isolation purposes, we recommend using a separate AWS account for SAP Cloud Appliance Library. These types of accounts can be created using consolidated billing in AWS. Note that there are several prerequisites for configuring your AWS account:

- Enable the Amazon EC2 service for your AWS account.
- Your IAM user has the following roles: *AmazonEC2FullAccess*, *AmazonVPCFullAccess*, *IAMReadOnlyAccess*, *AWSAccountUsageReportAccess*, and Custom KMS Role.

More details about the following roles:

- *AmazonVPCFullAccess* – many users come with fresh hyperscaler accounts and SAP Cloud Appliance Library offers to create a default network setup. It can be omitted if the user has prepared the network setup in advance.
- *AmazonEC2FullAccess* – SAP Cloud Appliance Library creates a number of resources that are required to provision the corresponding SAP Cloud Appliance Library solution – VMs, volumes, snapshots, security groups, and so on. And upon termination SAP Cloud Appliance Library takes care to delete the resources.

In general, the customer needs to accept two points:

1. SAP Cloud Appliance Library needs to be trusted and authorized for CRUD operations on the required cloud resources.
2. SAP Cloud Appliance Library is a delivery service and not a managed service like SAP HANA Enterprise Cloud (HEC). After the system is provisioned into customer's hyperscaler account, it is fully customer-managed.

How to configure your IAM user?

1. In AWS Identity and Access Management (IAM), create new group with the following policies:

- *AmazonEC2FullAccess*
- *AmazonVPCFullAccess*
- *IAMReadOnlyAccess*
- *AWSAccountUsageReportAccess*

In addition, SAP Cloud Appliance Library uses encrypted resources and to be able to consume these resources you must embed an inline policy for your IAM user by using the following procedure:

- a. Sign into the AWS Management Console and open the IAM console at <https://console.aws.amazon.com/iam/>
- b. In the navigation pane, choose *Users*.
- c. In the list, choose the name of the user to embed a policy in.
- d. Choose the *Permissions* tab.
- e. Choose *Add permissions* and then choose *Add inline policy*.
- f. In the *JSON* tab, paste this policy:

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": [
        "kms:Decrypt",
        "kms:Encrypt",
        "kms:ReEncryptFrom",
        "kms:ReEncryptTo",
        "kms:DescribeKey",

```

```

        "kms:CreateGrant",
        "kms:GenerateDataKeyWithoutPlaintext"
    ],
    "Resource": [
        "*"
    ]
}
]
}

```

For your information, after you create an inline policy, it is automatically embedded in your IAM user.

Note that Amazon EBS encryption uses AWS Key Management Service (AWS KMS) keys when creating encrypted volumes and snapshots.

2. Create a new user in IAM and assign to it the new group.

3. Generate the credentials for this new user.

In the SAP Cloud Appliance Library, you should use the credentials of the user.

How to configure your IAM user for consuming SAP Cloud Appliance Library APIs?

If you want to consume the SAP Cloud Appliance Library APIs in the AWS cloud provider, you must embed an additional inline policy for your IAM user by using the following procedure:

1. Sign into the AWS Management Console and open the IAM console at <https://console.aws.amazon.com/iam/>
2. In the navigation pane, choose *Users*.
3. In the list, choose the name of the user to embed a policy in.
4. Choose the *Permissions* tab.
5. Choose *Add permissions* and then choose *Add inline policy*.
6. In the *JSON* tab, paste this policy:

```

{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": [
        "secretsmanager:CreateSecret",
        "secretsmanager:ListSecrets",
        "secretsmanager:TagResource"
      ],
      "Resource": "*"
    },
    {
      "Effect": "Allow",
      "Action": [
        "secretsmanager:DescribeSecret",
        "secretsmanager:GetSecretValue",
        "secretsmanager>DeleteSecret",
        "secretsmanager:UpdateSecret"
      ],
      "Resource": "*"
    }
  ]
}

```

```

    ],
    "Resource": "*",
    "Condition": {
        "StringEquals": {
            "secretsmanager:ResourceTag/CAL:Origin": "SAP Cloud Appliance Library"
        }
    }
}
]
}

```

For your information, after you create an inline policy, it is automatically embedded in your IAM user.

Note that with this policy SAP Cloud Appliance Library will access only the secrets with the tag **CAL:Origin** and its value **SAP Cloud Appliance Library**. When SAP Cloud Appliance Library creates the API secrets, it will add this tag. In this way SAP Cloud Appliance Library will not have access to the other secrets that are available in your Amazon subscription.

How to configure your IAM user for Kubernetes based appliance template?

If you want to use Kubernetes based appliance template, you need to add also the following predefined AWS policies:

- *AmazonEC2ContainerRegistryFullAccess*
- *AmazonS3FullAccess*
- *AutoScalingFullAccess*
- *ElasticLoadBalancingFullAccess*
- *IAMFullAccess*

In addition, you need to create two custom policies:

- One for the *CloudFormation* service:

```

{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": "cloudformation:*",
      "Resource": "*"
    }
  ]
}

```

- One for the *Elastic Kubernetes* service:

```

{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": "eks:*",
      "Resource": "*"
    }
  ]
}

```

For more information how to create IAM policies in AWS, [see this document](#).

How to manage service control policies in Amazon Web Services?

For more information about service control policies (SCPs), see the [AWS documentation](#).

What is the default AWS region in SAP Cloud Appliance Library?

The default AWS region for SAP Cloud Appliance Library content is US-EAST-1.

What is the default Availability Zone (AZ) for the selected region?

The default AZ is a property of the AWS account of the customer. SAP Cloud Appliance Library does not specify an AZ when starting an appliance. If a default AZ is not set in the account, the AWS backend will choose an appropriate AZ for you.

How is the recommended t-shirt sizing calculated?

Every appliance template available in SAP Cloud Appliance Library comes with a recommended t-shirt size. The t-shirt sizes may differ between the appliance templates. The recommended size is a guidance from SAP to satisfy the minimum requirements to run the appliance template on AWS. It does not provide any guidance on the maximum amount of application users which are supported, the guaranteed IOPS, response time and storage/network bandwidth.

For additional sizing questions, please get in touch with Amazon Web Services or look at the SAPS ratings of conducted Benchmarks on the AWS infrastructure available on [this SAP Note 1656099](#) (SAP S-User credentials required to check this note).

When will other AWS regions be supported?

If you have already purchased the SAP Cloud Appliance Library subscription and you need an appliance template to be available in a region different from US-EAST-1, you can open a normal support ticket within the SAP Cloud Appliance Library (BC-VCM-CAL) component, and we enable the appliance template in your desired AWS region free of charge.

Where do I find information on the configuration of an Amazon VPC / VPN?

There are various ways to do the VPC and VPN configuration on AWS. For example via hardware assisted VPN through routers (external Link - [Hardware assisted VPC](#)) or software assisted with OpenVPN as described in [this blog](#). For more information about Amazon VPC, see the [AWS documentation](#).

How to increase your AWS Service quotas?

To see the procedure how to increase the AWS Service quota, please check the following AWS documents:

- [Amazon EC2 service quotas](#)
- [How do I manage my AWS service quotas?](#)

Note that you can check the size requirements by going to the appliance template details in the SAP Cloud Appliance Library and navigating to the **RECOMMENDED VM SIZES** section. There you can see the required cores for each virtual machine.

If you would like to see the details of the different available sizes for the appliance template, you can choose *Calculate Cost* and choose the desired cloud provider and select the required region. There you will see the different available sizes and their details, as well as the required storage to successfully start the appliance. Please note that the update of the quota generally takes some time. Additionally, it is possible that some of the quota may be consumed by activities not related to the work with the SAP Cloud Appliance Library.

How to activate already created appliance without sufficient Amazon r4 VM sizes quota?

If appliance activation fails due to not enough r4 resources in your AWS account, please follow this procedure:

Caution

You should create a backup of your appliance in SAP Cloud Appliance Library. For more information, see [this document](#).

1. Activate your appliance to execute some manual commands on it. And if the resource shortage persists, please contact Amazon Web Services support.
2. For every Linux-based virtual machine in your system landscape, log on to the OS level.
 - For SLES 12 SP4 and earlier SLES 12 version execute the following command on the OS level:

```
echo 'add_drivers+=" ena ext4 nvme nvme-core virtio virtio_scsi xen-blkfront xen-netfront "' >> /etc/dracut.conf.d/07-aws-type-switch.conf; mkinitrd
```

- For SLES 12 SP5 and later based appliances execute the following command on the OS level:

```
echo 'add_drivers+=" ena ext4 nvme nvme-core xen-blkfront xen-netfront "' >> /etc/dracut.conf.d/07-aws-type-switch.conf; mkinitrd
```

For more information about those updates, [check this page](#).

- If your system landscape contains an "SAP BusinessObjects BI Platform" virtual machine, execute these additional commands on the OS level:

```
cp /etc/fstab /etc/fstab.1
while read d r ; do if [ -b $d ]; then echo "$(blkid -o export $d | grep ^UUID) $r" ;
else echo "$d $r" ; fi ; done < /etc/fstab.1 > /etc/fstab
diff -u /etc/fstab.1 /etc/fstab
```

3. Save the output of the last command on your desktop for future reference.
4. Go to SAP Cloud Appliance Library and open the appliance details. Then choose Edit. For more information, see [this document](#).
5. Navigate to the Virtual Machines section and for every virtual machine running with a r4 VM size from the dropdown select the corresponding r5 value.
6. Save your entries. Note that saving the changes will suspend your appliance.
7. Activate the appliance and continue working on it.

Note

If you experience any problems, please contact us via the official support channels.

Can I use Reserved Instances with SAP Cloud Appliance Library?

Yes, you can. Reserved instances are similar to a billing entitlement that you purchase. You need to purchase a suitable Reserved Instance that matches your desired appliance within SAP Cloud Appliance Library. If the appliance in SAP Cloud Appliance Library for example is using the instance type r3.8xlarge in the **us-east** region, you would need to purchase a Reserved Instance of **r3.8xlarge** with SUSE Linux in the **us-east** region. Once you purchased the Reserved Instance you can benefit from the new cost structure (for example, lower hour costs). For more information about Amazon Reserved Instances, see the AWS Reserved Instances Documentation.

Can I restart the SAP System during the initial waiting period?

No, you should not do that at any point in time during the provisioning process. The initial waiting time is required so that mandatory configurations of the SAP system are performed before you can use it. In case you log on with SSH to the appliance and execute stopsap on the command line – you corrupted the configuration process, and the SAP system is in an unrecoverable state. If this happened, you have to terminate the appliance in SAP Cloud Appliance Library and start from scratch.

Can I connect an appliance template in SAP Cloud Appliance Library to my on-premise systems?

Yes, you can do that. First you would need a VPC with a functional VPN connection to your corporate network.

How to proceed when my appliance is in the status Undefined and the AWS account that I use is currently being verified?

This issue might occur when a user creates an appliance in the SAP Cloud Appliance Library and he or she uses a newly created AWS account that is still being verified. In this case the user has to terminate the failed appliance from the SAP Cloud Appliance Library as it will not be recovered and then to try to create a new appliance a few hours later. If the verification of the new AWS account takes more than two hours, please contact the AWS support team.

How to access to backend servers on the Operating System (OS) level?

Depending on the overall requirements your appliance template may consist of one or more servers running either on a Linux OS and/or on a Windows OS.

Access to Linux OS on Backend

If you need OS access, you can use SSH connectivity:

| Parameter ID | Value | Description |
|--------------|--------|---|
| OS User Name | root | The default Operating System administrator user. |
| OS Password | <none> | Use the private key (downloaded during the activation of the SAP appliance in SAP Cloud Appliance Library) for logging on with the root user. |

Access to Windows OS on Backend

If you need OS access, you can use RDP connectivity:

- **Microsoft Windows:** Start the *Remote Desktop Connection* using the *Start Menu (All Programs > Accessories)* or executing *mstsc.exe*.
- **Apple Mac OS X:** Use the free [Microsoft Remote Desktop](#) app available in the Mac App Store to connect to your frontend.
- **Linux:** Use your preferred RDP client.

| Parameter ID | Value | Description |
|--------------|---------------|---|
| OS User Name | Administrator | The default OS administrator user for Windows. |
| OS Password | <none> | The master password is used for accessing the system. It is provided by the user during the creation of the appliance in SAP Cloud Appliance Library. |

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