IBM Cloud Automation Manager

IBM

CAM Template Format

IBM Cloud

CAM Template files

Metadata for CAM

CAM Configuration Files

camtemplate.json

- Defines metadata for the entire template

- Name

- Description

- Title

- Displayname

- Etc

camvariables.json

- Defines the template input variables are defined

- Name

- Label

- Description

- Type

- etc

https://www.ibm.com/support/knowledgecenter/en/SS2L37_4.2.0.0/cam_struct_template.html

camtemplate.json - Example

← Template Library

LAMP Deployment on a single virtual machine

Overview   **Template Source**   **Parameters**

This template deploys Oracle MySQL Database V5.7 and Apache HTTP Server V2.4 on a Linux virtual machine.

AUTHOR	IBM
TYPE	Terraform
CREATED	05/27/2019 12:26 PM
CLOUD	VMware vSphere
VERSION	2.1

Template Version:

2.1(default) ▾

GIT URL :

https://github.com/IBM-CAMHub-Open/template_lamp_stack_v1_standalone/tree/2.1/vmware/terraform

To clone the template click the Git repository link, clone the repository and then create a template with the new repository information.

Features

- **Clouds**

  VMware

- **Topology**

  1 virtual machine:
  MySQL DB
  odb instance 1, 1 database
  Apache HTTP Server

- **Default Virtual Machine Settings**

  vCPU 2, Memory (GB) 4, Disk (GB) 100

- **Operating Systems Supported**

  Red Hat Enterprise Linux 7
  Ubuntu 16.04

- **Software Deployed**

  Apache HTTP Server Version V2.4, with PHP Module
  Oracle MySQL V5.7

- **Usage and Special Notes**

  1. The user is responsible for obtaining appropriate software licenses and downloads prior to template deployment.
  2. Detailed system requirements for Oracle Database V5.7 - https://dev.mysql.com/doc/refman/5.7/en/
  3. Detailed system requirements for Apache HTTP Server - https://projects.apache.org/project.html?httpd-http_server

camtemplate.json - Continued

← Template Library

LAMP Deployment on a single virtual machine

Template Metadata   Manage Template

Save ⋮

Description

🔹 Change Icon

GIT URL
https://github.com/IBM-CAMHub-Open/template_lamp_stack_v1_standalone/tree/2.1/vmware/terraform

Display name ⓘ

| LAMP Deployment on a single virtual machine |

Short Description

| This template deploys Oracle MySQL Database V5.7 and Apache HTTP Server V2.4 on a Linux virtual machine. |

104/150

Cloud Provider

| VMware vSphere ▼ |

Details

Long Description

This template deploys Oracle MySQL Database V5.7 and Apache HTTP Server V2.4 on a Linux virtual machine.

Features

- Clouds   ⋮
- Operating Systems Supported   ⋮
- Topology   ⋮

Cloud Connection

```
"manifest": {
  "template_type": "Terraform",
  "template_format": "HCL",
  "template_provider": "IBM",
  "template": {
    "templateData": "",
    "templateVariables": "",
    "templateOutput": ""
  },
```

3. Select a Cloud Connection

* Cloud Connection:

You need a Cloud Connection:
There isn't a IBM cloud connection to deploy this template with, create connection first.

camtemplate.json

- The camtemplate.json file contains template metadata. It defines the function and features of the template.

- In the Cloud Automation Manager user interface, the template **Overview** page includes the details defined in this JSON file.

- Can be modified manually in a text editor, using the CAM UI or in the Template Designer

camvariables.json - Example

Defines metadata for the terraform input variables

camvariables.json

The camvariables.json file contains metadata that is used in Cloud Automation Manager to augument the support for variables in terraform. Metadata adds additional parameters for existing variables that are understood and handled by Cloud Automation Manager.

When you deploy the template in the Cloud Automation Manager user interface, all these defined variables are displayed. After you enter the values in the user interface, they are passed on to a JSON file which is in turn sent for execution to terraform. Terraform matches these parameters with the variables in
the .tf file.

Input Groups

```
"input_groups": [
  {
    "name": "cloud",
    "label": "Cloud Input Variables"
  },
  {
    "name": "ssh_keys",
    "label": "SSH Keys"
  },
  {
    "name": "virtualmachine",
    "label": "Virtual Machine Input Variables"
  },
  {
    "name": "image_parameters",
    "label": "Image Parameters"
  }
],
```

* indicates a required field

1. Enter a unique Instance Name

* **Instance Name:** ⓘ

jw-test2

2. Select a Namespace

* **Namespace:**

default

3. Select a Cloud Connection

* **Cloud Connection:**

Team2_VMWare

4. Cloud Input Variables

5. Virtual Machine Input Variables

Input Parameters

Template Variable

```
variable "vm_1_datacenter" {
  description = "Target vSphere datacenter for virtual machine creation"
}
```

CAM Variable

```
{
  "name": "vm_1_datacenter",
  "type": "string",
  "description": "Target vSphere datacenter for virtual machine creation",
  "hidden": false,
  "label": "vSphere Datacenter – vm_1",
  "secured": false,
  "required": false,
  "immutable": false,
  "group_name": "cloud"
},
```

4. Cloud Input Variables

vSpher...

Target vSphere datacenter for virtual machine creation

vSphere Datacenter - vm_1 value must not contain |,<,> and "," characters.

vSphere Datacenter - vm_1:

Input Parameters

CAM Variable

```
{
  "name": "vm_1_dns_servers",
  "type": "list",
  "description": "DNS servers for the virtual network adapter",
  "hidden": false,
  "label": "DNS Servers – vm_1",
  "secured": false,
  "required": true,
  "immutable": false,
  "group_name": "virtualmachine"
},
```

Terraform Variable

```
variable "vm_1_dns_servers" {
  type        = "list"
  description = "DNS servers for the virtual network adapter"
}
```

5. Virtual Machine Input Variables

DNS servers for the virtual network adapter

DNS Servers - vm_1 value must not contain |,<,> and "," characters.

* DNS Servers - vm_1: ⓘ

8.8.8.8

Add New ⊕

Input Parameters

CAM Variable

```json
{
  "name": "vm_1_root_disk_type",
  "type": "string",
  "description": "Type of template disk volume",
  "default": "eager_zeroed",
  "hidden": false,
  "label": "Template Disk Type – vm_1",
  "secured": false,
  "options": [
    {
      "value": "eager_zeroed",
      "label": "Thick Provision Eager Zeroed",
      "default": "true"
    },
    {
      "value": "lazy",
      "label": "Thick Provision Lazy Zeroed"
    },
    {
      "value": "thin",
      "label": "Thin Provision",
      "group_name": "virtualmachine"
    }
  ],
  "required": true,
  "immutable": false,
  "group_name": "virtualmachine"
},
```

Terraform Variable

```
variable "vm_1_root_disk_type" {
  type        = "string"
  description = "Type of template disk volume"
  default     = "eager_zeroed"
}
```

* Template Disk Type - vm_1: ⓘ

Thick Provision Eager Zeroed ▾

Thick Provision Eager Zeroed
Thick Provision Lazy Zeroed
Thin Provision

Input Parameters

```
variable "mariadb_ssh_user_password" {
  description = "The user password for ssh connection to mariadb server, which is default in template"
}
```

CAM Variable

```
{
  "name": "mariadb_ssh_user_password",
  "label": "mariadb Server SSH User Password",
  "description": "The user password for ssh connection to mariadb server, which is default in template",
  "hidden": false,
  "immutable": false,
  "required": true,
  "secured": true,
  "type": "password",
  "group_name": "virtualmachine"
},
```

* mariadb Server SSH User Password: ⓘ

Enter password:

•••• 👁

Confirm password:

•••••• 👁

Passwords did not match. Try again.

Input Parameters

Template Variable

```
variable "mariadb_user" {
  description = "User to be added into db and sshed into servers"
  default     = "camuser"
}
```

6. Virtual Machine Input Variables

* mariadb User: (i)

camuser?

Invalid parameter value, must contain ^[A-Za-z][A-Za-z0-9]{0,15}$ characters.

CAM Variables

```
{
  "name": "mariadb_user",
  "label": "mariadb User",
  "description": "User to be added into db and sshed into servers; Allow 1 to 16 alphanumeric characters with beginning at
  "default": "camuser",
  "hidden": false,
  "immutable": false,
  "required": true,
  "secured": false,
  "type": "string",
  "regex": "^[A-Za-z][A-Za-z0-9]{0,15}$",
  "group_name": "virtualmachine"
},
```

Input Parameters

Terraform Variable

```
variable "public_ssh_key" {
  description = "Public SSH key used to connect to the virtual guest"
}
```

Public SSH key used to connect to the virtual guest

Public SSH Key value must contain ssh-rsa AAAA[0-9A-Za-z+/]+[=]{0,3} ([^@]+@[^@]+) characters.
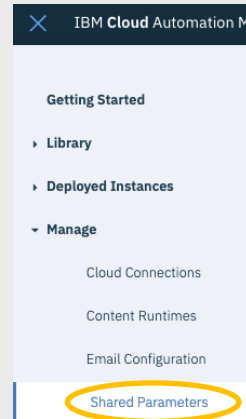
* Public SSH Key: ⓘ

CAM Variable

```
{
    "description": "Public SSH key used to connect to the virtual guest",
    "hidden": false,
    "immutable": false,
    "label": "Public SSH Key",
    "name": "public_ssh_key",
    "required": true,
    "secured": false,
    "type": "string",
        "regex": "ssh-rsa AAAA[0-9A-Za-z+/]+[=]{0,3} ([^@]+@[^@]+)"
},
```

* Public SSH Key: ⓘ

asdasd

Invalid parameter value, must contain ssh-rsa AAAA[0-9A-Za-z+/]+[=]{0,3} ([^@]+@[^@]+) characters.

Shared Parameters

- Define shared configuration to store data

- Are used by templates

- *Data Types* and *Data Objects* are two admin constructs that are used to capture these *shared configurations*.

- These are essentially pointers to data structures that facilitate the dynamic binding at run time.

Shared Parameters – Data Types

Shared Parameters – Data Objects

The Data Type for this Data Object

A Data Object is a stored group of parameters that conforms to a selected Data Type. This object can later be used when creating a Service or deploying a Template instance.

* indicates a required field

* Data Type:

aws_cloud

Make this globally accessible

Off ⬤ On

* Data Object Name: ⓘ

cmh-aws

Attributes

centos AMI ⓘ

ami-b81dbfc5

ubuntu AMI ⓘ

ami-759bc50a

* instance type ⓘ

t2.medium

* availability zone ⓘ

us-east-1a

Security group name ⓘ

ucdev_secgroup_nva

VPC ID ⓘ

vpc-6c51be09

Cancel   Update

Data Types (14)

🔍 Search Data Types

Create Data Type ⊕

Name ▲	Data Type	
AWS cloud	aws_cloud	⋮
Advanced Content Runtime Chef	advanced_content_runtime_chef	⋮
Ansible	ansible	⋮
Bastion Host Configuration	bastionhost	⋮
HTTP Proxy Configuration	httpproxy	⋮

Data Types per page 5 ▾ | 1-5 of 14 Data Types   1 of 3 pages   ‹ 1 ›

Data Objects (10)

🔍 Search Data Objects

Create Data Object ⊕

Name ▲	Data Type ▲	Namespace	
DefaultNoBastionHostRequired	bastionhost	*Globally Accessible*	⋮
DefaultNoProxyRequired	httpproxy	*Globally Accessible*	⋮
cmh-aws	aws_cloud	*Globally Accessible*	⋮
icam_agent_master1	icam_agent	*Globally Accessible*	⋮
master1-icam-agent-db2	ibm_cloud_app_management_agent	*Globally Accessible*	⋮

Input Datatypes

Template Variable

```
variable "aws_web-server_ami" {
    type = "string"
    description = "AWS Image ID"
}
```

```
"input_datatypes": [
    {
        "name": "aws_cloud",
        "label": "aws_cloud"
    }
],
```

CAM Variable

```
{
    "name": "aws_web-server_ami",
    "label": "AWS Image ID",
    "description": "AWS Image Id",
    "type": "string",
    "default": "${aws_cloud.centos-ami}",
    "hidden": false,
    "immutable": false,
    "required": true,
    "secured": false
},
```

CAM Template walkthrough
Simple to Complex