



Cloud Resource Tagging with Morpheus

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INTRODUCTION

As organizations scale their cloud environments, they often need to devise methodologies for organizing those resources. Tags consist of key and optional value pairs which make it easier to search for or filter your cloud resources based on categories relevant to the organization. While each public or private cloud handles tagging slightly differently, Morpheus removes that complexity and differentiation by handling tags in a consistent way across clouds. In addition, the Morpheus policy engine gives administrators tools to set up guard rails and ensure cloud resource tagging is handled consistently with each provisioning activity.

This guide will go through Morpheus tagging features and best practices, as well as include provisioning examples from some of the most commonly integrated clouds.

NOTE: Tag synchronization is bi-directional in Morpheus for supported clouds. Tag syncing is currently supported in Amazon, Azure, Google, VMware, and Alibaba Clouds.

TAGGING ON PROVISIONING

In the simplest use case, tags can be entered manually in most provisioning scenarios. For example, on the Configure tab of the Create Instance wizard, the user can expand the Tags section and enter as many Tags as he or she needs to comply with organization practices.

CREATE INSTANCE

TYPE

GROUP

CONFIGURE

AUTOMATION

REVIEW

Configuration Options

LAYOUT

Amazon VM

PLAN

Amazon T2 Micro - 1 Core, 1GB Memory

Cores: 1 Memory: 1 GB Price: \$8.4912 / Month

RESOURCE POOL

VOLUMES

root

20

GB

gp2

+

NETWORKS

DHCP

+

SECURITY GROUPS

default

+

PUBLIC IP

Subnet Default

▸ User Config

▸ Network Options

▸ Advanced Options

▼ Tags

TAGS

Application

App1

+

▸ Environment

PREVIOUS

NEXT

Once the resource is deployed, Tags are synced and applied to the provisioned machine in the relevant cloud. Tags are shown on the Instance detail page in Morpheus and can also be confirmed in the cloud console if desired. Tag syncing is also a two-way street in that any tag updates applied within Morpheus or within the cloud console will be reflected everywhere.

NOTE: Tag updates made in the cloud console may take up to five minutes to be reflected in Morpheus UI following the next sync of cloud data.

CUSTOM INSTANCE TYPES AND TAGGING

Manually tagging resources as described in the previous section will work in some cases but many administrators will likely need to pre-seed the provisioning wizards with tagging prompts or build dropdown lists for tag values. This is

accomplished in Morpheus through the use of custom Instance Types, Inputs, and Option Lists.

To get started, first create an Option List to hold dropdown or typeahead sets of available key values if needed based on organizational tagging policy. If the tag value field should be manually entered at provision time or if the value field is to be left blank, this step can be skipped.

Option Lists are created and stored in the Morpheus Library (Provisioning > Library). They can be populated manually by entering CSV or JSON datasets as shown in the example below. They can also be dynamically populated through Morpheus API or REST calls.

EDIT OPTION LIST

NAME

Tag Application

DESCRIPTION

TYPE

Manual

DATASET

Create an initial JSON or CSV dataset to be used as the collection for this option list. It should be a list containing objects with properties 'name', and 'value'.

'App1 ' , 'App1 '

'App2 ' , 'App2 '

'App3 ' , 'App3 '


'App4 ' , 'App4 '

'App5 ' , 'App5 '

SAVE CHANGES

With the set of possible values defined (if needed), we next create an Option Type to prompt the user for tag input when provisioning relevant Instance types. Option Types are also housed in the Morpheus Library (Provisioning > Library).

It's important to note the value entered for the FIELD NAME on the new Input will be set as the tag key. The EXPORT AS TAG box should also be marked.



By default, the TYPE value is Text. This is appropriate when the user should be prompted with a free text field at provision time to enter a tag value. To tie this Input to the Option List that was just created (if needed), change the TYPE value to Select List or Typeahead. Typeahead works best for very long lists while Select List is often a better user experience for lists of a more manageable size. Set the Option List we created in the previous step in the OPTION LIST value (if needed).

EDIT OPTION TYPE

×

NAME

*Tag Application

DESCRIPTION

FIELD NAME

application

This is the input fieldName property that the value gets assigned to.

☒ EXPORT AS TAG

TYPE

Select List

▼

LABEL

Tag Application

This is the input label that shows typically to the left of a custom option.

DEFAULT VALUE

☒ REQUIRED

OPTION LIST

Tag Application


▼

DEPENDENT FIELD

A fieldName that will trigger reloading this option list

SAVE CHANGES

At this point, we are ready to add this Input to any custom Instance Types or Layouts. When those Instance Types or Layouts are provisioned, the values input by the user become tags associated with the created cloud resources. By setting the Input on an Instance Type, the tag selection appears when provisioning all



associated Layouts. Alternatively, if the Input is set on individual Layouts, it will only appear when those Layouts are provisioned.

Instance Types and Layouts are also stored in the Morpheus Library (Provisioning > Library). By opening up any custom Instance Type, we can add the Input we just created when editing the Instance Type. Additionally, we can drill into associated Layouts and apply the Input to selected Layouts if that's more appropriate.

EDIT INSTANCE TYPE

×

NAME

CODE

Useful shortcode for provisioning naming schemes and export reference.

DESCRIPTION

CATEGORY

▼

ICON

Browse

Suggested Dimensions: 150 x 51

Option Types

*Tag Application (select)

≡

×

*Tag Compliance (text)

≡

×

*Tag Cost Center (text)

≡

×

*Tag Department (text)

≡

×

*Tag Environment (text)

≡

×

*Tag Owner (text)

≡

×

Going forward, each time the chosen Instance Type or Layout is provisioned, the user will be prompted to enter relevant tag selections. We can even require the user input these values or govern their inputs through tagging policies which will be discussed in the next section.

INSTITUTING TAGGING POLICIES

If needed, Morpheus allows cloud resource tagging to be governed through its native policy engine. Like other policies, tag policies are added from Administration > Policies. By creating a new policy and setting the TYPE to Tags, the relevant fields are revealed.

NOTE: Tag policy scanning and enforcement is only currently supported for Azure, Amazon AWS, VMware, and Google Cloud Platform clouds. Additional clouds will be supported in the future.

With a tag policy, we can choose to enforce the policy on a strict or passive basis by marking or unmarking the STRICT ENFORCEMENT box. Strictly enforced tagging policies will not allow provisioning to proceed in supported clouds if the policy requirements are not met. If we opt to enforce the policy passively, a warning banner will appear on the detail page of any server that does not meet policy requirements. Additionally, existing servers in supported clouds will be scanned and those which do not meet policy requirements will also receive the warning banner.

A tag policy must be given a KEY value. If we define only a KEY value, the policy will look for a tag with that key and any (or no) value. Alternatively, we can select any pre-existing Option List as the VALUE LIST to require the tag contain a value that exists in that list.

Finally, like other Morpheus policies, we can choose to scope it globally, by group, by cloud, or by user. Primary Tenant administrators can also choose to scope the policy to one or more Subtenants.

NEW POLICY

×

TYPE

Tags

▼

NAME

DESCRIPTION

☒ ENABLED

Tag Policy scanning and enforcement is only currently functional for three cloud types. Azure, Amazon, and VMware.

Config

☐ STRICT ENFORCEMENT

KEY

Tag Key

VALUE LIST

Select

▼

Choose from any configured Option List

Filter

SCOPE

Global

▼

SAVE CHANGES

TAGGING IN ACTION

With the prep work complete, we can take a look at our Inputs in action at provision time. In this example case, several Inputs have been created and applied to one custom Instance Type. The example Instance Type has three associated CentOS Layouts: one for AWS, one for VMware, and one for

Azure. Regardless of the selected Layout, users are prompted to fill the same tag fields and our tagging remains consistent regardless of the user who is provisioning a new resource at the time.

TAGGING AND AWS

When provisioning my CentOS Instance Type with an Amazon Layout, the tag prompts are shown in the provisioning wizard.

The screenshot shows the 'CREATE INSTANCE' wizard in the AWS Management Console, specifically the 'CONFIGURE' step. The 'Configuration Options' section is visible, showing various settings for the instance. A red rounded rectangle highlights the tagging section, which includes the following fields:

- TAG APPLICATION: Select
- COMPLIANCE: PCI
- COST CENTER: 10001
- DEPARTMENT: Security
- ENVIRONMENT: Dev
- OWNER: John User

Other visible configuration options include:

- LAYOUT: _aws_cent
- PLAN: Amazon T2 Micro - 1 Core, 1GB Memory (Cores: 1, Memory: 1 GB, Price: \$8.4912 / Month)
- RESOURCE POOL: [blurred]
- VOLUMES: root, 20 GB, gp2
- NETWORKS: [blurred], DHCP
- SECURITY GROUPS: Select
- PUBLIC IP: Subnet Default

At the bottom left, there is a link to 'User Config'.

In the AWS web console, we can see the same tags are applied. We also have two-way tag sync going forward. When tags are updated in Morpheus, the changed is synced to the AWS web console. The opposite is also true.

Description	Status Checks	Monitoring	Tags
Add/Edit Tags			
Key	Value		
VMware ID	12345		Show Column
VMware Instance ID	12345		Show Column
VMware Server ID	12345		Show Column
Tags	all-vmware-tagged-items-1234		Show Column
application	App1		Show Column
compliance	PCI		Show Column
costCenter	10001		Show Column
department	Security		Show Column
environment	Dev		Show Column
owner	John User		Show Column

TAGGING AND VMWARE

When provisioning my CentOS Instance Type with a VMware Layout, the tag prompts are shown in the provisioning wizard.

CREATE INSTANCE

TYPE

GROUP

CONFIGURE

AUTOMATION

REVIEW

Configuration Options

LAYOUT

vmware_cent

PLAN

1 CPU, 1GB Memory

Cores: 1 Memory: 1 GB Price: \$5.726 / Month

RESOURCE POOL

VOLUMES

root

10

GB

Auto - Cluster

+

NETWORKS

Select Network

+

TAG APPLICATION

App1

COMPLIANCE

PCI

COST CENTER

10001

DEPARTMENT

Security

ENVIRONMENT

Dev

OWNER

John User

HOST

Select

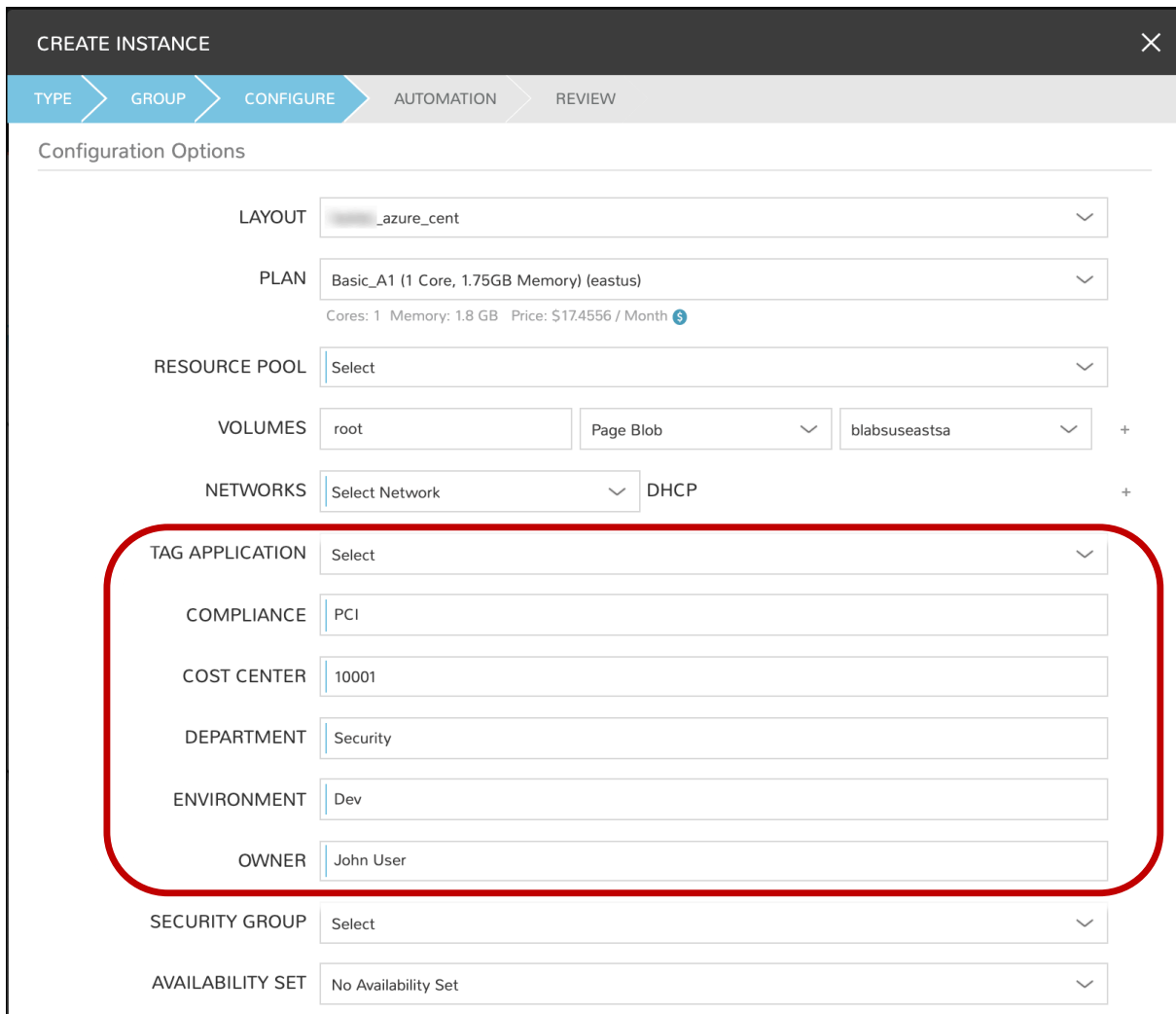
FOLDER

► User Config

In the VMware console, we can see the same tags are applied. We also have two-way tag sync going forward. When tags are updated in Morpheus, the changed is synced to VMware. The opposite is also true.

TAGGING AND AZURE

When provisioning my CentOS Instance Type with an Azure Layout, the tag prompts are shown in the provisioning wizard.



CREATE INSTANCE

TYPE > GROUP > CONFIGURE > AUTOMATION > REVIEW

Configuration Options

LAYOUT: _azure_cent

PLAN: Basic_A1 (1 Core, 1.75GB Memory) (eastus)
Cores: 1 Memory: 1.8 GB Price: \$17.4556 / Month

RESOURCE POOL: Select

VOLUMES: root, Page Blob, blabsuseastsa

NETWORKS: Select Network, DHCP

TAG APPLICATION: Select

COMPLIANCE: PCI

COST CENTER: 10001

DEPARTMENT: Security

ENVIRONMENT: Dev

OWNER: John User

SECURITY GROUP: Select


AVAILABILITY SET: No Availability Set

In the Azure console, we can see the same tags are applied. We also have two-way tag sync going forward. When tags are updated in Morpheus, the changed is synced to Azure. The opposite is also true.

SUMMARY

We've discussed tagging using the Morpheus platform and how to tag resources in numerous clouds during the provisioning process. We touched on how to setup tagging for provisioning, and how one can enforce tagging through policy. Most organizations find this very helpful, as they also have the ability to filter and report on resources using tags. We hope you take advantage of this capability and recognize the benefits for yourself.

Morpheus Data is the market leader in unified and persona-based multi-cloud management. The Morpheus software platform gives enterprise organizations and service providers the ability to present a simple self-service catalog to users which



can span dozens of on-premises and public clouds. As part of delivering on the promise of open and agnostic self-service, the Morpheus platform provides cost optimization, complete role-based access controls, and continuous automation for DevOps teams modernizing applications comprised of bare metal, VMs, containers, and public cloud PaaS services. With more built-in integrations and native functionality than any other platform, customers can standardize workflows, reduce tool sprawl, and unify existing teams and technologies.

To get started with Morpheus today, please visit www.morpheusdata.com
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