WHITE PAPER

How to implement an effective cloud tagging strategy

Introduction

Cloud computing has transformed the way organizations manage their IT resources. Cloud services allow businesses to quickly provision computing resources, easily scale up or down as needed, and reduce their upfront capital expenditures.

However, the ease of use and flexibility of cloud services also creates challenges for managing and tracking cloud resources. As organizations adopt more cloud services, it becomes increasingly difficult to identify and manage resources, especially when multiple teams are involved.

To address this challenge, Resoto provides an inventory of all cloud resources in your infrastructure, allowing users to search, sort, and manage them easily. Additionally, Resoto provides a tagging module named TagGuard that allows users to tag resources and find them easily across clouds and accounts.

"Cloud resource tagging" refers to the labeling of resources with metadata for identification, organization, and tracking. Metadata tags are key-value pairs added to cloud resources such as instances, volumes, and storage buckets. Tags can be used to label resources with their owner, cost center, purpose, environment, application, or any other attribute relevant to the organization. By enforcing a consistent and meaningful tagging policy, organizations improve the visibility and control of cloud resources, simplify cost allocation, enhance security, and enable automation.

Tags are created and consumed by both humans and machines, serving as a shared language that enables effective communication of the purpose of resources across both human and automated processes.

The purpose of this white paper is to provide guidance on developing a cloud resource tagging policy for organizations and demonstrate how Resoto can help organizations to manage and optimize their cloud resources effectively. We discuss the benefits of implementing a tagging policy, best practices for creating and enforcing a policy, and examples of different tagging policies for various industries. We also explore the challenges that organizations may face when implementing a tagging policy and provide solutions to overcome these challenges.

By following the best practices and examples in this white paper, organizations can implement an effective cloud resource tagging policy that improves the management and optimization of their cloud resources.

Benefits of tagging policies

Improved organization and visibility

Resoto enables organizations to locate and categorize cloud resources easily by adding meaningful tags to resources.

When consistently applied, tags facilitate filtering and searching for resources by owner, environment, or project. This makes it easier to identify unused or abandoned resources, assess resource utilization, and identify potential areas for cost optimization.

Additionally, a policy that enforces consistent tagging ensures that teams across the entire organization are using common terminology to describe resources, reducing confusion and miscommunication.

Simplified cost allocation

Organizations can simplify cost allocation by tagging resources with cost centers or project names.

Cloud resource tagging enables teams to quickly identify resources used for specific projects or by certain departments, minimizing the risk of misallocated costs and budget overruns.

Enhanced security

Tagging policies help organizations manage security and compliance risks.

By applying tags to resources based on sensitivity or risk level, teams can easily identify high-risk resources and verify that they are properly secured. This bolsters security by reducing attack surfaces and ensures that compliance requirements are met.

Effortless automation

Resoto's tagging system facilitates automation and reduces the amount of manual effort.

By consistently tagging resources, organizations can easily identify resources associated with a workflow or task. This enables teams to create automated processes triggered by specific tags, reducing the need for manual intervention and streamlining workflows.

Resoto's built-in "job" system can also automate searches and tagging across multiple clouds and accounts.

Tagging best practices

Use consistent and meaningful tag names

Using consistent and meaningful tag names across all resources ensures that the meanings of tags are clear and reduces the likelihood of misinterpretation.

Tag names should be concise, descriptive, and aligned with the organization's business needs. It's also essential to define a standard format for tag names, to ensure they are consistently applied across all resources.

Define clear tagging policies and guidelines

It's important to define clear policies and guidelines for cloud resource tagging so that all teams apply tags consistently.

Policies include information on who is responsible for tagging resources, what tags should be applied to each resource, and clear, specific rules for tag formatting and content. Guidelines include examples of common tags and tag naming conventions.

Resoto can help in automatically validating the presence and content of resource tags.

Enforce tagging policies across all cloud accounts

Consistency across all cloud accounts is key to effective cloud resource tagging.

Although it may be tempting to have more relaxed tagging policies in sandbox or development accounts, this can lead to mismanagement and difficulties in identifying and tracking resources across different environments.

When accounts have varying policies, it is difficult to track organization-wide resource usage and cost allocation. It is also challenging to optimize resource usage and identify areas with potential cost savings.

Enforcing a consistent tagging policy across all cloud accounts ensures that all resources are uniformly tagged and allows teams to easily identify and track resources regardless of the account they are in. It also helps teams to accurately allocate budget and identify areas for cost optimization.

Even when enforcing a tagging policy across all cloud accounts, there may be cases where allowed tag values differ. For example, if an expiration tag defines the allowed lifespan of a resource, development accounts may specify a value of one week, sandbox accounts a single day, and production resources no expiration at all.

Train users to correctly tag resources

It's important to provide training to all teams responsible for managing cloud resources. Training should cover that includes the background and rationale behind tagging policies, how to choose appropriate tags, and how to apply tags to resources.

Enforce tagging policies using automated tools

Automated tools can ensure that tags are consistently and correctly applied to all resources.

For example, automation can be used to automatically apply tags to all new resources or to send alerts when tags are missing or incorrect. IaC tools like Terraform can apply tags during resource creation, while Resoto can find untagged resources and report, fix, or remove affected resources.

Routinely review and update tagging policies

Cloud resource tagging policies should be routinely reviewed and updated to be relevant and effective. Regular reviews can identify areas for improvement and ensure policies align with the organization's business needs as they change over time.

Examples of tagging policies

Basic tagging policy

A basic tagging policy might include the following tags:

Tag Name	Tag Description
owner	The team or person who owns the resource
expiration	The lifespan of this resource

This tagging policy comes with the additional assumption that resources deployed without either of these two tags get automatically marked for cleanup within a certain time frame, e.g. one hour.

With this basic tagging policy, an infrastructure team can accomplish three goals:

01 Liberal permissions for developers, without giving up control

02 Cost allocation to products and business units

03 Automatic cost and security hygiene

The goals are accomplished by tag handling through Resoto.

Advanced tagging policy

An advanced tagging policy might include additional tags, such as:

Tag Name	Tag Description
environment	The environment the resource belongs to (e.g., production, development, staging)
project	The project the resource belongs to
cost_center	The cost center responsible for the resource
application	The name of the application that the resource belongs to
service	The service that the resource belongs to
backup	Whether or not the resource is backed up
compliance	Whether or not the resource is subject to compliance requirements
security	The security level of the resource

Industry-specific tagging policies

Tag names should be concise, descriptive, and aligned with the organization's business needs. It's also essential to define a standard format for tag names, to ensure they are consistently applied across all resources.

Healthcare

Tagging policies for healthcare organizations could address compliance requirements (e.g., HIPAA), data sensitivity levels, resource usage by department, and cost center.

Financial services

Tagging policies for organizations providing financial services could require tags for compliance requirements (e.g., PCI-DSS), data sensitivity levels, resource usage by business unit, and cost center.

Education

Tagging policies at educational institutions could enforce mandatory tagging of resources with course or program names, research project tags, department or school tags, etc..

Government

At government agencies, tagging policies might mandate tags for compliance requirements (e.g., FedRAMP), data sensitivity levels, resource usage by department, and cost center.

Retail

Tagging policies in retail organizations could require tags for product categories, marketing campaigns, store locations, and cost center.

Examples of tag handling in Resoto

Find EC2 instances without an `owner` tag

```
search is(aws_ec2_instance) and tags.owner = null
```

Count untagged EC2 instances by account

```
search is(aws_ec2_instance) and tags.owner = null | count /ancestors.account.reported.name
```

Export list of untagged EC2 instances to a CSV file

```
search is(aws_ec2_instance) and tags.owner = null | list --csv | write untagged.csv
```

Apply a default `owner` tag value to EC2 instances in a particular account

```
search is(aws_ec2_instance) and tags.owner = null and /ancestors.account.reported.name = eng-sre | tag update owner SRE
```

Automatically post a list of EC2 instances without an `owner` tag to a Slack channel on the 1st of every month at 10am

```
jobs add --id report_untagged --schedule "0 10 1 * *" --wait-for-event collect_done 'search is(aws_ec2_instance) and tags.owner = null | slack --title "Found untagged instances" --webhook ...'
```

Automatically remove EC2 instances without an `owner` tag two hours after creation

```
search is(aws_ec2_instance) and tags.owner = null and age > 2h and /ancestors.account.reported.name = eng-high-security | clean "Missing owner tag"
```

Challenges and solutions

Resistance to change

Teams may be resistant to adopting a new policy, especially if they have their own tagging conventions or are used to a different approach.

To overcome resistance, communicate the benefits of the tagging policy, involve teams in the development of the policy, and provide training and support to help teams transition to the new approach.

Lack of understanding

Some teams may not understand the importance of tagging or see value in the effort required to tag resources.

As such, it's important to clearly communicate the benefits of tagging for organization, visibility, security, and automation.

Concrete, relevant examples of how tagging can help teams in their day-to-day work can also be helpful.

Implementation obstacles

There are often obstacles to implementing tagging policies, such as a lack of resources or competing priorities.

To overcome these obstacles, create a plan in conjunction with teams impacted by the tagging policy that includes clear goals, timelines, and responsibilities. Regular communication and follow-up can ensure that policy implementation stays on track and that unanticipated issues are addressed in a timely manner.

Conclusion

Cloud resource tagging is a powerful tool for organizations looking to improve the management and optimization of their cloud resources. By applying consistent and meaningful tags to resources, organizations improve organization, increase visibility, simplify cost allocation, enhance security, and enable automation. However, implementing a tagging policy can be challenging and requires clear policies, guidelines, and training to ensure that tags are consistently and accurately applied.

In this white paper, we've offered guidance on developing a cloud resource tagging policy for organizations and demonstrated how Resoto TagGuard could aid in implementing such a policy. We've discussed the benefits of implementing a tagging policy, best practices for creating and enforcing a policy, and examples of different tagging policies for various industries. We've also explored some of the challenges organizations may face when implementing a tagging policy and provided solutions to overcome these challenges.

We encourage organizations to take action by identifying the teams responsible for cloud resource management, defining clear tagging policies and guidelines, providing training and support to teams, and regularly reviewing and updating the policy. With a well-designed tagging policy and a commitment to enforcing the use of tags, organizations can unlock the benefits of improved resource management, visibility, and control.

Thank you for reading this white paper. We hope that it is useful in your organization's cloud resource tagging efforts.