EC2 DLM Backup Policy

Revised for New Processes and Tools 10/18/23

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Prism Data Nodes

HSX primarily performs backups using Amazon DLM Backup policies to perform daily or weekly AMIs. The exception is the Prism Elasticsearch data nodes, backed up via Kibana snapshots to S3 with additional redundancy in data replication between Elasticsearch and Postgres RDS.

How Amazon Data Lifecycle Manager works

The following are the key elements of Amazon Data Lifecycle Manager.

Elements

Snapshots
EBS-backed AMIs
Target resource tags
Amazon Data Lifecycle Manager tags Lifecycle policies
Policy schedules

Snapshots

Snapshots are the primary means to back up data from your EBS volumes. To save storage costs, successive snapshots are incremental, containing only the volume data that changed since the previous snapshot. When you delete one snapshot in a series of snapshots for a volume, only the data that's unique to that snapshot is removed. The rest of the captured history of the volume is preserved.

For more information, see Amazon EBS snapshots.

EBS-backed AMIs
An Amazon Machine Image (AMI) provides the information that's required to launch an instance. You can launch multiple instances from a single AMI when you need multiple instances with the same configuration. Amazon Data Lifecycle Manager supports EBS-backed AMIs only. EBS-backed AMIs include a snapshot for each EBS volume that's attached to the source instance.

For more information, see Amazon Machine Images (AMI).

**Target resource tags**

Amazon Data Lifecycle Manager uses resource tags to identify the resources to back up. Tags are customizable metadata that you can assign to your AWS resources (including Amazon EC2 instances, EBS volumes and snapshots). An Amazon Data Lifecycle Manager policy (described later) targets an instance or volume for backup using a single tag. Multiple tags can be assigned to an instance or volume if you want to run multiple policies on it.

You can't use a \\ or '=' character in a tag key. Target resource tags are case sensitive. For more information, see Tag your Amazon EC2 resources.

**Amazon Data Lifecycle Manager tags**

Amazon Data Lifecycle Manager applies the following tags to all snapshots and AMIs created by a policy, to distinguish them from snapshots and AMIs created by any other means:

- `aws:dlm:lifecycle-policy-id`
- `aws:dlm:lifecycle-schedule-name`
- `aws:dlm:expirationTime` — For policies with age-based retention schedules only.

You can also specify custom tags to be applied to snapshots and AMIs on creation. You can't use a \\ or '=' character in a tag key.

In our implementation, instances must be tagged with Backup: (True or Weekly) in order to be managed by either of our backup policies.

The target tags that Amazon Data Lifecycle Manager uses to associate volumes with a snapshot policy can optionally be applied to snapshots created by the policy. Similarly, the target tags that are used to associate instances with an AMI policy can optionally be applied to AMIs created by the policy.

**Lifecycle policies**

A lifecycle policy consists of these core settings:
Policy type—Defines the type of resources that the policy can manage. Amazon Data Lifecycle Manager supports the following types of lifecycle policies:

Snapshot lifecycle policy—Used to automate the lifecycle of EBS snapshots. These policies can target individual EBS volumes or all EBS volumes attached to an instance.

EBS-backed AMI lifecycle policy—Used to automate the lifecycle of EBS-backed AMIs and their backing snapshots. These policies can target instances only.

Cross-account copy event policy—Used to automate snapshot copies across accounts. Use this policy type in conjunction with an EBS snapshot policy that shares snapshots across accounts.

Resource type—Defines the type of resources that are targeted by the policy. Snapshot lifecycle policies can target instances or volumes. Use VOLUME to create snapshots of individual volumes, or use INSTANCE to create multi-volume snapshots of all of the volumes that are attached to an instance. For more information, see Multi-volume snapshots. AMI lifecycle policies can target instances only. One AMI is created that includes snapshots of all of the volumes that are attached to the target instance.

Target tags—Specifies the tags that must be assigned to an EBS volume or an Amazon EC2 instance for it to be targeted by the policy. Schedules—The start times and intervals for creating snapshots or AMIs. The first snapshot or AMI creation operation starts within one hour after the specified start time. Subsequent snapshot or AMI creation operations start within one hour of their scheduled time. A policy can have up to four schedules: one mandatory schedule, and up to three optional schedules. For more information, see Policy schedules. Retention—Specifies how snapshots or AMIs are to be retained. You can retain snapshots or AMIs based either on their total count (count-based), or their age (age-based). For snapshot policies, when the retention threshold is reached, the oldest snapshot is deleted. For AMI policies, when the retention threshold is reached, the oldest AMI is deregistered and its backing snapshots are deleted.

For example, you could create a policy with settings similar to the following:

Manages all EBS volumes that have a tag with a key of account and a value of finance.
Creates snapshots every 24 hours at 0900 UTC.
Retains only the five most recent snapshots.
Starts snapshot creation no later than 0959 UTC each day.

Policy schedules

Policy schedules define when snapshots or AMIs are created by the policy. Policies can have up to four schedules—one mandatory schedule, and up to three optional schedules.

Adding multiple schedules to a single policy lets you create snapshots or AMIs at different frequencies using the same policy. For example, you can create a single policy that creates daily, weekly, monthly, and yearly snapshots. This eliminates the need to manage multiple policies.
For each schedule, you can define the frequency, fast snapshot restore settings (snapshot lifecycle policies only), cross-Region copy rules, and tags. The tags that are assigned to a schedule are automatically assigned to the snapshots or AMIs that are created when the schedule is initiated. In addition, Amazon Data Lifecycle Manager automatically assigns a system-generated tag based on the schedule's frequency to each snapshot or AMI.

Each schedule is initiated individually based on its frequency. If multiple schedules are initiated at the same time, Amazon Data Lifecycle Manager creates only one snapshot or AMI and applies the retention settings of the schedule that has the highest retention period. The tags of all of the initiated schedules are applied to the snapshot or AMI.

(Snapshot lifecycle policies only) If more than one of the initiated schedules is enabled for fast snapshot restore, then the snapshot is enabled for fast snapshot restore in all of the Availability Zones specified across all of the initiated schedules. The highest retention settings of the initiated schedules is used for each Availability Zone.

If more than one of the initiated schedules is enabled for cross-Region copy, the snapshot or AMI is copied to all Regions specified across all of the initiated schedules. The highest retention period of the initiated schedules is applied.

How HSX Uses DLM

We currently have two backup policies:

- **ec2-backups**
  
  Instances must be tagged with **Backup: True**
  
  Runs **nightly** and will retain AMIs for **one month with inventory records including content and location** (not 30 days) in **us-east-1**
  
  Runs a second schedule **every Saturday** to back up to **us-west-1** and retain **2 copies**

- **weekly-ami-policy**
  
  Instances must be tagged with **Backup: Weekly**
  
  Runs weekly and will retain AMIs for **one month with inventory records including content and location** (not 30 days) in **us-east-1**
  
  Runs a second schedule **every Saturday to back up to us-west-1** and retains **1 copy**

Both policies will:

- Back up instances in either a started or stopped state
- Keep running instances from rebooting

Use SSM Resource Manager Tag Editor to quickly verify multiple instances have the correct Backup tag values and assign tags as necessary

Links
Jira Tickets:

**TCO-447** - Getting issue details...

STATUS