Implementation Guide:

Spot by NetApp and AWS Control Tower Integration

November 2020



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Foreword

Spot by NetApp is the "easy button" for CloudOps teams. Through predictive analytics and automation, Spot by NetApp provides insights, guidance, and automation for cloud infrastructure, continuously optimizing cost, utilization, and availability of cloud compute resources. Spot by NetApp eliminates the burden of manually managing infrastructure while delivering up to 90% savings for AWS customers.

The Spot by NetApp integrated suite of products includes:

Cloud Analyzer: provides free insights into infrastructure usage and costs across workloads, services, regions, and AWS accounts, showing how you can reduce costs with just a few clicks.

Elastigroup: makes it easy to deploy mission-critical workloads on Elastic Compute Cloud (EC2) Spot with availability and enterprise service-level agreements (SLAs) to save up to 90% on compute. With advanced auto-scaling for predictable performance, plus integrations with dozens of AWS services and tools, it just takes a few clicks to get started.

Ocean: delivers a serverless containers experience. With robust, container-driven auto-scaling and intelligent right-sizing that supports Elastic Container Services (ECS), Elastic Kubernetes Service (EKS), and Kubernetes, teams can "set and forget" the underlying EC2 Spot cluster.

Eco: provides full lifecycle management for Reserved Instance (RI) and Savings Plans. Eco maximizes RI utilization and automates selling and conversion in the AWS Marketplace to maximize the return on investment (ROI) on your compute commitments.

Spot by NetApp integrates with a broad variety of services and tools including ECS, EKS, Kubernetes, Auto Scaling Group, CloudFormation, Terraform, and more.

The purpose of this AWS Implementation Guide is to enable every AWS Marketplace customer to seamlessly activate, deploy, and configure Spot by NetApp integration in AWS Control Tower environment while taking full advantage of the resources pre-configured by AWS Control Tower as part of the initialization.

Solution overview and features

AWS Control Tower allows you to simultaneously set up a Spot by NetApp account for any AWS member account within the Root AWS organization. This implementation reduces overhead administration of manual process to connect each AWS account to Spot by NetApp.

This implementation will automatically create a new account in your pre-configured Spot by NetApp Organization. The account will automatically inherit permissions to AWS member account in order to enjoy the benefit of reduced costs.

With Spot by NetApp, you can:

- Maximize cloud deployment efficiency to reduce costs up to 90% by automatically deploying the optimal blend of spot, reserved, and on-demand compute instances for auto-scaling applications, while ensuring performance, scalability, and availability.
- Enjoy hands-free container and Kubernetes infrastructure by using Spot by NetApp's intelligent, container-driven auto-scaling and resource optimization to simplify infrastructure management for ECS, EKS, or your own Kubernetes deployment.
- Maximize the value of Reserved Instances and Savings Plans with sophisticated lifecycle management powered by advanced analytics and machine learning that understands, predicts, and automates utilization of your commitment purchases, and delivers optimized buying and selling of RIs in AWS Marketplace.



Architecture diagram

The solution uses <u>Amazon CloudWatch Events</u> rules triggered by <u>AWS Control Tower Lifecycle</u> <u>events</u> to call Lambda LifeCycle function. The Lambda LifeCycle function creates a CloudFormation StackSet, which in turn creates an Identity and Access Management (IAM) role to be used by Spot in each new AWS Linked Account. Spot by NetApp uses the secure Cross-Account Role to access your AWS account. The role includes a restricted list of policies that allows proper functioning of the Spot mechanism.

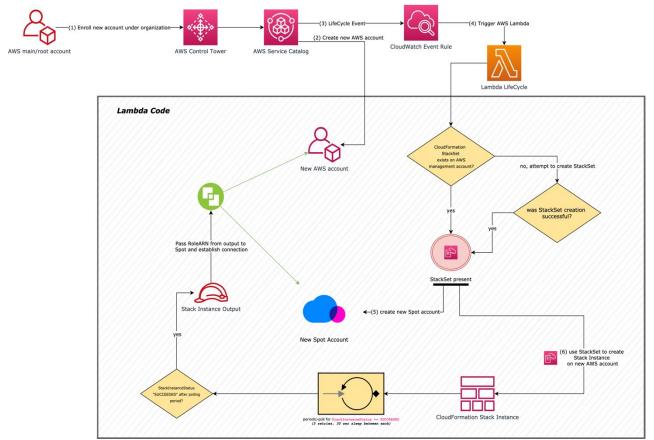


Figure 1 Spot by NetApp Architecture Diagram

Pre-requisites

- 1) You should be registered and have a Spot Organization set up.
- 2) If you are new to Spot by NetApp, follow the below instructions to create an Organization:
 - a. From your AWS Control Tower management account, create your Spot Organization through AWS Marketplace subscription.
 - b. Select your preferred subscription from AWS Marketplace here.
 - i. Spot by NetApp PAYG Pay as you go subscription allows you to pay only for your use.
 - ii. Spot by NetApp Enterprise Commitment plan at better price plan.
 - c. Click on the Continue to Subscribe button.

Continue to Subscribe

d. Click Subscribe to continue.



e. Click Set Up Your Account.

Congratulations! You are now subscribed!

To begin using this software, you will be redirected to the Spot.io PAYG website. Simply click the button below to set up your account and complete your registration. If you are unable to complete your registration, you can always return here through the Your Software page on AWS Marketplace.

Set Up Your Account

- f. You'll be redirected to Spot to register in one of two options:
 - i. Connect to an existing organization.
 - ii. Set up new organization.
- g. Once an organization has been created, you'll be guided to connect your Spot by NetApp account to your AWS account. At this stage, you can go back to AWS Control Tower and start implementing the AWS Control Tower integration with Spot by NetApp.

Deployment and configuration steps

Step 1: Generate Spot token

Step 1.1: Log in to your Spot Organization. **Step 1.2:** Get a valid Personal Access Token with Admin permission. You can follow the instructions <u>here</u>.

Step 2: Create Parameter Store

Parameter details

Step 2.1: Log in to AWS Control Tower Management Account as Admin.

Step 2.2: Navigate to AWS System Manager Parameter Store and create new Parameter:

- Name: spot-auth-token
- Type: SecureString
- Value: enter the Personal Access Token value from Step 1.2

lame		
Q spot-auth-token		×
Antional Ontional		
Description — Optional		
Tier Parameter Store offers standar		
	u anu auvanceu parameters.	
	ters. Parameter value size up to 4 KB.	
Parameter policies are r	not available. No additional charge.	
Advanced Can smarte more than 1	0.000 parameters. Parameter value	
size up to 8 KB. Parame	ter policies are available. Charges	
apply		
Гуре		
String		
Any string value.		
 StringList Separate strings using corr 	imas.	
SecureString		
Encrypt sensitive data usin	g KMS keys from your account or another account.	
KMS key source		
My current account		
Use the default KMS ke	ey for this account or specify a customer-managed key for this account. Learn more	
 Another account 		
-	other account Learn more	
KMS Key ID		
alias/aws/ssm		•
	the default AWS managed key. All users in the current AWS account and Region will have To restrict access to the parameter, use a customer managed key (CMK) instead.	access
Value		



Step 3: Setup your CloudFormation Stack

Step 3.1: Download CloudFormation Stack from <u>here</u>.
Step 3.2 Log in to AWS Control Tower Management Account as Admin and create a new CloudFormation Stack.

tep 1 pecify template	Create stack
ep 2 becify stack details	Prerequisite - Prepare template
ep 3	Prepare template Every stack is based on a template. A template is a JSON or YAML file that contains configuration information about the AWS resources you want to include in the stack.
onfigure stack options	• Template is ready Use a sample template Create template In Designer
p 4 view	Specify template A template is a JSON or YAML file that describes your stack's resources and properties.
	Template source Selecting a template generates an Amazon 53 URL where it will be stored.
	Amazon S3 URL Upload a template file
	Upload a template file Choose file JSON or YAML formatted file

Step 3.3: Upload the downloaded file from Step 3.1.

Step 3.4: Enter the Stack name and deploy the CloudFormation Stack.

Step 3.5: Check that the CloudFormation Stack deployed successfully.

Step 4: How to use

Step 4.1: Log in to AWS Control Tower management account and enroll a new AWS account.

AWS Control Tower $\qquad \times$	AWS Control Tower > Account factory		
Dashboard Organizational units Accounts Account factory Guardrails	Account factory or one provision new With the account factory you can provision new ceasing matriple account.	accounts and enroll existing accounts, and you can stand	lardize your account and network configurations for
Users and access Shared accounts	Network configuration The following VPC configuration options are available	e to your users when they provision new accounts. You can modify	Edit these settings anytime.
Landing zone settings Activities	Internet-accessible subnet Disallow Maximum number of private subnets	Address range (CIDR) for account VPCs 172.31.0.0/16	Regions for VPC creation
Launch solutions with the Getting Started library 🖸 Join our feedback panel 🚺	1 Availability Zone count 3		

Step 4.2: Fill in the relevant information in the Enrollment form:

Account email – Specify a new email if you are creating a new account in your landing zone, or an existing email to extend governance to an existing AWS account.

Dashboard Organizational units	Enroll account Info				
Accounts Account factory Guardrails	AWS Control Tower cannot enroll an account if you are signed in as root. You can enroll one Account details Account enrollment provisions a new account or brings an existing account into AWS Control Tower governance. Account email Specify a new small if you are creating a new account in your landing zone, or an existing email to extend governance to an existing MXS account.				
Users and access Shared accounts					
Landing zone settings Activities					
	email@example.com				
Launch solutions with the Getting Started library 2 Join our feedback panel 2	Must be from 6 to 64 characters long. Display name Name for account as it appears in AWS Control Tower				
Som our reedback parter E	John-Appleseed-01				
	Must contain only letters, numbers, periods, disbes, underscores. Must begin with a letter or number. Do not use spaces. AWS SSO email Designate an SSO user.				
	email@example.com				
	Must be from 6 to 64 characters long.				
	AWS SSO user name First and last name intended for creating an AWS SSO user				
	First name Last name				
	Organizational unit Defines governance for an account, and enables all guardrails on that OU				
	Custom				

Step 4.3: A new AWS account will be created. Creation of a new account may take up to 45 minutes. You can validate the account creation by checking a successful provisioned product in AWS Service Catalog.

6 🕘	aws service catalog	Provisioned products list								
Û	Products list	We've redesigned the AWS Service Catalog end user console to	o make it easier to use. Try out the new conso	e today.					2	×
6	Provisioned products list	Search Ex. Name OR status:available				Filter by Sort by User \checkmark Relevance \checkmark	Count 100 V	0		
Û	Admin Products list	Showing 1-1						*	1	,
12-	Portfolios list	Provisioned Product name	Туре	ID	Created	Status	St	atus mess	age	
38	TagOption library	i Test	CONTROL_TOWER_AC COUNT	pp-3q4mcxqftmw34	2020-11-09 12:01:50 UTC+0200					
h-	Service actions									
¢	Preferences									

Step 5: Validation

The "CreateManagedAccount" event will trigger the Lambda function that enrolls the account into Spot by NetApp platform.

Step 5.1: Log in to Spot by NetApp console.

Step 5.2: In the top-right corner, verify you can find the newly created account in the account's dropdown menu. Its name will be identical to the newly created AWS account Display Name (see "Enroll Account" form in step 4.2). The AWS Logo near the account name confirms that the connection has been successfully established:

spot O aws					✓ aws CT1-Vending1 ✓ 🕻		
ORGANIZATION	ACCOUNT	API	SECURITY	BILLING	Q	Search Accounts	
ORGANIZATION	ACCOUNT	API	SECORITY	BILLING		AWS	
General			Organization Name *		aws	CT1-Vending1	
		1	AWS		aws	CT1-Vending2	
Accounts		Org	tanization ID			Add Account	
Users							

Step 5.3: Start using the newly created Spot account.

Solution estimated pricing

Solution pricing would be according to your Spot by NetApp chosen plan. There are no added fees Spot by NetApp charges for using the integration with AWS Control Tower.

Additional resources

<u>Getting started with Spot by NetApp</u> <u>Create an Elastigroup</u> <u>Getting started with Ocean</u>

Partner contact information

https://Spot by NetApp/contact/

