Stackgenie Moving from Intel to AMD-powered instances

Demonstrating the seamless transition of workloads to more efficient AMD-based instances.

stackgenie

A little change can go a long way, saving you up to 10% of your compute costs

Making a simple change to a single line of code can save AWS customers up to 10% of their compute costs. A perfect solution for those customers looking at price optimised compute options with greater flexibility for right-sizing workloads.

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INTRODUCTION

As a cloud service, Amazon Elastic Compute Cloud (Amazon EC2) provides its customers with cloud-based resizable compute capacity. Allowing users to have complete control of their computing resources whilst running on Amazon's proven computing environment.

Utilising cloud-computing through Amazon EC2, means developers can create and launch new server instances in mere minutes, thus allowing quick scaling capabilities through elastic web-scale computing.

Intel has a long-standing relationship, in excess of 15 years, with Amazon Web Services (AWS) collaborating on developing, building and supporting cloud services. This partnership has made technology more accessible and allowed AWS customers to push the boundaries of innovation. However, with the exponential growth of workloads, each with different characteristics and infrastructure needs, AWS recognised its customers had limited choices for running workloads that were also optimised for performance and cost.

Partnering with AMD since 2018, AWS now delivers a wide variety of choices to right-size workloads whilst simultaneously lowering compute and memory costs for its customers.

The AWS and AMD collaboration resulted in the first generation AMD EPYC[™] processors in 2018, followed by the second generation version in 2020, and more recently combining the second generation AMD EPYC[™] processors and AMD Radeon Pro GPUs with Amazon EC2 G4ad instances. The launch of third generation AMD EPYC[™] processors will further increase the flexibility and choices available too.

AWS customers can use EC2 instances powered by AMD for a wide variety of workloads including databases, enterprise applications, big data analytics, batch processing and gaming.





AMD EPYC™ BENEFITS

Flexibility and Choice

Originally built to provide AWS customers more choice when running Amazon EC2 instances using AMD EPYC[™] processors. AMD-powered instances provide flexibility and choice through helping optimise both cost and performance of workloads.

Customers can improve this optimisation further by incorporating right-sizing during the transition process, as well as periodically reviewing as an ongoing process within their organisation.

Cost-savings

Not only do EC2 instances that feature AMD EPYC[™] processors deliver up to 10% lower costs for Worldwide regions than comparable instances, the C5a instances also offers the lowest price per x86 vCPU for EC2-based workloads too.

Additionally, in the Asia Pacific (Mumbai) region, EC2 customers are seeing up to 45% lower costs than comparable instances when using AMD EPYC[™] processors.

Seamless Workload Transition

For applications running on Amazon's existing x86 EC2 instances (powered by Intel), customers can easily migrate over to the AMD variants with minimal, if any, modification requirements. Switch from C5, T3, M5 and R5 instances to the AMD variants that are available in the same sizes and offer application compatibility.

WORKLOADS COMPARISON

Manufacture	AMD EPYC™	Intel
General Purpose	T3a Unlimited CPU burst 0.5:2 GiB to vCPU Up to 2.5 GHz 1st Gen AMD EPYC* Up to 8vCPU / 32 GiB	T3 Burstable CPU usage SKX-up to 8 vCPUs
General rupose	M5a 4:1 GiB to vCPU Up to 2.5 GHz 1st Gen AMD EPYC* Up to 20 Gbps network Up to 96 vCPU / 384 GiB	M5 Non-burstable CPU usage SKX-up to 96 vCPUs
Compute Optimised	C5a Up to 3.3 GHz EPYC* (2nd Gen) Up to 25 Gbps network Up to 96 vCPU / 192 GiB	C5 High-performance low price/ compute ratio SKX-up to 36vCPUs
Memory Optimised	R5a 8:1 GiB to vCPU Up to 2.5 GHz 1st Gen AMD EPYC* Up to 20 Gbps network Up to 768 GiB / 96 vCPU	R5 up to 768 GiB RAM SKX or CLX Up to 96 VCPUs
Graphics- intensive	G4ad Ultra-Advanced Up to 64 vCPUs Memory: up to 256 GPU: 32 AMD Radeon Pro V520 Storage: up to 2400	G4dn Advanced Up to 96 vCPUs Memory: upto 384 GPU: up to 128 NVIDIA T4 Tensor Storage: up to 2x900

On-demand instances prices

MOVING FROM INTEL TO AMD EPYCTM VARIANTS

Amazon Elastic Compute Cloud (EC2) offers the broadest and deepest compute platform, with over 400 instances and choice of processor, storage, networking, operating system, and purchase model.

EC2 allows users to build apps to automate scaling according to changing needs and peak periods, and makes it simple to deploy virtual servers and manage storage, lessening the need to invest in hardware and helping streamline development processes. AMD EPYC[™] 7000 series processors feature an all core turbo clock speed of 2.5GHz. Amazon EC2 instances powered by AMD EPYC[™] processors can deliver optimised compute and memory at a lower cost than comparable instances.

Since many workloads utilise only a fraction of a processor's maximum performance, these instances offer a better fit for purpose for many workloads. Therefore, AMD-based instances provide additional options for AWS customers that are not fully utilising their compute resources, and can result in a cost savings benefit of up to 10% too.

As AMD EPYC[™] processors are based on the same x86-64 architecture as Intel processors, applications that are already running on existing EC2 instances can easily be transitioned across. In most cases, with minimal, if any, modification requirements. Due to the application compatibility for R5, M5, T3 and C5 instances, the transition to AMD EPYC[™] variants is as simple as stopping an instance, switching the type to AMD and starting it back up.



SIMPLE EC2 INSTANCE UPDATE

Update from AWS Console

This section demonstrates how an application running in an AWS EC2 Intel-based instance can be moved to an EC2 AMD-based instance using the web application, <u>AWS Management Console</u>, which comprises of, and refers to, a broad collection of service consoles for managing Amazon Web Services.

The Process

		Ve	rify the curre	ent instance type.	
C6g C6g	n C6i	C5 C5a	C5n C4		
C5 instances a compute ratio		ed for compute-ir	itensive workloads and	d deliver cost-effective high performan	ce at a low price per
Features:					
 C5 instance 	es offer a c	hoice of processo	rs based on the size of	the instance.	
(Cascade L	ake) with a	sustained all core	e Turbo frequency of 3	e feature custom 2nd generation Intel > .6GHz and single core turbo frequency tel Xeon Scalable Processors (Cascade L	of up to 3.9GHz.
Xeon Plati	num 8000 s		All and the state of the state	tained all core Turbo frequency of up to	a state for an and the state of the second
 New larger 	24xlarge i	nstance size offer	ing 96 vCPUs, 192 GiB	of memory, and optional 3.6TB local 1	WMe-based SSDs
			s for ENA and NVMe		
		ocal NVMe-based ne of the C5 instai	100 C C	nnected to the host server and provide	block-level storage that is
	22	ter (ENA) provide to Amazon EBS.	s C5 instances with up	to 25 Gbps of network bandwidth and	up to 19 Gbps of
Powered b	y the AWS	Nitro System, a co	ombination of dedicate	ed hardware and lightweight hyperviso	ſ
Model	VCPU	Memory (GiB)	Instance Storage (G	iB) Network Bandwidth (Gbps)***	EBS Bandwidth (Mbps)
					The state of the s
c5.large	2	4	EBS-Only	Up to 10	Up to 4,750
c5.large c5.xlarge	2 4	4 8	EBS-Only EBS-Only	Up to 10 Up to 10	Up to 4,750 Up to 4,750



Find a similar instance type in AMD EPYC™.

6g C6gn	C6i	C5 C5	a C5n C4		
5a instances (offer leading	3 x86 price-per	formance for a broad set of o	compute-intensive workloads.	
eatures:					
2nd genera	tion AMD E	PYC 7002 serie	s processors running at frequ	encies up to 3.3 GHz	
	AND THE REAL PROPERTY OF	and the second second second second		0 Gbps of network bandwidth an	d up to 9.5 Gbps of
dedicated b	andwidth t	o Amazon EBS			
Dowarad by	11				
Fowered by	the AWS N	itro System, a o	combination of dedicated ha	rdware and lightweight hyperviso	ν Γ
With C5ad	instances, lo	5 5.	ed SSDs are physically conne	rdware and lightweight hyperviso	
With C5ad	instances, lo	ocal NVMe-base	ed SSDs are physically conne		
With C5ad is coupled t	instances, lo o the lifetin	ocal NVMe-base ne of the C5a ir Memory	ed SSDs are physically conne nstance	cted to the host server and provic	le block-level storage tha
With C5ad is coupled t Model	instances, lo to the lifetin vCPU	ne of the C5a ir Memory (GiB)	ed SSDs are physically conner istance Instance Storage (GiB)	cted to the host server and provid Network Bandwidth (Gbps)***	le block-level storage tha EBS Bandwidth (Mbps)
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Stop running the existing instance.

Instances (1/1) Info		C	Connect	Instance state	Actions 🔻	Launch instances		× .
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🖌 test	i-085662c509c5df175 🛛 🔗 Runn	ng @Q	c5.large	Terminate instance	No alarms 🕂	eu-west-2c		ec2-



Confirm the instance has stopped.

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Change the instance type.

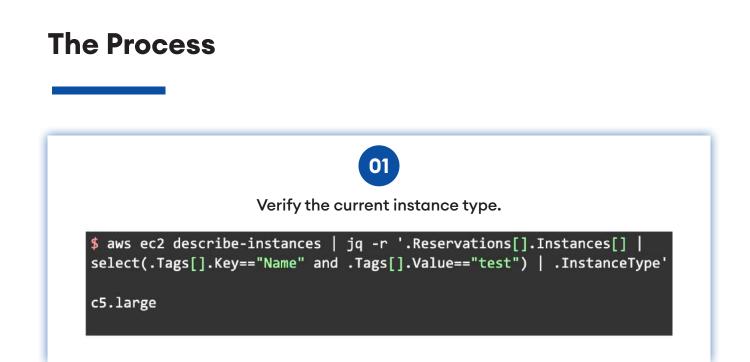
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	c5d.24xlarge			6 instance.	Actions V Launch	s instances	0
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search: I-085662c509c5df1	75 X ⊽	Instance ID	Instance state	A	Instance type						
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Update from AWS CLI

The AWS Command Line Interface (CLI) is a unified tool to manage your AWS services. With just one tool to download and configure, you can control multiple AWS services from the command line and automate them through scripts.

Please follow the link to <u>configure AWS CLI credentials</u> to execute following commands.





Log in to the instance and fetch the CPU information.

login to the instance

ssh -i "test-user.pem" ec2-user@ec2-18-168-62-86.euest-2.compute.amazonaws.com

#getting the cpu information

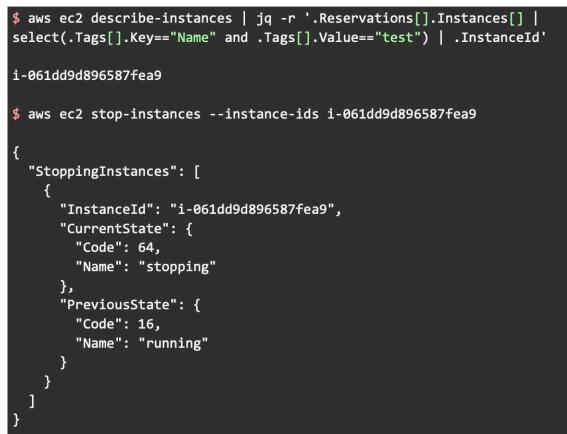
\$ cat /proc/cpuinfo | more

processor	: 0 *** *** *
vendor_id	: GenuineIntel
cpu family	: 6
model	: 85
model name	: Intel(R) Xeon(R) Platinum 8124M CPU @ 3.00GHz
stepping	: 4
microcode	: 0x1000157
cpu MHz	: 3399.896
cache size	: 25344 KB
physical id	: 0

			milar instance	type in AMD EPYC ¹	гм
		11110 0 31			•
C6g C6gr	C6i	C5 C5a	C5n C4		
C5a instances (offer leading	3 x86 price-perf	ormance for a broad set of (compute-intensive workloads.	
Features:					
• 2nd genera	ition AMD El	PYC 7002 series	processors running at frequ	uencies up to 3.3 GHz	
	Same and the second second	er (ENA) provide: o Amazon EBS	s C5a instances with up to 2	20 Gbps of network bandwidth an	d up to 9.5 Gbps of
Powered by	/ the AWS N	itro System, a co	ombination of dedicated ha	rdware and lightweight hyperviso	r
		ocal NVMe-based ne of the C5a ins		cted to the host server and provid	le block-level storage that
	VCPU	Memory (GiB)	Instance Storage (GiB)	Network Bandwidth (Gbps)***	EBS Bandwidth (Mbps)
Model				Up to 10	Up to 3,170
Model c5a.large	2	4	EBS-Only	001010	
	2	4 8	EBS-Only EBS-Only	Up to 10	Up to 3,170
c5a.large		40-1		Table and a second	



Stop running the instance.





Confirm the instance has stopped.

```
$ aws ec2 describe-instances | jq -r '.Reservations[].Instances[] |
select(.Tags[].Key=="Name" and .Tags[].Value=="test") | .State'
{
    "Code": 80,
    "Name": "stopped"
}
```



Log in to the instance and fetch the CPU information.

```
$ aws ec2 modify-instance-attribute --instance-id i-061dd9d896587fea9 --
instance-type "{\"Value\": \"c5a.large\"}"
$ aws ec2 describe-instances | jq -r '.Reservations[].Instances[] |
select(.Tags[].Key=="Name" and .Tags[].Value=="Test") | .InstanceType'
c5a.large
```



Start the new instance type.

```
$ aws ec2 start-instances --instance-ids i-061dd9d896587fea9
{
    "StartingInstances": [
        {
          "CurrentState": {
              "Code": 0,
              "Name": "pending"
        },
          "InstanceId": "i-061dd9d896587fea9",
        "PreviousState": {
              "Code": 80,
              "Name": "stopped"
        }
    }
    ]
}
```

08

Confirm the instance has started successfully.

\$ aws ec2 describe-instances | jq -r
'.Reservations[].Instances[] | select(.Tags[].Key=="Name"
and .Tags[].Value=="test") | .State'

"Code": 16, "Name": "running"



Log in to the instance and fetch the CPU information.

```
$ aws ec2 describe-instances | jq -r
'.Reservations[].Instances[] | select(.Tags[].Key=="Name"
and .Tags[].Value=="test") | .State'
  "Code": 16,
  "Name": "running"
#login to the instance
$ ssh -i "test-user.pem" ec2-user@ec2-18-168-62-86.eu-
west-2.compute.amazonaws.com
processor
             : AuthenticAMD
vendor_id
cpu family
model
             : 49
model name
             : AMD EPYC 7R32
            : 0
stepping
            : 0x8301034
microcode
cpu MHz
            : 2261.794
ache size
             : 512 KB
 hysical id
              0
```

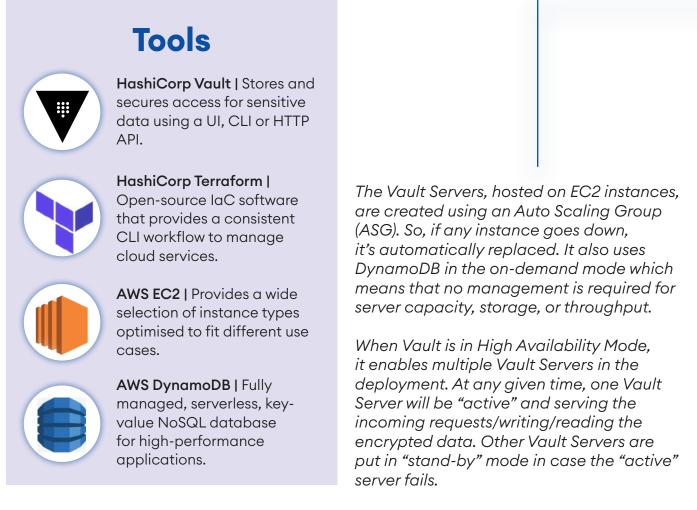


MOVEMENT OF AN EC2 INSTANCE APPLICATION

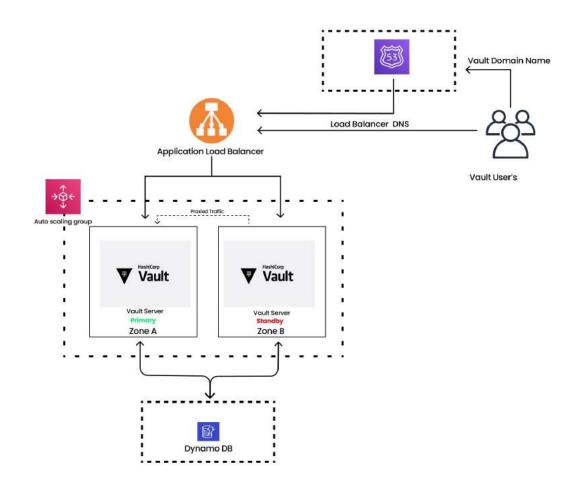
HashiCorp Vault

This section demonstrates how an application running on several EC2 instances can be moved using either AWS CloudFormation or Terraform. The exercise uses the HashiCorp Vault application, an open-source tool for securely storing secrets and sensitive data in dynamic cloud environments.

The infrastructure is currently deployed in AWS EC2 instance; the underlying nodes are using AWS Intel instances. The transition process will update this infrastructure from Intel EC2 instances to AMD EPYC[™] EC2 instances.



Application Architecture in AWS

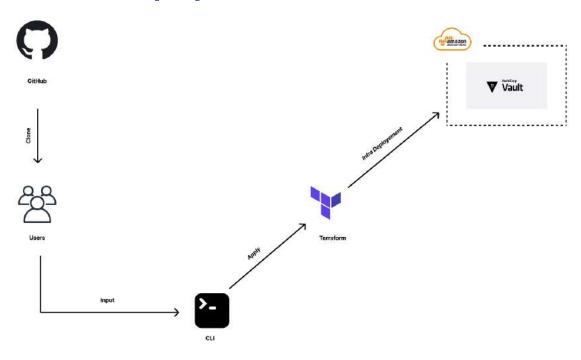


Deployment with Terraform

Terraform is an open-source, infrastructure-as-code (IaC) software tool that allows you to build, change and version infrastructure, both safely and efficiently. It can be used to manage existing service providers as well as custom in-house solutions, for both low-level (eg compute instances, storage, networking) and high-level components (eg DNS entries, SaaS features).

This repository contains a set of Terraform files for deploying a Vault cluster on AWS. HashiCorp Vault helps to store the infrastructural secrets and credentials in a highly available setup.

Deployment Architecture



Clone the application <u>GitHub repository</u>, and follow the <u>Readme.md</u> file to configure and deploy the HashiCorp Vault in AWS with the help of Terraform.

This project requires that you have Terraform 0.14+ installed. Both deployment and management should be done through Terraform.

The deployment process is done using a Terraform template, by cloning the repository into CLI and modifying the required parameters, then executing a command, the entire infrastructure will be provisioned. Users can access the vault dashboard via Route53 or can use load balancer DNS. Terraform will create a base infrastructure containing:

- EC2 instances
- DynamoDB
- S3 bucket
- KMS Key
- an Application Load Balancer
- an Autoscaling Group
- Route53 subdomain entry
- VPC and its components

Terraform also executes a user-data which helps to initialise the vault and allows it to auto-unseal with the help of a KMS key. The root token and key shards will be uploaded to an S3-bucket that has to be created by Terraform.

The DynamoDB storage will provide high availability and is used to persist Vault's data in the DynamoDB table.

The Process

Moving from t3.medium instance infrastructure to an AMD-based t3a.medium instance.

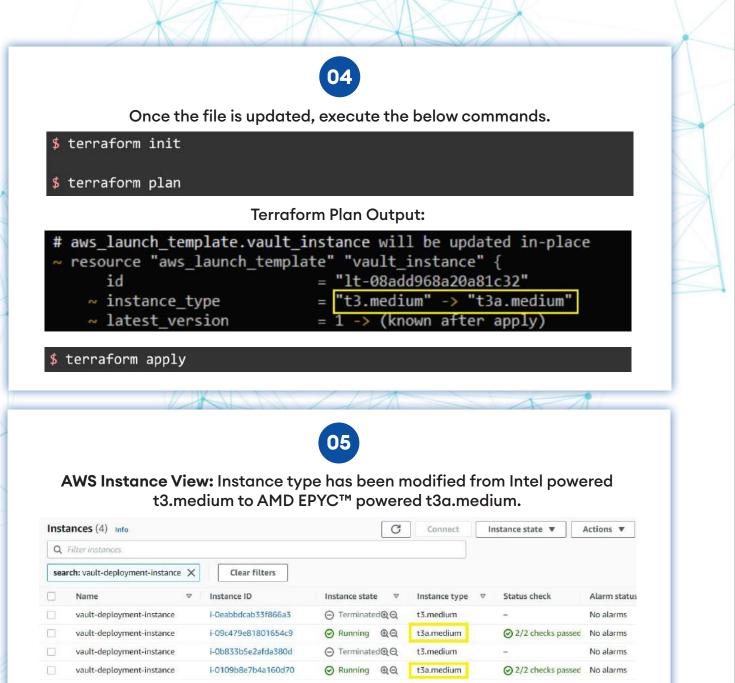
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AWS EC2 Instance Vie	ew: Instances ar	e current	y rur	nning on l	ntel t3.medium
Instances (2) Info			C	Connect	Instance state 🔻
Q Filter instances					
< riter misturices				1	
search: vault-deployment-instance X	Clear filters				
	Clear filters	Instance state	⊽	Instance type	▼ Status check
search: vault-deployment-instance X			⊽ @Q	Instance type t3.medium	 ✓ Status check ⊘ 2/2 checks passed





Go to the Terraform variable file, update the file (variables.tf) with the "Instance type" to AMD EPYC™ (t3a.medium).

variable "vault_instance_type" { description = "The EC2 instance size of the vault." type = string default = "t3a.medium"



Vault Browser View: Verify the application is working as expected.

06

	ackgenie.io/ui/vault/secrets			
ets Access Policie	s Tools			
ets Engines				
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le_42868b73				
3				
	bbyhole/	bbyhole/	bbyhole/ 1e_42860b73	bbyhole/ 1e_42869b73



The result is a successful transition of EC2 instances from Intel-based processors to AMD variants using Terraform.

Deployment with CloudFormation, Packer and Ansible

CloudFormation is an AWS managed service that allows you to manage the infrastructure in AWS using templates. As the name suggests, it is an Infrastructure as code (IaC) tool. CloudFormation is used for automating the deployment and configuration of the majority of services in AWS.

Packer is an open source tool from HashiCorp that can be used to create golden images from a single source of configuration.

Ansible is a highly versatile open source tool. It can handle configuration management, application deployment, cloud provisioning, ad-hoc task execution, network automation and multi-node orchestration.







identical machine images for multiple platforms from a single source configuration. AWS CloudFormation |

HashiCorp Vault | Stores and

secures access for sensitive

data using a UI. CLI or HTTP

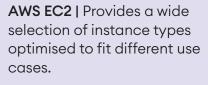
HashiCorp Packer | Creates

Tools

API.

Treats infrastructure as code to model, provision and manage AWS and third-party resources.

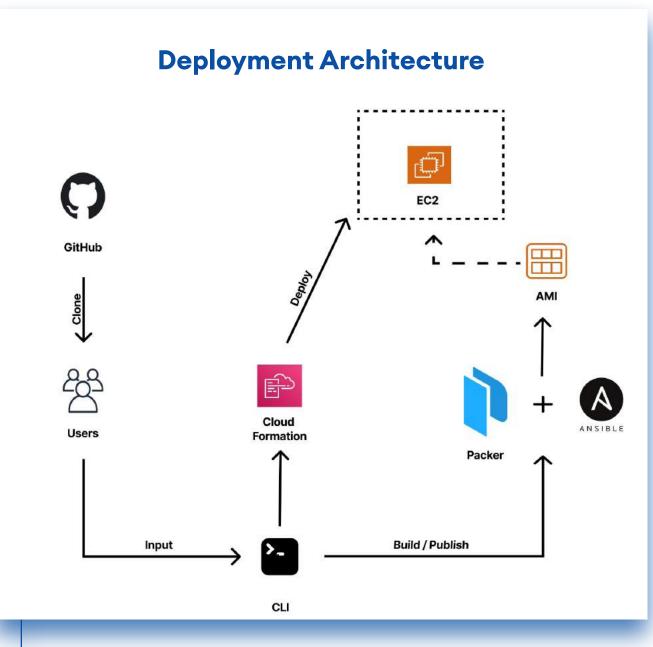




AWS DynamoDB | Fully managed, serverless, key-value NoSQL database for high-performance applications.

CloudFormation Templates

The CloudFormation templates (vault_cfn.yaml) available in the GitHub repository will deploy the application in AWS. This CloudFormation template deploys a VPC with both public and private subnet across two Availability Zones. It also provisions an instance backed by an autoscaling group which is using a custom Amazon Machine Image (AMI) created with Packer. Finally, the CloudFormation template will create an application load balancer, auto scaling group, DynamoDB table, SSM Parameter Store, KMS key and Route53 subdomain entry.



Clone the application <u>GitHub repository</u>, and follow the <u>Readme.md</u> file to deploy the application. The packer builder command will provision an AMI with the help of the Ansible provisioner.

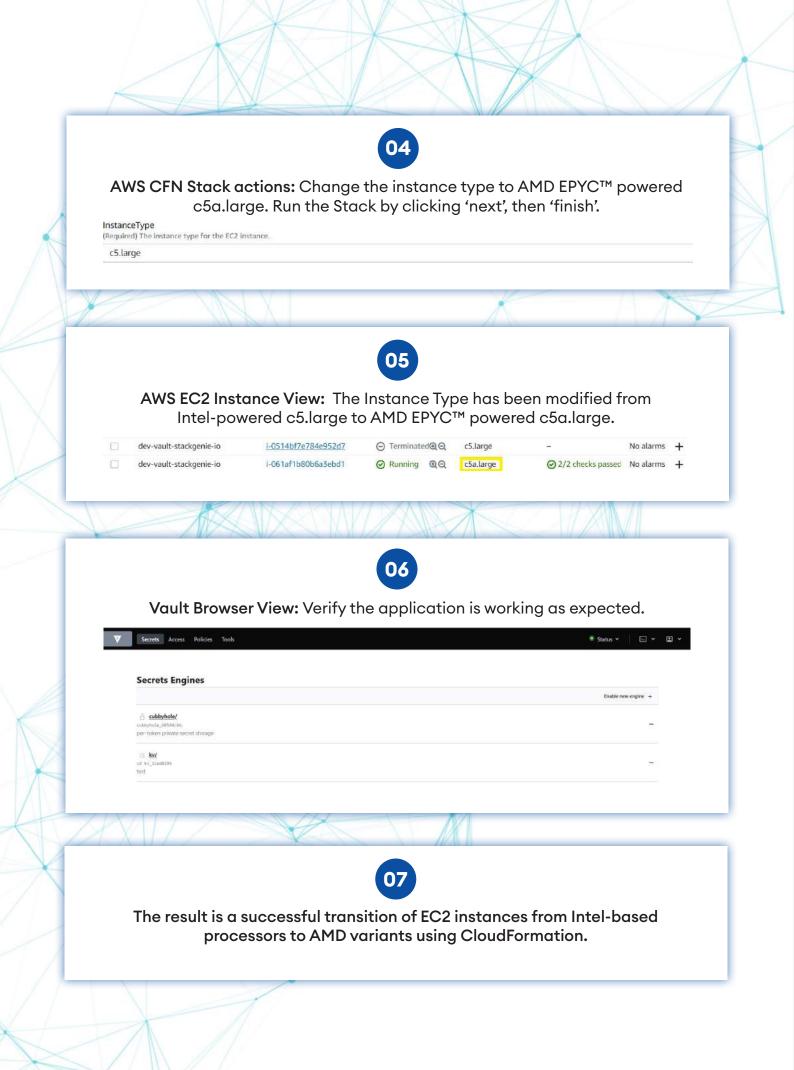
Use a custom build AMI, as this application is deployed into an EC2 instance, by using HCP Packer with Ansible provisioner. The deployment process can start once the custom AMI is ready. This is done using a CloudFormation template, by cloning the repository into CLI and modifying the required parameters, then executing a command, the entire infrastructure will be provisioned. Users can access the vault dashboard via Route53 or can use load balancer DNS. The user-data in the Launch Template will initialise the Vault cluster and upload the root keys and recovery keys in the SSM parameter store. An encryption key from AWS Key Management Services (KMS) will help to auto-unseal Vault.

Whilst, the DynamoDB storage backend supports high availability and is used to persist Vault's data in the DynamoDB table.

The Process

In this example, the application is running on an Intel-powered c5.large EC2 instance. To move the application to an AMD EPYC[™] powered c5a.large instance, update the "Instance Type" parameter on the CloudFormation stack; the update will redeploy the application and change the EC2 instance type.

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MOVEMENT OF A MICROSERVICE WEB APPLICATION WITH DATABASES

e-Commerce Application

In this example, to aid the demonstrations and testing of microservices and cloud-native technologies, the application for the purpose of migration is an e-commerce application. As an online shop that sells products, it is a multi-tiered application that has both a web front-end, that's user-facing, and a database back-end. Please refer to the online shop application <u>GitHub repository</u>.

The application is built using <u>Spring Boot</u>, <u>Go kit</u> and <u>Node.js</u> and is packaged in Docker containers. You can read more about the <u>application design</u>.



HashiCorp Terraform | Open-source IaC software that provides a consistent CLI workflow to manage cloud services.

Tools



NGINX ingress controller | Ingress exposes HTT and HTTPS routes from outside the cluster to services with the cluster. An ingress controller for Kubernetes using NGINX as a reverse proxy and load balancer.



Amazon EKS | Open-source system for automating deployment, scaling and management of containerised applications.

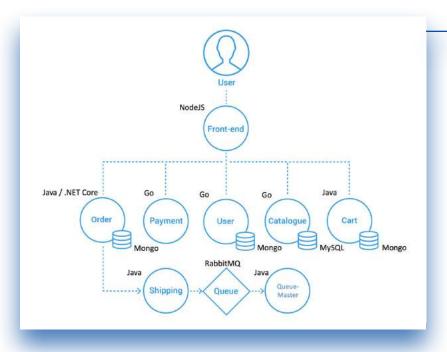


Argo CD | A declarative, GitOps continuous delivery tool for Kubernetes.



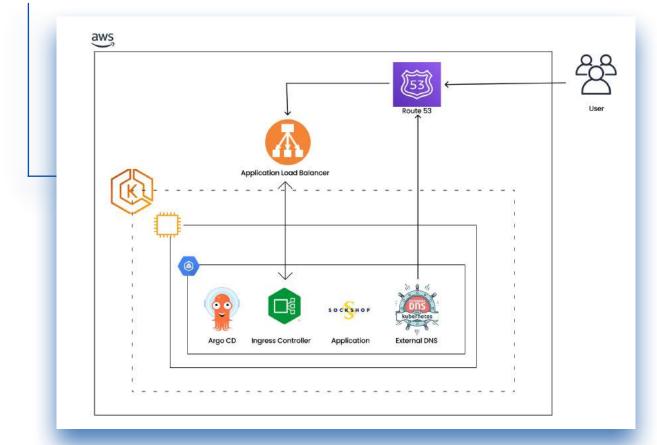
ExternalDNS | Synchronises exposed Kubernetes Services and Ingresses with DNS providers, and makes Kubernetes resources discoverable via public DNS servers.

e-Commerce Application Design



The architecture of the demo microservices application was intentionally designed to provide as many microservices as possible, as well as being polyglot to exercise a number of different technologies. The microservices are roughly defined by the function in an e-Commerce site. All services communicate using REST over HTTP. This was chosen due to the simplicity of development and testing.

The Application containers are deployed on EKS Cluster with CI/CD tool Argo CD so the application deployment and lifecycle management should be automated, auditable, and easy to understand. It also uses some supporting tools NGINX ingress controller, and external DNS provisioner. All these microservices are scheduled on Amazon EKS managed node groups to automate the provisioning and lifecycle management of nodes (Amazon EC2 instances) for Amazon EKS Kubernetes clusters and all managed nodes are provisioned as part of an Amazon EC2 Auto Scaling group that's managed for you by Amazon EKS.



Application Structure in EKS

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The application is currently deployed in EKS, with the underlying EC2 instances using AWS Intel c5.large instances.

The transition process will update this infrastructure from c5.large instances to c5a.large instances that are based on AMD EPYC[™].

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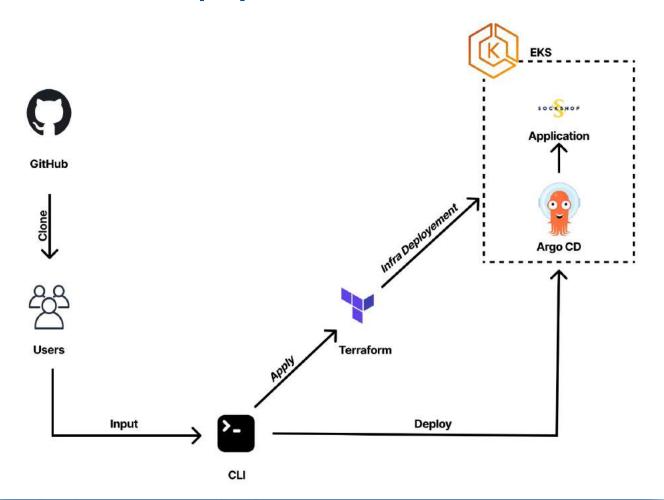
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Deployment with Terraform

In this example, Terraform is used only for deploying the AWS infrastructure. The AWS infrastructure includes EKS cluster, VPCs and its components.

Also, Argo CD is already deployed on the cluster using an Argo manifest. The microservices application is deployed with Argo CD. Optional services like "Nginx ingress controller along with ExternalDNS" will also be deployed on the cluster.

The movement of these applications on EKS node group from AWS Intel c5.large instance to AWS AMD EPYC[™] powered c5a.large can be achieved by changing the instance type on the Terraform variable file.



Deployment Architecture

Clone the <u>application repository</u> and follow the <u>readme</u> to deploy the application in EKS. This application is deployed using tools such as HashiCorp Terraform, AWS EKS (Elastic Kubernetes Services), and Argo CD.

This project requires Terraform 0.14+ and Argo CD CL. The deployment process uses a Terraform template, by cloning the repository into CLI and modifying the required parameters, then executing a command, the entire infrastructure will be provisioned. Once the infrastructure is ready, the application is deployed using Argo CD CLI. Users can access the application via Route53 or can port-forward the application to localhost.

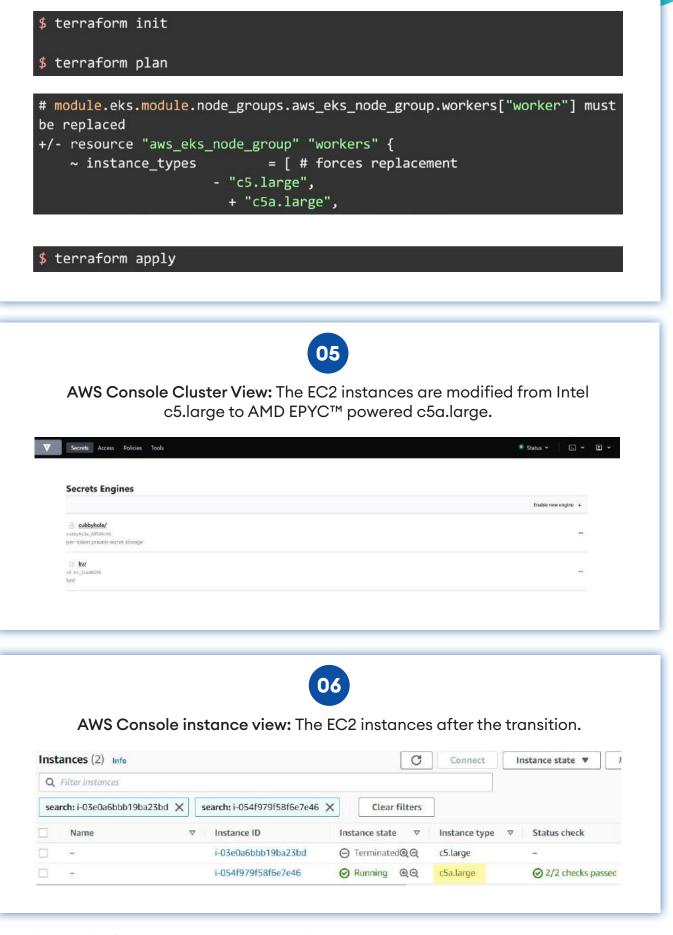
The Process

Moving from c5.large instance to an AMD-based c5a.large instance.

EKS > Clusters > di	ev-sockshop-b41a				-	
dev-socksho				P	Active C Dele	te cluster
	cloads Configurati	ion				
Nodes (1) Info						
Q. Filter nodes by p	roperty or value					(1)
Node name		Instance type 🗢	Node Group		⊽ Created ⊽	Status 🛡
ip-10-50-3-99.eu-wes	t-2.compute.internal	c5.large	dev-sockshop-b41a-worke	202111100934346843000000	De an hour ago	⊘ Ready
		thub.com,	02 ne the reposi /stackgenie/		evops-amd03	3.git &8
git clone h stackgenie		thub.com,			evops-amd03	3.git &&
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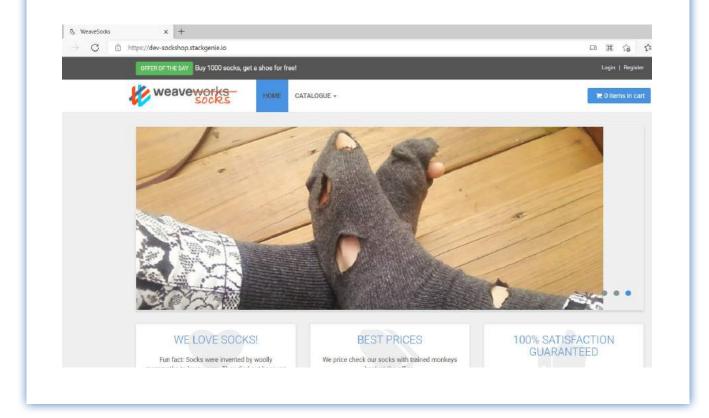


Applying Terraform changes will update the instance type to c5a.large.





Browser result: Application is working as expected after the instance type is changed from c5.large to c5a.large.



Deployment with CloudFormation

As in the previous example, Argo CD is deployed on the cluster using an Argo manifest. The microservices application is deployed with Argo CD. Optional services like "Nginx ingress controller along with ExternalDNS" will also be deployed on the cluster.

For migrating the application from the AWS Intel c5.large instance to AWS AMD EPYC[™] powered c5a.large, update the CloudFormation stack with a new instance type (c5a.large).

Argo CD

Argo CD automates the deployment of the desired application states in the specified target environments.

Application deployments can track updates to branches, tags, or pinned to a specific version of manifests at a Git commit.

Tools



AWS CloudFormation | Treats infrastructure as code to model, provision and manage AWS and third-party resources.



Amazon EKS | Open-source system for automating deployment, scaling and management of containerised applications.



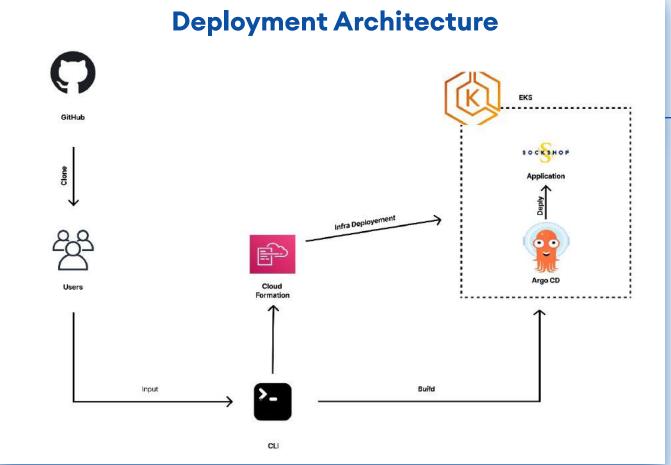
Argo CD | A declarative, GitOps continuous delivery tool for Kubernetes.



NGINX ingress controller | Ingress exposes HTT and HTTPS routes from outside the cluster to services with the cluster. An ingress controller for Kubernetes using NGINX as a reverse proxy and load balancer.



ExternalDNS | Synchronises exposed Kubernetes Services and Ingresses with DNS providers, and makes Kubernetes resources discoverable via public DNS servers.



Clone the <u>application repository</u> and follow the <u>readme</u> to deploy the infrastructure and application. Deploying the Cloud Formation Template will create the AWS infrastructure for the application. The AWS Infrastructure contains a VPC, EKS cluster, and EKS NodeGroup.

The application is deployed into EKS, here we are using CloudFormation for infrastructure deployment and Argo CD for the application deployment. First, clone the repository and modify the required parameters, then execute the command, the entire infrastructure will be provisioned. Once we have the infrastructure, next, deploy an application using Argo CD. Users can access the application via Route53 or can port-forward the application to localhost.

The Process

Moving from c5.large instance infrastructure to an AMD-based c5a.large instance.

01

AWS CFN stack console view: The Intel EC2 instance is c5.large as highlighted below.

🖸 Stacks (1) 🛛 📿	Stack info Events Resources Outputs Parameters Template Change set
Q Filter by stock name	
Active View nested	Parameters (9)
dev-sockshop-example-io	Q. Search parameters
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	ArgoFQDN dev-argo.stackgenie.io
	CapacityType ON_DEMAND
	ClassB 88
	DNSHostedZonelD
	1 2
nstances (2) Info	C Connect Instance state 🔻
Q Filter instances	
search: i-06049bab874a5bf59 X	arch: i-000f436274ce43a30 X Clear filters
Name 🗸	Instance ID Instance state V Instance type V Status check
1 -	i-06049bab874a5bf59 ⊘ Running @ Q c5.large ⊘ 2/2 checks passed



AWS console actions: Change the instance type to AMD EPYC[™] powered c5a.large by updating the current template:

E Stacks (1)	dev-sockshop-example-io Delete Update Stack actions v Cr
Q Filter by stack name	Stack info Events Resources Outputs Parameters Template Change sets
Active View nested	Parameters (9)
aev-sockshop-example-io 2021-11-08 13:34:19 UTC+0530	Q Search parameters



AWS console actions: Choose 'use current template' and change the instance type to AMD EPYC[™] powered c5a.large.

Cluster EC2 Nod	Parameters			
InstanceTypes				
(Required) The List(C	mmaDelimitedList) of EC2 ins	ance types, that you want to	run on the cluster.	
«En lavas				



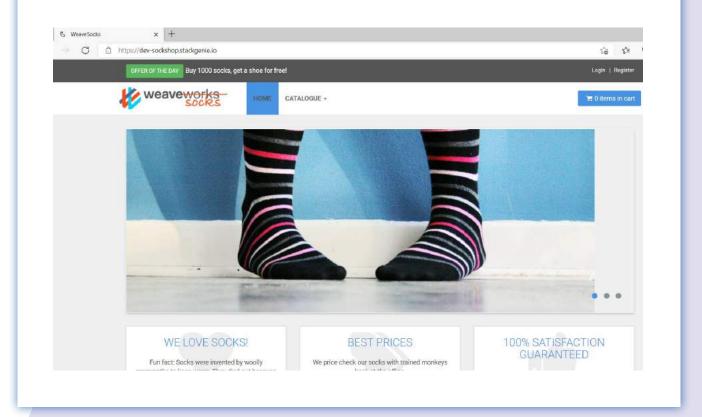
AWS console view: The EC2 instances are modified from Intel c5.large to AMD EPYC[™] powered c5a.large.

🗆 Stacks (1)	dev-sockshop-example-io	S
Q Filter by stack name	Stack info Events Resources Outputs Parameters Template Change sets	
Active View nested	Parameters (9)	
dev-sockshop-example-io 2021-11-08 13:34:19 UTC+0530 ② UPDATE_COMPLETE	Q Search parameters	
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	ACMCertificateARN arn:aws.acm	
	ArgoFQDN dev-argo.stackgenie.io	
	CapacityType ON_DEMAND	
	Class8 88	
	DNSHostedZoneID	
	DesiredCount 2	
	InstanceTypes c5a.large	

05 AWS instance view: The EC2 instances after the transition. Instances (4) Info С Instance state 🔻 Connect A Q Filter instances search: i-06049bab874a5bf59 🗙 search: i-000f436274ce43a30 🗙 search: i-Ofbf2f1d5fd1ee80d 🗙 search: i-0295d29a3d69cd385 **Clear filters** Name Instance ID Instance state -Instance type -Status check i-06049bab874a5bf59 ⊖ Terminated@Q c5.large i-0295d29a3d69cd385 ⊘ Running ⊕Q c5a.large i-000f436274ce43a30 ⊖ Terminated@Q c5.large i-Ofbf2f1d5fd1ee80d ⊘ Running @Q ⊘ 2/2 checks passed c5a.large



Browser result: The application is working as expected after moving the instance type from c5.large to c5a.large.



stackgenie CONCLUSION

Whilst Intel processors have been the default choice for running instances on Amazon EC2 for well over a decade, the launch of AMD EPYC[™] processors in 2018 provided Amazon customers with alternative options for running workloads.

Having more availability and choice means AWS users can optimise for performance and cost, as well as right-sizing their workloads by choosing from a wide variety of Intel and AMD-based options.

Same x86 Architecture

Both Intel and AMD EPYC[™] processors use the same x86 architecture, which means, in most situations, applications running on existing EC2 instances can transition from one to the other, seamlessly.

A little change can save customers up to 10% of their compute costs.

Vinayak Kumar Stackgenie Founder and CEO

> This white paper demonstrates the ease of moving from Intel to AMDbased instances. As demonstrated through the various examples, a little change can go a long way. A single line of code can save customers up to 10% of their compute costs.

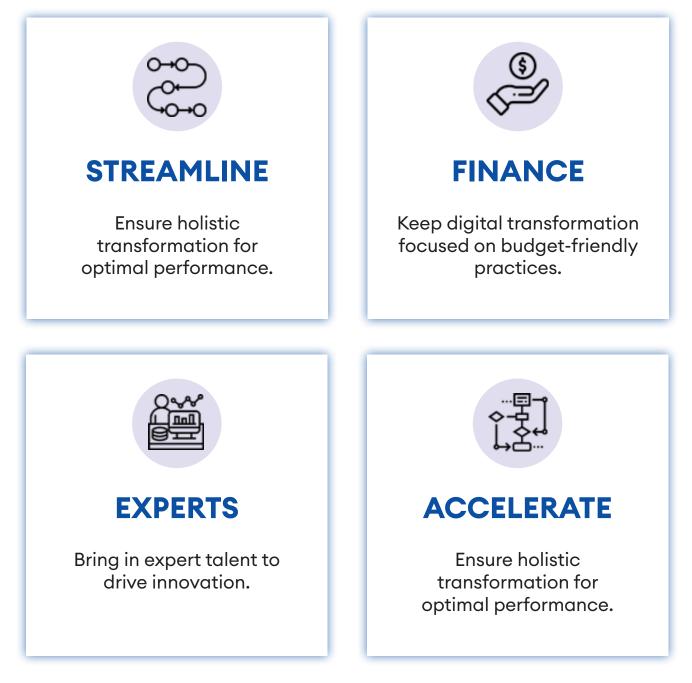
For AWS customers looking at priceoptimised compute options, AMD EPYC[™] provides greater flexibility when looking at right-sizing instances.

There is also further excitement with the launch of the third generation of AMD EPYC[™] processors. Customers will have even more flexibility and choice with the launch of R6a, C6a and M6a instances.

WHAT WE DO?

HOW WE SUPPORT YOU

Augment and enhance your people capabilities throughout your digital transformation journey with us partnering and working as an extension of your team.





Take advantage of our comprehensive, complementary and collaborative support matrix.



INSIGHT

Gain data-backed insights from customer preferences.



INNOVATE

Go beyond existing technologies make your business agile, secure and streamlined.



STRATEGY

Identify custom strategies to give you a competitive edge.



CUSTOM

Augment your existing business systems with tailored support plans.

stackgenie

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