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| Section 11) ECS,ECR and Fargate Docker in AWS  Ecs-elastic container service (used to manage docker container)    Machine generated alternative text: ECS Introduction  • New section at the exam — some tricky questions  • Docker Introduction  • ECS  • Cluster  • Services  . Tasks  • Tasks Definition  • ECR  . Fargate  • Exam Tips  Docker  Machine generated alternative text: What is Docker?  • Docker is a software development platform to deploy apps  • Apps are packaged in containers that can be run on any OS  • Apps run the same, regardless  • Any machine  • No compatibility issues  • Predictable behavior  • Less work  • Easier to maintain and deploy  they're run  • Works with any language, any OS, any technology    Docker container on ec2 we can scale up or down docker container    Machine generated alternative text: Docker on an OS  MgSQL—  'e written a note here.  Server (ex: EC2 Instance)    **Note : we stored images in ECR( Elastic container Registry)**    Machine generated alternative text: Where Docker images are stored?  • Docker images are stored in Docker Repositories  • Public: Docker Hub https://hub40ckericom/  • Find base images for many tec ol or S:  • Ubuntu  • MySQL  . NodeJS,Java...  • Private: Amazon ECR (Elastic Container Registry)    Machine generated alternative text: Docker versus Virtual Machines  • Docker is "sort of" a virtualization technology, but not exactly  • Resources are shared with the host many containers on one server  Guest OS  Apps  Guest OS  H ervisor  Host OS  Infrastructure  Apps  Guest OS  (VM)  •wontainer  Container  Container  Container  Container  Container  Container  Container  Container  Docker Daemon  Host OS (EC2 Instance)  Infrastructure    **Virtual machines** and containers differ in several ways, but the primary **difference is** that containers provide a way to virtualize an **OS** so that multiple workloads can run on a single **OS** instance. With VMs, the hardware **is** being virtualized to run multiple **OS** instances.    **Docker** is container based technology and containers are just user space of the operating system. ... A **Virtual Machine**, on the other hand, is not based on container technology. They are made up of user space plus kernel space of an operating system. Under VMs, server hardware is virtualized.    Machine generated alternative text: Getting Started with Docker  • Download Docker at: https://www.docker.com/get-started  Dockerfile  build  Docker Image  run  Docker Container  push  *dockerhub  pull  important  Machine generated alternative text: Docker Containers Management  • To manage containers, we need a container management platform  • Three choices:  • ECS: Amazon's own platform  • Fargate: Amazon's own Serve ss plå€f  source)  • EKS: Amazon's managed Kuberne      ECS clusters  Machine generated alternative text: ECS Clusters Overview  • ECS Clusters are logical grouping of EC2 instances  • EC2 instances run the ECS agent (Docker container)  • The ECS agents registers the instance-to the ECS cluster  • The EC2 instances run a speckl specifically for ECS  ECS Agent  register  ECS Cluster  EC2 instance    **ECS hands on**    First create cluster : ec2 will register in ecs cluster  Then ecs task definition: creating task to run in container  Ecs service : how many task will run ( also can use load balancer and auto scaling)  Configure security group for ec2  Public ip : 8080    **Amazon ECS makes it easy to deploy, manage, and scale Docker containers running applications, services, and batch processes. Amazon ECS places containers across your cluster based on your resource needs and is integrated with familiar features like Elastic Load Balancing, EC2 security groups, EBS volumes and IAM roles.**    **Step 1) click create cluster/ click ec2 linux + networking**    Machine generated alternative text: Create Cluster  I Step 1: Select Cluster template  Step 2: Configure CAJSter  Select cluster template  Cluste to  Networking only  vpc (optional)  powered by AWS Fargate  EC2 Windows Networking  ux + Networking  with AMI      **Click view cluster**    Machine generated alternative text: Amazon ECS  usters  list  s  Account Settings  Amazon ECR  Repositories  AWS Marketplace  Discover software  Subscriptions  Clusters  An Amazon ECS cluster is a regional grouping of one or more container instances on which you can run task requests. Each account receives a default cluster the first time you use the Amazon ECS service. Clusters may cont  more than one Amazon EC2 instance type  For more information, see the ECS documentation.  view all  lofl  1  Container instances  Create Cluster  View  Get Started  CloudWatch monitoring  Default Monitoring  Running tasks  Running tasks  cluster-demo  FARGATE  Services  EC2  Services  0  Pending tasks  0  Pending tasks  No data  CPUUtilization  No data  MemoryUtilization        Note : this ECS instance is linked to ec2 instance    Machine generated alternative text: Services  Amazon ECS  I Clusters  Task Definitions  Amazon ECR  Re positories  AWS Marketplace  Discover software  Subscriptions C?  R Groups  Cluster : cluster-demo  Get a view of  Registered container instances  re dataamulus  Ireland •  Support •  Delete C luster  O Fægate. O EC2  O Fa,gate. O EC2  O Fugate. O EC2  O O EC2  EC2 Instance  SewiceS  Pendi•g tasks CWnt  Cant  ActWe  count  Tasks ECS  Feedback  e English  Last updated on January 31 2019 3:38:08 PM pm ago)  1-1 50  Scale ECS  status: ALL ACTIVE DRAINING  Ageü  Status  Runrüng  CPU ilable  102'  Memory availa...  pelie„  Agent  1.25.'  Machine generated alternative text: Active service count  Draining service count  O Fargate, O EC2  O Fargate, O EC2  Tags  Capacity Providers  Running tasks.  0  Last updated on October 6,  2020 PM (4m ago)  1-1  Page size 50  Services Tasks ECS Instances Metrics Scheduled Tasks  Add additional ECS Instances using Auto Scaling or Amazon EC2.  Actions  status: ALL ACTIVE DRAINING  Filter by attributes (click or press down arrow to view filter options)  CPU available  1024  Agent version  1 _45_o  Docker vere  Container Instance  b7c9fc9f-03ff-4e88-887b-1  EC2 Instance  i-001ac761afe2.  Availability Zo...  eu-west-3b  Agent Connec...  true  Status  ACTIVE  Memory availa.  983      **Note :**  **------------------------While creating ECS due to ASG , ec2 instance will create automatically**    **Ami id will create by ecs**    Machine generated alternative text: aWS Services v  Reserved Instances  Dedicated Hosts New  Scheduled Instances  Capacity Reservations  V IMAGES  AMIS  V ELASTIC BLOCK STORE  Volumes  Snapshots  Lifecycle Manager  V NETWORK & SECURITY  Security Groups New  Elastic IPS New  Placement Groups New  Key Pairs New  Network Interfaces  V LOAD BALANCING  Load Balancers  Target Groups New  ING  Launch  Configurations New  Auto Scaling  Creation time  Tue Oct 06 2020 GMT+0530 (India Standard Time)  IAM instance profile  instance-profile/ecslnstanceRole  Monitoring  true  Spot price  IP address type  Default  Metadata version  Actions  saurabh @ awsdeveloperlearn v  Paris v  The Old launch configurations console is no longer available. We will keep improving the new console based on your feedback.  EC2 ) Launch configurations  Launch configurations (1 / 1)  Q  Search launch configurations  Info  Instance type  t2.micro  Instance type  t2.micro  Key name  Ec2 Tutorial  Security groups  sg-07302ec2cc512315b  RAM disk ID  Token hop limit  Spot price  Create launch configuration  Name  EC2ContainerSe...  AMI ID  ami-018238190  Kernel ID  EBS optimized  false  Create time  AMI ID  ami-0182381900...  Tue Oct 06 2020 GMT+0530 (India Standard Time)  Metadata accessible      Machine generated alternative text: PS C:XUsersXsaurakes) ssh  C:XUsersXsaurakesXDesktopXniagara docxaws stephaneXEc2Tutoria1.pem ec2-user@35.18a.55.1Ø  L ast login: Tue oct 6 2828 from 72.163.2.241  Amazon Linux 2 (ECS Optimized)  For documentation, visit http://aws.amazon.com/documentation/ecs  1 package(s) needed for security, out of 11 available  Run "sudo yum update" to apply all updates.  Lec2-user@ip-172-31-16-146  ECS CLUSTER-cluster-demo  ECS BACKEND HOST:  Lec2-user@ip-172-31-16-146  M$ cat /etc/ecs/ecs.config      Machine generated alternative text: un "sudo yum update" to apply  ec2-user@ip-172-31-16-146 M$  CS CLUSTER-cluster-demo  CS BACKEND HOST:  ec2-user@ip-172-31-16-146 M$  evel-info  evel-info  evel-info  evel-info  evel-info  evel-info  evel-info  evel-info  evel-info  evel-info  evel-info  evel-info  evel-info  all updates.  cat /etc/ecs/ecs. config  docker ps  COMMAND  ONTAINER ID  .64ee1635198  IMAGE  CREATED  22 minutes ago  STATUS  Up 22 minutes (healthy)  amazon/ amazon -ecs - agent : latest  " / agent"  ec2-user@ip-172-31-16-146 M$ docker logs 664ee1635198  time:  time:  time:  time:  time:  time:  time:  time:  time:  time:  time:  time:  time:  : 59Z  2020-10-06 Tag  2020-10-06 Tag  : 59Z  msg:" Loading configuration" module-agent. go  msg: "Amazon ECS agent Version: 1.45. a, Commit: 84321fcb" module-agent. go  excluded from cleanup: amazon/ amazon-ecs-pause:a.l.a" module-docker imag  msg:" Image excluded from cleanup: amazon/ amazon-ecs-pause:a.l.a" module-docker imag  msg:" Image excluded from cleanup: amazon/ amazon-ecs-agent:latest" module-docker ima  msg: "Creating root ecs cgroup: /ecs" module-init  msg: "Creating cgroup ecs'  msg:" manager . go  stream Containerchange start listening  rsg-"Registering Instance with ECS" module-agent.  msg: "Remaining mem: 983" module-client. go  "Registered container instance with cluster! "  ms  "Registration completed successfully. I am ru  msg  linux. go  er linux.go  " module-eventstream.go  odule-client . go  ing as 'arn:aws:ecs:eu-west-3:39  g for updates" module-agent  " module-eventstrea  cluster  evel-info  evel-info  evel-info  evel-info  'cluster-demo '  time-2a2a-1a-a6Tag:43.  time-2a2a-1a-a6Tag:43.  time-2a2a-1a-a6TØ9 : 43.  time-2a2a-1a-a6Tag:43.  module-agent . go  '59Z  •59Z msg:"  •59Z msg:  •59Z msg:  Event stream Deregistercontainerlnstance start listening..  "Initializing stats engine" module-engine. go  "Establishing a Websocket connection to https://ecs-a-1.eu-west-3.amazonaws.com  - instance%2Fb7c9fc9f - Off -4e88-887b-1c62af6Ø6ø1  111-1" module-client. go  evelzinfo PROXY module-client  evel-info msg:" Establishing a Websocket connection to https://ecs  -t-1. eu-west-3. amazonaws . com  instance%2Fb7c9fc9f - Off -  ae88-887b-1c62af6a6a1e&dock  evel-info to TCS endpoint" module-handler . go  evel-info to ACS endpoint" module-acs handler . go  evel-info msg-"TCS Websocket connection closed for a valid reason"  module-handler . go  evel-info msg:" Establishing a Websocket connection to https://ecs  -t-1. eu-west-3. amazonaws . com  -instance%2Fb7c9fc9f - Off -  ae88-887b-1c62af6a6a1e&dock  evel-info to TCS endpoint" module-handler . go      **ECS Task Definition**    Machine generated alternative text: ECS Task Definitions  • Tasks definitions are metadata in  JSON form to tell ECS how to run a  Host pori  8080  80  Containe  httpd  ECS Agent  EC2 instance  Docker Container  • It contains crucial information  • Image Name  • Port Binding for Container and  • Memory and CPU required  • Environment variables  • Networking information  have written a note here.  und:  o    **Create ECS : ecs agent will register ec2 to ecs cluster due to autoscaling**  **and task definition : configure container info**      **Step create : task definition**    Machine generated alternative text: Add container  Standard  Container name*  Image*  Private repository  authentication*  Memory Limits (MiB)*  Port mappings  httpd  nttM:2.4  Hard limit  O Add Soft limit  300  o  o  o  o  Define hard and/or soft memory limits in Mia tor your container. Hard and soft limits correspond to the  •memory' and •memoryReservation• parameters, respectively, in task definitions.  ECS recommends 300-500 MiB as a starting point for web applications.  Host pott  8080  O Add port mapping  Container po,'t  80  Protocol  tcp •  Advanced container configuration      **ECS Service**    **Ecs service will place a task (container) in EC2**    Machine generated alternative text: ECS Service  • ECS Services help define how many tasks should run and how they  should be run  • They ensure that the number of  desired is running across our fleet  of EC2 instances.  • They can be linked to ELB/ LB  needed      Step 1) cluster/cluster demo/create service    Machine generated alternative text: s  usters  Task Definitions  Account Settings  Amazon ECR  Repositories  AWS Marketplace  Discover software  Subscriptions  Clusters cluster-demo  Cluster : cluster-demo  Get a detailed view of the resources on your cluster  Update Cluster  Delete Cluster  Cluster ARN  Status  Registered container instances  Pending tasks count  Running tasks count  Active service count  Draining service count  arn:aws:ecs:eu-west-3:398678778168:cluster/cluster-demo  ACTIVE  O Fargate, O EC2  O Fargate, O EC2  O Fargate, O EC2  O Fargate, O EC2  Tags  Capacity Providers  ALL  Service type  Services  Scheduled Tasks  Tasks ECS Instances Metrics  pdate  Filter in this page  Service Name  Delete  Actions  Launch type  ALL  Task Definition .  Last updated on October 67 2020 4:05:20 PM (0m ago)  Running tasks  Launch type  Service type  Status  Desired tasks  Platform versio..    Machine generated alternative text: Configure service  A service lets you specify how many copies of your task definition to run and maintain in a cluster. You can optionally use an Elastic  Load Balancing load balancer to distribute incoming traffic to containers in your service. Amazon ECS maintains that number of tasks  and coordinates task scheduling with the load balancer. You can also optionally use Service Auto Scaling to adjust the number of  tasks in your service.      Machine generated alternative text: Create Service  I Step 1: Configure service  Step 2 Configure network  Step 3 SetAuto Scaling (optional)  Step 4: Review  Configure service  A service lets you specify how many copies of your task definition to run and maintain in a cluster. You can optionally use an Elastic  Load Balancing load balancer to distribute incoming traffic to containers in your service. Amazon ECS maintains that number ot tasks  and coordinates task scheduling with the load balancer. You can also optionally use Service Auto Scaling to adjust the number ot  tasks in your service.  Launch type  Task Definition  Cluster  Service name  Service type*  Number ot tasks  Minimum healthy percent  FARGATE  EC2  o  o  o  o  o  o  Enter a value  Switch to capacity provider strategy  Family  my-httpd  Revision  1 (latest)  cluster-demo  httpd-service  DAEMON  REPLICA    Machine generated alternative text: Create Service  Step 1: Configure service  Step 2: Configure network  Step 3: SetAuto Scaling (optional)  I Step 4: Review  Review  Cluster  Launch type  Task Definition  Service name  Service type  Number of tasks  Minimum healthy percent  Maximum percent  Configure network  Set Auto Scaling (optional)  cluster-demo  EC2  my-httpd: 1  httpd-service  REPLICA  200  not configured  not configured  Cancel  Previous  Edit  Edit  Edit  Create Service    Machine generated alternative text: Amazon ECS  I Clusters  Task Definitions  Account Settings  Amazon ECR  Repositories  AWS Marketplace  Discover software  Subscriptions t?  Clusters cluster-demo  Service: httpd-service  Service : httpd-service  Desired count  Pending count  Running count  Desired status  RUNNING  update  Last updated on October 6, 2020 4: 15:09 PM (0m ago)  Delet  Cluster  Status  Task definition  Service type  Launch type  Created By  cluster-demo  ACTIVE  my-httpd: 1  REPLICA  EC2  Details  Group  service:httpd-service  Deployments  Tasks Events Auto Scaling  Metrics  Tags  Last status  RUNNING  1-1  Launch type  EC2  Page size  50  Task status: Stopped  Y Filter tn this page  Task  Task Definition  my-httpd:l |
|  |
|  |
| Note: <http://35.180.55.10:8080/>    It not running because of security group issue |
| After setting security group for ec2    Machine generated alternative text: It works!  Not secure  55.180.55.10:8080    Note : our first docker container is running in ec2 machine and port 8080    Machine generated alternative text: ec2-user@ip-172-31-16-  Lec2-user@ip-172-31-16-146 M $ docker ps  COMMAND  "httpd-foreground"  STATUS  Up 39 minutes  Up 2 hours (healthy)  POR  ø.e  CONTAINER ID  TS  770161a3d88  664ee1635198  IMAGE  NAMES  httpd:2.4  CREATED  39 minutes ago  2 hours ago  ecs-my-httpd-l-httpd-ec95b2f3f1c8f7ef5caa  amazon/ amazon -ecs - agent : latest  " / agent'  ecs- agent  Lec2-user@ip-172-31-16-146 M$ curl localhost:8Ø8Ø  (htmlxbodyxhl)lt works ! Uh1X/bodyx/htm1)  Lec2-user@ip-172-31-16-146 M$    Awesome : **one ec2 instance running in ecs cluster and it running a task of httpd**    **Create ecs**  **Create task**  **Create service**    **Can we scale a service or can we run two task**    **Update the service and increase the number of task 2:**    Machine generated alternative text: tasks nd coordinates schéuEng the load use Auto  Step 4: Review  Of tasks in yCN_'  Task  Ente a  0  0  Force new  Service tm•  lave written a note here.  o      Machine generated alternative text: Amazon ECS  I Clusters  Task Definitions  Account Settings  Amazon ECR  Repositories  AWS Marketplace  Discover software  Subscriptions t?  Clusters cluster-demo  Service: httpd-service  Service : httpd-service  Desired count  Pending count  Running count  2  update  Last updated on October 6, 2020 PM (0m ago)  Delete  1-1  Cluster  Status  Task definition  Service type  Launch type  Created By  cluster-demo  ACTIVE  my-httpd: 1  REPLICA  EC2  Metrics  Tags  Details  Pending count  Deployments  Tasks Events Auto Scaling  Task Placement  Strategy  Constraint  spread(attribute:ecs.availaöility-zone), spread(instanceld)  No constraints  Desired count  2  Service Deployment Options  Minimum healthy percent  Maximum percent  Y Fj/ter tn t,hjs page  Deployment Id  ecs-sW4089744950053497223  200 0  Status  PRIMARY  Created time  2020-10-06  +0530  Updated time  2020-10-06 185948 +0530  Running count    **Note :**    **Port 8080:80 is using by first task so second task cant use same port so for this we will scale up cluster**    Machine generated alternative text: Ultimate AWS Certified Developer Associate 2020 - NEW  YOL  Paused &  Service  Clusters  Amazon ECS  I Clusters  Task Definitions  Amazon ECR  Repositories  AWS Marketplace  Discover software  Subscriptions  Successfully updated the Auto Scaling group EC2ContainerService-cluster-demo-EcslnstanceAsg-152W43X8RTDXlJ in the CloudFormation  stack EC2ContainerService-cluster-demo.  cluster-demo  Cluster : cluster-demo  Get a detailed view of the resources on your cluster.  Registeæd container instances  Pending tasks count  Running tasks Count  Active service count  Draining service count  O Fargate, O EC2  0 Fargate, 1 EC2  0 Fugate. 1 EC2  O Fargate. O EC2  50  Services Tasks ECSInstances Metrics Tasks  Scale ECS Instances  Tags  Last updated On January 31 , 2019 4:2g:25 PM (0m ago)  I-I ) Page size  Note: if you don't see the "Scale ECS Instances" button  the underlying Auto Scaling group (in the EC2 console)  Memory availa...  set the desired capacity and max capacity to 2  ople have written a note here.  Agent v      **Note: now 2 task are running**    Machine generated alternative text: Amazon ECS  I Clusters  Task Definitions  Account Settings  Amazon ECR  Repositories  AWS Marketplace  Discover software  Subscriptions t?  Clusters cluster-demo  Cluster : cluster-demo  Get a detailed view otthe resources on your cluster.  update Cluster  Delete Cluster  Cluster ARN  Status  Registered container instances  Pending tasks count  Running tasks count  Active service count  Draining service count  arn:aws:ecseu-west-3:398678778168:cluster/cluster-demo  ACTIVE  2  O Fargate, O EC2  O Fargate, 2 EC2  O Fargate, 1 EC2  O Fargate, O EC2  Tags  Capacity Providers  Services  Tas ks  Metrics  Scheduled Tasks  ECS Instances  Stop  Run new Task  Desired status  RUNNING  RUNNING  Last updated on October 6, 2020 506:14 PM (0m ago)  stop All  Actions  Started at  2020-10-06 17:053_  2020-10-06 1814i5_  Started By  ecs-svU408974495._  ecs-svU408974495._  Stopped  Launch type  ALL  Group  service:httpd-service  service: httpd-service  1-2  Launch type  EC2  EC2  Page size 50  Platform version  Desired task status: Running  Y Fj/ter tn t,hjs page  Task  2eeOt1aa-83tc-4aOO._  759123bb-5Cd7-436._.  Task definition  my-httpd:l  my-httpd:l  Container instanc...  G5ba881-0d36-418._  ö7c9tc9t-03fr-4*8-._.  Last status  RUNNING  RUNNING |
| ECS Service with Load balancer |
| **It will spread load on different container**    Machine generated alternative text: ECS Service with Load Balancer  32698  32667  80  httpd  httpd  32657  32713  80  httpd  httpd  Application  Load Balancer  ECS Agent  ECS Agent  With dynamic  port forwarding  EC2 instance  EC2 instance      How to run task on different instance    **Step 1 ) increase number of task 4 in service**  **Step 2) create new revision of task definition and keep container port blank**    Machine generated alternative text: Task memory maximum allocation tor container memory  Task CPU maximum allocation tor containers  Edit container  Standard  Container name*  Image*  Private repository  authentication*  Memory Limits (MiB)*  Port map  httpd  httpd:2.4  Hard limit  O Add Sott limit  300  o  o  o  o  o  o  Cancel  Container Definitions  Add container  Container Name  Constraint  Image  httpd:2  Task placement constraints allow you to filter the container in  strategy to place the task.  Type  O Add constraint  Proxy Configuration  The configuration details for App Mesh proxy. These fields a  Enab  Log Router Integration  FireLens for Amazon ECS helps you route logs to an AWS se  then choose Apply. Learn more  E nabl  Ilish (US) v  Define hard and/or soft memory limits in Mia for your container Hard and soft limits correspond to the 'memory' and  •memoryReservation• parameters, respectively, in task definitions  ECS recommends 300-500 MiB as a starting point for web applications  O Add port  Advanced container configura on  HEALTHCHECK  Command  * Required  Container port  80  ping  Protocol  tcp  Update  CMD-SHELL, cur/ -f http_/hocalfiost/ll exit 1            Machine generated alternative text: Update Service  I Step 1: Configure service  Step 2 Configure network  Step 3 SetAuto Scaling (optional)  Step 4: Review  Configure service  A service lets you specify how many copies of your task definition to run and maintain in a cluster. You can optionally use an Elastic  Load Balancing load balancer to distribute incoming traffic to containers in your service. Amazon ECS maintains that number ot tasks  and coordinates task scheduling with the load balancer. You can also optionally use Service Auto Scaling to adjust the number ot  tasks in your service.  Task Definition  Launch type  Force new deployment  Cluster  Service name  Service type*  Number ot tasks  Family  my-httpd  'Slon  2 (latest)  EC2  Switch to capacity provider strategy  cluster-demo  httpd-service  REPLICA  4  Enter a value  o  o  o  o      Now : 4 container is running    Machine generated alternative text: Amazon ECS  I Clusters  Task Definitions  Account Settings  Amazon ECR  Repositories  AWS Marketplace  Discover software  Subscriptions t?  Clusters cluster-demo  Service: httpd-service  Service : httpd-service  Desired count  Pending count  Running count  Desired status  RUNNING  RUNNING  RUNNING  RUNNING  4  4  update  Last updated on October 6, 2020 522:15 PM (0m ago)  Delete  Cluster  Status  Task definition  Service type  Launch type  Created By  cluster-demo  ACTIVE  my-httpd:2  REPLICA  EC2  Details  Group  service:httpd-service  service:httpd-service  service:httpd-service  service:httpd-service  Deployments  Tasks Events Auto Scaling  Metrics  Tags  Last status  RUNNING  RUNNING  RUNNING  RUNNING  1-4  Launch type  EC2  EC2  EC2  EC2  Page size  Task status: Stopped  Y Fj/ter tn t,hjs page  Task  oa8c2021-b7df-40df-8Cba-d72528935_  2776782b-&b4-455C-8td2-bbd3d958_  ö8742da3-1dec-acc4-8tec-1t9534204f._  50  Task Definition  my-httpd:2  my-httpd:2  my-httpd:2  my-httpd:2    Port will assign random    Machine generated alternative text: ec2-user@ip-172-31-16-  tec2-user@ip-172-31-16-146  docker  ps  COMMAND  CREATED  STATUS  PORTS  ø.a.ø.a:32769-  ø.a.ø.a:32768-  )8a/tcp  )8a/tcp  NAMES  ecs-my-httpd-2-httpd-e2baf  ecs-my-httpd-2-httpd-d2fbd  ecs-agent  CONTAINER ID  24b468d45365  ge7a1f527aa  714f5f425Øb5  bd3b2bucaa  664ee1635198  IMAGE  httpd:2.4  httpd:2.4  "httpd-foreground"  "httpd-foreground"  " / agent"  6  6  2  minutes ago  minutes ago  hours ago  Up  Up  6  6  2  minutes  minutes  hours (healthy)  amazon/ amazon -ecs - agent : latest  Lec2-user@ip-172-31-16-146 M$ curl localhost:32768  (htmlxbodyxhl)lt works  Lec2-user@ip-172-31-16-146 M$ curl localhost:32769  (htmlxbodyxhl)lt works ! Uh1X/bodyx/htm1)  Lec2-user@ip-172-31-16-146 M$      From user perspective it really tough how to get port so will use load balancer    **NOTE: we cannot update service and add load balancer for this we need to create new service**    Application Load Balancer  Allows containers to use dynamic host port mapping (multiple tasks allowed per container instance). Multiple services can use the same listener port on a single load balancer with rule-based routing and paths.       * **NOTE: link load** balancer to security group of ecs     Machine generated alternative text: aws  Services v  Create Security Group  Actions v  Filter by tags and attributes or search by keyword  Group Name  my-first-rds-sg  default  EC2ContainerService-cluste  vpc ID  vpc-cl 4dafa9  vpc-cl 4dafa9  -cl 4dafa9  Port Range (j)  Owner  398678778168  398678778168  398678778168  Source O)  Description  Created by RDS management console  default VPC security group  ECS Allowed Ports  Description O)  saurabh @ awsdeveloperlearn  o  x  Paris  Support  New EC2 Experience  EC2 Dashboard  Events  Tags  Limits  INSTANCES  Instances  Instance Types  Launch Templates  Spot Requests  Savings Plans  Reserved Instances  Dedicated Hosts  Capacity Reservations  - IMAGES  AMIS  ELASTIC BLOCK  Volumes  Snapshots  Litecycle Manager  NETWORK &  Security Groups  Elastic IPS  Placement Groups  Key Pairs  lt050t5  Name  Description  Edit  Type (i)  Group ID  sg-0090aa9787683070c  sg-0185c561  sg-07302ec2cc512315b  sg-Odd483b011  sg-0fcb 14ce91 ad  Edit inbound rules  Type 0)  Add Rule  Protocol O)  SSH tor Admin Desktop  allow elb talk to any pon on ec2  sg-Odd483b011bö5a199  NOTE: Any edits made on existing rules will result in the edited rule being deleted and a new rule created with the new details. This will cause traffic that depends on  that rule to be dropped tor a very brief period of time until the new rule can be created.  Source (i)  Cancel  Description (i)  httpd  (i)  Port Range  8080  (i)  Inbound Outbound  Tags  Protocol  custom TCP RLlle      Creating new service with alb configuration    Machine generated alternative text: Create Service  Step 1: Configure service  I Step 2: Configure network  Step 3 SetAuto Scaling (optional)  Step 4: Review  Configure network  VPC and security groups  VPC and security groups are configurable when your task definition uses the awsvpc mode.  Load balancing  An Elastic Load Balancing load balancer distributes incoming traffic across the tasks running in your service. Choose an existing load  balancer, or create a new one in the Amazon EC2 console.  Load balancer  type*  None  Your service will not use a load balancer.  Application Load Balancer  Allows containers to use dynamic host pon mapping (multiple tasks allowed per container  instance). Multiple services can use the same listener port on a single load balancer with rule-  based routing and paths.  Network Load Balancer  A Load Balancer functions at the fourth layer of the Open Systems Interconnection (OSI)  model. Atter the load balancer receives a request, it selects a target trom the target group for the  default rule using a flow hash routing algorithm.  Classic Load Balancer  Requires static host port mappings (only one task allowed per container instance); rule-based  routing and paths are not supported.  AV,/SServjceROEForECS  my-ecs-cluster-alb  Service IAM role  Load balancer name      New service    Machine generated alternative text: Amazon ECS  I Clusters  Task Definitions  Account Settings  Amazon ECR  Repositories  AWS Marketplace  Discover software  Subscriptions t?  Clusters cluster-demo  Cluster : cluster-demo  Get a detailed view otthe resources on your cluster.  update Cluster  Delete Cluster  Cluster ARN  Status  Registered container instances  Pending tasks count  Running tasks count  Active service count  Draining service count  arn:aws:ecseu-west-3:398678778168:cluster/cluster-demo  ACTIVE  2  O Fargate, O EC2  O Fargate, 6 EC2  O Fargate, 2 EC2  O Fargate, O EC2  Tags  Capacity Providers  ALL  Service type  REPLICA  REPLICA  Services  Create  Scheduled Tasks  Tasks ECS Instances Metrics  Update  Delete  Actions  Launch type  ALL  Last updated on October 6, 2020 547:00 PM (0m ago)  Running tasks  4  2  Launch type  EC2  EC2  Y Fj/ter tn t,hjs page  Service Name  httpd-service  httpd-alb-demo  Task Definition  my-httpd:2  my-httpd:2  Desired tasks  4  4  1-2  Service type  Status  ACTIVE  ACTIVE  Platform version      Note : **update 0 number of task in old service and delete it**      **Click on task container is mapped to port**    Machine generated alternative text: Started at  2020-10-06 17:49: 19 +0530  Network  Network mode  bridge  Mount Points - not configured  Volumes from - not configured  Last updated on October 6, 2020 552:03 PM (0m ago)  Containers  Name  • httpd  Details  Container Runtime l...  Status  öOcbbc55cc4fe le514..  RUNNING  Protocol  tcp  Image  httpd:2.4  External Link  35.180.164.176132771  Image Digest  cpu units  Hard/Sott memory...  300/-  Essential  true  Resource  53f530eg-9  Network bindings  Host Port  32771  Container Port  80  Environment Variables - not configured  Environment Files - not configured  Docker labels - not configured  Extra hosts - not configured      **NOTE: if we go load balancer and open DNS name it works**    Machine generated alternative text: C A Not secure I my-ecs-cluster-alb-1069320144.eu-west-3.elb.amazonaws.com  It works!  **Note: 4 container running on 2 instance with dynamic port routing using alb** |
| ECR part 1)  If we want to push or pull image from ecr we should have correct IAM policy    Machine generated alternative text: ECR  • So far we've been using Docker images from Docker Hub (public)  • ECR is a private Docker image repository  • Access is controlled through IAM (permission errors policy)  • AWS CLI VI login command (may be asked at the exam)  • $(aws ecr get-login —no-include-email —region eu-west- I)  • AWS CLI v2 login command (newer, may also be asked at the exam - pipe)  • aws ecr get-login-password --region eu-west-l I docker login --username AWS  password-stdin 1 234567890.dkr.ecr.eu-west- I .amazonaws.com  • Docker Push & Pull:  • docker push 1234567890.dkr.ecr.eu-west- I .amazonaws.com/demo:latest  • docker pull 1234567890.dkrecr.eu-west- I .amazonaws.com/demo:latest      Hands on    **Step 1) build image**  **Step 2) before running image into ECS we need to push image to ecr**    **Create repository : search ecs /ecr ---by name demo**    Machine generated alternative text: Services  Services  Amazon ECS  Clusters  Task definitions  Amazon EKS  Clusters  Amazon ECR  Repositories  @ Successfully created repository demo  ECR Repositories  Repositories  (1)  Q  Find repositories  URI  398678778168.dkr.ecr.eu-west-3.amazonaws.com/demo  Created at  10/06/20, 07M 8:49 PM  c  View push commands  Tag immutability  Disabled  saurabh  Delete  Edit  Support  View push commands  Create repository  Encryption type  AES-256  C)  Repository name  demo  Scan on push  Disabled      **Our goal is push images to ECR**    Machine generated alternative text: Push commands for demo  Started with Amazon ECR e.  use the following steps to authenticate and push an image to your repository. For additional registry authentication  methods, including the Amazon ECR credential helper, see Registry Authentication e.  1. Retrieve an authentication token and authenticate your Docker client to your registry.  x  use the AWS CLI:  aws ecr get-login-password  -region eu-west-3  docker login  -username AHS --password-stdilO  Note: If you receive an error using the AWS CLI, make sure that you have the latest version of the AWS CLI and Docker installed.  2. Build your Docker image using the following command. For information on building a Docker file from  scratch see the instructions here e. You can skip this step if your image is already built:  docker build -t demo .  3. After the build completes, tag your image so you can push the image to this repository:  docker tag demo:latest 398678778168.dkr.ecr.eu-west-3.amazonaws.com/demo:latest  4. Run the following command to push this image to your newly created AWS repository:  docker push 398678778168. dkr. ecr .eu-west-3.amazonaws . com/demo:latest    By running above command docker image push to ecr above command will get in ecr aws  Machine generated alternative text: ECR Repositories  demo  Images  Q  Find images  Image tag  latest  demo  Image URI  398678778168.dkr.ecr.eu-west-  3.amazonaws.com/demo:latest  Pushed at  10/06/20,  Digest  sha2S6•  . 24232c27b..  Size  (MB)  55.13  c  Scan  status  View push commands  Delete  Vulnerabilities    ECR PART 2    Set up ecs to use docker image push by ecr      **Step 1) create task definition**      Give the full image name in container of task definition    Earlier from docker hub  Machine generated alternative text: Edit container  Task  Container Definitions  Task CmStrXntS  that match the teen  Volumes  O Add  0  o  o  o  upd    Now from docker ecr  Machine generated alternative text: ;ervices v  Edit container  Task CPU maximum allocation tor containers  Standard  * Required  httpd  Hard limit  O Add Sott limit  o  o  o  o  o  o  Container Definitions  Add container  Container Name  Constraint  Image  httpd:  Container name*  Image*  Private repository  authentication*  Memory Limits (MiB)*  Port mappings  300  Task placement constraints allow you to filter the container in  strategy to place the task.  Type  O Add constraint  Proxy Configuration  The configuration details for App Mesh proxy. These fields a  Enab  Log Router Integration  FireLens for Amazon ECS helps you route logs to an AWS se  then choose Apply. Learn more  Enabl  Volumes  use a volume configuration to add volumes for use by the  Define hard and/or soft memory limits in Mia for your container Hard and soft limits correspond to the 'memory' and  •memoryReservation• parameters, respectively, in task definitions  ECS recommends 300-500 MiB as a starting point for web applications  Host port  O Add port mapping  Container port  80  Protocol  tcp  Advanced container configuration  HEALTHCHECK  Command  CMD-SHELL, cur/ -f http_/hocalfiost/ll exit 1      Machine generated alternative text: Amazon ECS  I Clusters  Task Definitions  Account Settings  Amazon ECR  Repositories  AWS Marketplace  Discover software  Subscriptions t?  Clusters cluster-demo  Cluster : cluster-demo  Get a detailed view otthe resources on your cluster.  Last updated on October 6,  update Cluster  Delete Cluster  Cluster ARN  Status  Registered container instances  Pending tasks count  Running tasks count  Active service count  Draining service count  arn:aws:ecseu-west-3:398678778168:cluster/cluster-demo  ACTIVE  2  O Fargate, O EC2  O Fargate, 2 EC2  O Fargate, 1 EC2  O Fargate, O EC2  Tags  Capacity Providers  Services  Tasks  Metrics  Scheduled Tasks  ECS Instances  Stop  Run new Task  Desired status  RUNNING  RUNNING  RUNNING  RUNNING  Started at  2020-10-06 20:123_  2020-10-06 20:20i4_  2020-10-06 20:123_  2020-10-06  Started By  ecs-sW900639549._  ecs-svc/900639549._  ecs-svc/900639549._  ecs-sW900639549._  2020 822:29 PM (0m ago)  stop All  Actions  Stopped  Launch type  ALL  Group  service:httpd-alö-de_  service:httpd-alö-de_  service:httpd-alö-de_  service:httpd-alö-de_  1-4  Page size 50  Platform version  Desired task status: Running  Y Fj/ter tn t,hjs page  Task  86471&9-84ca-4d9._.  ö25dat26-1bca-45a._  CBI 3Cbdd-fC7ö-446_._  d9Cbdt8d-5tea-40d5._.  Task definition  my-httpd:3  my-httpd:3  my-httpd:3  my-httpd:3  Container instanc...  ö7c9tc9t-03fr-4*8-._.  ö7c9tc9t-03fr-4*8-._  aa5ba881-0d36-418._.  aa5ba881-0d36-418._.  Last status  RUNNING  RUNNING  RUNNING  RUNNING  Launch type  EC2  EC2  EC2  EC2    **Load balancer url**    Machine generated alternative text: C A Not secure I my-ecs-cluster-alb-1069320144.eu-west-3.elb.amazonaws.com  Hello world from custom Docker image  This image is runnmg on ECS, here's some information about this container and task:  "Dockerld" :  " d6ab3da648136a1887b886cdbaa8d14b2d4d7fe7c9Sc99fcafe5abb56d8e464e" ,  "Name'  "httpd' ,  " Docke rName'  "ecs -my- httpd-3-httpd-8488f6f1b7c9d2bfc4e1 '  " Image '  " 398678778168. dkr. ecr. eu -west-3.amazonaws.com/demo : latest" ,  "ImagelD" :  " sha2S6 : e485c11e3d386897b7a24f94e543b6144c2fsebfe94d7afSfaaf98b9f5e15dae" ,  " Ports "  "ContainerPort": 8B,  "Protocol'  "tcp" ,  "HostPort" :  32772  'Labels" .  'com. amazonaws .  'com. amazonaws .  'com. amazonaws .  'com. amazonaws .  'com. amazonaws .  "DesiredStatus'  " KnownStatus "  'Limits'  "CPU": e,  "Memory": 3ee  ecs.  ecs.  ecs.  ecs.  ecs.  cluster'  "cluster-demo" ,  container-name  task-arn' .  "arn.  task-definition-family'  task-definition-version'  "httpd",  • aws : ecs : eu -west-3•.398678778168 : task/86471c69-84ca-4d92-b62a-8d5911198c3a' ,  "my-httpd",  "3"  "RUNNING" ,  . "RUNNING" ,  "2e2e- le-e6T14 : 42 : 35.636e96465z" ,  "2e2e-1e-e6T14 : 42 : 36.69e889955z" ,  "CreatedAt" .  "StartedAt" .  "bridge" ,  "Type'  . "NORMAL",  "Networks "  " NetworkMode' |

Fargate

Machine generated alternative text:
Fargate 
• When launching an ECS Cluster, we have to create our EC2 instances 
• If we need to scale, we need to add EC2 instances 
• So we manage infrastructure. .. 
• With Fargate, it's all Serverles 
• We don't provision EC2 instance 
• We just create task definitions, and AWS will run our containers for us 
• To scale, just increase the task number Simple! No more EC2 @ 

**Demo**

1. Create Cluster

Machine generated alternative text:
Create Cluster 
I Step 1: Select cluster template 
Step 2 Configure cluster 
Select cluster template 
The following cluster templates are available to simplify cluster creation. Additional configuration and integrations can be 
added later. 
Networking only 
Resources to be created: 
Cluster 
VPC (optional) 
Subnets (optional) 
Powered by AWS Fargate 
EC2 Windows + Networking 
Resources to be created: 
Cluster 
Subnets 
Auto Scaling group with Windows AMI 
EC2 Linux + Networking 
Resources to be created: 
Cluster 
Subnets 
Auto Scaling group with Linux AMI 

Machine generated alternative text:
Create Cluster 
Step 1: Select cluster template 
I Step 2: Configure cluster 
Configure cluster 
Cluster name* 
Networking 
targate-demd 
o 
Create a new VPC tor your cluster to use. A VPC is an isolated portion of the AWS Cloud populated by AWS objects, such 
as Fargate tasks. 
Tags 
Key 
Add key 
create vpc 
Create a new VPC for this cluster 
Value 
Add value 
CloudWatch Container Insights 
CloudWatch Container Insights is a monitoring and troubleshooting solution for containerized applications and microservices. It 
collects, aggregates, and summarizes compute utilization such as CPU, memory, disk, and and diagnostic information 
such as container restart tailures to help you isolate Issues with your clusters and resolve them quickly. Learn more 
CloudWatch Container Insights 
Enable Container Insights 
Previous 
Create 
*Required 
Cancel 

0 instance

Machine generated alternative text:
Amazon ECS 
I Clusters 
Task Definitions 
Account Settings 
Amazon ECR 
Repositories 
AWS Marketplace 
Discover software 
Subscriptions t? 
Clusters targate-demo 
Cluster : fargate-demo 
Get a detailed view otthe resources on your cluster. 
Update Cluster 
Delete Cluster 
Cluster ARN 
Status 
Registered container instances 
Pending tasks count 
Running tasks count 
Active service count 
Draining service count 
arn:aws:ecseu-west-3:398678778168:cluster/fargate-demo 
ACTIVE 
O Fargate, O EC2 
O Fargate, O EC2 
O Fargate, O EC2 
O Fargate, O EC2 
Services 
Create 
Scheduled Tasks 
Tasks ECS Instances Metrics 
Tags 
Capacity Providers 
ALL 
Service type 
Update 
Delete 
Actions 
Launch type 
ALL 
Last updated on October 6, 2020 833:06 PM (0m ago) 
Running tasks 
Launch type 
Platform version 
Y Fj/ter tn t,hjs page 
Service Name 
Task Definition 
No results 
Desired tasks 
Service type 
Status 

**Step 2 : create new task definition**

**Note :**

**Very important**

**There is no ec2 container and autoscaling group in fargate but behind the scene aws provide docker container for us serverless manner**

Machine generated alternative text:
Amazon ECS 
I Clusters 
Task Definitions 
Account Settings 
Amazon ECR 
Repositories 
AWS Marketplace 
Discover software 
Subscriptions t? 
Clusters targate-demo Service targate-service-demo 
Service : fargate-service-demo 
Desired status 
RUNNING 
RUNNING 
Desired count 
Pending count 
Running count 
Group 
2 
2 
update 
Last updated on October 6, 2020 849:03 PM (0m ago) 
50 
Delete 
Cluster 
Status 
Task definition 
Service type 
Launch type 
Service role 
Created By 
targate-demo 
ACTIVE 
targate-task-definition-demo:l 
REPLICA 
FARGATE 
AwsservtceR0EForacs 
Details 
Deployments 
Tasks Events Auto Scaling 
Metrics 
Tags 
Logs 
Launch type 
FARGATE 
FARGATE 
1-2 Page size 
Platform version 
1.30 
1.30 
Task status: Stopped 
Y Fj/ter tn t,hjs page 
Task 
oe8eda9a-70bt-4a88-9be3-a74_._ 
624e381 
Task Definition 
targate-task-definition-demo:l 
targate-task-definition-demo:l 
Last status 
RUNNING 
RUNNING 
service:targate-service-demo 
service:targate-service-demo 

**Output:**

Machine generated alternative text:
C A Not secure I my-ecs-cluster-alb-1069320144.eu-west-3.elb.amazonaws.com 
Hello world from custom Docker image 
This image is runnmg on ECS, here's some information about this container and task: 
"Dockerld" : 
"259abe94238e7fe1d6baa2d2c68ba7747fea466333893178aa9b58e287efa8ae' , 
"Name' 
: "httpd' , 
"ecs - fargate -task-definition -demo-I -httpd-fe85d7e5d8eda3e8ade1" , 
"Docke rName' 
" Image' 
" 398678778168. dkr. ecr. eu -west-3. amazonaws . com/demo : latest" , 
"ImagelD" : 
" sha2S6 : e485c11e3d386897b7a24f94e543b6144c2fsebfe94d7afSfaaf98b9f5e15dae" , 
"Labels" : 
'com. amazonaws . 
'com. amazonaws . 
'com. amazonaws . 
'com. amazonaws . 
'com. amazonaws . 
"DesiredStatus' 
" KnownStatus" 
'Limits' 
"CPU": e, 
"Memory": 512 
ecs. 
ecs. 
ecs. 
ecs. 
ecs. 
cluster' 
'arn : aws : ecs : eu-west -3 : 398678778168 : cluster/fargate-demo" , 
container-name 
"httpd " , 
task-arn . 
'arn. 
• aws : ecs : eu -west- 3 : 398678778168 : task/ee8eda9a-7ebf-4a88-9be3-a74d1168a272" , 
task-definition-family' 
"far-gate-task-definition-demo' , 
task-definition-version" 
"1" 
"RUNNING" , 
• "RUNNING", 
"2e2e-ae-e6T15 : 17 : 42.4e9545197z" , 
"2e2e- le-e6T15 : 17 : 43.2859e6449z" , 
"CreatedAt" : 
"StartedAt" . 
"Type' 
"NORMAL" , 
"Networks " 
" NetworkMode' 
" awsvpc' 
"1Pv4Addresses " . 
"172.31.42.8e" 

|  |
| --- |
|  |
| ECS IAM deep dive and hands on |

Notes :

**ecs agent connect with ecs service , cloudwatch logs and ecr service through ec2 instance profile**

Machine generated alternative text:
ECS IAM Roles Deep 
• EC2 Instance Profile: 
• Used by the ECS agent 
• Makes API calls to ECS service 
• Send container logs to CloudWa 
• Pull Docker image from ECR 
• ECSTask Role: 
• Allow each task to have a specific 
Dive 
EC2 Instance Profile 
@ Service 
CloudWatch 
3 
ECR Service 
S3 Bucket 
EC2 Service 
EC2 instance 
ECS Agent 
Task A 
ECS Task Role A 
Task B 
a— 
ECS Task Role B 
• Use different roles for the different ECS 
Services you run 
• Task Role is defined in the task definition 
O Stephane Maarek 

ECS task placement and constrains

Machine generated alternative text:
ECS Tasks Placement 
• When a task of type EC2 is launched, 
ECS must determine where to place 
it, with the constraints of CPU, 
memory, and available port 
• Similarly, when a service scales i C 
needs to determine which task 
terminate. 
• To assist with this, you can define 
task placement strategy and task 
placement constraints 
• Note: this is only for ECS with EC2, 
not for Fargate 
C2 instance 
EQ instance 
ECS Service 
New Container 
EC2 instance 

Machine generated alternative text:
ECS Task Placement Process 
• Task placement strategies are a best effort 
• When Amazon ECS places tas 
container instances: 
the following process to select 
2. 
3. 
4. 
Identify the instances that sa i 
, memory, and port 
requirements in the task 
Identify the instances that satisfy the task placement constraints. 
Identify the instances that satisfy the task placement strategies. 
Select the instances for task placement. 

Binpack: first it will put all container in one ec2 then it will go for other ec2 that’s why it is called binpack

Machine generated alternative text:
ECS Task Placement Strategies 
• Binpack 
• Place tasks based on the least available 
amount of CPU or memory 
• This minimizes the number of insünces I 
use (cost savings) 
" placementSt rategy" : 
"field": "memory", 
"type": "binpack" 
EQ instance 
EC2 instance 

Random : it will placed container randomly in ec2

Machine generated alternative text:
ECS Task Placement Strategies 
• Random 
• Place the task randomly 
" placementStrategy" : 
"type": " random" 
EQ instance 
EC2 instance 

Machine generated alternative text:
ECS Task Placement Strategies 
EQ instance 
AZ-B 
EC2 instance 
AZ-C 
• Spread 
• Place the task evenly based on 
the specified value 
• Example: instanceld, 
attribute:ecs.availability-zone 
"placementStrategy": I 
"field": "attribute: , 
"type": "spread" 
EQ instance 
AZ-A 

Machine generated alternative text:
ECS Task Placement Strategies 
• You can mix them together 
"type": "spread" 
"type": "spread" 
"type": "spread" 
"type": "binpack" 
ementStrategy" : 
"field": "attribute: ecs.availability—zone" , 
"field": 
" nemory" , 
"placementStrategy••: 
"field": "attribute:ecs. availability—zone", 
"field": 
"instanceld" , 
"p 

Machine generated alternative text:
ECS Task Placement Constraints 
• distinctlnstance: place each task on a different container instance 
"placementconstraints": 
"type": "distinctlnstance" 
• memberOf: places task on instances that satisfy an expression 
• Uses the Cluster Query Language (advanced) 
"placementconstraints" : 
"expression": "attribute:ecs. instance—type t2.*••, 
"type": "memberOf•• 

This will come while creating service

Machine generated alternative text:
Maxinzn 
Task Placement 
AWS O 
This Wts AWS ttæ A 
wrth To to 
. must re-crate 
Lets to 
AZ 
Next S tep 
O 
Tagging that you 

ECS Autoscaling

Machine generated alternative text:
ECS — Service Auto Scaling 
• CPU and RAM is tracked in CloudWatch at the ECS service level 
• Target Tracking: target a specific average CloudWatch metric 
• ECS Service Scaling (task level) # Auto Scaling (instance level) 
• Fargate Auto Scaling is much easier to setup (because serverless) 

Machine generated alternative text:
ECS — Cluster Capacity Provider 
• A Capacity Provider is used in association with a cluster to determine 
the infrastructure that a task runs on 
• For ECS and Fargate users, the FARGATE and FARGATE_SPOT capacity 
providers are added automatically 
• For Amazon ECS on EC2, youn d o 
ciate the capacity provider with an 
auto-scaling group 
• When you run a task or a service, 
define a capacity provider 
strategy, to prioritize in which provider to run. 
• This allows the capacity provider to automatically provision 
infrastructure for you 

Machine generated alternative text:
ECS 
Ote here. 
— Cluster Capacity Provider 
New task 
Fargate 
Container 
Launched thanks to 
a capacity provider 
EC2 instance 
1 011 
Launched thanks to 
a capacity provider 
EC2 instance 
EC2 instance 
Average EC2 CPU 30% 
tances have no more capacity 

**Capacity provider : give 70 % of cpu if more task create the due to capcity provider more ec2 instance will create**

ECS Summary

Machine generated alternative text:
ECS Summary + Exam Tips 
• ECS is used to run Docker containers and has 3 flavors: 
• ECS "Classic": provision EC2 in 
o run containers onto 
• Fargate: ECS Serverless, no m re 872.t provision 
• EKS: Managed Kubernetes by 

Machine generated alternative text:
ECS classic 
• EC2 instances must be created 
• We must configure the file /etc/ecs/ecs.config with the cluster name 
• The EC2 instance must run an ECS agent 
• EC2 instances can run multiple containers on the same type: 
• You must not specify a host port (only container port) 
• You should use an Application Load Balancer with the dynamic port mapping 
• The EC2 instance security group must allow traffc from the ALB on all ports 
• ECS tasks can have IAM Roles to execute actions against AWS 
• Security groups operate at the instance level, not task level 

Machine generated alternative text:
ECR is used to store Docker Images 
• ECR is tightly integrated with IAM 
• AWS CLI VI login command (may be asked at the exam) 
• $(aws ecr get-login —no-include-email —region eu-west- l) 
• "aws ecr get-login" generates a "docker login" command 
• AWS CLI v2 login command (newer, may also be asked at the exam - pipe) 
• aws ecr get-login-password --region eu-west-l I docker login --username AWS 
password-stdin 1 234567890.dkr.ecr.eu-west- I .amazonaws.com 
• Docker Push & Pull: 
• docker push 1234567890.dkr.ecr.eu-west- I .amazonaws.com/demo:latest 
• docker pull 1 234567890.dk-.ecr.eu-west- I .amazonaws.com/demo:latest 
• In case an EC2 instance (or you) cannot pull a Docker image, check IAM 

Machine generated alternative text:
Fargate 
• Fargate is Serverless (no EC2 to manage) 
• AWS provisions containers for us and assigns them ENI 
• Fargate containers are provisio ed-by e container spec (CPU / RAM) 
• Fargate tasks can have IAM Roles 
x ute actions against AWS 

Machine generated alternative text:
ECS Other 
• ECS does integrate with CloudWatch Logs: 
• You need to setup logging at the task definition level 
• Each container will have a different log stream 
• The EC2 Instance Profile needs to have the correct IAM permissions 
• Use IAM Task Roles for your tasks 
• Task Placement Strategies: binpack, random, spread 
• Service Auto Scaling with target tracking, step scaling, or scheduled 
• Cluster Auto Scaling through Capacity Providers 