

Task - 23

Gateway load balancer

- A Gateway Load Balancer (GWLB) is a type of load balancer that acts as a transparent network gateway to deploy, scale, and manage a fleet of virtual appliances like firewalls, intrusion detection systems, and deep packet inspection systems.
- It provides a single entry and exits point for network traffic, distributes that traffic to healthy appliances, and uses a protocol like Geneve to encapsulate traffic transparently so the appliances see the original source and destination of the traffic.

Create a VPC

The screenshot shows the AWS VPC console interface. The top navigation bar includes tabs for 'vpcs | VPC Console', 'VPC | ap-southeast-1', 'subnets | VPC Console', 'Instances | EC2 | ap...', 'EC2 Instance Connect', 'Target group details', 'Load balancer details', and a '+' button. The account ID is 3938-2745-7998, and the region is Asia Pacific (Singapore). The main content area is titled 'Your VPCs (3) Info'. It features a search bar and a table with columns: Name, VPC ID, State, Block Public..., IPv4 CIDR, and IPv6 CIDR. The table lists three VPCs: 'security_vpc' (ID: vpc-0274a22a0d4412f3c), 'customer_vpc' (ID: vpc-02634456d8b8d15d5), and a root entry ('-'). Below the table is a section titled 'Select a VPC above'. On the left sidebar, under 'Virtual private cloud', there are links for 'Your VPCs', 'Subnets', 'Route tables', 'Internet gateways', 'Egress-only Internet gateways', 'DHCP option sets', 'Elastic IPs', 'Managed prefix lists', 'NAT gateways', 'Peering connections', and 'Route servers'. Under 'Security', there is a link for 'Network ACLs'. At the bottom, there are links for 'CloudShell', 'Feedback', and 'Console Mobile App', along with copyright information for 2025 and links for 'Privacy', 'Terms', and 'Cookie preferences'.

Create a subnet

The screenshot shows the AWS VPC console interface, similar to the previous one but for subnets. The top navigation bar and account information are identical. The main content area is titled 'Subnets (6) Info'. It features a search bar and a table with columns: Name, Subnet ID, State, VPC, Block Public..., and IPv4 CIDR. The table lists six subnets: 'customer_private' (ID: subnet-07c3990cda2b5ce77), 'customer_public' (ID: subnet-0a0612aa5b10f2fb), and four unnamed subnets (IDs: subnet-00b1afc1fe5e29345, subnet-09cd94db8c5f77451, subnet-03776fe5f5968f808, and subnet-08bad571f595fb8fd). Below the table is a section titled 'Select a subnet'. On the left sidebar, under 'Virtual private cloud', there are links for 'Your VPCs', 'Subnets', 'Route tables', 'Internet gateways', 'Egress-only Internet gateways', 'DHCP option sets', 'Elastic IPs', 'Managed prefix lists', 'NAT gateways', 'Peering connections', and 'Route servers'. Under 'Security', there is a link for 'Network ACLs'. At the bottom, there are links for 'CloudShell', 'Feedback', and 'Console Mobile App', along with copyright information for 2025 and links for 'Privacy', 'Terms', and 'Cookie preferences'.

Create route table

The screenshot shows the AWS VPC Route Tables page. The left sidebar includes sections for VPC dashboard, Virtual private cloud (Your VPCs, Subnets, Route tables selected), Security (Network ACLs, Security groups), and CloudShell/Feedback/Console Mobile App. The main content area displays a table of existing route tables:

Name	Route table ID	Explicit subnet associations	Main	VPC
-	rtb-0b82a447c9d0a0356	-	Yes	vpc-00aa32b792ae81dee
-	rtb-05b449cbfa4778239	-	Yes	vpc-0274a22a0d4412f5c sec
-	rtb-0fe113472201cf203	-	Yes	vpc-02634456d8b8d15d5 cu
customer_rt1	rtb-06b35581067fd6f88	subnet-0a0612aacb510f...	No	vpc-02634456d8b8d15d5 cu
<input checked="" type="checkbox"/> customer_rt2	rtb-0afebb48f1e8c95ad	subnet-07c3990cda2b5ce77 / customer_private	No	vpc-02634456d8b8d15d5 cu
-	rtb-0a0c9564982dbb479	subnet-08ad6571f595fb...	No	vpc-0274a22a0d4412f5c sec

A modal window for "rtb-0afebb48f1e8c95ad / customer_rt2" is open, showing the "Details" tab. It lists the Route table ID (rtb-0afebb48f1e8c95ad), Main status (No), and Explicit subnet associations (subnet-07c3990cda2b5ce77 / customer_private). Edge associations are listed as "-".

Create internet gateway

The screenshot shows the AWS VPC Internet Gateways page. The left sidebar includes sections for VPC dashboard, Virtual private cloud (Your VPCs, Subnets, Route tables, Internet gateways selected), Security (Network ACLs, Security groups), and CloudShell/Feedback/Console Mobile App. The main content area displays a table of existing internet gateways:

Name	Internet gateway ID	State	VPC ID	Owner
-	igw-03bbe680f5bcb9f72	Attached	vpc-00aa32b792ae81dee	393827457998
igw1	igw-0b2e0b4c298edb5cb	Attached	vpc-02634456d8b8d15d5 customer_vpc	393827457998
igw2	igw-0567e03d58860db16	Attached	vpc-0274a22a0d4412f5c security_vpc	393827457998

A modal window at the bottom prompts "Select an internet gateway above".

Create a security group

The screenshot shows the AWS VPC Security Groups page. A green success message at the top states: "Security group (sg-095b818c210f6241f | sg_2) was created successfully". Below this, a table lists nine security groups. The columns are: Name, Security group ID, Security group name, VPC ID, and Description. The table includes rows for launch-wizard-3, launch-wizard-1, sg_2, launch-wizard-4, default, sg_1, and sg, each with their respective VPC IDs and descriptions.

Name	Security group ID	Security group name	VPC ID	Description
-	sg-0a89d0fa2910b0a83	launch-wizard-3	vpc-00aa32b792ae81dee	launch-wizard-
-	sg-0f5c90fb0671c6566	launch-wizard-1	vpc-00aa32b792ae81dee	launch-wizard-
-	sg-095b818c210f6241f	sg_2	vpc-0274a22a0d4412f3c	sg
-	sg-0890560fd12152428	launch-wizard-4	vpc-00aa32b792ae81dee	launch-wizard-
-	sg-05ee9f9ba43e0a7dd	default	vpc-0274a22a0d4412f3c	default VPC sec
-	sg-048c0219ee74e277a	sg_1	vpc-02634456d8b8d15d5	sg
-	sg-05d188ac4f7894163	default	vpc-02634456d8b8d15d5	default VPC sec

Create target group

The screenshot shows the AWS EC2 Target groups page. A table lists one target group named "my-tg". The columns are: Name, ARN, Port, Protocol, Target type, Load balancer, and VPC ID. The target group is associated with a GENEVE protocol, an Instance target type, and is currently unassociated with any load balancers. The VPC ID listed is vpc-0274a22a0d4412f3c.

Name	ARN	Port	Protocol	Target type	Load balancer	VPC ID
my-tg	arn:aws:elasticloadbalancing:ap-southeast-1:123456789012:targetgroup/my-tg/095b818c210f6241f	6081	GENEVE	Instance	None associated	vpc-0274a22a0d4412f3c

Create a GWLB

The screenshot shows the AWS EC2 Load Balancers console. On the left, a navigation sidebar includes sections for Capacity Manager, Images, Elastic Block Store, Network & Security, Load Balancing (selected), Auto Scaling, and CloudShell. The main area displays a table titled "Load balancers (1)". The table has columns for Name, State, Type, Scheme, IP address type, VPC ID, and Availability Zones. One row is listed: "gw-lb" (Active, gateway, -, IPv4, vpc-0274a22a0d4412f5c, ap-southeast-1a (ap)). Below the table, a message says "0 load balancers selected". At the bottom right of the page, there are links for "CloudShell", "Feedback", and "Console Mobile App".

Create endpoint services

The screenshot shows the AWS VPC Endpoint Services console. On the left, a navigation sidebar includes sections for VPC gateways, Security (Network ACLs, Security groups), PrivateLink and Lattice (Getting started, Endpoints, Endpoint services), DNS firewall (Rule groups, Domain lists), and Network Firewall. The main area displays a table titled "Endpoint services (1/1) Info". The table has columns for Name, Service ID, Types, Service name, State, and Availability. One row is listed: "my-end-pt" (vpce-svc-0b6e921648aa08f06, GatewayLoadBalancer, com.amazonaws.vpce.ap-southeast-1.v..., Available, aps). Below the table, a detailed view for "vpce-svc-0b6e921648aa08f06 / my-end-pt" is shown with tabs for Details, Load balancers, Allow principals, Endpoint connections, Notifications, Supported Regions, Monitoring, and Controls. The "Details" tab is selected, showing fields for Service ID, Types, Service name, and State. The state is marked as "Available". At the bottom right of the page, there are links for "CloudShell", "Feedback", and "Console Mobile App".

Create endpoints

The screenshot shows the AWS VPC Endpoints console. On the left, a navigation sidebar includes links for VPC gateways, Peering connections, Route servers, Security (Network ACLs, Security groups), PrivateLink and Lattice (Getting started, Endpoints, Endpoint services, Service networks, Lattice services, Resource configurations, Resource gateways, Target groups), DNS firewall (Rule groups, Domain lists), and Network Firewall (CloudFront). The main content area displays the 'Endpoints (1/1)' page. A table lists one endpoint:

Name	VPC endpoint ID	Endpoint type	Status	Service name
my_ept	vpce-07d1f56a13a59cfb3	GatewayLoadBalancer	Available	com.amazonaws.vpce...

Below the table, a detailed view for 'vpce-07d1f56a13a59cfb3 / my_ept' is shown with tabs for Details, Subnets, Notification, Monitoring, and Tags. The Details tab shows the Endpoint ID (vpce-07d1f56a13a59cfb3), Status (Available), Creation time (Thursday 30 October 2025 at 16:56:56 GMT+5:30), and Endpoint type (GatewayLoadBalancer).

Create instance

The screenshot shows the AWS EC2 Instances console. On the left, a navigation sidebar includes links for Elastic Block Store (Volumes, Snapshots, Lifecycle Manager), Network & Security (Security Groups, Elastic IPs, Placement Groups, Key Pairs, Network Interfaces), Load Balancing (Load Balancers, Target Groups, Trust Stores), Auto Scaling (Auto Scaling Groups, Settings), and CloudWatch Metrics (CloudWatch Metrics). The main content area displays the 'Instances (1/3)' page. A table lists three instances:

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IP
security_inst...	i-079433e80e79243de	Running	t2.micro	2/2 checks passed	View alarms +	ap-southeast-1a	-
customer_priv...	i-0466dc32114c03bf	Running	t2.micro	2/2 checks passed	View alarms +	ap-southeast-1a	-
customer_pub...	i-02c9f0a8f3b09c443	Running	t2.micro	2/2 checks passed	View alarms +	ap-southeast-1a	-

Below the table, a detailed view for 'i-02c9f0a8f3b09c443 (customer_public_instance)' is shown with tabs for Details, Status and alarms, Monitoring, Security, Networking, Storage, and Tags. The Details tab shows the Instance ID (i-02c9f0a8f3b09c443), AMI ID (ami-0609186b60570e9c9), AMI name (al2023-ami-2023.9.20251027.0-kernel-6.1-x86_64), Monitoring (disabled), Allowed image (-), Platform details (Linux/UNIX), and Termination protection (Disabled).

```
Amazon Linux 2023
https://aws.amazon.com/linux/amazon-linux-2023

Last login: Thu Oct 30 11:36:55 2025 from 3.0.5.35
[ec2-user@ip-10-0-1-43 ~]$ sudo tcpdump -nvv 'port 6081'
dropped privs to tcpdump
tcpdump: listening on enX0, link-type EN10MB (Ethernet), snapshot length 262144 bytes
```

i-02c9f0a8f3b09c443 (customer_public_instance)

PublicIPs: 54.169.218.192 PrivateIPs: 10.0.1.43

CloudShell Feedback Console Mobile App