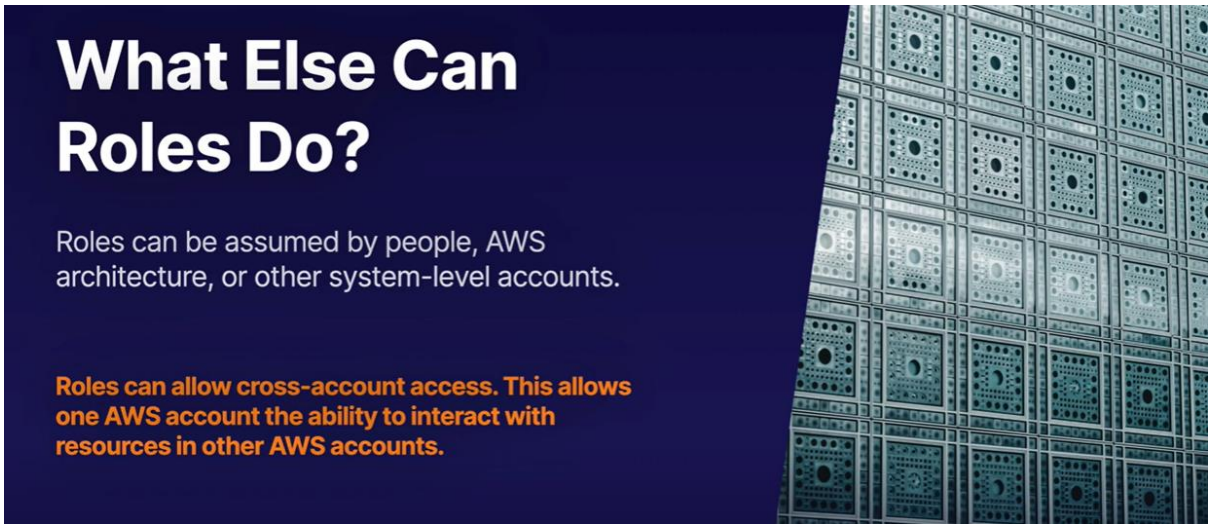
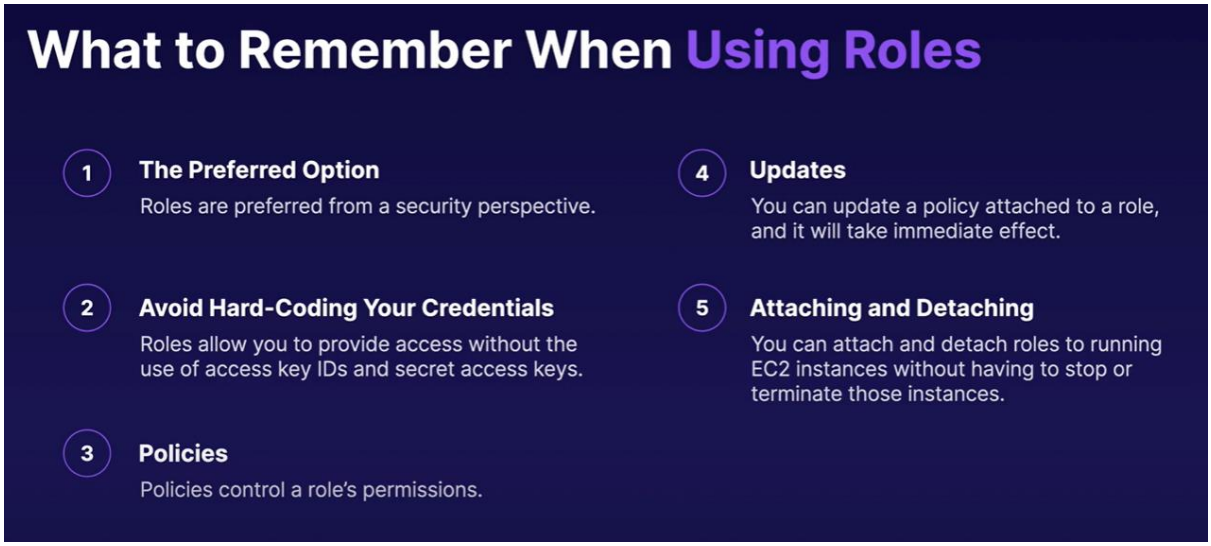
Using Roles:

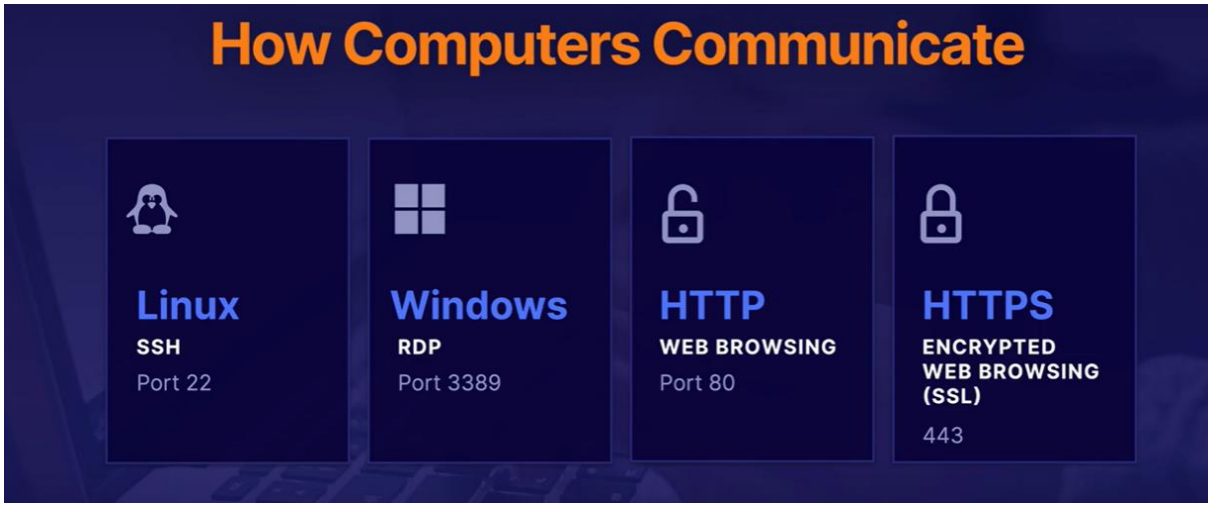

What Is an
IAM Role?
A role is an identity you can create in IAM that has specific permissions. A role is similar to a user, as it is an AWS identity with permission policies that determine what the identity can and cannot do in AWS.

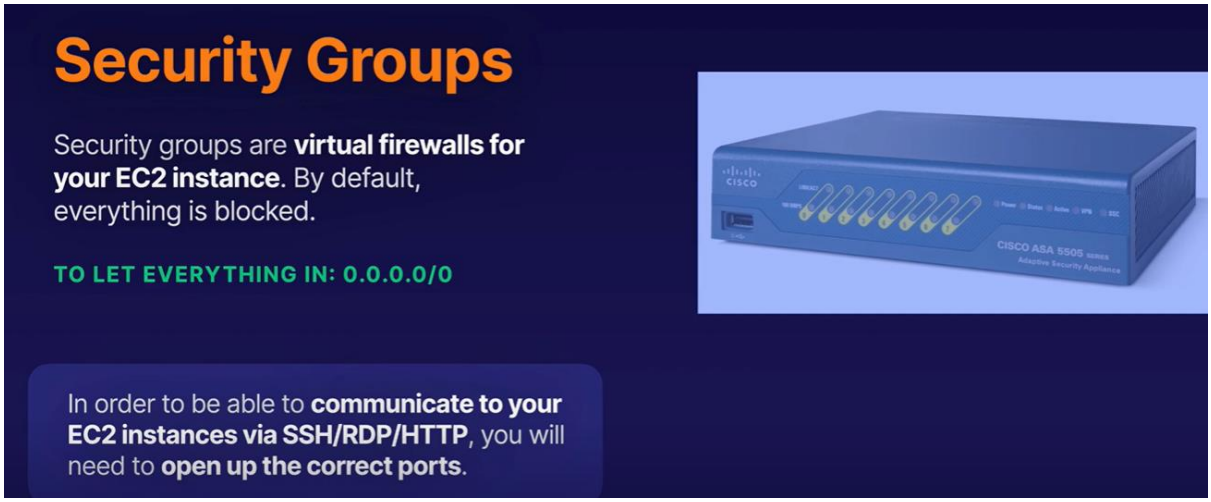

Roles Are Temporary
A role does not have standard long-term credentials the same way passwords or access keys do. Instead, when you assume a role, it provides you with temporary security credentials for your role session.

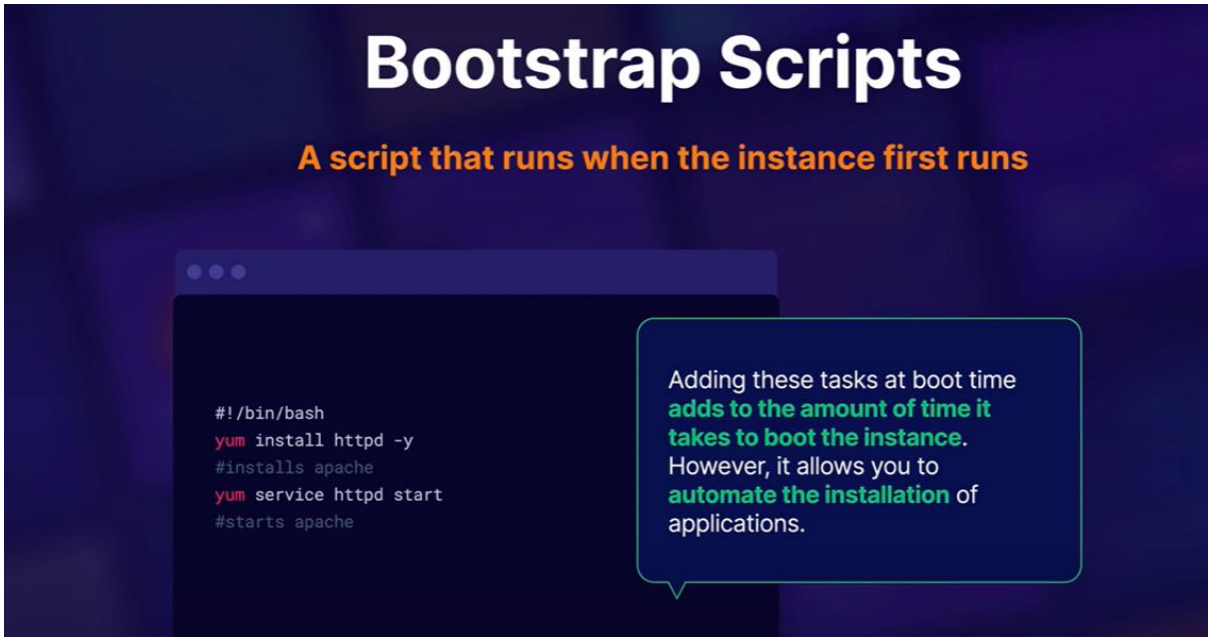

What Else Can Roles Do?
Roles can be assumed by people, AWS architecture, or other system-level accounts.
Roles can allow cross-account access. This allows one AWS account the ability to interact with resources in other AWS accounts.

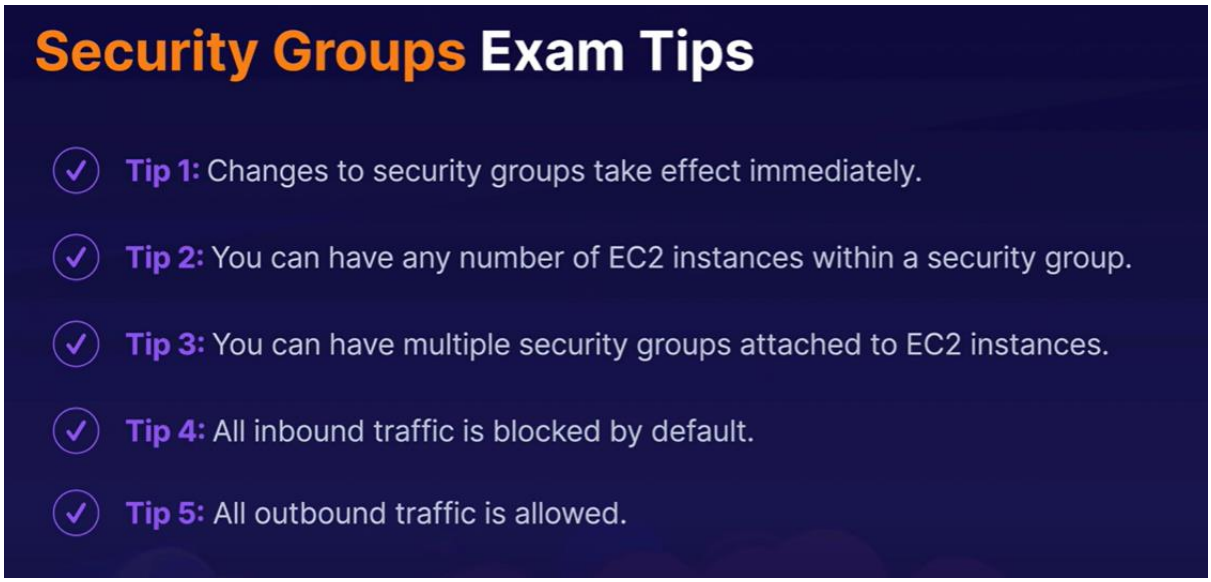


Security Groups:

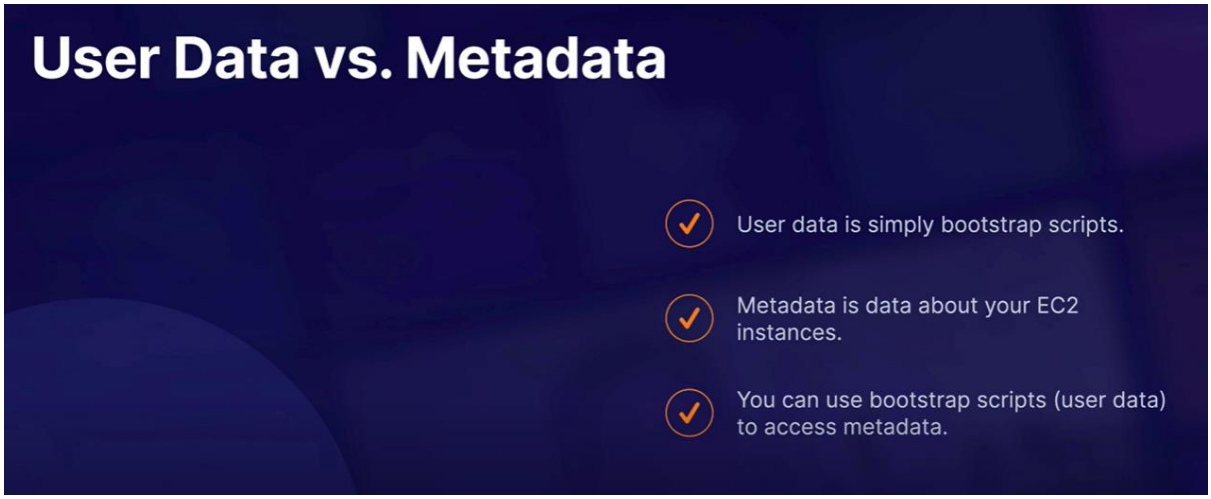




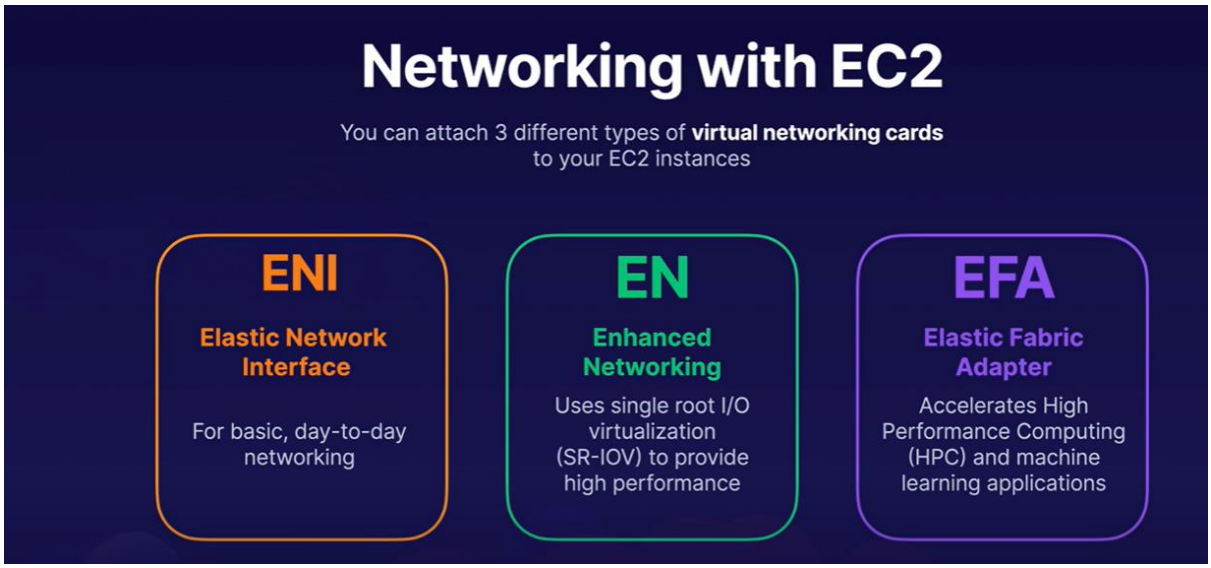




EC2 Metadata:



Networking with EC2:



An ENI is simply a virtual network card that allows:

- Private IPv4 Addresses
- Public IPv4 Address
- Many IPv6 Addresses
- MAC Address
- 1 or More Security Groups

Common ENI Use Cases

- Create a management network.
- Use network and security appliances in your VPC.
- Create dual-homed instances with workloads/ roles on distinct subnets.
- Create a low-budget, high-availability solution.

What Is Enhanced Networking?

For High-Performance Networking between 10 Gbps - 100 Gbps

SINGLE ROOT I/O VIRTUALIZATION (SR-IOV)

SR-IOV provides higher I/O performance and lower CPU utilization

PERFORMANCE

Provides higher bandwidth, higher packet per second (PPS) performance, and consistently lower inter-instance latencies

Depending on your instance type, enhanced networking can be enabled using:

ELASTIC NETWORK ADAPTER (ENA)

Supports network speeds of up to 100 Gbps for supported instance types.

OR

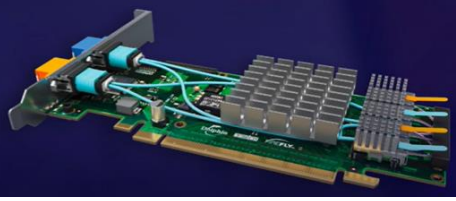
INTEL 82599 VIRTUAL FUNCTION (VF) INTERFACE

Supports network speeds of up to 10 Gbps for supported instance types. Typically used on older instances.

What Is an EFA?

Elastic Fabric Adapter

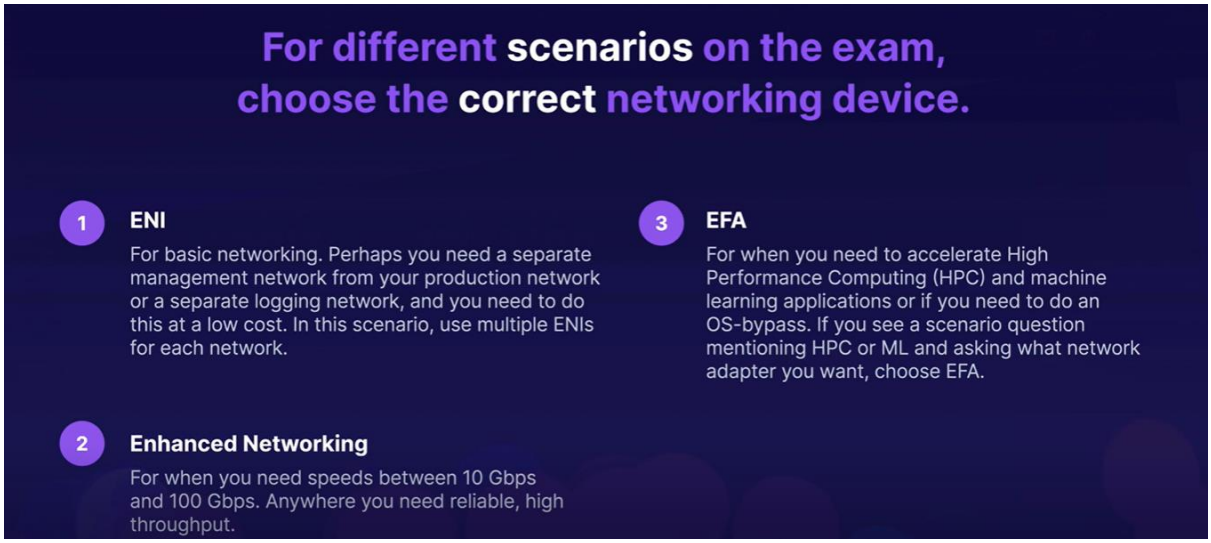
- A network device you can attach to your Amazon EC2 instance to accelerate High Performance Computing (HPC) and machine learning applications.
- Provides lower and more consistent latency and higher throughput than the TCP transport traditionally used in cloud-based HPC systems.



EFA CAN USE OS-BYPASS

It makes it a lot faster with much lower latency.

OS-bypass enables HPC and machine learning applications to bypass the operating system kernel and communicate directly with the EFA device. Not currently supported with Windows — only Linux.


For different scenarios on the exam,
choose the correct networking device.
1
ENI
For basic networking. Perhaps you need a separate management network from your production network or a separate logging network, and you need to do this at a low cost. In this scenario, use multiple ENIs for each network.
2
Enhanced Networking
For when you need speeds between 10 Gbps and 100 Gbps. Anywhere you need reliable, high throughput.
3
EFA
For when you need to accelerate High Performance Computing (HPC) and machine learning applications or if you need to do an OS-bypass. If you see a scenario question mentioning HPC or ML and asking what network adapter you want, choose EFA.