



Discipline

Nitro System Detailing

CS5002

Activity-12

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❖ **Problem Statement:**

Prepare a document for Nitro System detail and its feature. Also provide different types of EC2 with supports Nitro system.

❖ **Solution:**

➤ **Nitro System:**

1. The Nitro System is a collection of AWS-built hardware and software components that enable high performance, high availability and high security.
2. The Nitro System provides bare metal capabilities that eliminate virtualization overhead and support workloads that require full access to host hardware.
3. The AWS Nitro System is the underlying platform for our next generation of EC2 instances that enables AWS to innovate faster, further reduce cost for our customers, and deliver added benefits like increased security and new instance types.
4. AWS has completely re-imagined our virtualization infrastructure. Traditionally, hypervisors protect the physical hardware and bios, virtualize the CPU, storage, networking, and provide a rich set of management capabilities. With the Nitro System, we can break apart those functions, offload them to dedicated hardware and software, and reduce costs by delivering practically all of the resources of a server to your instances.

➤ **Benefits:**

1. **Faster Innovation:**

The Nitro System is a rich collection of building blocks that can be assembled in many different ways, giving us the flexibility to design and rapidly deliver EC2 instance types with an ever-broadening selection of compute, storage, memory, and networking options.

2. Enhanced Security:

The Nitro System provides enhanced security that continuously monitors, protects, and verifies the instance hardware and firmware. Virtualization resources are offloaded to dedicated hardware and software minimizing the attack surface. Finally, Nitro System's security model is locked down and prohibits administrative access, eliminating the possibility of human error and tampering.

3. Better Performance and Price:

The Nitro System delivers practically all of the compute and memory resources of the host hardware to your instances resulting in better overall performance. Additionally, dedicated Nitro Cards enable high-speed networking, high-speed EBS, and I/O acceleration.

➤ **Features/Components:**

1. Nitro Cards:

The Nitro Cards are a family of cards that offloads and accelerates IO for functions, ultimately increasing overall system performance. Key cards include Nitro Card for VPC, Nitro Card for EBS, Nitro Card for Instance Storage, Nitro Card Controller, and Nitro Security Chip.

2. Nitro Security Chip:

The Nitro Security Chip enables the most secure cloud platform with a minimized attack surface as virtualization and security functions are offloaded to dedicated hardware and software. Additionally, a locked-down security model prohibits all administrative access, including those of Amazon employees, eliminating the possibility of human error and tampering.

3. Nitro Hypervisor:

The Nitro Hypervisor is a lightweight hypervisor that manages memory and CPU allocation and delivers performance that is indistinguishable from bare metal.

➤ **Different types of EC2 with supports Nitro system:**

1. Virtualized:

A1, C5, C5a, C5ad, C5d, C5n, C6g, C6gd, C6gn, D3, D3en, G4, I3en, Inf1, M5, M5a, M5ad, M5d, M5dn, M5n, M5zn, M6g, M6gd, M6i, p3dn.24xlarge, P4, R5, R5a, R5ad, R5b, R5d, R5dn, R5n, R6g, R6gd, T3, T3a, T4g, high memory (u-*), X2gd, and z1d

2. Bare metal:

a1.metal, c5.metal, c5d.metal, c5n.metal, c6g.metal, c6gd.metal, i3.metal, i3en.metal, m5.metal, m5d.metal, m5dn.metal, m5n.metal, m5zn.metal, m6g.metal, m6gd.metal, mac1.metal, r5.metal, r5b.metal, r5d.metal, r5dn.metal, r5n.metal, r6g.metal, r6gd.metal, u-6tb1.metal, u-9tb1.metal, u-12tb1.metal, u-18tb1.metal, u-24tb1.metal, x2gd.metal, and z1d.metal