**Training Day Report:**

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## 1. IaaS to PaaS:

Infrastructure as a Service (IaaS) provides virtualized hardware resources such as servers and storage over the internet. It gives users control over OS and applications.  
  
Platform as a Service (PaaS) abstracts away infrastructure and offers tools to build, deploy, and manage apps easily. It enhances productivity and reduces operational complexity.  
  
The shift from IaaS to PaaS allows developers to focus more on application logic and less on managing infrastructure.

## 2. Next Gen Virtualization:

Next-generation virtualization uses technologies like containers, microVMs, and serverless functions for efficient computing.  
  
Tools like Docker, Kubernetes, and AWS Lambda offer lightweight, scalable solutions for cloud-native development.  
  
They improve performance, reduce overhead, and support better application isolation than traditional virtualization.

## 3. Container vis-a-vis Virtualization:

Containers share the host OS and are lightweight, making them faster to boot. They are ideal for microservices and modern cloud-native apps.  
  
Virtual Machines (VMs) run full OSes on hypervisors and are suited for apps needing strong isolation.  
  
Containers offer speed and flexibility, while VMs offer better security and compatibility with legacy applications.

## 4. Container VM vs Metal VM:

Container VMs provide a flexible environment to run containers on top of virtualized infrastructure.  
  
Metal VMs (bare-metal) run directly on physical servers, offering maximum performance and minimal overhead.  
  
Use container VMs for portability and ease of scaling; use metal VMs for high-performance and resource-intensive workloads.

## Key Takeaways:

- PaaS simplifies application deployment and increases developer efficiency.  
- Next-gen virtualization includes containers and serverless for modern IT needs.  
- Containers are efficient and fast; VMs are secure and isolated.  
- Bare-metal VMs offer better performance; container VMs offer better scalability.

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