Cloud Basics (AWS/Azure/GCP) - Interview Preparation Canvas

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1. IaaS, PaaS, SaaS

Concept Explanation: - IaaS: Infrastructure as a Service – provides VMs, storage, networking (e.g., AWS EC2) - PaaS: Platform as a Service – provides platform to deploy apps without managing infra (e.g., Azure App Service) - SaaS: Software as a Service – ready-to-use applications (e.g., Gmail, Office 365)

Interview Answer: "IaaS provides virtualized hardware resources, PaaS provides a platform for deploying apps without managing servers, and SaaS delivers software applications over the internet."

Delivery Example: "I would say: 'In cloud, IaaS gives me virtual machines and storage, PaaS lets me deploy applications without worrying about underlying servers, and SaaS provides ready-to-use applications like email or CRM.'"

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2. Virtual Machines

Concept Explanation: - VMs are virtualized computers running on hypervisors - Can be created, stopped, started, resized, and configured with CPU/RAM/OS

Interview Answer: "Virtual machines are isolated computing environments that allow running OS and applications on shared physical infrastructure."

Delivery Example: "I would explain: 'A VM is like a virtual computer; I can choose its OS, CPU, memory, and storage, and it runs isolated from other VMs on the same host.'"

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3. Storage: Block, Object, File

Concept Explanation: - Block: low-level storage for VMs, fast (e.g., EBS) - Object: stores files with metadata, scalable (e.g., S3) - File: network file system access (e.g., EFS)

Interview Answer: "Block storage is for VMs, object storage is scalable for files and backups, and file storage allows shared access across multiple systems."

Delivery Example: "I would say: 'Block storage is like a hard drive for a VM, object storage like S3 is great for scalable files and backups, and file storage allows multiple servers to access files concurrently.'"

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4. Networking in Cloud

Concept Explanation: - VPC: Virtual Private Cloud, isolated network in cloud - Subnets: divide VPC into smaller networks - Security Groups: act as virtual firewalls - NAT Gateway: allows private subnet instances to access the internet

Interview Answer: "Cloud networking uses VPCs to isolate networks, subnets to segment them, security groups to control access, and NAT gateways to provide internet access to private instances."

Delivery Example: "I would explain: 'I create a VPC to isolate my network, divide it into public and private subnets, use security groups to allow or block traffic, and deploy a NAT gateway so private VMs can access the internet.'"

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5. Identity and Access Management (IAM)

Concept Explanation: - Users, groups, roles, policies to manage permissions - Principle of least privilege

Interview Answer: "IAM provides secure access control for users and resources using roles, policies, and groups."

Delivery Example: "I would say: 'I assign users to groups, attach policies or roles defining permissions, and always follow least privilege principle to secure cloud resources.'"

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6. Monitoring & Logging

Concept Explanation: - Tools like CloudWatch (AWS), Azure Monitor, Stackdriver (GCP) - Tracks metrics, events, and logs

Interview Answer: "Monitoring and logging tools help track performance, detect issues, and audit cloud resources."

Delivery Example: "I would explain: 'I set up CloudWatch to monitor CPU, memory, and network usage, configure alerts, and review logs for troubleshooting and audits.'"

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7. Backup & Snapshots

Concept Explanation: - Snapshots capture VM or volume state at a point in time - Backups store data securely for disaster recovery

Interview Answer: "Snapshots and backups protect data and allow recovery in case of failure."

Delivery Example: "I would say: 'I create snapshots of volumes or VMs to capture the current state, and store backups regularly to ensure disaster recovery.'"

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8. Common Services (AWS Example)

Concept Explanation: - EC2: virtual servers - S3: object storage - RDS: managed databases - Lambda: serverless compute

Interview Answer: "EC2 provides VMs, S3 stores scalable objects, RDS manages databases, and Lambda allows running code without servers."

Delivery Example: "I would explain: 'I launch EC2 instances for compute, store files in S3, use RDS for relational databases, and deploy serverless functions in Lambda.'"

Example Questions & Scenario Responses:

Q1: Public vs Private Subnets? - Public: has internet access, Private: no direct internet access - Delivery: 'Public subnets can reach the internet via IGW, private subnets use NAT for outbound internet, enhancing security.'

Q2: IAM roles and policies? - Roles: assigned to resources, Policies: define permissions - Delivery: 'IAM roles are attached to VMs or services, and policies define what actions are allowed, ensuring secure, role-based access.'

Q3: Take snapshot of VM in AWS? - AWS Console or CLI: Create snapshot of EBS volume - Delivery: 'I navigate to EC2, select the volume, and create a snapshot, or use AWS CLI aws ec2 create-snapshot for automation.'

Scenario 1: VM cannot connect to internet - Check subnet, route table, security group, NAT/IGW - Delivery: 'I verify the subnet is correctly routed, security group rules allow outbound traffic, and NAT or Internet Gateway is configured.'

Scenario 2: Role-based access to storage bucket - Use IAM roles/policies, attach to users or services - Delivery: 'I define an IAM policy granting bucket permissions, attach it to a role, and assign the role to users or services.'

Scenario 3: Migrate local server to cloud - Use AWS VM import, create AMI, copy data, configure networking - Delivery: 'I can export the local VM, import it into AWS as an AMI, configure network and security settings, and test connectivity.'