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Certificate of Cloud Security Knowledge (CCSK)

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Domain 4

Organization Management

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Organization Hierarchy Models

In cloud computing, **organization hierarchy models** define how enterprises structure their cloud resources, roles, and governance frameworks within a **Cloud Service Provider (CSP)**. These models ensure compliance, access control, and efficient management of cloud resources while aligning with business objectives. A well-designed hierarchy allows organizations to **segment workloads, enforce security policies, and optimize operational costs**.

Cloud providers offer built-in frameworks that enable companies to create structured hierarchies for **centralized governance, security enforcement, and financial management**. These models typically reflect an organization's **business units, security boundaries, and regulatory needs**, ensuring operational efficiency at scale.

4.1.1 Definitions

An **organization hierarchy model** represents the structured arrangement of **cloud accounts, services, and identity controls** within a cloud provider's environment. It ensures logical separation of workloads while maintaining centralized **governance, access control, and cost visibility**.

Several key concepts define organization hierarchies in cloud environments. The **root account or management account** is the highest authority level, responsible for overseeing all sub-accounts, projects, or subscriptions. Within the hierarchy, **sub-accounts, organizational units (OUs), or resource groups** segment cloud workloads based on business function, security policies, and compliance requirements.

Delegated administration is a critical aspect, allowing organizations to assign responsibilities across teams while maintaining security boundaries. Additionally, a **resource hierarchy** ensures proper allocation and grouping of computing, storage, and networking resources to align with security and operational best practices.

A well-defined hierarchy improves **security, scalability, and regulatory compliance** by enabling **role-based access control (RBAC), policy enforcement, and centralized monitoring**.

4.1.2 Organization Capabilities Within a Cloud Service Provider

Cloud providers such as **AWS, Microsoft Azure, and Google Cloud Platform (GCP)** offer hierarchical structures that facilitate multi-account governance, policy enforcement, and security management.

AWS provides a centralized framework through **AWS Organizations**, allowing businesses to manage multiple AWS accounts under a single entity. **Organizational Units (OUs)** enable policy-based access control, while **AWS Control Tower** automates best-practice governance. AWS also supports **Service Control Policies (SCPs)**, IAM roles, and consolidated billing for cost tracking.

Microsoft Azure organizes cloud environments using **Management Groups, Subscriptions, and Resource Groups**. **Management Groups** serve as the top-level hierarchy, grouping multiple subscriptions for policy enforcement. **Azure Policy and Blueprints** help in maintaining compliance, while **RBAC** ensures granular access control.

Google Cloud Platform (GCP) structures its resources under an **Organization Node**, which governs **Folders and Projects**. **Projects** represent individual workloads, with **IAM policies** applied at different levels. GCP also integrates **Organization Policies** to enforce security standards across workloads.

These capabilities ensure that organizations can **implement security policies, monitor usage, and manage costs effectively** while maintaining compliance with industry standards.

4.1.3 Building a Hierarchy Within a Provider

Establishing an effective **organization hierarchy** requires a structured approach that aligns **security, governance, and operational needs** with business objectives. The process begins with defining **business and security requirements**, ensuring that **multi-account or multi-subscription strategies** meet regulatory and compliance standards.

A root or management account serves as the **foundation** of the hierarchy. This account should have **strict access controls** to minimize risk. From this root structure, organizations create **sub-accounts, management groups, or folders** that reflect business functions such as finance, HR, and development teams. **Organizational units (OUs) or projects** further refine this structure, ensuring workload separation and security policy enforcement.

Once the hierarchy is established, **access control policies, governance rules, and compliance frameworks** must be implemented. **AWS Service Control Policies, Azure RBAC, and GCP IAM Policies** ensure that access is restricted based on the **principle of least privilege**. Additionally, **security automation tools** such as AWS Config, Azure Security Center, and GCP Security Command Center help enforce compliance and monitor activity.

Billing and cost management are also integral to a well-structured hierarchy. Cloud providers offer **consolidated billing and cost tracking** tools, ensuring that expenditures are allocated correctly across departments. **Cost monitoring services like AWS Cost Explorer, Azure Cost Management, and GCP Billing Reports** provide insights into resource utilization.

Ongoing monitoring and optimization further enhance the effectiveness of the hierarchy. **Logging and monitoring solutions**, including AWS CloudTrail, Azure Monitor, and GCP Cloud Logging, ensure visibility into cloud activities. By continuously refining policies and security controls, organizations can maintain **resilience, compliance, and cost efficiency** within their cloud hierarchy.

Case Study: Implementing a Multi-Account Strategy for a Financial Institution

Background

A global financial services firm sought to migrate its operations to the cloud while ensuring **security, regulatory compliance, and cost management**. The company needed a **multi-account strategy** to segment workloads while adhering to **PCI-DSS, GDPR, and other financial regulations**.

Solution

The firm adopted a **multi-account structure using AWS Organizations**, defining its hierarchy with:

- A **root account** governing **security, billing, and compliance**
- **Organizational Units (OUs)** for different departments such as finance, HR, and development
- **AWS Control Tower** to ensure best practices in account setup and governance
- **Service Control Policies (SCPs) and IAM policies** for access restrictions
- **AWS Security Hub and CloudTrail** for centralized security monitoring

Outcome

By implementing this structured hierarchy, the organization **achieved compliance, improved security, and optimized cost allocation**. The **segmentation of workloads** minimized risk, and **centralized governance tools** ensured **policy enforcement and security monitoring**. The structured approach also **enhanced scalability**, allowing the company to expand its cloud footprint without compromising security.

For further insights into cloud organization hierarchy models, refer to:

- AWS Organizations and Best Practices
- Azure Management Groups and Subscriptions
- Google Cloud Resource Hierarchy

Conclusion

A **structured organization hierarchy** is essential for managing cloud environments at scale. By leveraging **multi-account strategies, policy enforcement, and governance frameworks**, enterprises can **enhance security, maintain compliance, and optimize cloud resources**. Cloud providers offer robust tools to **establish, monitor, and optimize hierarchical structures**, ensuring **efficient workload segmentation, cost control, and security compliance**.

The next sections will build upon these foundational concepts by exploring **security governance frameworks, access control mechanisms, and compliance policies**, providing deeper insights into securing cloud environments.