CCSP Exam Architectural Concepts & Design Requirements

**Keywords and Hints Specific to Domain 1**

1. **Cloud Computing Characteristics**
   * **On-demand self-service**: Automated provisioning, instant access, user-initiated.
   * **Broad network access**: Internet-based access, multi-device compatibility, remote access.
   * **Resource pooling**: Shared resources, multi-tenancy, dynamic allocation.
   * **Rapid elasticity**: Automatic scaling, flexible resource allocation, real-time adjustment.
   * **Measured service**: Usage-based billing, resource monitoring, pay-per-use.
2. **Deployment Models**
   * **Public cloud**: Shared infrastructure, third-party management, cost-effective, accessible to the public.
   * **Private cloud**: Single organization, internal or hosted by third-party, higher control, exclusive use.
   * **Hybrid cloud**: Combination of private and public clouds, data and application integration, flexibility.
   * **Community cloud**: Shared by organizations with common goals, collaborative, sector-specific.
3. **Service Models**
   * **IaaS (Infrastructure as a Service)**: Virtual machines, networking, storage, high user control.
   * **PaaS (Platform as a Service)**: Development environment, middleware, application hosting, less management effort.
   * **SaaS (Software as a Service)**: End-user applications, web-based, subscription model, least user control.
4. **Architectural Concepts**
   * **Scalability**: Increase/decrease resources, handle growth, maintain performance.
   * **Elasticity**: Dynamic resource allocation, real-time scaling, cost efficiency.
   * **Multi-tenancy**: Shared resources among multiple users, isolated environments, efficiency.
   * **Virtualization**: Hypervisors, virtual machines, abstraction of physical hardware, resource optimization.
5. **Data and Security Concepts**
   * **Data sovereignty**: Jurisdiction, legal compliance, geographic storage requirements.
   * **Data residency**: Physical location of data, regulatory compliance, jurisdiction.
   * **High availability**: Redundancy, failover mechanisms, continuous operation, uptime guarantees.
   * **Disaster recovery**: Backup, restore, business continuity, resilience.
6. **Architectural Principles**
   * **Modularity**: Component-based design, reusability, independent deployment.
   * **Service-oriented architecture (SOA)**: Services as components, interoperability, integration.
   * **Microservices**: Small, independent services, scalability, resilience.
   * **Serverless computing**: Event-driven, no infrastructure management, automatic scaling.
7. **Key Terms in Cloud Security**
   * **Confidentiality**: Data protection, encryption, access controls.
   * **Integrity**: Data accuracy, validation, consistency.
   * **Availability**: Accessible data and services, uptime, redundancy.
   * **Interoperability**: Compatibility, seamless integration, multi-cloud strategies.
   * **Vendor lock-in**: Dependence on a single provider, migration challenges, proprietary services.
8. **Cloud Management and Operations**
   * **Service Level Agreements (SLAs)**: Performance metrics, uptime guarantees, service commitments.
   * **Orchestration**: Automated coordination, resource management, service integration.
   * **API Gateway**: API management, security, rate limiting, access control.
9. **Risk and Compliance**
   * **Risk management**: Threat identification, mitigation strategies, risk assessment.
   * **Regulatory compliance**: Legal requirements, industry standards, compliance frameworks.
10. **Emerging Technologies**
    * **Cloud-native**: Designed for cloud environments, microservices, containerization.
    * **Edge computing**: Data processing at the edge, latency reduction, real-time processing.