CCDE Network Design Prep

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Practice Questions

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1. A company is implementing a new network infrastructure and needs to validate design requirements before full deployment. Which project management methodology best supports this iterative approach?

A. Waterfall
B. Critical Path Method
C. PERT
D. Agile

2. When analyzing the business impact of a network design, which financial metric best measures the time required to recoup the initial investment?

A. Internal Rate of Return
B. Gross Profit Margin
C. Payback period
D. Net Present Value

3. A retail organization requires network availability of 99.99% for their point-of-sale systems. Which business continuity metric is most directly related to this requirement?

A. Mean Time To Repair (MTTR)
B. Recovery Time Objective (RTO)
C. Mean Time Between Failures (MTBF)
D. Recovery Point Objective (RPO)

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4. Which network design approach best aligns with an organization seeking to convert capital expenditures to operational expenditures?

A. Cloud-based network services
B. On-premises hardware deployment
C. Traditional data center expansion
D. Bulk hardware procurement

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5. When conducting a cost analysis for a network upgrade, which factor represents an OPEX consideration rather than CAPEX?

A. Router hardware purchases
B. Fiber optic cable installation
C. New switching infrastructure
D. Support contracts

6. A healthcare organization needs to minimize data loss in case of a disaster. Which business continuity metric should be prioritized in the network design?

A. Service Level Agreement (SLA)
B. Mean Opinion Score (MOS)
C. Recovery Point Objective (RPO)
D. Mean Time To Repair (MTTR)

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7. Which project management approach is most appropriate for a network migration with clearly defined requirements and minimal expected changes?

A. Kanban
B. Waterfall
C. Agile
D. Scrum

8. When designing a network for a financial institution with strict regulatory compliance requirements, which business factor should receive the highest priority?

A. Risk assessment
B. Implementation speed
C. Hardware standardization
D. Vendor diversity

9. A company is evaluating two network design proposals. Proposal A has higher initial costs but lower maintenance requirements. Proposal B has lower initial costs but higher ongoing maintenance. Which financial analysis tool is most appropriate for this comparison?

A. Return on Investment (ROI)
B. Internal Rate of Return (IRR)
C. Earnings Before Interest and Taxes (EBIT)
D. Total Cost of Ownership (TCO)

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10. Which network design consideration best supports the business goal of rapid expansion into new geographical markets?

A. Centralized management only
B. Custom hardware solutions
C. Scalable architecture with modular components
D. Single-vendor infrastructure

11. A manufacturing company needs to prioritize network investment decisions based on financial impact. Which metric should be used to compare potential network projects?

A. Cash Flow
B. Return on Investment (ROI)
C. Gross Revenue
D. Net Profit

12. Which approach to network design best supports an organization with rapid business requirement changes and evolving applications?

A. Intent-based networking
B. Static network segmentation
C. Rigid hierarchical design
D. Fixed VLAN assignment

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13. When designing a network to support business continuity, which approach provides the most protection against regional disasters?

A. Redundant equipment in a single location
B. Extended warranties on critical equipment
C. Increased bandwidth between existing sites
D. Geographically dispersed data centers

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14. A business is planning to reduce its physical infrastructure footprint while maintaining the same network capabilities. Which strategy best aligns with this business goal?

A. Implementing more compact hardware
B. Consolidating to fewer, larger devices
C. Network function virtualization (NFV)
D. Installing higher density switches

15. When presenting network design options to executive leadership, which business factor should be emphasized most prominently?

A. Vendor selection process
B. Business outcomes alignment
C. Technical specifications
D. Implementation timeline details

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16. Which network infrastructure model best supports a business strategy focused on minimizing initial capital investment?

A. Network-as-a-Service (NaaS)
B. Traditional on-premises deployment
C. Comprehensive hardware refresh
D. Wholesale equipment purchase

17. A company needs to prioritize which locations receive network upgrades first. Which business factor is most relevant for this decision?

A. Age of existing equipment
B. Number of users per site
C. Geographic proximity to headquarters
D. Revenue impact per location

18. Which approach to network planning best addresses the risk/reward balance in adopting new technologies?

A. Waiting for industry-wide adoption
B. Implementing only proven technologies
C. Phased implementation with pilot deployments
D. Immediate enterprise-wide rollout

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19. When designing a network to support operational sustainability, which factor contributes most to long-term operational efficiency?

A. Extended vendor support contracts
B. Automation and programmability
C. Annual hardware refreshes
D. Increased staffing levels

20. A retail business experiences seasonal traffic spikes that impact network performance. Which design approach best addresses this business pattern while optimizing costs?

A. Elastic capacity with cloud resources
B. Permanent infrastructure sized for peak demand
C. Manual reconfiguration during busy periods
D. Traffic throttling during peak times

21. A financial institution is implementing a zero-trust security model. Which design approach best supports this security model?

A. Traditional perimeter firewall with VPN access
B. ACLs at distribution layer only
C. Network-based antivirus scanning
D. Micro-segmentation with continuous authentication and authorization

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22. When designing a network to comply with PCI DSS requirements, which segmentation approach is most appropriate for the cardholder data environment?

A. Physical separation only
B. Encryption without segmentation
C. A separate security zone with dedicated firewalls
D. VLANs with basic ACLs

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23. Which security design element best addresses the risk of compromised credentials in a network with multiple remote sites?

A. Single sign-on implementation
B. Multi-factor authentication
C. Longer password requirements
D. More frequent password rotation

24. A healthcare organization needs to implement a security solution that ensures protected health information (PHI) remains private during transit across their network. Which technology should be recommended?

A. End-to-end encryption
B. Network traffic analysis
C. Access control lists only
D. Load balancing

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25. When designing security for an SD-WAN deployment, which approach is most critical to address the security challenges introduced by direct internet access at branch offices?

A. Centralized internet access only
B. Basic stateful firewalls
C. Periodic security audits
D. Distributed security policy enforcement with local inspection

26. Which design element is most important when implementing a security strategy focused on detecting and responding to threats that have bypassed preventative controls?

A. Stronger perimeter firewalls
B. Additional authentication factors
C. Advanced threat detection with behavioral analytics
D. More restrictive access control lists

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27. A company is concerned about protection against sophisticated attacks that target their data center. Which security design approach provides the most comprehensive protection?

A. VPN concentrator
B. Defense-in-depth with multiple security technologies
C. Single next-generation firewall
D. Intrusion detection system only

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28. When designing a network security architecture for a company with strict regulatory compliance requirements, which approach to security policy management is most effective?

A. Centralized policy management with automated compliance reporting
B. Distributed management with manual auditing
C. Device-level configurations
D. Outsourced security management

29. Which network design element best supports the principle of least privilege in an enterprise environment?

A. Network-wide access control lists
B. Shared administrative accounts
C. Virtual private networks only
D. Role-based access control with fine-grained permissions

30. A manufacturing company with industrial control systems (ICS) needs to connect these systems to their enterprise network. Which security design approach is most appropriate?

A. Basic VLANs with ACLs
B. Endpoint security software on ICS devices
C. Air-gapped networks or strictly controlled demilitarized zones
D. Standard enterprise firewall rules

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Answer Key & Explanations

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1. D — Agile
Agile methodology supports iterative development and validation of requirements before proceeding to full implementation, allowing for adjustments based on feedback from each phase.

2. C — Payback period
Payback period directly measures the time required to recover the initial investment in a network infrastructure project, making it the most appropriate metric for this purpose.

3. B — Recovery Time Objective (RTO)
Recovery Time Objective (RTO) defines the maximum acceptable time for restoring system functionality after a disruption, directly relating to the availability requirement of 99.99%.

4. A — Cloud-based network services
Cloud-based network services allow organizations to shift from capital expenditures (purchasing hardware) to operational expenditures (subscription-based services), aligning with the financial objective.

5. D — Support contracts
Support contracts are operational expenditures (OPEX) as they represent ongoing costs over time rather than initial capital investments.

6. C — Recovery Point Objective (RPO)
Recovery Point Objective (RPO) defines the maximum acceptable amount of data loss measured in time, which directly addresses the requirement to minimize data loss in disaster scenarios.

7. B — Waterfall
Waterfall methodology works best for projects with well-defined, unchanging requirements where sequential phases (planning, design, implementation, testing) can be completed in order without significant iteration.

8. A — Risk assessment
Risk assessment should receive the highest priority for financial institutions with strict regulatory compliance requirements, as it identifies potential vulnerabilities and ensures alignment with regulations.

9. D — Total Cost of Ownership (TCO)
Total Cost of Ownership (TCO) analysis considers both initial acquisition costs and ongoing operational costs over the solution's lifecycle, making it the most appropriate tool for comparing these proposals.

10. C — Scalable architecture with modular components
Scalable architecture with modular components allows for rapid expansion into new geographical markets by providing a consistent, repeatable deployment model that can be quickly implemented in new locations.

11. B — Return on Investment (ROI)
Return on Investment (ROI) provides a percentage-based measure of the financial return relative to the cost of each project, allowing for direct comparison between different investment options.

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12. A — Intent-based networking
Intent-based networking allows for dynamic policy-based network configuration that can adapt to changing business requirements without requiring complete redesigns, supporting organizations with rapidly evolving needs.

13. D — Geographically dispersed data centers
Geographically dispersed data centers provide the most protection against regional disasters by ensuring that network operations can continue from an unaffected location if one region experiences a catastrophic event.

14. C — Network function virtualization (NFV)
Network function virtualization (NFV) enables businesses to replace physical network appliances with virtualized instances, reducing physical infrastructure footprint while maintaining network capabilities.

15. B — Business outcomes alignment
Business outcomes alignment should be emphasized most prominently to executive leadership, as it directly connects the network design to the organization's strategic objectives and goals.

16. A — Network-as-a-Service (NaaS)
Network-as-a-Service (NaaS) allows businesses to consume network services without significant upfront capital investment, shifting costs to an operational expense model that aligns with minimizing initial investment.

17. D — Revenue impact per location
Revenue impact per location provides the most direct business justification for prioritizing network upgrades, focusing resources on sites where improvements will have the greatest financial benefit.

18. C — Phased implementation with pilot deployments
Phased implementation with pilot deployments allows organizations to evaluate new technologies in controlled environments before wider adoption, effectively balancing risk and reward.

19. B — Automation and programmability
Automation and programmability contribute most to long-term operational efficiency by reducing manual intervention, minimizing human error, and enabling consistent policy application across the network.

20. A — Elastic capacity with cloud resources
Elastic capacity with cloud resources allows the network to scale up during peak seasons and scale down during quieter periods, optimizing costs by matching capacity to actual business needs.

21. D — Micro-segmentation with continuous authentication and authorization
Micro-segmentation with continuous authentication and authorization provides the granular control and verification needed for a zero-trust security model, where no user or device is inherently trusted regardless of location.

22. C — A separate security zone with dedicated firewalls
A separate security zone with dedicated firewalls provides the strongest isolation for cardholder data environments, allowing specific security controls and monitoring to be applied to meet PCI DSS requirements.

23. B — Multi-factor authentication
Multi-factor authentication requires multiple verification methods, significantly reducing the risk posed by compromised passwords or credentials, especially in distributed networks with multiple remote access points.

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24. A — End-to-end encryption
End-to-end encryption ensures that protected health information remains encrypted throughout its journey across the network, protecting it from eavesdropping and meeting HIPAA compliance requirements.

25. D — Distributed security policy enforcement with local inspection
Distributed security policy enforcement with local inspection ensures that branch offices with direct internet access have appropriate security controls to inspect and filter traffic locally, rather than backhauling to a central location.

26. C — Advanced threat detection with behavioral analytics
Advanced threat detection with behavioral analytics can identify anomalous patterns and potential threats that have already bypassed preventative controls, enabling faster response to security incidents.

27. B — Defense-in-depth with multiple security technologies
Defense-in-depth with multiple security technologies provides layered protection against sophisticated attacks, ensuring that if one security control is bypassed, others remain to detect or prevent the attack.

28. A — Centralized policy management with automated compliance reporting
Centralized policy management with automated compliance reporting provides consistent enforcement of security policies across the network while generating the documentation needed to demonstrate regulatory compliance.

29. D — Role-based access control with fine-grained permissions
Role-based access control with fine-grained permissions implements the principle of least privilege by ensuring users and devices have only the specific access rights needed for their roles, limiting potential damage from compromised accounts.

30. C — Air-gapped networks or strictly controlled demilitarized zones
Air-gapped networks or strictly controlled demilitarized zones provide the necessary isolation for industrial control systems, protecting them from potential threats that could disrupt operations while allowing controlled information exchange.

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