

**CDRE - Certified Disaster Recovery Engineer**  
**Chapter 4 - IT Recovery Strategies**

**WORKBOOK**



# IT Recovery Strategies

## Chapter 4

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 Chapter 4 Topics  
What Are We Covering?

IT Recovery Strategies	DR Site Strategies
<ul style="list-style-type: none"><li>• How to determine priority</li><li>• Preventative Controls</li><li>• Resiliency</li><li>• High Availability</li><li>• Replication</li><li>• Backups</li></ul>	<ul style="list-style-type: none"><li>• Private and Public Cloud</li><li>• Reciprocal Sites</li><li>• Other Sites</li></ul>

Assessment of Strategies



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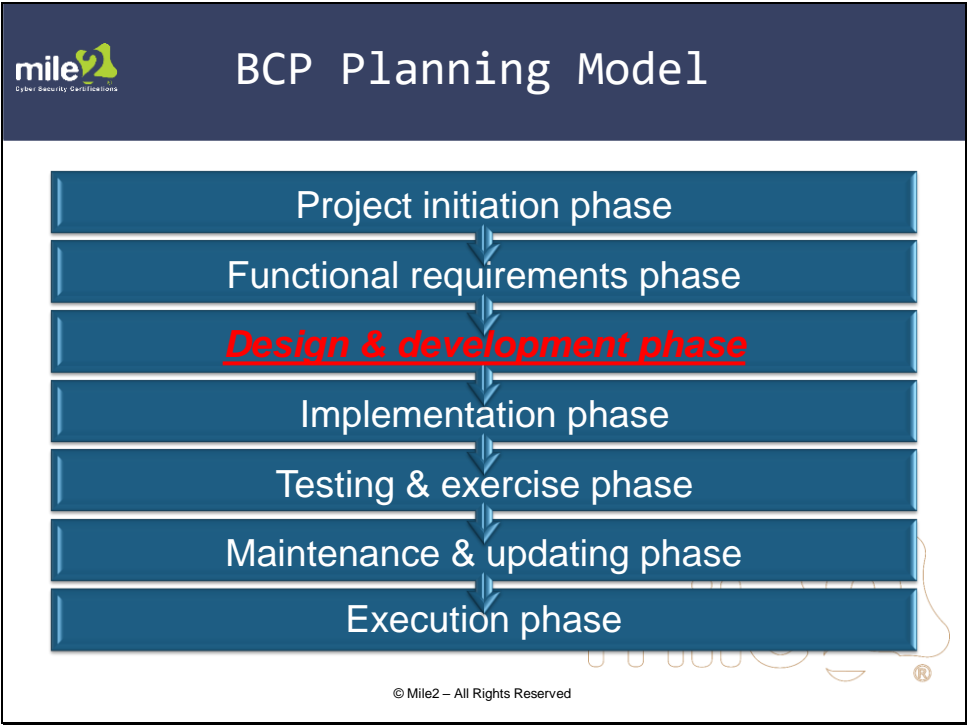
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# BCP Planning Phases - IT Recovery Strategies

## Section 1

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 **IT Recovery Strategies**

**Determined by priority of business processes**

- Determined in the BIA
- RTO / RPO will drive strategy / solution
- Consolidate solutions
- Benefits to lower priority processes

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# IT Recovery Strategies

## Preventive Controls

- Operate to ensure prevention and mitigation before and during disruption
- Relate to physical security, the protection of employees, security screening, the protection of information, IT security (in the DR Plan), etc.
- Management Controls and Physical Security Controls need to be reviewed and evaluated to measure their effectiveness.
- Installing fire detection and suppression systems

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 **IT Recovery Strategies**

**Resiliency**

- Redundant power sources; UPS & backup generator
- N+1 resources for cooling
- Primary & backup Internet services, disparate vendors and building entry points
- Redundant server components (processors, network cards, memory)
- RAID groups for disk storage devices

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The slide features a dark blue header with the 'mile2 Cyber Security Certifications' logo on the left and the title 'IT Recovery Strategies' in white. Below the header, a dark grey rounded rectangle on the left contains the text 'High Availability'. To its right, a light grey rounded rectangle contains a bulleted list of four items: 'Clustered servers', 'Database clusters', 'Application grid / farm', and 'Internet load balancers'. At the bottom center, there is a small copyright notice: '©Mile2 – All Rights Reserved'. A faint, stylized logo is visible in the bottom right corner of the slide area.

**High Availability**

- Clustered servers
- Database clusters
- Application grid / farm
- Internet load balancers

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# IT Recovery Strategies

**High Availability**

- Clustered servers
- Servers can be clustered to provide fail-over resources in the event of a server crash or failure. Typically the application running on the original server will need to be restarted on the fail-over server

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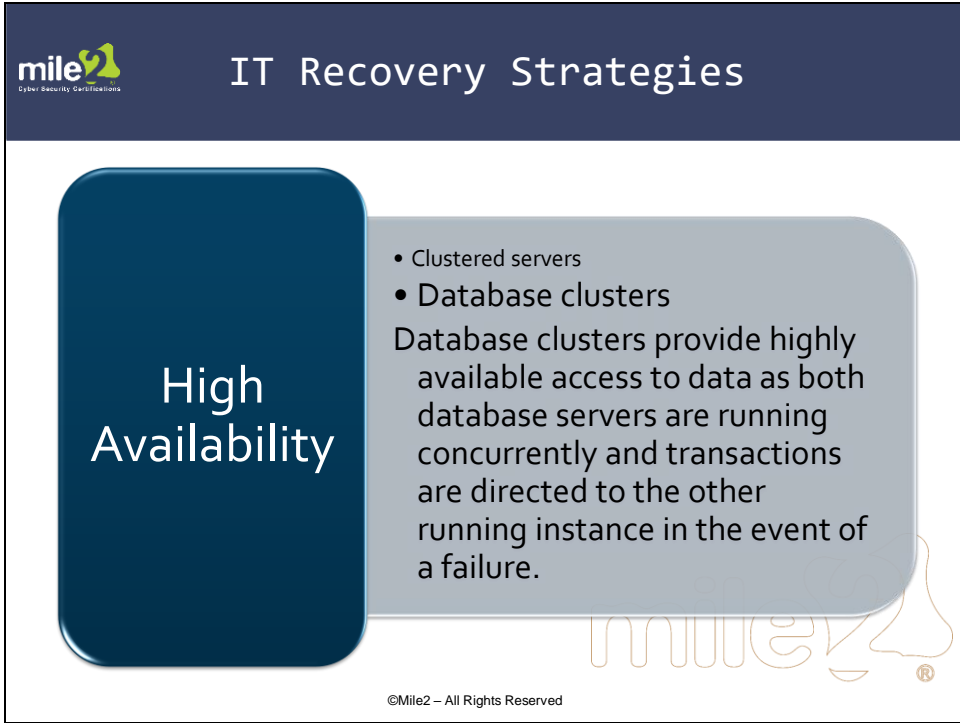
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**High Availability**

- Clustered servers
- Database clusters

Database clusters provide highly available access to data as both database servers are running concurrently and transactions are directed to the other running instance in the event of a failure.

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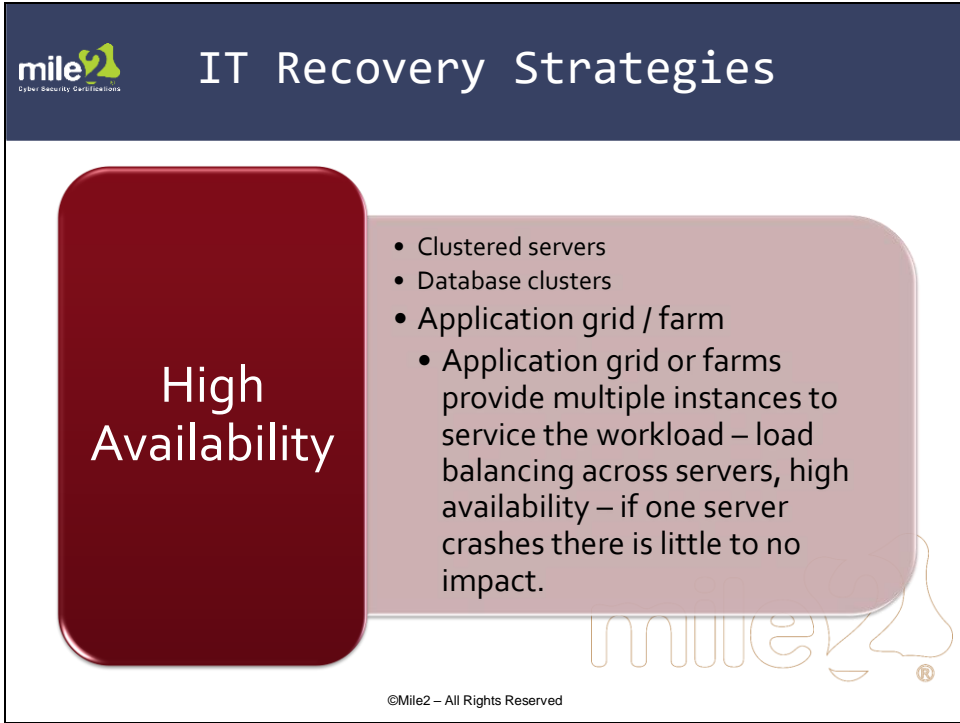
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**High Availability**

- Clustered servers
- Database clusters
- Application grid / farm
  - Application grid or farms provide multiple instances to service the workload – load balancing across servers, high availability – if one server crashes there is little to no impact.

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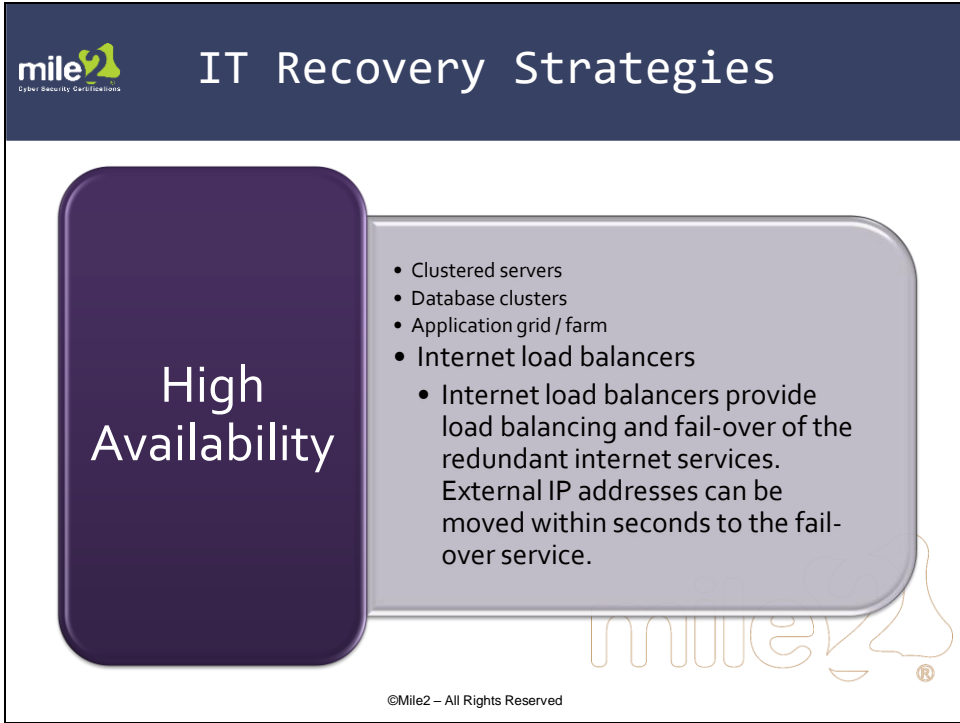
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**High Availability**

- Clustered servers
- Database clusters
- Application grid / farm
- Internet load balancers
  - Internet load balancers provide load balancing and fail-over of the redundant internet services. External IP addresses can be moved within seconds to the fail-over service.

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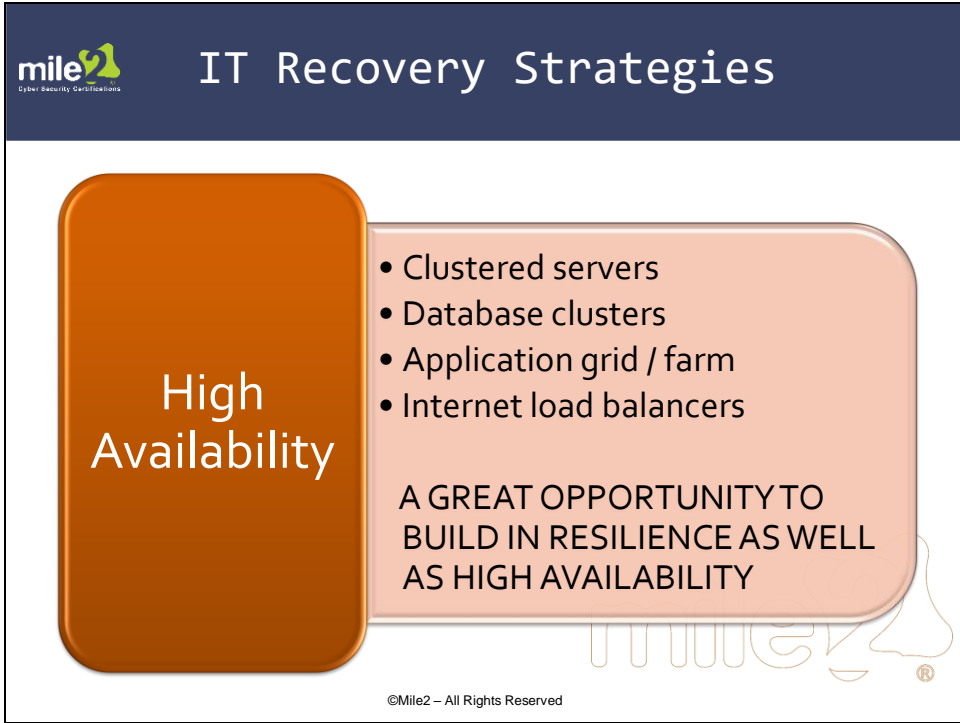
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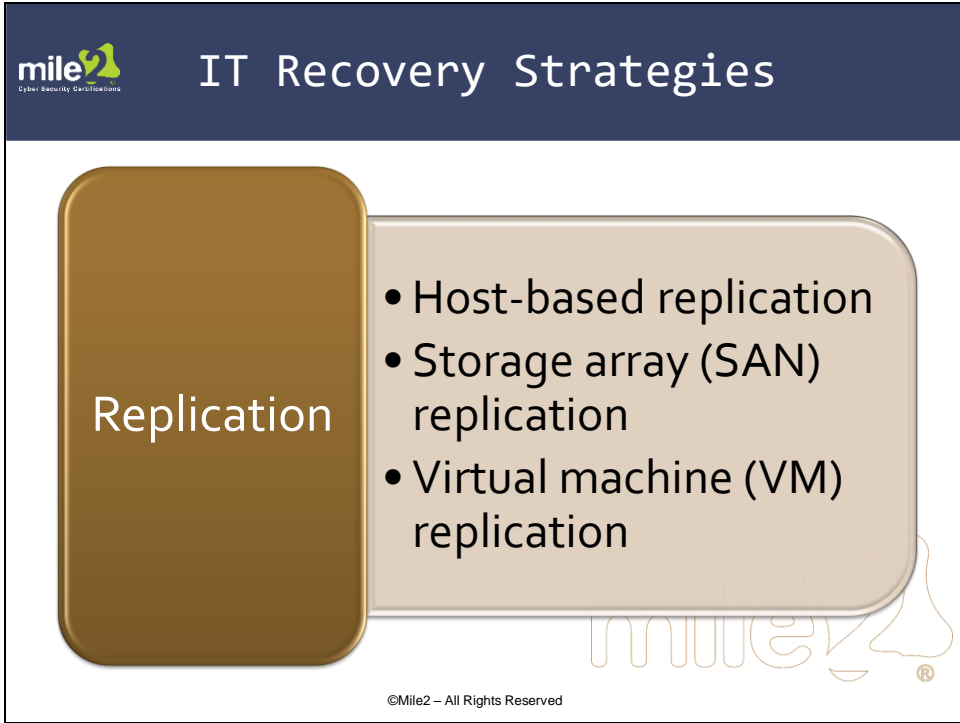
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The slide features a dark blue header with the 'mile2 Cyber Security Certifications' logo on the left and the title 'IT Recovery Strategies' in white text on the right. Below the header, a dark brown rounded rectangle on the left contains the word 'Replication' in white. To its right, a light brown rounded rectangle contains a bulleted list of three items: 'Host-based replication', 'Storage array (SAN) replication', and 'Virtual machine (VM) replication'. A faint 'mile2' watermark is visible in the bottom right of the slide area, and a copyright notice '©Mile2 – All Rights Reserved' is at the very bottom.

**Replication**

- Host-based replication
- Storage array (SAN) replication
- Virtual machine (VM) replication

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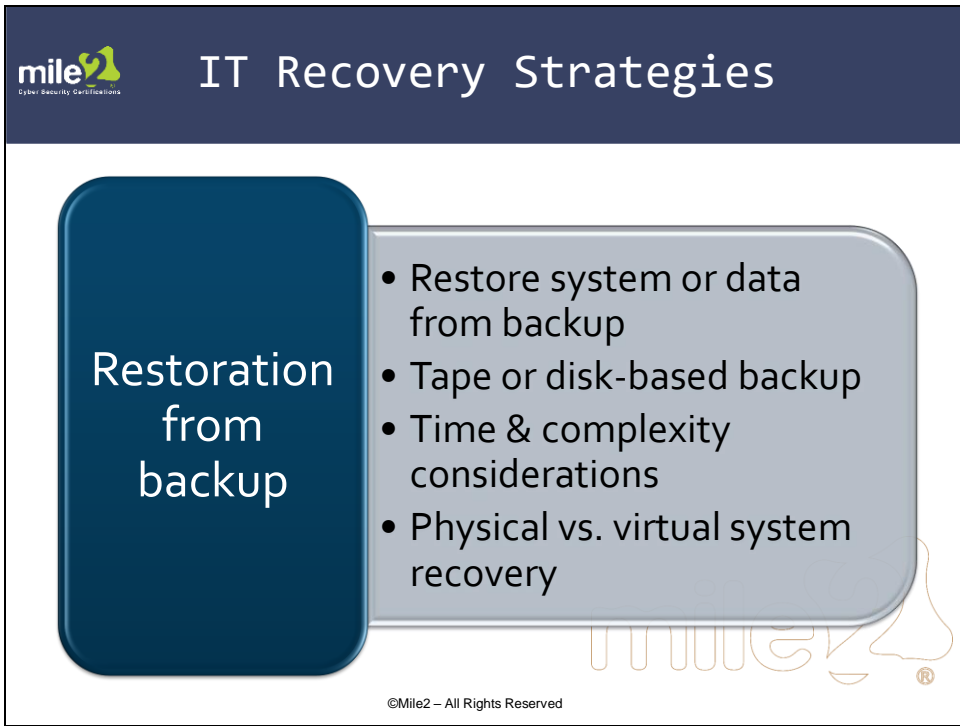
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The slide features a dark blue header with the 'mile2 Cyber Security Certifications' logo on the left and the title 'IT Recovery Strategies' in white text on the right. Below the header, a dark blue rounded rectangle on the left contains the text 'Restoration from backup' in white. To its right, a light gray rounded rectangle contains a bulleted list of four items. At the bottom center of the slide, there is a copyright notice '©Mile2 – All Rights Reserved' and a faint, stylized logo.

**Restoration from backup**

- Restore system or data from backup
- Tape or disk-based backup
- Time & complexity considerations
- Physical vs. virtual system recovery

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The slide features a dark blue header with the 'mile2 Cyber Security Certifications' logo on the left and the title 'IT Recovery Strategies' on the right. The main content area contains a dark purple rounded rectangle on the left with the text 'Assessment of available Strategies'. To its right is a light grey rounded rectangle containing a bulleted list. At the bottom center of the slide is the copyright notice '©Mile2 – All Rights Reserved'.

**Assessment of available Strategies**

- To select the most appropriate recovery strategy, each must be assessed in terms of:
  - possible disruption
  - impacts to the organization
  - Risk vs. Benefit
  - Feasibility and cost

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# DR Site Strategies

## Section 2

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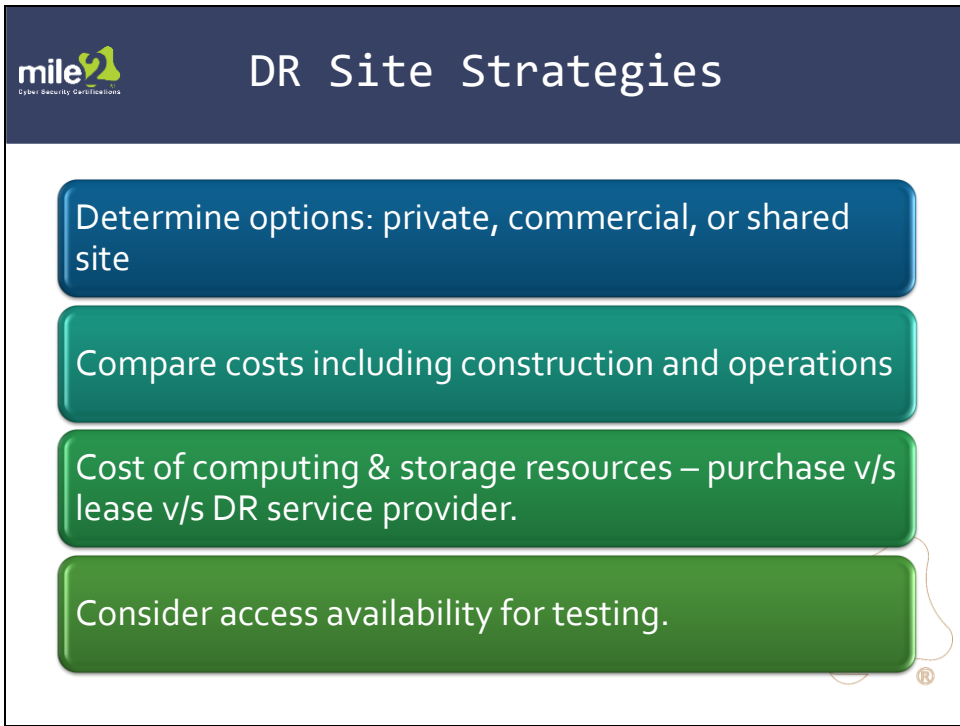
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## DR Site Strategies

- Determine options: private, commercial, or shared site
- Compare costs including construction and operations
- Cost of computing & storage resources – purchase v/s lease v/s DR service provider.
- Consider access availability for testing.

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 **DR Site Strategies**

### Private Cloud

- Privately owned - Build or utilize existing data centers.
- Full control over access and use of resources.
- Potentially leverage location for both data center and staff recovery.
- Facilities management and staffing costs.

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## DR Site Strategies

### Public / Commercial Cloud

- **Get out of the data center business – no staffing or plant maintenance.**
- **Pay for just the services you need when you need them.**
- **Can be fully configured with all required hardware, software, networking, and office equipment.**
- **Move production offsite and have built-in disaster recovery!**
- **Recurring monthly costs**



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 DR Site Strategies

## Community / Reciprocal Site

- Two companies with similar & spare processing resources agree to back up each other's critical applications
- Advantages
  - No separate data recovery site is required
  - Most necessary equipment may be in place and maintained
- Disadvantages
  - Testing coordination can be difficult
  - May limit growth capacity for each party
  - Security can be a challenge
  - Legal / compliance concerns

  
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## DR Site Strategies

### Hot Sites

- Fully configured with all needed hardware, software, and office equipment.
- Privately owned or purchased from a commercial DR vendor
- Communication links and configurations in place
- Data is likely not on site unless redundancy is maintained
- Advantages:
  - High level of readiness (RTO 24-48 hrs.)
  - Annual Testing could be performed
  - May contain separate work area for end user recovery
  - Local IT staff on hand to provide assistance
- Disadvantages:
  - Cost \$\$\$\$
  - Access Logistics and Competition



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## High Availability

Consider the use of high availability (HA) processes within any DR strategies to provide for online real-time resilient access to alternate system resources. HA denotes systems that can achieve an uptime of 99.999 percent or better. Note that HA is a process for achieving high availability and should not be confused with FIPS 199 high-impact category systems.

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Questions

and

Answers

## Review Questions:

1. Proper BCP Design includes which of the following?
  - A. Scope & Objectives
  - B. Limitations & Assumptions
  - C. Escalation, notification, and activation procedures
  - D. Emergency Management procedures
  - E. All of the above
  
2. BCP Design includes which of the following Escalation, Notification, and Activation procedures?
  - A. Clarify when an incident becomes a disaster
  - B. Identify who has the authority / responsibility to declare
  - C. Define communications tree contacts and their responsibilities
  - D. All of the above
  
3. BCP Design of Business Unit Recovery Plans can include the following:
  - A. Manual steps to follow during an outage
  - B. Operational procedure changes at the recovery site
  - C. Transportation to & from housing at the recovery site
  - D. All of the above
  
4. BCP Design of the Public Relations Plan does not include:
  - A. Pre-determined message to public, customers, & media
  - B. Secondary message ensuring services and data are safe and available or recoverable
  - C. ETA for resumption of services
  - D. Contacting your biggest competitor during the disaster
  
5. True or False: A proper BCP Design will include a primary site resumption plan in order to reduce the time required at the alternate site.
  - A. True
  - B. False

## Answer Key:

1. E  
Proper BCP Design includes all of the options listed.
2. D  
All of the above are included in BCP design.
3. D  
BCP Design of Business Unit Recovery Plans can include all of the above.
4. D  
BCP Design of the Public Relations Plan does not include contacting your biggest competitor during the disaster.
5. A  
True. A proper BCP Design will include a primary site resumption plan in order to reduce the time required at the alternate site.