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Data Backup & Recovery Solution

Course Duration: 44 Hours

Course Outline

Module 1: Introduction to Backup and Recovery

- Understanding the importance of backup and recovery
- Exploring the consequences of data loss
- Introducing the backup lifecycle
- Overview of different backup strategies

Module 2: Backup Fundamentals

- Types of backups: Full, Incremental, Differential
- Backup targets: On-premises storage, Cloud storage, Tape drives
- Backup scheduling and frequency
- Backup software and tools overview

Module 3: Backup Technologies

- Disk-based backup solutions
- Cloud backup services and providers
- Backup appliances
- Data deduplication and compression techniques

Module 4: Recovery Techniques

- File-level recovery
- Volume-level recovery
- Bare-metal recovery
- Disaster recovery planning and execution

Module 5: Best Practices for Data Protection

- Data encryption and security considerations
- Testing backup and recovery procedures
- Offsite backups and geographical redundancy
- Monitoring and auditing backup processes

Module 6: Advanced Topics

- Continuous Data Protection (CDP)
- Snapshot technology.
- Replication for disaster recovery
- Backup for virtualized environments

Module 7: Case Studies and Real-World Scenarios

- Analyzing backup and recovery scenarios
- Case studies of successful and failed backup implementations
- Hands-on exercises and simulations

Module 8: Future Trends and Emerging Technologies

- Overview of emerging backup and recovery technologies
- Predictive analytics for data protection
- Artificial Intelligence (AI) in backup management

Module 9: Implementing Backup and Recovery Solutions

- Designing backup and recovery architectures
- Deploying backup infrastructure
- Configuring backup policies and schedules
- Monitoring and optimizing backup performance.

Module 10: Best Practices for Backup and Recovery Administration

- Backup documentation and reporting
- User access control and permissions
- Compliance considerations
- Disaster recovery testing and maintenance

Working with Veeam Backup Solutions

Module 1: Introduction to Veeam Backup

- Overview of Veeam Backup: Features and capabilities
- Understanding the importance of data protection and disaster recovery
- Introduction to Veeam Backup components and architecture
- Licensing and editions of Veeam Backup

Module 2: Deploying Veeam Backup Infrastructure

- Planning and sizing Veeam Backup infrastructure
- Installing Veeam Backup Server
- Configuring backup repositories and backup proxies
- Integration with virtualization platforms (VMware vSphere, Microsoft Hyper-V)

Module 3: Configuring Backup Jobs

- Creating backup jobs in Veeam Backup
- Configuring backup schedules and retention policies
- Leveraging advanced backup settings (compression, encryption, deduplication)

- Utilizing Veeam Backup copy jobs for offsite backups

Module 4: Performing Backup and Restore Operations

- Initiating backup and restore operations in Veeam Backup
- Monitoring backup jobs and job logs
- Exploring different restore scenarios (file-level, volume-level, application-item)
- Performing Instant VM Recovery for quick VM restores

Module 5: Veeam Replication and Disaster Recovery

- Introduction to Veeam Replication
- Configuring replication jobs for disaster recovery
- Failover and failback procedures
- Testing and verifying disaster recovery plans with SureReplica

Module 6: Veeam Backup and Cloud Integration

- Overview of Veeam Cloud Connect
- Configuring Veeam Backup to Azure/AWS
- Utilizing Veeam Backup for Microsoft Office 365
- Implementing Veeam Backup to Object Storage

Module 7: Advanced Veeam Backup Features

- Exploring Veeam SureBackup and SureReplica for automated recovery verification
- Introduction to Veeam ONE for monitoring and reporting
- Veeam DataLabs for creating isolated environments for testing and development
- Exploring Veeam Explorers for granular recovery (Exchange, SQL, Active Directory)

Module 8: Best Practices for Veeam Backup Administration

- Designing backup and recovery strategies with Veeam Backup
- Implementing security best practices (encryption, access controls)
- Monitoring Veeam Backup infrastructure for performance and reliability
- Backup documentation and reporting

Module 9: Troubleshooting and Optimization

- Common issues and troubleshooting techniques in Veeam Backup
- Optimizing backup performance and resource utilization
- Understanding Veeam Backup logs and error messages
- Engaging with Veeam Support for advanced troubleshooting

Module 10: Case Studies and Real-World Scenarios

- Analyzing real-world backup and recovery scenarios with Veeam Backup
- Case studies of successful Veeam Backup implementations

- Hands-on exercises and simulations

Final Project: Veeam Backup Implementation Plan

- Develop a comprehensive backup and recovery plan using Veeam Backup for a fictional organization
- Incorporate best practices and industry standards
- Present the plan and rationale for backup and recovery strategies

Working with Windows Backup

Module 1: Introduction to Windows Server Backup

- Overview of Windows Server Backup (WSB)
- Understanding the importance of data protection
- Introduction to backup and recovery concepts
- Overview of Windows Server Backup features and capabilities

Module 2: Planning and Deployment

- Planning backup strategies and storage requirements
- Installing Windows Server Backup roles and features
- Configuring backup destinations (local disk, network share, external storage)
- Understanding backup formats and compatibility

Module 3: Configuring Backup Operations

- Creating backup schedules and retention policies
- Configuring backup types (full, incremental, differential)
- Leveraging Volume Shadow Copy Service (VSS) for application-aware backups
- Automating backup tasks with PowerShell cmdlets

Module 4: Backup and Recovery Operations

- Initiating backups and restores using Windows Server Backup
- Monitoring backup progress and job logs
- Performing bare-metal recoveries
- Recovering specific files, folders, and volumes

Module 5: Advanced Backup Scenarios

- Backup and recovery of Active Directory Domain Services (AD DS)
- Protecting Exchange Server with Windows Server Backup
- Backing up Hyper-V virtual machines
- Ensuring data consistency and integrity in backup operations

Working with Azure Backup

Module 1: Introduction to Azure Backup

- Overview of Azure Backup services
- Understanding the importance of cloud-based data protection
- Introduction to Azure Backup components and architecture
- Licensing and pricing considerations for Azure Backup

Module 2: Configuring Azure Backup

- Setting up Azure Recovery Services Vault
- Configuring backup policies and schedules in Azure Backup
- Protecting on-premises workloads with Azure Backup Agent
- Leveraging Azure Backup for Azure Virtual Machines

Module 3: Implementing Backup and Restore Operations

- Initiating backups and restores using Azure Backup
- Monitoring backup jobs and job logs in Azure portal
- Configuring backup alerts and notifications
- Best practices for data recovery from Azure Backup

Module 4: Disaster Recovery with Azure Site Recovery

- Introduction to Azure Site Recovery (ASR)
- Configuring ASR for disaster recovery scenarios
- Failover and failback procedures with ASR
- Testing and validating disaster recovery plans

Module 5: Advanced Topics in Azure Backup

- Utilizing Azure Backup for hybrid cloud environments
- Backup and recovery of Azure SQL Database and Azure Files
- Implementing long-term retention with Azure Backup
- Exploring advanced backup options and customization

Module 6: Security and Compliance Considerations

- Data encryption and security best practices in Azure Backup
- Compliance considerations (GDPR, HIPAA, etc.)
- Role-based access control (RBAC) for Azure Backup
- Backup documentation and audit trails

Module 7: Monitoring, Reporting, and Troubleshooting

- Monitoring Azure Backup performance and health
- Utilizing Azure Monitor for backup monitoring and reporting

- Common troubleshooting scenarios and techniques
- Engaging with Azure Support for advanced troubleshooting
- Backup and Storage troubleshooting documentation for Window.

Other Backup & Recovery Solutions

1. **Dell EMS Backup**
2. **Proxmox backup solution**
3. **Others Open-Source Backup**

Assessment:

- Assignments: Practical exercises on designing backup strategies, configuring backup software, and performing recovery tasks.
- Exams: Assessing theoretical knowledge and understanding of backup and recovery concepts.

Conclusion: This course equips students with the knowledge and skills necessary to effectively manage data backup and recovery processes. By the end of the course, students will be able to design, implement, and maintain robust backup solutions to protect critical data assets and ensure business continuity.