

# Understanding the Role of Storage Technologies and Big Data

*Skills and expertise to help you increase your knowledge in the field of storage technologies*

*Training in storage technologies is naturally promoted as the path to data storage career success. This course is specially designed for new sales and technology consultants who wish to expand their knowledge and career in the field of storage technologies.*



This two day face-to-face instructor led class is designed to develop storage technology skills and strategies associated with managing the explosive growth of business data across the enterprise in today's networked economy. It introduces the basic concepts and terminology associated with Direct Attached Storage (DAS), networked storage including Storage Area Networks (SANs), Network Attached Storage (NAS), and Internet SCSI (iSCSI). It also covers storage emerging technologies like Object Storage, Software Defined Storage including storage virtualization and an comprehensive introduction on the role of Analytics and Big Data.

For additional details on other AIX courses, please visit: <http://www.tlcpak.com/educ.html>

**Prerequisites:**

Participants attending this course should be familiar with basic Information Technology (IT) concepts and the role of general storage systems technology.

**Objectives: Skills Gained**

On successful completion of this course, students should be able to:

- Understand the role of SNIA
- Describe and understand Direct Attached Storage technologies.
- Understand different types of available RAID levels.
- Choosing the right RAID level with respect to applications and databases.
- Exploiting Storage Area Networks.
- Introduction to Network Attached Storage.
- All about Information Infrastructure and associated risk and challenges associated with storage securities.
- Define SAN terminology including: Fibre Channel architecture, data transfer protocols, nodes, ports, fabric and switches.
- Identify resource access and sharing options and considerations associated with networked storage environments.
- Correlate storage networking infrastructure with host and NAS server LUN assignments and device access
- Understand Object Storage
- Problem areas for virtualization solutions.
- Introduction to Software Defined Storage
- Solution offers by storage virtualization
- Understand virtualization Architectures: In-Band vs. Out-of-Band

- What is information infrastructure and its challenges
- Information Infrastructure model
- Delivering a dynamic infrastructure
- Smart storage management
- Data replication technologies
- Access Control – Authentication and Authorization
- Understanding Encryption – Symmetric and Asymmetric
- Understand key contributors to Big Data
- Understanding Big Data and data exploration
- What does a Big Data platform do?
- Understanding Big Data 3Vs
- Harnessing Big Data & and knowing challenges associated with Big Data
- Understand Analytics and its importance
- Analytics mapping to the business applications
- Some of the key benefits offered by Analytics
- Understand how Analytical Life Cycle works

**Course Detail Information**

Course Code	: TN170
Course Duration	: 2 Days - Lecture Based Course
Course Fee	: PKR25,000
Course Location	: TLC office, Karachi.
Terms & Conditions	:100% payment in advance
Course Deliverable	: Comprehensive Student Guide and Course Certificate

*Opportunities are made,  
not found*

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## Course Highlights

Training will be delivered by an experienced trainer with 25+ years of career experience imparting education and training services both locally and internationally and have served international enterprise technology vendors including IBM, Fujitsu, and ICL.

Our instructor holds various industry professional certifications in the space of enterprise servers and storage technologies, Information Security, Enterprise Architecture, ITIL, Cloud, Virtualization, Green IT, and a co-author of 10 IBM Redbooks.

The training course flow will be a mix of lectures & classroom discussions so that participants can have a detailed understanding of various components of Storage technologies discussing different sales scenarios.



The storage training course is vendor neutral and it makes the attendee completely familiar with lot of technologies surrounding storage and various complex issues and solutions thereof due to explosive growth of data.

Often people take training courses on storage products ranging from Storage switches to Arrays to Tape Devices to Storage Virtualization appliances. However, few of them really understand the gamut of storage technologies that made those products. As a result, there is an acute shortage of people in the storage market who has a holistic understanding of the storage capabilities and how they relate to each other.

## Unit 1 – Storage in a view - Challenges and Trends

- Storage types and subsystems
- IT Trends and storage dilemma
- Business requirements
- Pressure on the IT management
- Information infrastructure model
- Information explosion – The growth
- Reduce cost, minimize risk and improve services
- Backup and restore solutions
- Planning about new storage purchase – Essential storage sizing considerations
- Understanding Persistent and Non Persistent Storage
- Critical facts about storage that you cannot ignore
- Acquisitions and storage dynamics

## Unit 2 – Introduction to Direct Attached Storage and RAID Levels

- What is Direct Attached Storage
- Understand internal DAS
- Understand external DAS
- Using a DAS under a cluster configuration
- DAS – Benefits, Connectivity options, and Challenges
- Understanding JBOD and its use
- Introduction to RAID
- Understanding different types of RAID levels

## Unit 3 – Exploiting Storage Area Networks

- Understanding SAN
- The role of SNIA – Standards & Compliances
- Why SAN?
- SAN highlights and utility
- Components and benefits of SAN
- SAN – A high speed data transfer between hosts
- Understand igroup and LUN
- Logical Unit Number specifics
- Information you require to create a LUN and SAN switch features

- SAN Applications and Zoning
- Major SAN players

## Unit 4 – Introduction to Network Attached Storage

- Understanding NAS
- Describe File Based Storage and NAS Advantages
- NAS Protocols – NFS and CIFS
- Understanding HTTP – A NAS feature
- Server and NAS connectivity
- NAS communications and security
- iSCSI – What is it?
- Basic iSCSI storage configuration
- Understanding TCP/IP Offload Engine (TOE)
- SAN NAS comparison chart
- Understand Snapshot technology
- Understanding Network Data Management Protocol and its functionality

## Unit 5 – Flash Storage Fundamentals

- The main Dilemma.
- Client responses to Performance Gap.
- Flash Storage – Solution to the problem.
- Flash Storage uses Nonvolatile Memory.
- Flash Storage Overview.
- How does Flash Storage works?
- Flash Storage adoption and Use Cases.
- Understanding all about All-Flash Array.
- Understand Multi-Level Cell and Single-Level Cell Flashes.
- Differentiating Wear Leveling Vs. Mean Time Between Failure.
- Understand Hybrid Flash Array.
- The benefits and drawbacks of a Hybrid Flash Array.
- Top five reasons to select a Hybrid or All-Flash Array.
- Where do you best use Flash Storage today?
- Hybrid Flash and All-Flash Array market leaders.
- Predictions – All-Flash Array Vs. Hybrid Flash Array.
- Flash Array Competitive Landscape – An Example

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## Target Audience

- Sales Specialists who want to refresh and expand their storage knowledge in the area of Software Defined Storage and Object Storage technologies.
- Technology sales people who want change their professional from other discipline to storage sales specialist.
- People who want to start their career as a Technology consultants and System Integrators.
- End-users who want to expand their knowledge in storage technologies.
- Students of engineering universities who want to embark their career in the field of Information Technology as a storage pre/post sales specialists.



A comprehensive student guide with detailed notes shall be provided to each student as a part of this course.

This course can also be conducted for customers at their premises in Karachi, Lahore and Islamabad.

For additional details on other AIX courses, please visit:  
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## Unit 6 – Storage Virtualization Basics

- What is storage virtualization?
- Why there is a need for storage virtualization
- Storage Capacity Utilization – Expanding more for less
- Storage Virtualization – Features & Benefits
- Virtualization – Industry wide definition
- SNIA shared storage model
- What does Storage Virtualization enable?
- Storage Virtualization Multi-Level Approach
- Virtualization Architectures: In-Band vs. Out-of-Band
- Key benefits of Storage Virtualization

## Unit 7 – Information Infrastructure Challenges and Storage Securities

- Differentiate between Security & Information Security
- Business and Technology needs and priorities
- Consequences of data security breaches
- What is information infrastructure and its challenges
- Information Infrastructure model
- Components of information infrastructure solution
- Data protection technologies
- What is storage security and why it is required?
- Data replication technologies
- Access Control – Authentication and Authorization
- Understanding Encryption – Symmetric and Asymmetric
- Why encryption is essential
- Fabric-based encryption for data-at-rest
- About Self-Encrypting Devices
- Understand what is Latency, Storage legacy and SAN

## Unit 8 - Introduction to Software Defined Storage

- Why Software Defined Storage?
- SDS is more than storage virtualization
- Software Defined Storage in the Context of the Software Defined Data Center
- What is needed for Software Defined Storage?
- Basic Building Blocks of Software Defined Storage
- Some of the attributes of Software Defined Storage

- Key benefits of Software Defined Storage
- Business Challenges solved by Software Defined Storage
- Key characteristics of an Software Defined Storage
- How SDS can help CSPs to achieve their goals
- Flexibility through Storage Virtualization

## Unit 9 – Introduction to Big Data & Analytics

- A new style of emerging IT and Key contributors to Big Data
- Understanding Big Data and data exploration
- What does a Big Data platform do?
- Understanding the types of Big Data
- Understanding Big Data 3Vs
- Analytics Breadth to Enable Decisions
- Describe Hadoop
- Harnessing Big Data & Big Data Challenges
- Understanding Analytics and why Analytics matters?
- Analytics Breadth to Enable Decisions
- Analytics mapping to the business applications
- Some of the key benefits offered by Analytics
- Understand how Analytical Life Cycle works
- Hybrid Cloud Storage – A way forward to Cloud Computing

## Unit 10 – Storage & Data Management

- Why Storage Management
- Storage Management Challenges
- SMI-S Benefits and Data Classification
- Storage Vs Data Classification
- Information Lifecycle Management
- ILM – Three Storage Strategies
- Hierarchical Storage Management
- Understand Data Protection
- Data Protection Methods
- Understanding RTO and RPO – DR
- Backup and Restore
- Types of Backups – Full, Incremental & Differential
- Understand Snapshot & Continuous Data Protection technologies
- Importance of Virtual Tape Library or send us your nominations at
- Data De-duplication technology [www.tlcpak.com/nomination.html](http://www.tlcpak.com/nomination.html)



**For additional information**

please write to us at:  
[info@tlcpak.com](mailto:info@tlcpak.com)

or send us your nominations at  
[www.tlcpak.com/nomination.html](http://www.tlcpak.com/nomination.html)