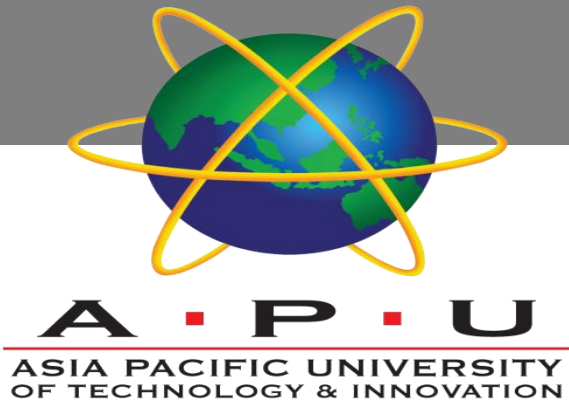




Data Protection and Management

Availability Solutions

Learning Outcome

At the end of this lecture you should able to;

- Explain availability solutions and their benefits
- Describe evolution of data protection solutions
- Define data protection terminologies
- Discuss key data protection management activities

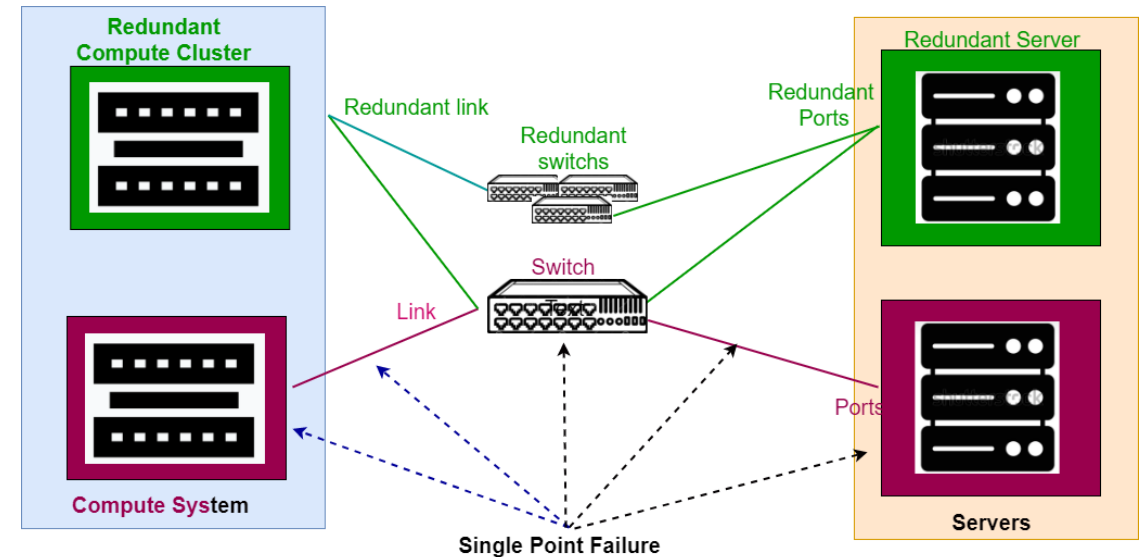
Data protection and availability solutions are:

Data protection and availability solutions assure that the data is safe and accessible to the intended users at a required level of performance.

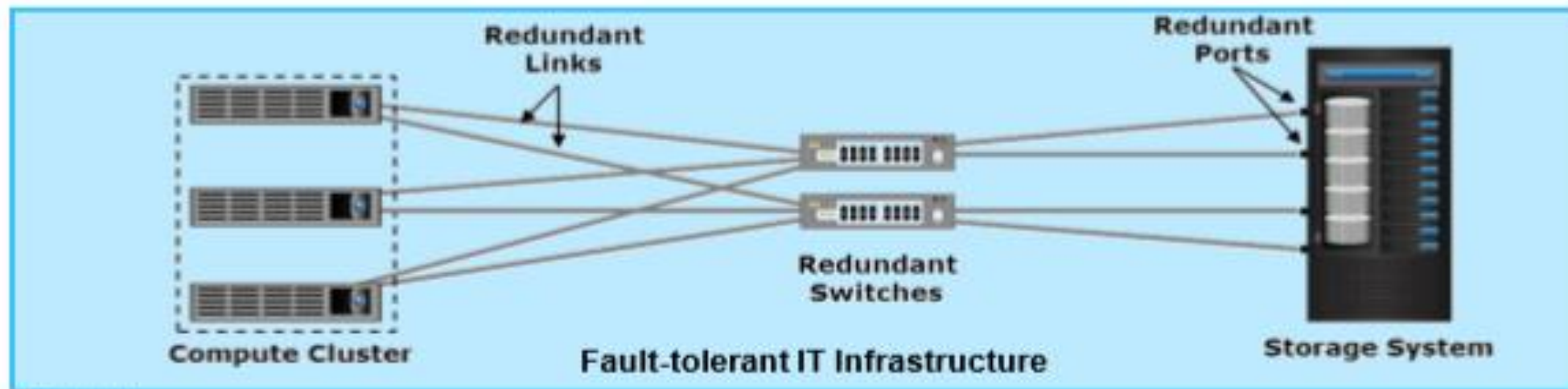
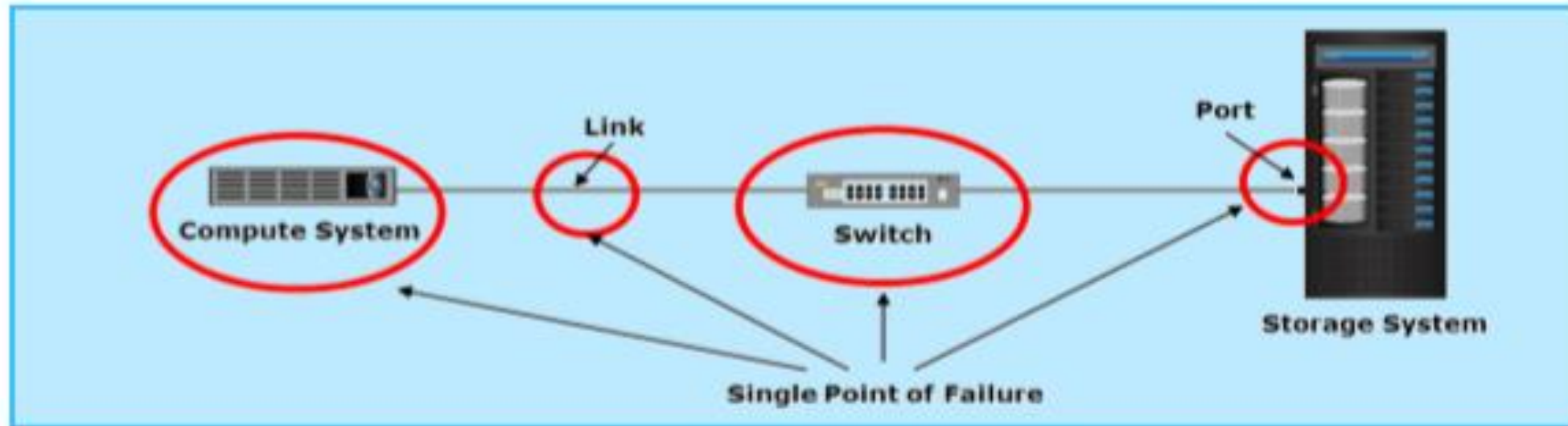
- Fault-tolerant IT infrastructure
- Data backup
- Data replication
- Data archiving
- Data migration
- Data security

Fault-tolerant IT Infrastructure

- It is design based on the concept of fault tolerance
 - Continues providing services in case of its components fail
 - Improve the availability of data and services

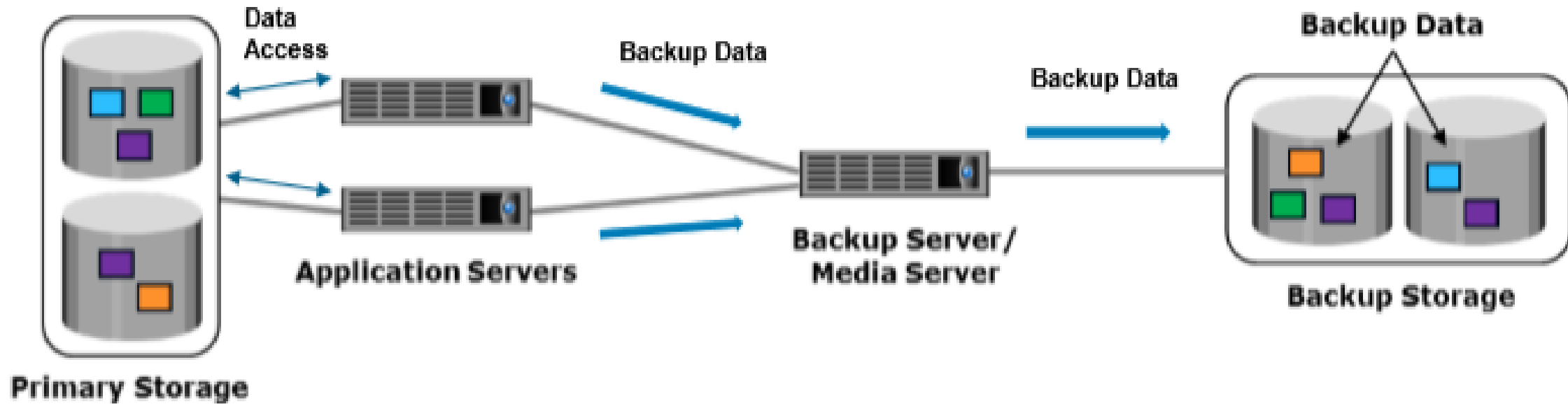


Fault-tolerant IT Infrastructure



Data Backup

- Process of making a copy of primary data for the purpose of restoring the original data in the event of data loss/corruption
 - Provides protection against data loss or corruption

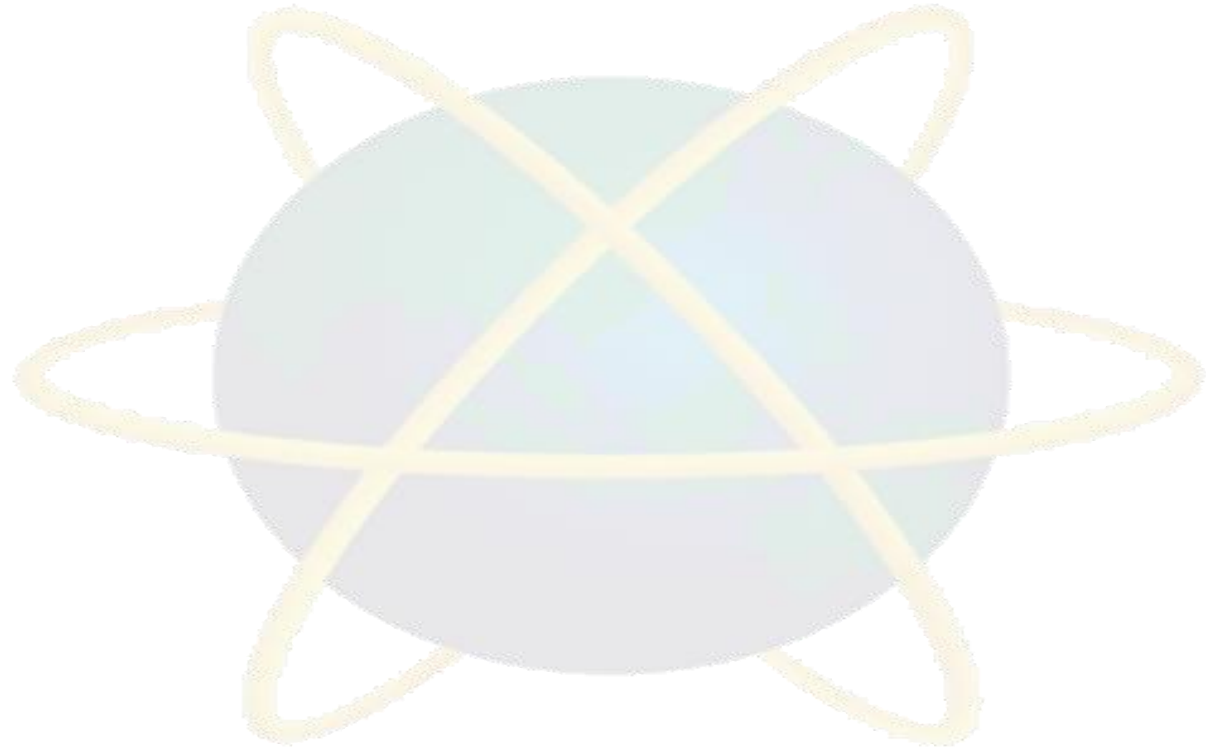


Data Backup

- The backup data should not be kept in the same storage device where the original data is stored.
- Often, data backups are performed both within and between sites or data centers.
- The local backup within a site enables easy access to the backup data and quick recovery. The backup data at the remote site provides protection against a disaster, which could damage or destroy the local backup data.

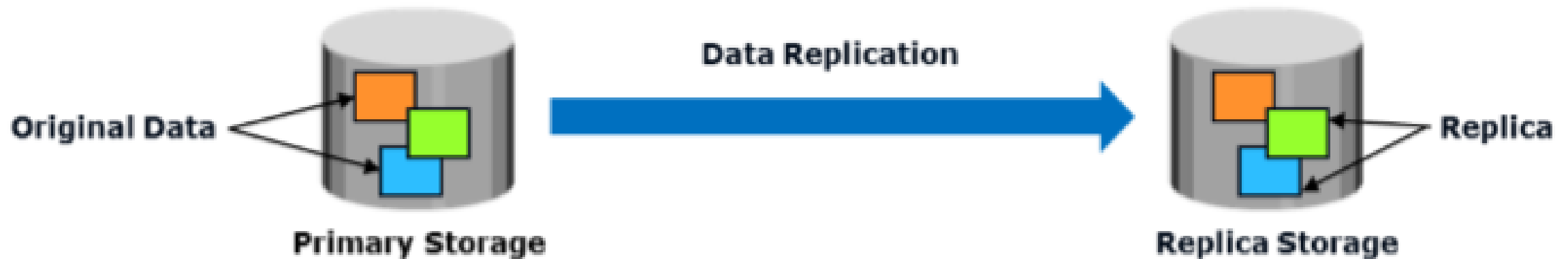
Quick Review

- Search from internet or other media and explain the different types of data backup



Data Replication

- Process of creating an exact copy (replica) of data so that it may be used to restore original data or restart operations
 - Provides protection against data loss or corruption
 - Improves data availability for business continuance



Data Replication

A replica can also be used to perform other business operations such as backup, reporting, and testing.

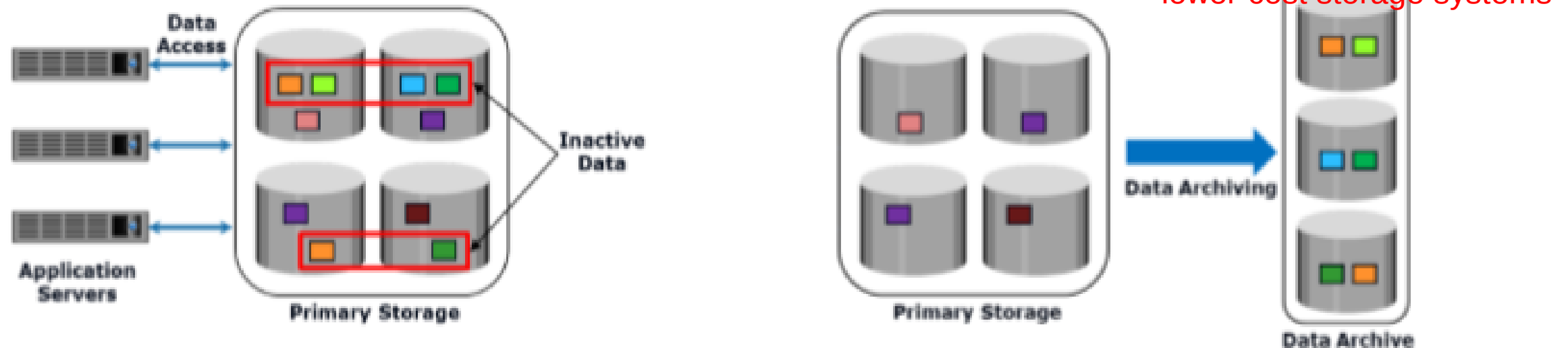
Data replication is similar to data backup, but, it provides higher availability because the replica can be made operational immediately after the primary storage failure.

Replication can be performed both within and across data centers or sites.

Data Archiving



- Process of moving inactive data from primary storage systems to data archives for long term retention
 - Assures data availability on a long-term basis
 - Meets data retention requirements
 - Reduces primary storage consumption and related costs
 - Reduces the amount of data that must be backed up



<https://www.youtube.com/watch?v=qrnF9BnJ74o>

Data Archiving

A data archive stores older but important data that is less likely to be accessed frequently.

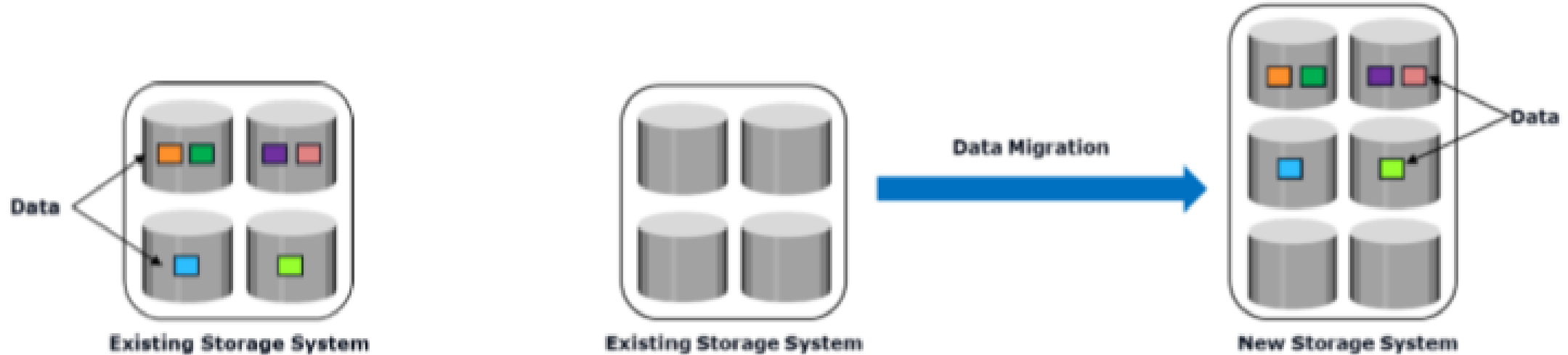
Data archiving helps in preserving data that may be needed for future reference and data that must be retained for regulatory compliance.

Organizations can reduce their expensive primary storage consumption and related costs.

By separating inactive data from primary storage, the amount of data that must be backed up is reduced, and, the backup storage cost is also lessened.

Data Migration

- Process of moving data between storage systems, compute systems, or formats
 - Ensures data availability during a system maintenance or a technology refresh



Quick Review

- Describe the advantages and disadvantages of data replication.
- Explain the difference between data replication and data backup
- Explain the difference between data replication and data synchronization

Data Migration Use Cases

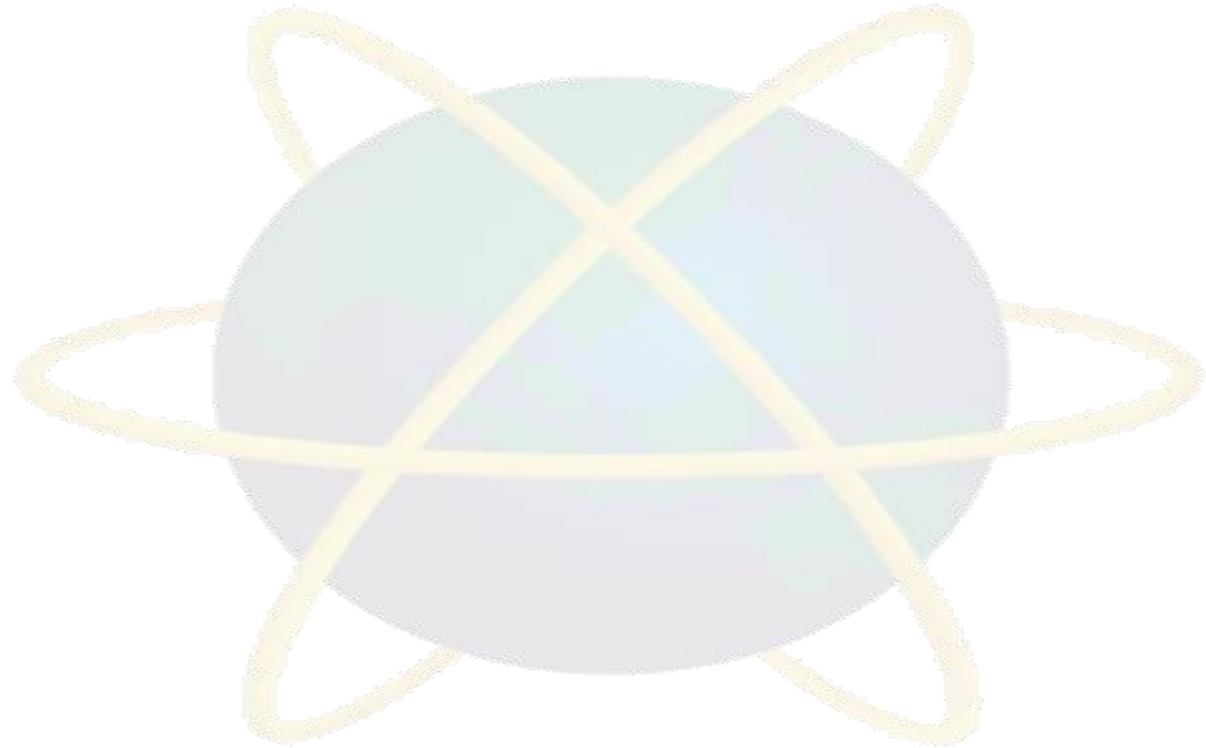
Case 1, before a scheduled system maintenance, data is transferred to another system to ensure continuous data availability.

In another case, when a technology or a system upgrade occurs the existing data needs to be moved to a new system before withdrawing the old system to avoid downtime.

https://www.youtube.com/watch?v=S7HTsuWz_2U

Quick Review

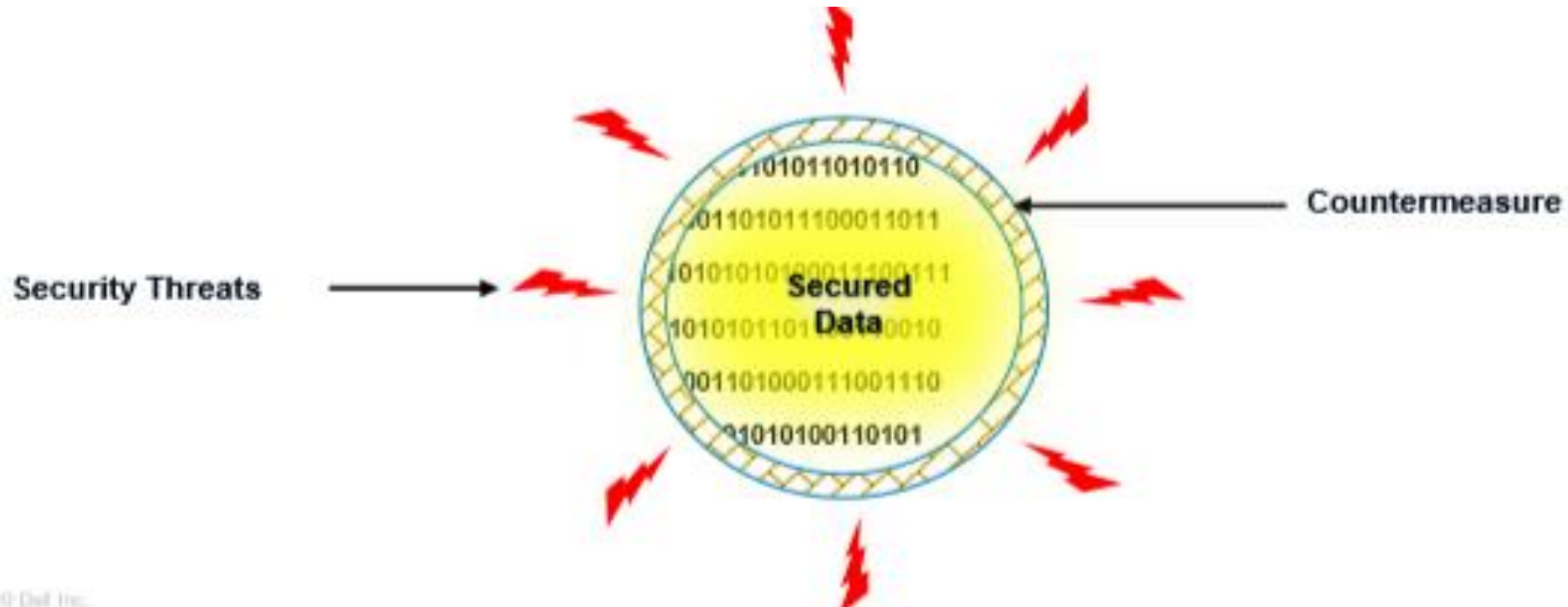
- Why data migration is important for critical businesses.



Data Security

Countermeasures used to protect data against unauthorized access, deletion, modification, or disruption

- Provides protection against threats that can destroy/corrupt data
- Prevents security attacks that can cause data unavailability



Data Security

Security countermeasures include the implementation of tools, processes, and policies that can prevent security attacks on infrastructure components and services.

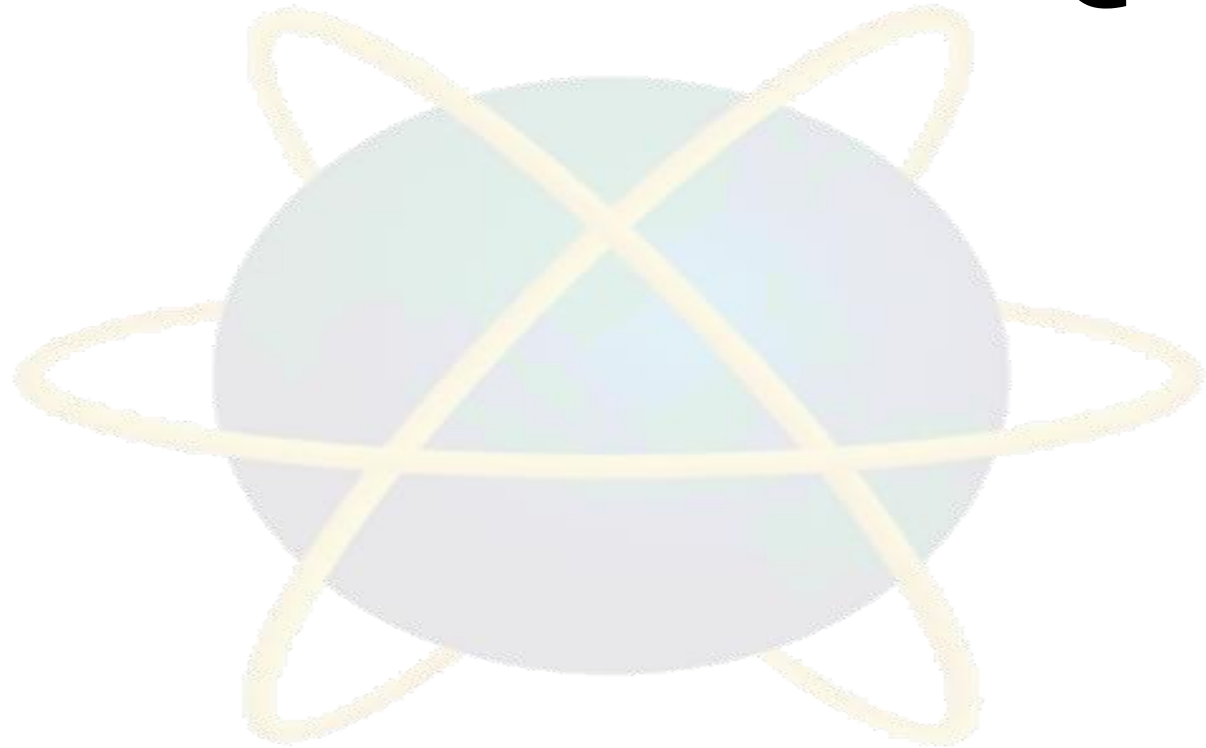
Security tools are deployed on compute system, storage, and network to protect data.

Quick Review

- What is the advantage, if data security procedure implemented on network such as on internet.
- Explain a data security approach on data storage.



Q & A



Next Topic

Data Protection Architecture

