Storage virtualization - overview, principles, and a virtual tape library as example
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At a high level, virtualisation is an intermediary hardware or software layer that separates the logical view from the physical view to resources. Without virtualisation each server, operating system or application manages its dedicated physical resources. In a virtualised environment, the server, operating system or application do not need to know where the resource resides physically. Logical resources that are presented in a virtualisation layer replace server's, operating system's or application's physical resources. The virtualisation layer then dynamically maps these logical resources to the target physical resources, thereby increasing the flexibility and efficiency in resource assignment to a server, operating system or application. Virtualisation allows the IT department to separate decisions regarding server, operating systems and application from compute and storage devices and the associated management tasks.

Virtualisation can be realised in many layers of an IT system (server, operating system, application, storage system or in the connecting network via intelligent switches or appliances). When focussing at storage virtualisation one can see that there are many solutions on the market. Some solutions have been broadly accepted, some solutions are targeting more to niche markets and some solutions are at the beginning of their life cycle.

Storage virtualisation falls in the following main categories:

- Storage array-based virtualisation (mainly block-oriented access)
- Virtualisation via NAS (mainly file-oriented access)
- Nearline virtualisation (also known as tape virtualisation)
- SAN fabric partitioning (virtual or logical SAN) and NAS partitioning
- LUN virtualisation via intelligent SAN switches
    - virtualisation functionality bound to fibre channel switch ASICs
    - In-band virtualisation appliances
- Server-based Volume Manager

The talk will give an overview and will then provide a deeper technical inside on broadly accepted technologies such tape virtualisation with Virtual Tape Libraries.