Storage networks, SAN/NAS

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MR-40   2 Days (14 Hours)

Description

This seminar presents the fundamental principles necessary for setting up and administering a storage network. It addresses the key points of all phases of a SAN/NAS implementation project: collection of storage needs for company applications, choice of a supplier, definition of the architecture, migration of applications on the SAN, and finally administration. The main aspects of the course concern both technical and organizational aspects. Technological developments are evaluated from the point of view of their use by the company.

Who is this training for ?

For whom

Project manager, architect, production manager, storage manager.
Prerequisites

Aucune

Training objectives

- Discover the key points of managing a storage network Understand the different components of a storage network Define a storage type for a specific application Manage a SAN/NAS implementation project Organize the administration of a storage network

Training program

> Quel stockage pour quelle application ?

- Storage seen as a new paradigm.
- Application storage needs.
- How are SAN and NAS different from each other? the other? What are the candidate applications for migration to the SAN? What are the applications intended for the NAS? Is the RDBMS data intact on a NAS? What applications for SAN and for NAS? Advantages and disadvantages of SAN and NAS.
- What is ROI, TCO? Can we justify the cost of a storage network?

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Les composants d'un réseau de stockage

- The basics of the Fiber Channel protocol.
- Why move from SCSI to Fiber Channel? Description of the limitations of SCSI.
- What is Fiber Channel does it represent progress compared to SCSI? Fibre Channel terminology.
- Choice and construction of an ISCSI storage network.
- Evolution of Ethernet hardware towards 10 Gb, specific architecture and configuration for ISCSI.
- The price/performance gap between Fiber Channel and ISCSI depending on the architectures and hardware used.
- Backup architectures: client traditional backup.
- Lanfree and Serverfree Backup.

Les composants matériels d'un réseau de stockage

- Cables: description of the different single-mode and multi-mode types, and maximum distances.
- GBICS: optical converters and the new generation (SFP).
- HBA: the Host Bus Adapters and the dual access path allowing fail-over, load balancing.
- Hub: shared bandwidth, 'bypass' mode.
- Topologies based on Hubs.
- Switch: aggregate bandwidth.
- FSPF path optimization protocols and limits.
- Monitor inter-switch links.
- Network topologies/arbitrated loop and switched Fabric.
- Why choose a director rather than numerous departmental switches? Storage bay: comparison of the main internal architectures, main operating principles.
- How do the latest developments meet the needs of applications? NAS head: main characteristics of a NAS head, SAN/NAS convergence architecture.

Composants logiciels d'un réseau de stockage

- Business Continuance Volume: mode of operation, data consistency constraints, types of use.
- Suitability of applications with BCV.
- Snapshots: operation, advantages and disadvantages.
- Snapclones: description of operation.
- Continuous Data Protection: management of reverting volumes to a previous state.
- Data replication between arrays : mechanisms in synchronous/asynchronous mode, choice in environments.
- How far can data be replicated? High availability.
- Data deduplication.
- Impacts on application performance.
- New asynchronous technologies.
- Storage virtualization.
- Add the flexibility and mobility of your data on a site or between sites.

Protocole Fibre Channel

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- Fiber Channel layers: list of their functions.
- Classes of service: concept of Buffer to Buffer, credit and main uses.
- Naming and usage convention addressing (WWN).
- Conversion to internal address.
- Arbitrated loop: description of the topology and the arbitration procedure.
- Manufacturer: description of 'a logical network.
- How to establish redundancy in the SAN? FCoE (Fibre Channel over Ethernet) standard, CNA (Converged Network Adapter).

Mise en oeuvre

- Inventory and collection of needs.
- Criteria for selecting candidate machines.
- Evaluate the necessary volume.
- Should we calculate the IO load? To what extent should we detail the components of the architecture? The specifications: the elements to integrate.
- The choice of supplier: the pitfalls to avoid.
- Procedure for defining the SAN/NAS architecture.
- Migration: the different options for migration.

Organisation de l'administration

- In-band and outband administration: administration outside the storage network and in the Fiber Channel.
- Alert devices: Snmp, Http, Telnet, call-home.
- When should you implement a monitoring system? Security issues.
- Adding servers or volumes: Zoning, Lun Masking, Persistent Binding.
- Monitor SAN performance.
- Conduct a performance audit, key elements to monitor depending on the components.
- Data distribution modes.
- Analysis of the consequences of the drop in access density.
- Quality of service concepts.
- Build a team of Storage Managers: define processes and procedures, Service Level Objectives.
- Storage management by attribute and the different service levels.

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