

COMMENT DELL SIMPLIFIE LE STOCKAGE



Equipe Dell Région Est
20 janvier 2009



Agenda

1. Simplify IT
2. Principe du SAN ISCSI ou SAN IP
3. Présentation de la gamme Dell|EquaLogic
4. Serveurs dédiés Virtualisation R805, M805, M905
5. Facilité de mise en œuvre et d'administration d'un environnement SAN sur IP
6. **Démo** (installation, management, réplication, snapshot)
 - ✓ OpenManage IT Assistant
 - ✓ Vmware Virtual Center / ESXi
 - ✓ Auto-Snapshot Manager / VMWare Microsoft



SIMPLIFY IT

GET IT
FASTER

RUN IT
BETTER

GROW IT
SMARTER



RECLAIM TIME, MONEY AND PEOPLE

Dell | EqualLogic "Simplifying Storage"



Michael Dell (Nov 5th, 2007)

"EqualLogic has the potential to act as an exciting catalyst for growth across our business when the acquisition is completed. Here are a few areas that excite me:



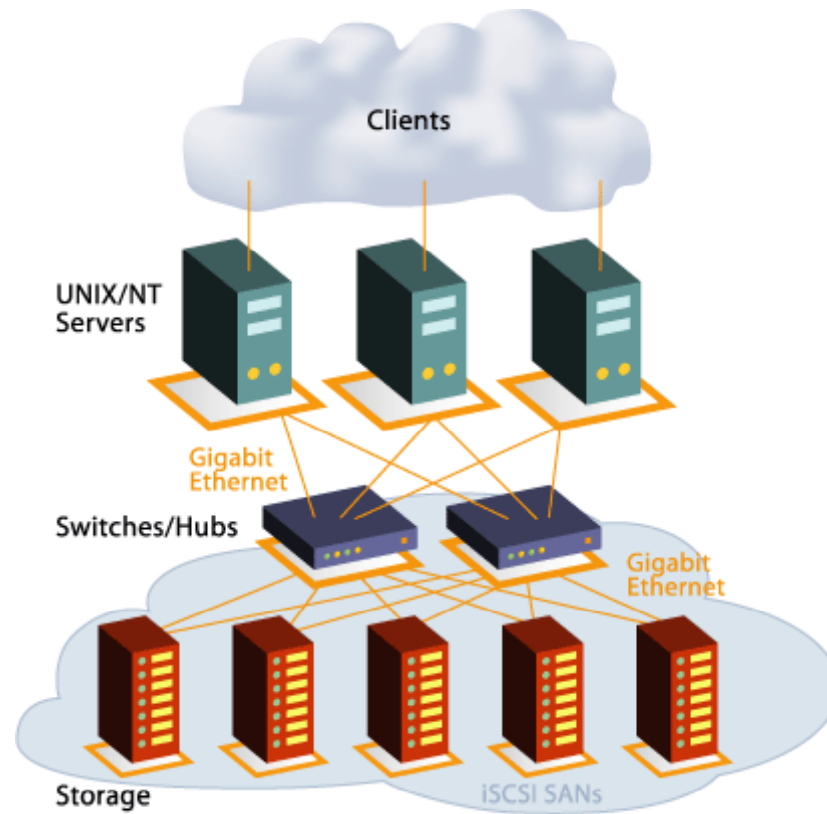
✓ *Dell and EqualLogic share a common vision for IT simplification: EqualLogic enables businesses of all sizes – and especially those in the mid-market – to realize the economic benefits of consolidated, self-managing storage.*

✓ *A mutual commitment to channel partners: Dell is committed to growing EqualLogic's very successful channel partner programs with current and future EqualLogic-branded products.*

✓ *Extending our leadership in virtualization: EqualLogic's industry-leading iSCSI-based products are uniquely optimized for virtualization, providing the simplified set-up, management and expansion that IT managers have been looking for to attach to their physical and virtualized servers "*



iSCSI SAN



Présentation iSCSI

iSCSI : internet Small Computer System Interface.

iSCSI est un protocole de transport de données de stockage au travers de réseaux IP.

Les blocs de données SCSI sont encapsulés dans des trames TCP/IP

- iSCSI est une technologie SAN, pas une technologie NAS. Le transport et le stockage se font au niveau bloc, pas au niveau fichier.

- iSCSI peut se comparer au protocole Fibre Channel :
 - FC: commandes SCSI encapsulées dans des trames Fibre Channel
 - iSCSI commandes SCSI encapsulées dans des trames IP



Avantages

Les principaux avantages d'iSCSI sont :

- Distance : contrairement au Fibre Channel où les distances sont limitées au maximum à quelques dizaines de kilomètres, iSCSI n'a virtuellement aucune limite puisqu'il s'appuie sur TCP/IP (en dehors de toute considération de performance)
- Coût : un SAN iSCSI est beaucoup plus économique que son équivalent FC. Le câblage, les switches et routeurs sont des équipements réseau standard. De simples cartes réseau Ethernet suffisent pour l'attachement des serveurs. Les administrateurs sont plus familiers avec les réseaux IP qu'avec Fibre Channel
- Plus performant que le NAS : le transport des données se fait au niveau bloc, l'overhead est très inférieur à celui d'un transfert au niveau fichier



Fonctionnement

Les deux éléments de base d'iSCSI sont l'**initiator** et la **target**

L'**initiator** est un node ou système hôte. Ce node peut-être un serveur, une station de travail ou même un ordinateur portable.

La **target** est une habituellement une baie de stockage, mais peut aussi être un serveur qui se comporte alors comme un périphérique de stockage

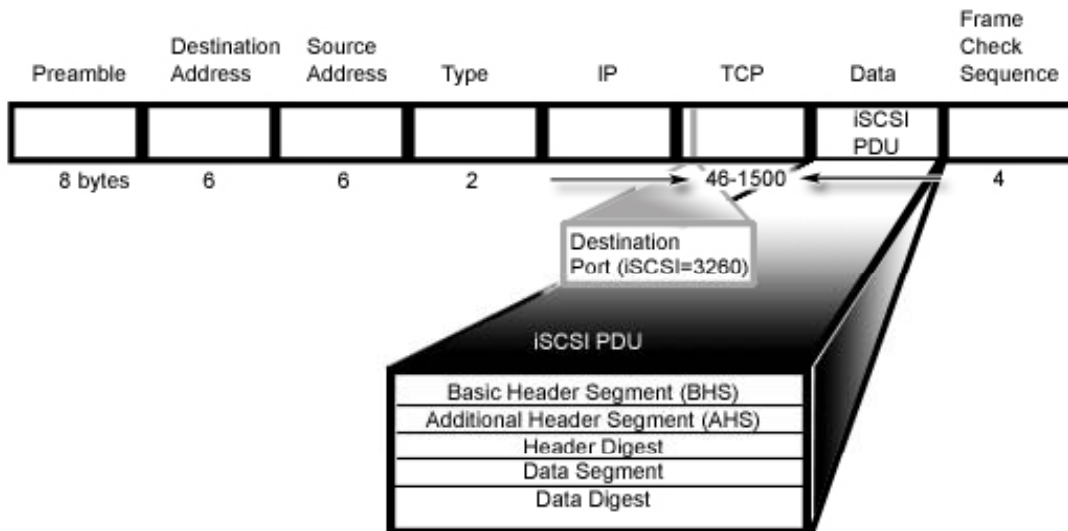


Fonctionnement (suite)

Communication entre l'initiator et la target :

1. The application tries to access the data on an iSCSI drive.
2. The iSCSI driver identifies the SCSI command description block (CDB) information from inside the protocol data unit (PDU).
3. The iSCSI driver creates an iSCSI protocol data unit that is encapsulated in TCP/IP.
4. The packet is sent to the network card and put onto the Ethernet LAN.
5. The target receives the TCP/IP packet and looks at the iSCSI information.

Protocol Data Unit (PDU) – CDBs are encapsulated into the PDU. The PDU is then forwarded to the TCP layer for packetization and transport.



Recommandations

Utiliser un LAN dédié pour iSCSI

Le trafic iSCSI est celui d'un système avec ses disques internes ou externes, il est beaucoup plus important que le trafic d'un LAN standard.
= Risque de saturation du réseau

Le protocole iSCSI supporte théoriquement des connexions à 10/100/1000 Mb
Dans la pratique, pour une utilisation en entreprise, une connexion 1Gb est recommandée

Les câbles Ethernet de catégorie 5, 5^e et 6 sont supportés
Pour des performances optimales, les câbles CAT6 sont recommandés



Sécurité CHAP

CHAP : Challenge Handshake Authentication Protocol

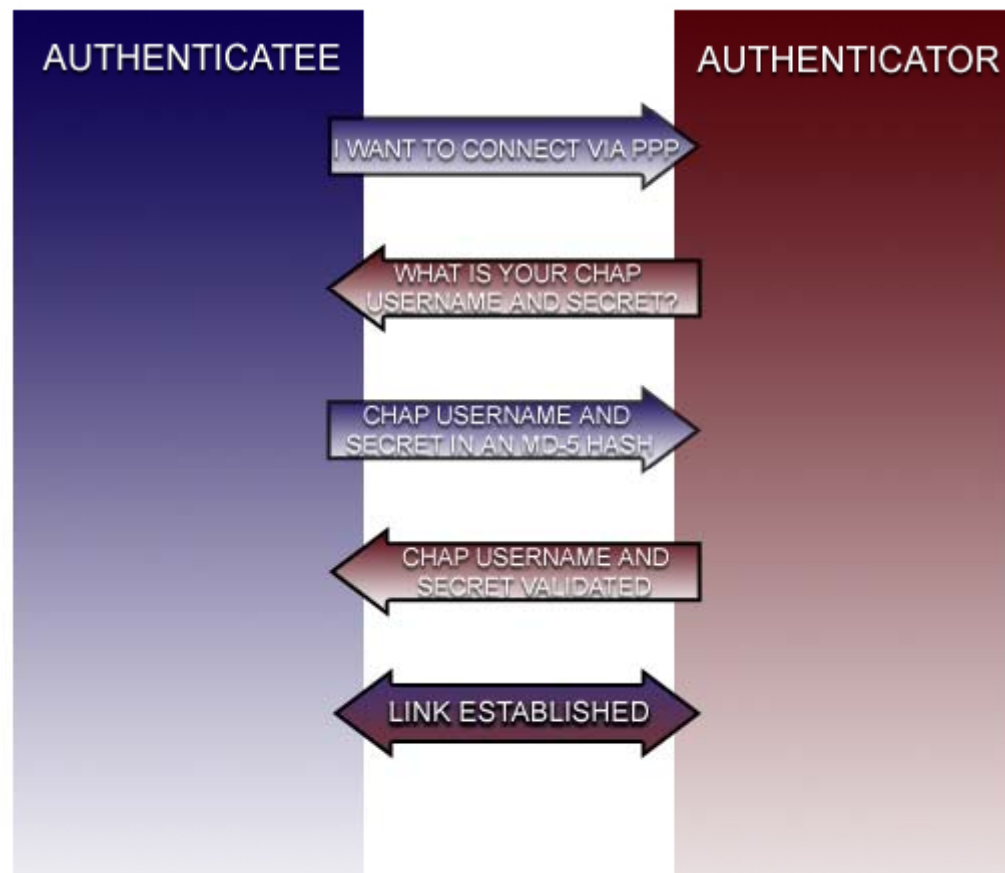
Challenge Handshake Authentication Protocol (CHAP) est un mécanisme de sécurité “challenge/response” utilisé habituellement entre un client et un serveur. Cette méthode d’authentification fait partie de la suite Point-to-Point Protocol (PPP).

Un “challenge/response” est une vérification de l’identité d’une personne ou d’un système sans révéler le secret (mot de passe) qui est partagée entre les deux parties. Pendant le processus le client doit prouver au serveur qu’il connaît le secret sans le diffuser



Sécurité CHAP (suite)

Processus CHAP :



Sécurité CHAP (suite)

Dans le cadre d'iSCSI, on peut décider ou non d'utiliser CHAP :

- Pas sécurité CHAP : habituellement dans le cadre d'une connexion directe entre un Initiator et une Target, ou dans le cas d'un LAN dédié au trafic iSCSI
- Sécurité CHAP simple : configuré sur l'initiator, c'est le premier niveau de sécurisation pour une utilisation sur un LAN existant
- Sécurité CHAP Mutuelle : configuré à la fois au niveau de l'initiator et de la target, c'est le niveau le plus sécurisé



Microsoft iSCSI Initiator

Les 3 principaux composants de l'Initiator iSCSI :

Software initiator kernel mode driver (mini-port driver - msiscsi.sys)

Le driver iSCSI qui prend en charge le transfert des données depuis la couche stockage vers la couche réseau standard. Cet initiator est utilisé uniquement quand le trafic iSCSI utilise les interfaces réseau standard (NIC), pas dans le cas de cartes HBA spécialisées iSCSI (TOE).

iSCSI port driver (iscsiprt.sys)

Un "port" driver qui ajoute certaines fonctionnalités spécifiques à Windows telles que le Plug and Play, la gestion d'alimentation, le Command Queuing, etc. Le software initiator driver (msiscsi.sys) utilise ce port driver.

Initiator service (iscsiexe.exe)

Un service qui gère tous les iSCSI initiators (incluant les cartes réseau standard et les HBA). Ses fonctions comprennent le référencement des informations de découverte iSCSI et la gestion des informations de sécurité. Il inclut un client iSNS.



iSNS

Description

Microsoft iSNS Server est un service Microsoft Windows qui prend en charge les enregistrements, désenregistrements, et les requêtes iSNS via TCP/IP des clients iSNS, et maintient une base de donnée de ces enregistrements. Le package Microsoft iSNS Server consiste en un service windows, une applet de configuration, une interface de commande en ligne, et un ensemble d'interfaces WMI. De plus, certaines dll permettent à un Cluster MSCS de gérer le service Microsoft iSNS Server en tant que ressource de cluster.

L'utilisation principale de Microsoft iSNS Server est de permettre à des clients iSNS– tels que l' Initiator Microsoft iSCSI– de s'enregistrer et d'interroger la base sur tout les autres clients iSCSI enregistrés. Les enregistrements et les requêtes sont transmises via TCP/IP.



A photograph of two men standing in a server room aisle. The man on the left is wearing a blue sweater and dark jeans, gesturing with his hands as if explaining something. The man on the right is wearing a green and white striped shirt and blue jeans, listening attentively. The server racks are dark and filled with equipment, with a yellow light fixture visible in the background.

Des serveurs Dédiés Virtualisation

Source: IDC.



POWEREDGE R905

MAXIMIZE VIRTUALIZATION PERFORMANCE

Overview

Performance scalability to address intensive database, enterprise application and virtualization workloads

Cost-effective memory scaling

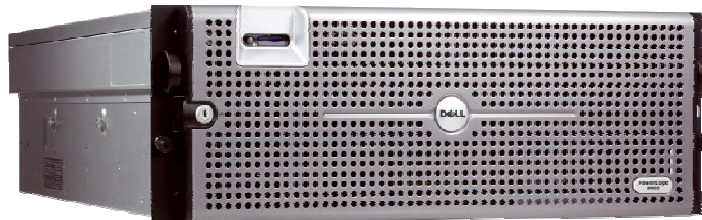
Benefits

Greater Performance & Capacity

Fast and easy virtualization deployment

Cost-effective I/O Scalability

Better Energy Efficiency



Performance

- Latest AMD Quad and Dual Core Opteron Processors
- Chipset: Broadcom HT-2100 and HT-1100 server
- **32 DIMMs, up to 256GB RAM** – 1GB to 8GB DDR-2 SDRAM
- PCI-Express I/O Technology

Availability

- Memory: ECC, SDDC
- Hot-plug, redundant power & cooling
- High and low line redundant power, auto-sensing PSU
- Optional remote management (DRAC5)

Expandability, I/O, Storage

- Seven PCI-Express slots
- **Four embedded Gigabit NICs – TOE enabled**
- Eight 2.5" SAS/ drives or Five 3.5 " SAS Drives
- Optional SAS 6/iR, PERC 6/I, PERC 6/E
- **Optional 10GbE and multiple HBA options**

Solution Components

- Dell/VMware ESX Program Integration
- **iSCSI boot solution**
- Dell Virtualization Services
- Dell / Oracle Program Integration



POWEREDGE R805

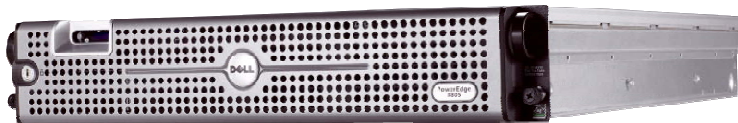
OPTIMIZED FOR VIRTUALIZATION

Overview

- Designed from the ground up for balanced virtualization performance
- For virtualization & other memory intensive applications
- Ideal for migrating from 4S to 2S servers
- Building block for virtual infrastructure

Benefits

- Faster time-to-productivity
- Cost-effective memory scaling (up to 128GB)
- Low energy footprint (90% Efficient PSU)
- Rack-dense industrystandard form factor
- Max VM density in 2U



Performance

- Latest AMD quad and dual core Opteron processors
- Chipset: Nvidia MCP55 + IO-55
- **16 DIMMs, up to 128GB RAM** – 1GB to 8GB DDR-2 SDRAM
- PCI-Express I/O Technology

Availability

- Memory: ECC, SDDC
- Hot-plug, redundant power & cooling
- BMC with IPMI 2.0
- Optional remote management (DRAC5)

Expandability, I/O, Storage

- Four PCI-Express slots
- **Four embedded Gigabit NICs – TOE enabled**
- Two 2.5" SAS or SATA drives
- Optional SAS 6/iR, PERC 6/I, PERC 6/E
- Optional 10GbE and multiple HBA options

Solution Components

- Dell/VMware ESX Program Integration
- Industry Unique Embedded Hypervisor
- iSCSI boot solution
- Dell Virtualization Services
- Dell / Oracle Program Integration



POWEREDGE M905

HIGH PERFORMANCE 4S BLADE SERVER

Overview

- High performance, highly scalable 4-socket blade server targeted at robust virtualization, database and messaging usage models
- 3x the memory and 2x the I/O connectivity of the ½ height blades
- **SD card Persistent Storage for embedded hypervisor**
- 3 Highly Available, fully redundant I/O fabrics

Benefits

- 24 DIMMs deliver higher memory capacity & more granularity to provide better performance and lower cost 32/64GB configurations
- 4 embedded Ethernet controllers + 4 I/O mezz card slots deliver more highly available I/O connectivity per blade
- High performance from 4-socket, quad-core processors, power efficient solution for customers that need robust blade for heavy use workloads



Performance

- Latest Dual-Core or Quad-Core AMD Processors
- **24 DIMM slots DDR2 667/800 SDRAM; 4GB/192GB RAM total**
- PCI Express I/O Technology

Availability

- Two 2.5" hot-plug SAS hard drives
- Memory: ECC, SDDC, Spare Bank
- Integrated RAID
- iDRAC per blade with support for:
 - Virtual Media/Virtual KVM, and Serial over LAN
 - Out of Band GUI and CLI
- Hot-plug, redundant power/cooling (chassis)

Expandability, I/O, Storage

- **Four embedded Gigabit¹ NIC with TOE/iSCSI offload**
- **Support for up to Four optional I/O Mezzanine cards**
- **Dual port Fibre Channel, Ethernet, or InfiniBand Mezzanine cards**
- Support for x8 PCI Express to each Mezzanine card
- Two 2.5" SAS HDDs
- SAS6/IR or CERC6 RAID options for local HDDs
- Embedded SD card slot – supports embedded hypervisor
- Up to 8 blade servers in a chassis

Solution Components

- Dell/Oracle & SQL Database Program Integration
- Dell/VMware Program Integration
- Dell/EMC Integration



POWEREDGE M805

SCALABLE 2S BLADE SERVER

Overview

- Highly scalable 2-socket blade server targeted at virtualization, database and messaging usage models
- 2x the memory and I/O connectivity of the ½ height blades
- SD card Persistent Storage for embedded hypervisor
- 3 Highly Available, fully redundant I/O fabrics

Benefits

- 16 DIMMs deliver higher memory capacity & more granularity to provide lower cost 32/64GB configurations
- 4 embedded Ethernet controllers + 4 I/O mezz card slots deliver more highly available I/O connectivity per blade
- High density, highly power efficient solution for customers that need high memory and I/O



Performance

- Latest Dual-Core or Quad-Core AMD Processors
- **16 DIMM slots DDR2 667/800 SDRAM; 4GB/128GB RAM total**
- PCI Express I/O Technology

Availability

- Two 2.5" hot-plug SAS hard drives
- Memory: ECC, SDDC, Spare Bank
- Integrated RAID
- iDRAC per blade with support for:
 - Virtual Media/Virtual KVM, and Serial over LAN
 - Out of Band GUI and CLI
 - Hot-plug, redundant power/cooling (chassis)

Expandability, I/O, Storage

- Four embedded Gigabit¹ NIC with TOE/iSCSI offload
- Support for up to Four optional I/O Mezzanine cards
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Solution Components

- Dell/Oracle & SQL Database Program Integration
- Dell/VMware Program Integration
- Dell/EMC Integration



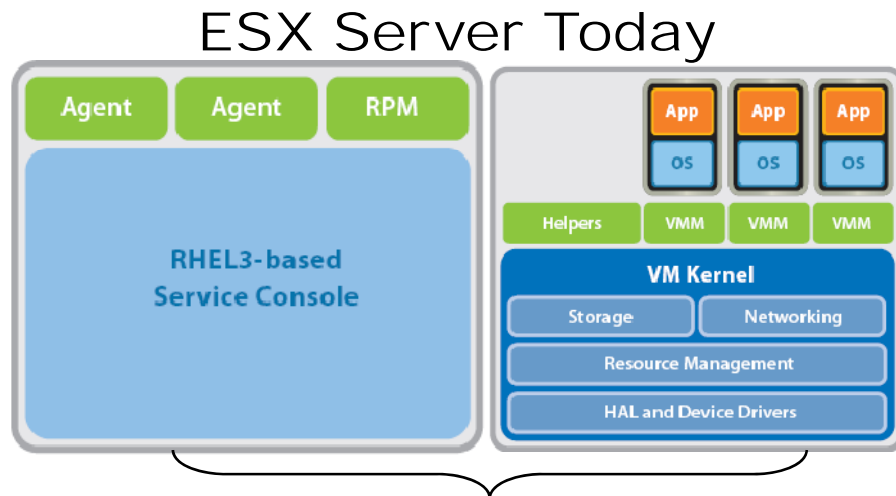
VIRTUALIZATION OPTIMIZED SERVERS

	2950III	R805	R710	R905	R900
Form Factor/# of CPUs	2U/2	2U/2	2U/2	4U/2 or 4	4U/2 or 4
# DIMMs/Max Memory GB	8/64	16/128	18/144	32/256	32/256
# I/O Slots	3	4	3 or 2	7	7
# LOMs	2	4	4	4	4
Type of Embedded	Factory Installed USB key	Factory Installed SD Card	Factory Installed SD Card	Factory Installed SD Card	Factory Installed USB key

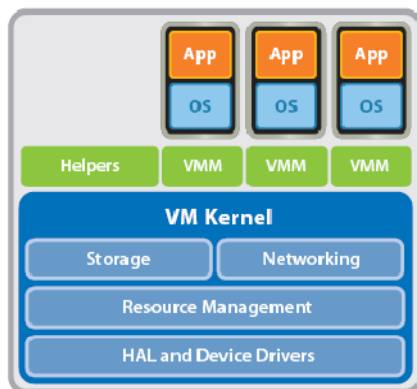
More memory and more I/O than HP or IBM

ESXi 3.5 is a New Architecture

ESXi 3.5 is a new architectural design for ESX



ESX Server 3i



Thin architecture:

- Unparalleled security and reliability
 - Compact 32MB footprint
 - 1/50th the size of a general purpose OS
 - Only OS-independent design focused on virtualization



DELL MANAGEMENT CONSOLE SIMPLIFIED, FLEXIBLE MANAGEMENT

Single console, database and agent – integration with existing tools



VIRTUALIZATION
MANAGEMENT

SYMANTEC
ENDPOINT
PROTECTION

VERITAS
CONFIG.
MANAGER

MICROSOFT
SYSTEM
CENTER

CONNECTORS
TO 3RD PARTY
TOOLS
HP OpenView,
SIM,
BMC Remedy,
ActiveDirectory
etc.

ALTIRIS
SERVER
MGMT
SUITE

ALTIRIS
ASSET MGMT.
SUITE

ALTIRIS
CLIENT
MGMT.
SUITE

ALTIRIS
HELPDESK
SOLUTION

SYMANTEC
BACKUPEXEC
SYSTEM
RECOVERY

OTHER ALTIRIS &
THIRD PARTY
SOLUTIONS
• Workflow
• Recovery
• eiPowerSaver



Stockage sur Disques Nouvelle Offre SAN



MD

AX

PS

CX

Positionnement

Prix & Simplicité

SAN FC/iSCSI Départemental

SAN iSCSI évolutif

SAN FC Entreprise

Message Clé

Commonalité serveurs

Management commun CX

Optimisé virtualisation

Infrastructure traditionnelle

Prix

5K-20K€

10K-40K€

15K-50K€

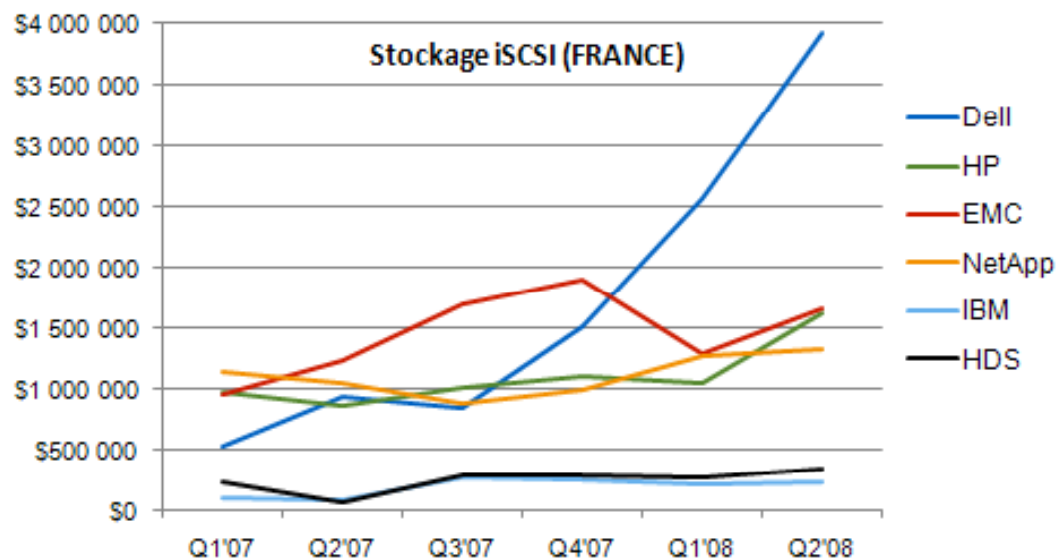
40K-250K€+

Fonctionnalités / Capacité



DELL, Acteur Clé du Stockage

- ↗ #4 en France (total stockage externe)
 - 13.1% de part de marché (Q2'08), +28% YoY
- ↗ #1 dans les environnements Windows/Linux
 - 27.7% de part de marché (H1'08)
- ↗ #1 sur iSCSI
 - 33.9% de part de marché (H1'08), 4.5x la croissance du marché




Source: Gartner (Sept 2008)



La Baie Equallogic




Gamme PS5000




PS5000XV
2.3 & 4.8 TB
15K SAS

Hautes performances pour des applications d'entreprise plus critiques et exigeantes



PS5000X
6.4To
10K SAS

Performances pour les applications "mainstream": bases de données, Exchange, environnements virtualisés...



PS5000E
2, 4, 8, 12 & 16To
7,2K SATA

Haute capacité à prix abordables pour: fichiers, backup, réplication / sites de secours...



Dell | EqualLogic - PS5500

Une capacité incroyable



Plate-forme SAN haute densité

- 48 disques SATA
- Chassis rack 4U

2 modèles:

- 48To: disques 1To
- 24To: disques 500Go



Idéal pour:

- Stockage massif (fichiers, ...)
- B2D / archivage
- Site de secours / PRA

Performances / Fiabilité

Architecture hautement disponible (99,999%)

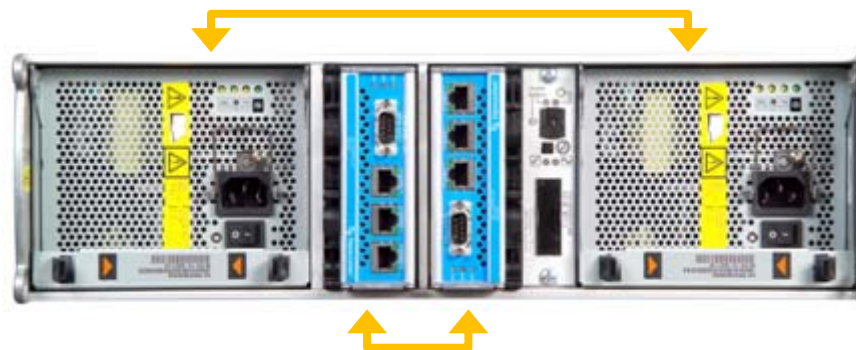
- 16x disques hot-swap
- Redondance (alim, ventilation)

Composants haut de gamme

- 3x interfaces réseau 1Gb
- Disques SATA et SAS
- Cache 2Go en miroir (avec battery backup)

Monitoring

- Status composants
- Check disques
- Température



Gestion totale des données

Tous les logiciels sont inclus de base

FONCTIONNALITES LOGICIELLES DE BASE

Gestion

- ☑ Gestionnaire de 'configuration' instantané
 - ☑ Gestionnaire de groupe
 - ☑ Approvisionnement rapide
- ☑ Administration basée sur les rôles

Protection et disponibilité des données

- ☑ RAID 5, 10 et 50
- ☑ Création automatique d'ensembles RAID
- ☑ Prise en charge de MPIO (E/S multichemin)

Maintenance

- ☑ Assistance téléphonique
- ☑ Système de surveillance du boîtier
- ☑ Surveillance des performances

FONCTIONNALITÉS LOGICIELLES AVANCÉES

Virtualisation du stockage

- ☑ Virtualisation complète des SAN
 - ☑ Thin provisioning
 - ☑ Equilibrage de charge automatique
- ☑ Pools & niveaux de stockage automatiques
 - ☑ Evacuation du module

Protection et récupération des données

- ☑ Instantanés inscriptibles
- ☑ Instantanés multi-volume
- ☑ Restauration instantanée / clonage

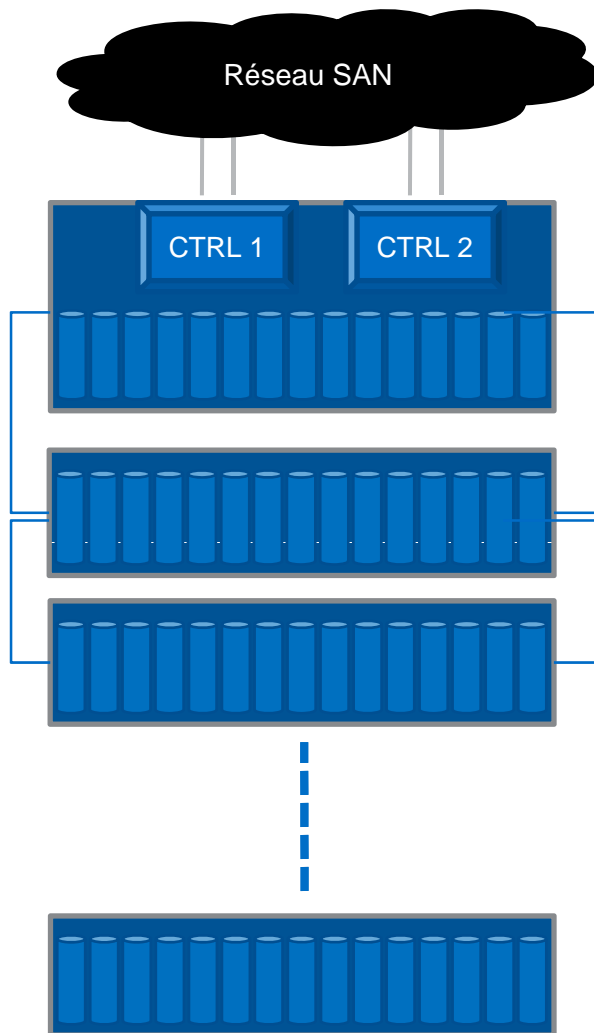
- ☑ Réplication multivoie pour la reprise après sinistre

Intégration de la gestion du serveur

- ☑ Hébergeurs de VSS et VDS
- ☑ Gestionnaire automatique de connexion MPIO
 - ☑ Gestionnaire automatique d'instantanés / Microsoft Edition
 - *Données de systèmes de fichiers Exchange, SQL Server et Windows*
 - ☑ Gestionnaire automatique d'instantanés / VMware Edition
 - *Instantanés SAN cohérents avec l'hyperviseur et reprise rapide*
- ☑ Adaptateur de stockage SRM VMware
 - Reprise après sinistre automatisée pour le centre de données virtuel



SAN traditionnel



DELL CONFIDENTIAL

Nécessités

- Définir en amont du projet les capacités minimum et maximum sur les 3 ou 5 prochaines années

Evolutivité

- Que se passe t-il si vous avez sous-évalué vos prévisions ?
- Que se passe t-il si vous avez sur-évalué vos prévisions ?
- Que se passe t-il au terme de la garantie ?



SAN EqualLogic

Ajout d'une nouvelle baie

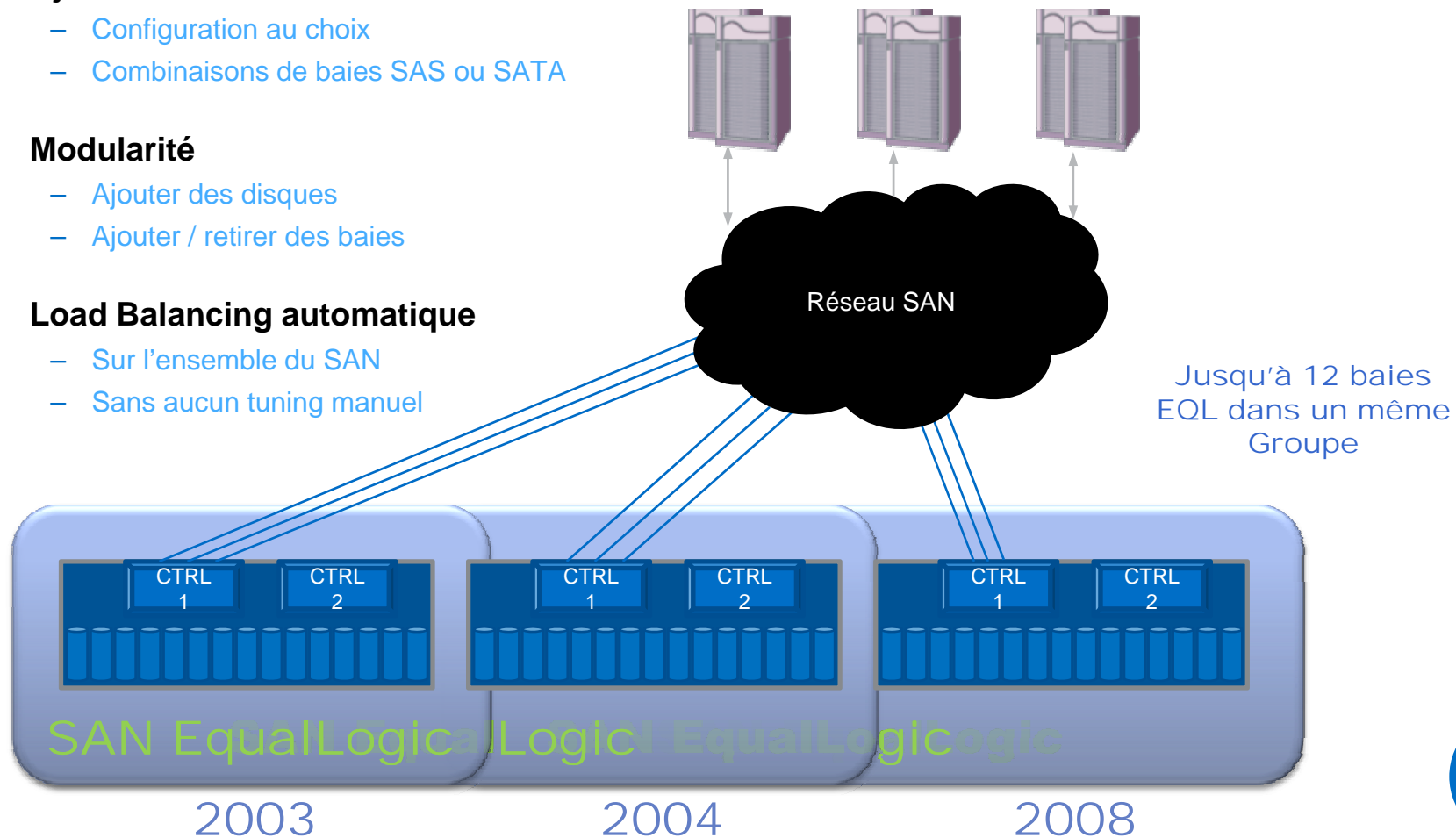
- Configuration au choix
- Combinaisons de baies SAS ou SATA

Modularité

- Ajouter des disques
- Ajouter / retirer des baies

Load Balancing automatique

- Sur l'ensemble du SAN
- Sans aucun tuning manuel



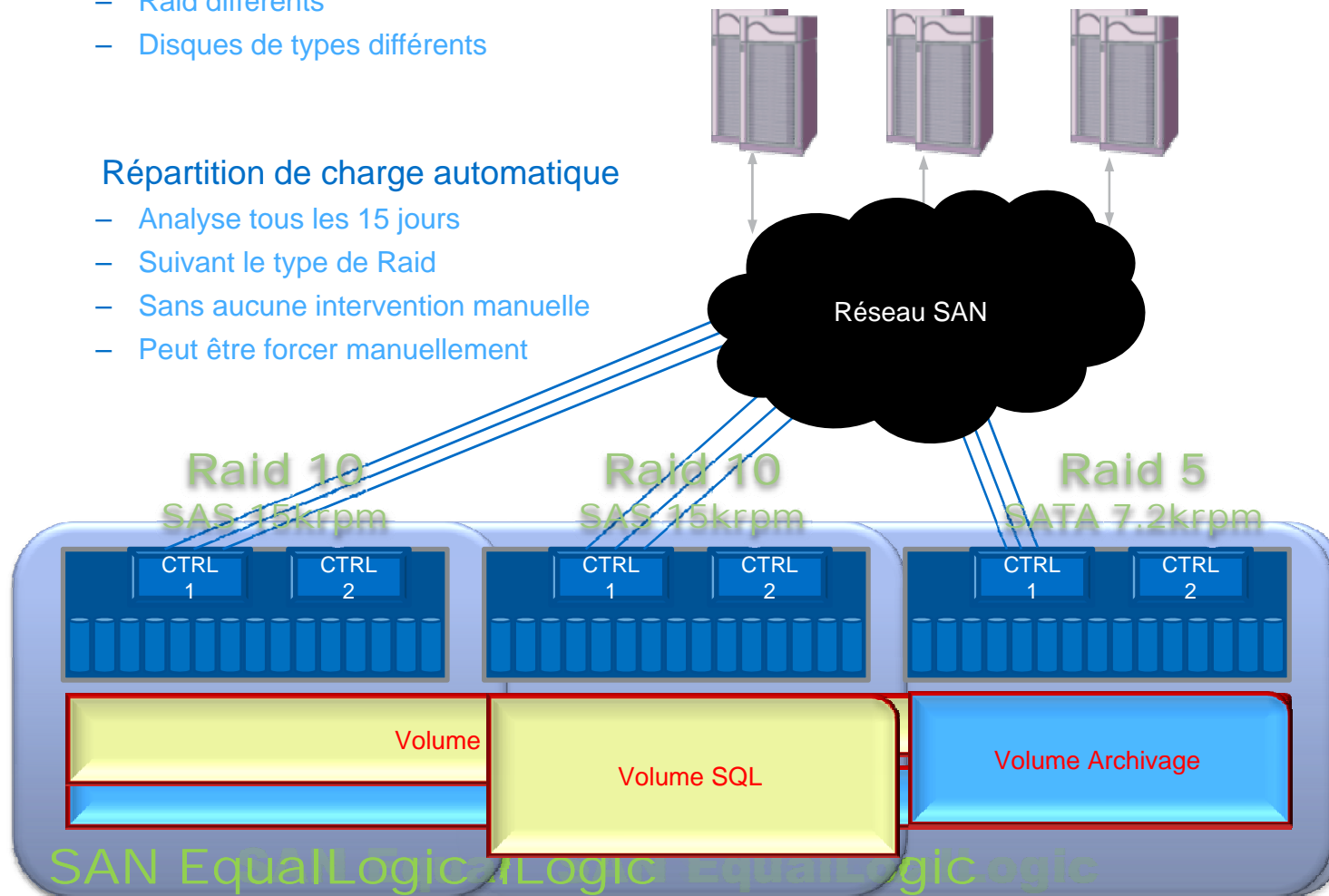
SAN EqualLogic (suite)

SAN EQL avec des configurations hétérogènes

- Raid différents
- Disques de types différents

Répartition de charge automatique

- Analyse tous les 15 jours
- Suivant le type de Raid
- Sans aucune intervention manuelle
- Peut être forcé manuellement



Evolution

Ajout d'une nouvelle baie

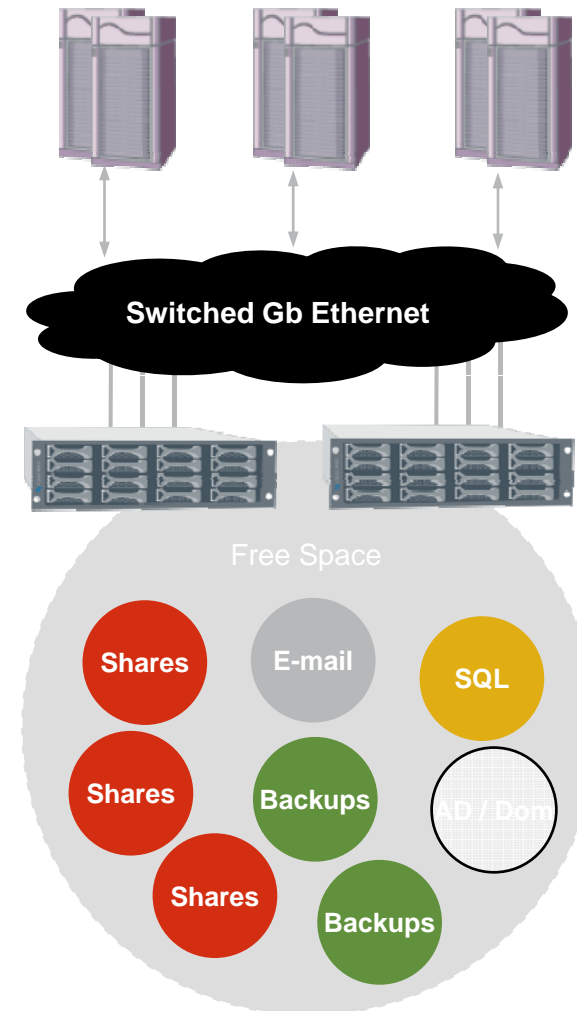
- Configuration au choix
- Combinaisons de baies SAS ou SATA

Modularité

- Ajouter des disques
- Ajouter / retirer des baies

Load Balancing automatique

- Sur l'ensemble du SAN
- Sans aucun tuning manuel



Equallogic en Chiffre

Maximum Supported Configurations

The maximum supported configuration for a PS Series group running V4.0.1 firmware is described in the following table. These limits are enforced.

Component	Maximum Value
Volumes per group	1024
Volume size*	15 TB
Snapshots and replicas per group	10,000
Snapshots per volume	512
Replicas per volume	512
Schedules (snapshot or replication) per volume	64
Replication partners per group	16
Replication partners per volume	1
Members per group	12
Members per pool	8
Pools per group	4
Volumes per collection	8
Collections per group (snapshot and replication)	100
Volume connections (each time an iSCSI initiator connects to a volume counts as a connection)	512 per pool 2048 per group with 4 pools
Access control records per volume and its snapshots	16
Simultaneous management sessions (any combination of GUI, telnet, or scripting sessions)	7
Thin-provisioning limits	Minimum allocation: 10% of volume size.

* Practical maximum volume size is operating system-specific. A PS Series group can create and present volumes up to 15 TB.



Méthodes de Management

Adresse IP unique pour monitorer tous les membres d'un meme groupe

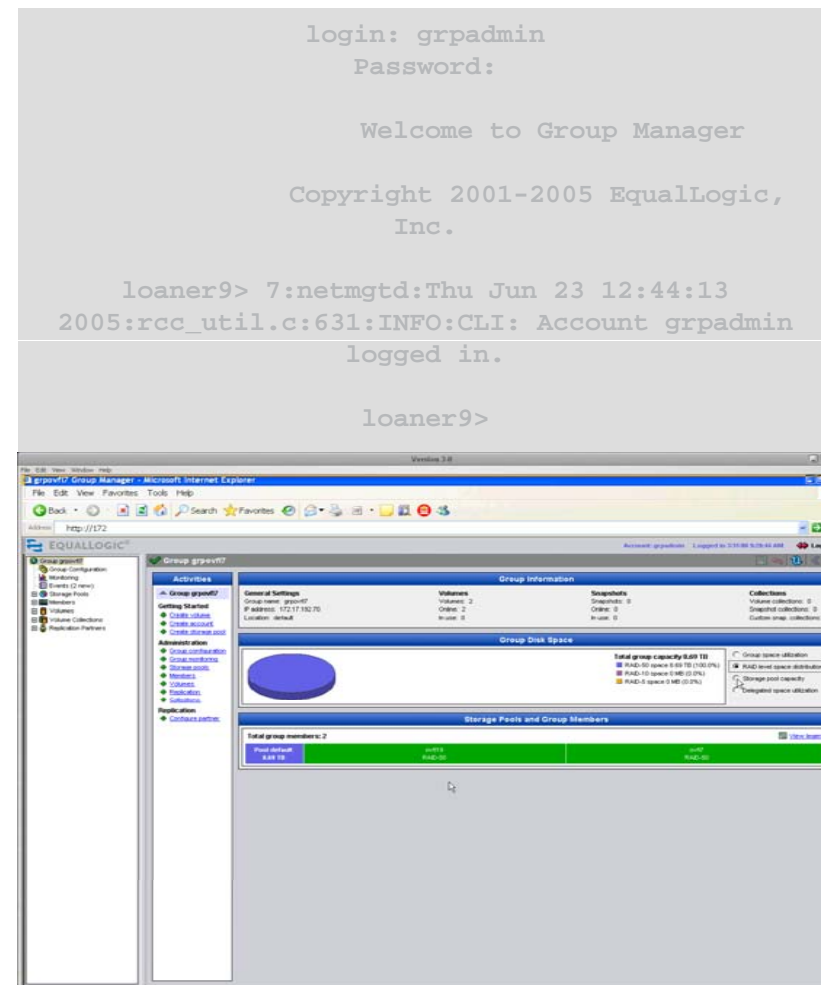
Telnet/SSH CLI

- Interface sur panneau frontal, securite, protection

Interface Web browser

- Interface standard
- Demande Java JRE

SNMP



Setup

Setup utility - Command Line Interface (CLI)

- Programme d'initialisation de la baie PS
- Supporté par tous les OS qui supportent une communication série

Host Integration Toolkit (HIT)

- Installe et configure les applications Windows additionnelles permettant l'intégration de la baie :
 - Remote Setup Wizard
 - Microsoft iSCSI Initiator
 - MPIO (MultiPath I/O)
 - VSS (Volume Shadow Copy Service)
 - Virtual Disk Service (VDS)

Remote Setup Wizard

- Seulement pour les plateformes Windows
- Fait partie de Equallogic HIT (Host Integration Toolkit)
- Wizard permettant la configuration de la baie depuis une plateforme Windows.



Setup cheminement

Setup program est utilise pour initialement configurer la baie PS

- Suite de questions
- Répondre aux questions posées
- Configuration Minimum

Une fois que la baie est configurer, 2 méthodes peuvent être utilisées pour le management.

- Web
- Command line

Pas besoin de station de management externe ou de software additionnel

```
Would you like to configure the array now ? (y/n)
      [n]y
      Group Manager Setup Utility
```

```
The setup utility establishes the initial network
      and storage
      configuration for a storage array and then
      configures the array
as a member of a new or existing group of arrays.
```

```
For help, enter a question mark (?) at a
      prompt.
```

```
Do you want to proceed (yes | no ) [no]: y
      raid firing scan complete
Initializing. This may take several minutes to
      complete..
```

```
Enter the network configuration for the array.
```

```
Member name []: Edu7
```

```
Network interface [eth0]: <CR>
```

```
IP address for network interface []:
```

```
172.168.200.71
```

```
Netmask [255.255.255.0]: 255.255.0.0
```

```
Default gateway [172.168.0.1]: <CR>
```

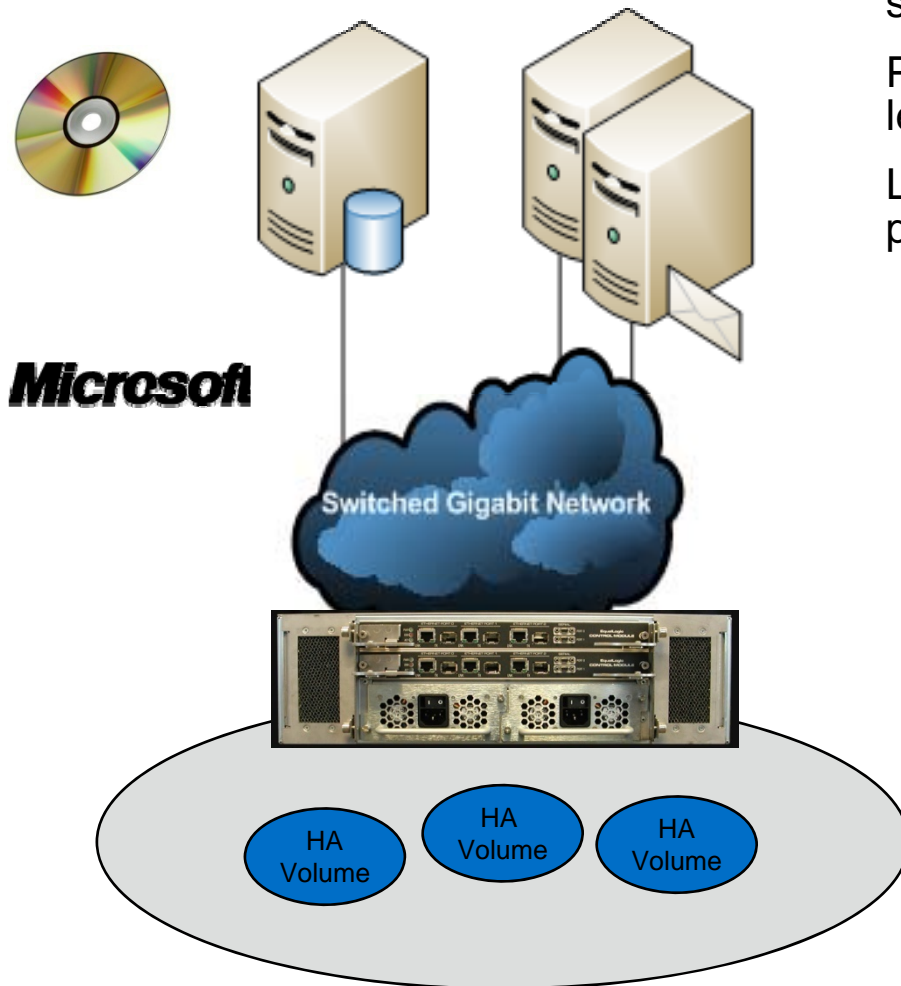
```
Enter the IP address and name of the group that
      the array will join.
```

```
Group name []: loaner9
```

```
Group IP address []: 172.168.200.70
```



Setup: HIT



UN seul CD nécessaire pour installer un serveur sur le SAN en moins de 5mn

Pas de frais supplémentaire pour le software, les licences et de frais par serveur

Les software suivants sont inclus pour les plateformes Windows

- Microsoft Software Initiator , avec MS MPIO
- Remote Setup Wizard
- EQL MPIO DSM
- VSS - Auto- Snapshot Manger, Provider / Requestor
- VDS – Virtual Disk Service, Provider
- Application Recovery tools utilisant le VSS Requestor
 - SQL Recovery Tool

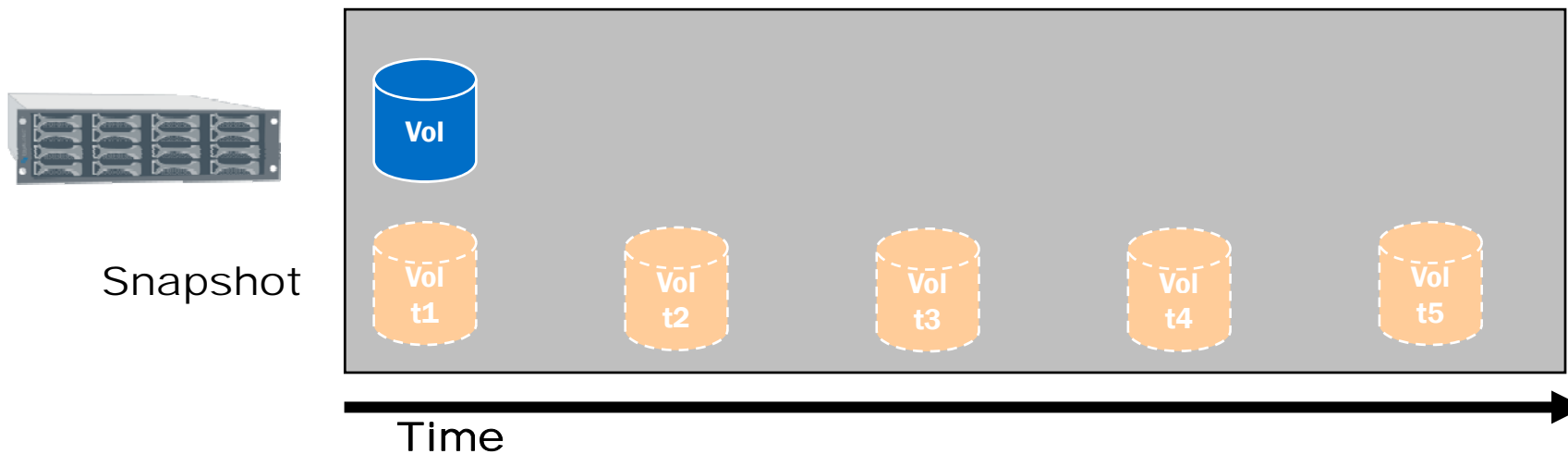
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DELL CONFIDENTIAL



PS Series SNAPSHOTS

SPACE-EFFICIENT, ONLINE POINT-IN-TIME COPIES



Create instant read/write copies without overhead or disruption

- Create snapshots on demand or via scheduler (GUI, CLI)
- Maintain up to 512 snapshots per volume online
- Instantly restore volume from snapshot
- Instantly convert snapshot to volume clone

Establish disk-based volume history for multiple use cases

- Rapidly restore data from multiple recovery points
- Offload backup operations to another server
- Provide other servers secure access to a copy of production data



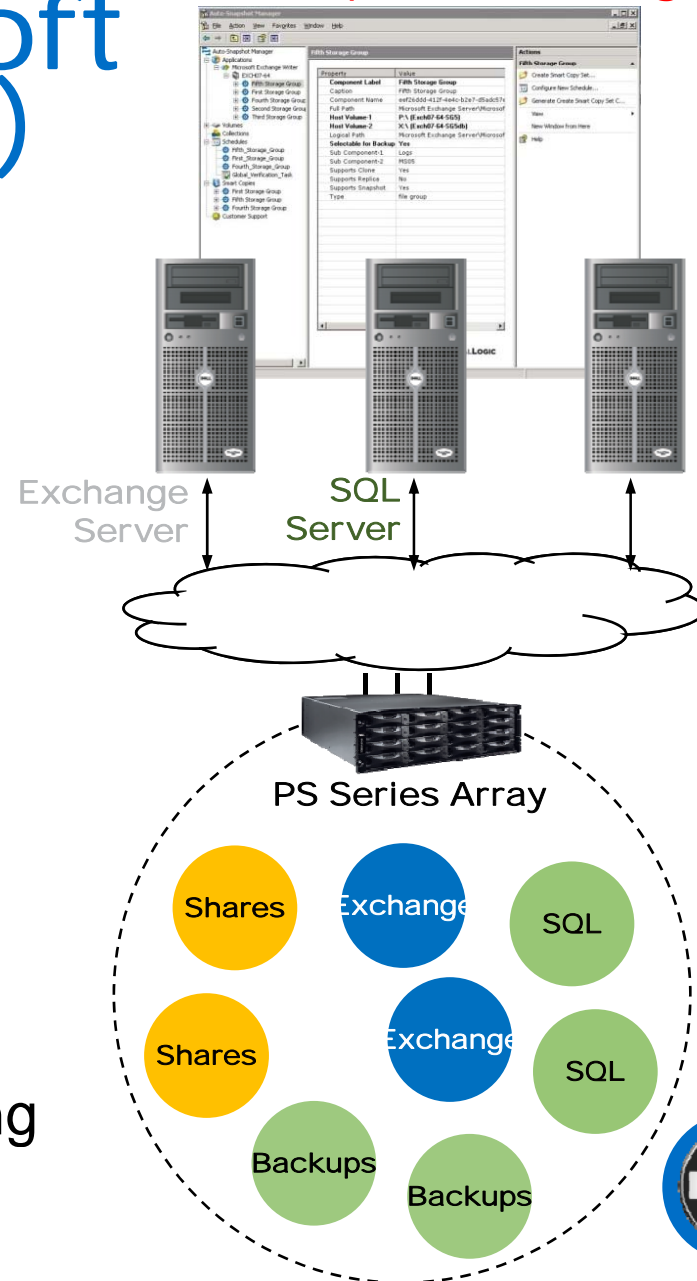
Auto-Snapshot Manager/ Microsoft Edition (ASM/ME)

Auto-Snapshot Manager

ASM Smart Copy: Application level data management software for PS Series iSCSI SANs

- Delivers powerful and flexible
 - data protection and rapid recovery
 - test and development
 - data maintenance
- Microsoft SQL[®], Exchange[®], and Windows[®] File Systems
- All-inclusive feature of PS Series arrays

Simplify IT: Spend less time managing and protecting application data



Introducing Auto-Snapshot Manager /VMware Edition



Automated, Integrated, and Scalable protection for Virtual machines

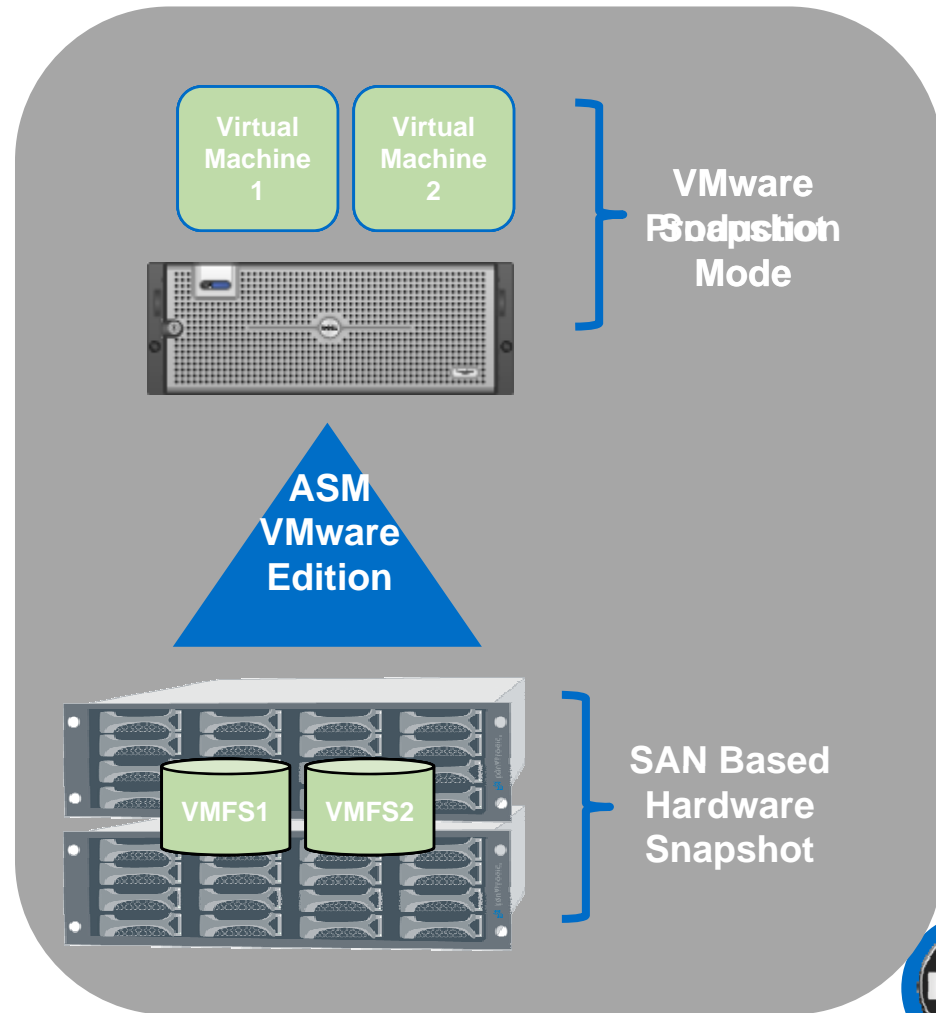
Works with Virtual Center to Snapshot the VM and then take PS Series snapshot

Allows for scheduling and automation of protection

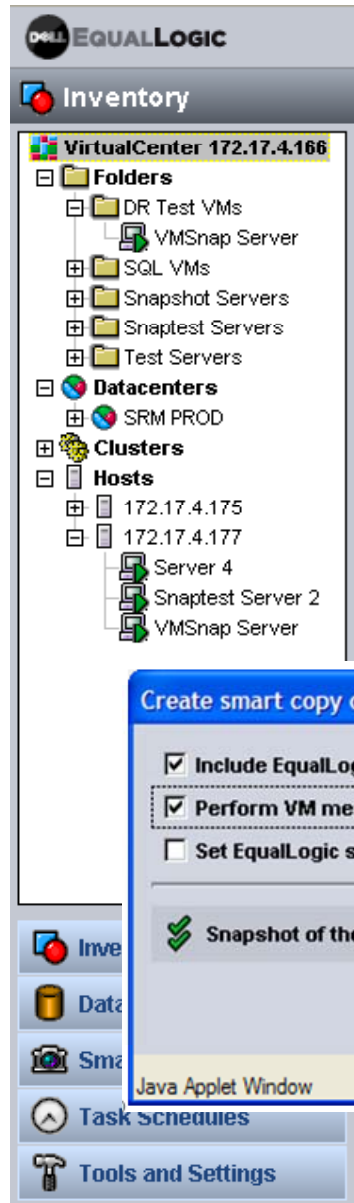
Works with VMware's folder structure for scalability

Allows for Rollback of VMs for fast recovery

Automated Rollback of datastore or selective restore of individual VMs



FAST SIMPLE INTEGRATION AND QUICK PROTECTION



Folder structure and VMware inventory integration

- Manage through IP Address of ASM/VE Web Server
- Select folder and VM
- Create Smart Copy

To create an Hypervisor aware Smart Copy

- Select Virtual Machine
- Create Smart Copy



Integrated Scheduler provides additional Levels of automation

Flexible scheduling
For granular data protection

Name	Managed object	Operation	Run	Time	Status
Snaptest Schedule	Snaptest Servers	Create smart copy	every day	12:00 AM to 11:00 PM every 1 hr	enabled
jobPopulateCache	root	Verify smart copies	every day	12:00 AM to 11:59 PM every 30 min	enabled
jobVerifySnaps	root	Verify smart copies	every day	from 12:00 AM every 1 hr	enabled

Run on	Schedule name	Managed object	Operation	Status	Comment
6/23/08 10:30:00 PM	jobPopulateCache	root	Verify smart copies	success	
6/23/08 11:00:00 PM	jobPopulateCache	root	Verify smart copies	success	
6/23/08 11:00:23 PM	jobVerifySnaps	root	Verify smart copies	success	
6/23/08 11:30:00 PM	jobPopulateCache	root	Verify smart copies	success	
6/24/08 12:00:00 AM	jobPopulateCache	root	Verify smart copies	success	
6/24/08 12:00:20 AM	jobVerifySnaps	root	Verify smart copies	success	
6/24/08 12:30:00 AM	jobPopulateCache	root	Verify smart copies	success	
6/24/08 1:00:00 AM	jobPopulateCache	root	Verify smart copies	success	
6/24/08 1:00:19 AM	jobVerifySnaps	root	Verify smart copies	success	
6/24/08 1:30:00 AM	jobPopulateCache	root	Verify smart copies	success	
6/24/08 2:00:00 AM	jobPopulateCache	root	Verify smart copies	success	
6/24/08 2:00:21 AM	jobVerifySnaps	root	Verify smart copies	success	

Task schedule tab for easy management

Built in scheduling capability enables granular data protection

- Choose folder or VM from inventory
- Create schedule by giving a name and frequency
- Enable schedule to run
- Modify, delete as required



Hypervisor aware smart copies make restore Fast and easy

To recover a VM from ASM/VE Smart Copy

- Select Smart Copy to recover from
- ASM/VE Rolls back PS Series Snapshot
- Coordinates with VC to rescan datastore and reload VM
- Recover VM from VMware Snapshot

Rollback Smart Copy- 1 Click

The screenshot displays the EqualLogic management console interface. The left sidebar shows a tree view of Smart Copies, including 'ESXDR', 'ESXVol1', 'ESXVol2', 'ESXVol3', 'ESXVol4', 'SQL VMs', and 'Test Server'. The main area is titled 'Smart copy SQL VMs (2008-07-30 05:00:11)'. The 'Activities' pane on the left shows a 'Smart Copy' activity with a 'Rollback smart copy' button highlighted by a blue arrow. The main pane displays a 'Summary' section with details like Name, Time, and Schedule. Below this is a 'Virtual Machine Snapshots' table showing one snapshot for 'SQL ASM Server'. At the bottom, there is an 'EqualLogic Snapshots' table with one entry for 'ESXVol2-2008-07-30-16:59:53:2637'.

Virtual Machine Snapshots			
Total virtual machines in smart copy: 1			
VM name	VM snapshot	Quiesced	iSCSI targets
SQL ASM Server	created (with memory dump)	yes	no

EqualLogic Snapshots			
EqualLogic snapshots in smart copy: 1			
Snapshot name	Group	Size	Status
ESXVol2-2008-07-30-16:59:53:2637	SRMPROCDGRP	100.0 GB	offline



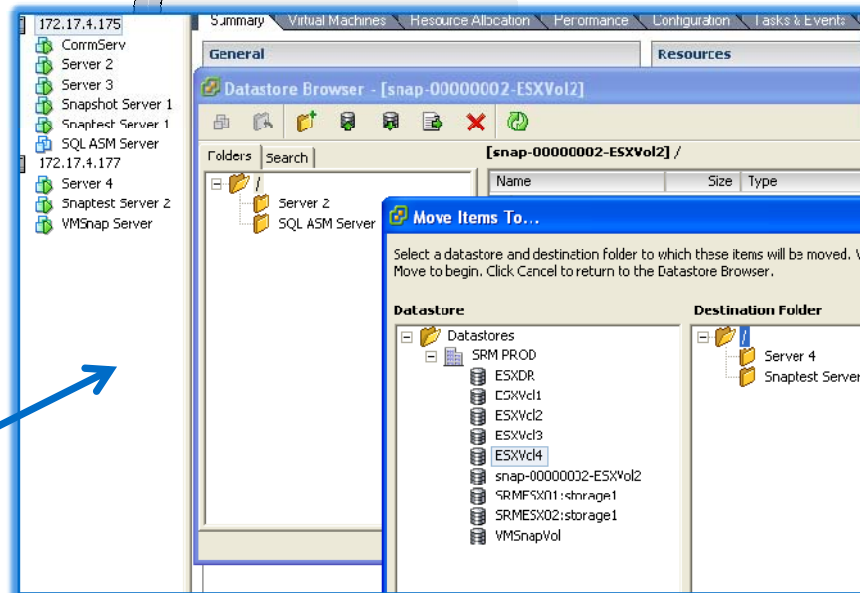
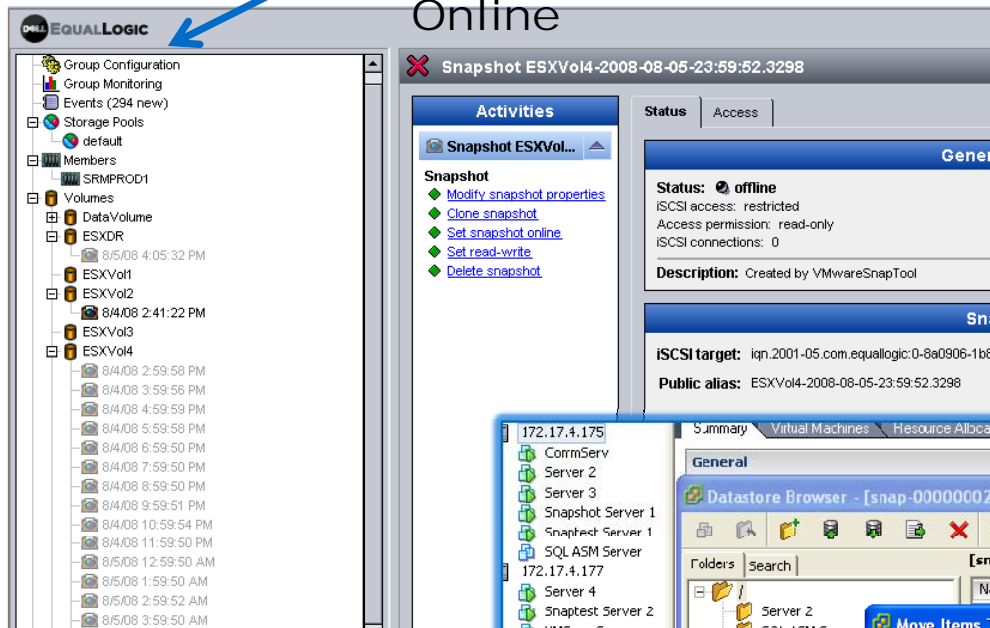
selectively restore virtual machines From Smart Copies

Group Manager to Bring Smart Copy Online

From PS Series Group Manager, online Smart Copy

Configure VC to see new snapshot volume

Use VMware native tools to recover VM from Smart Copy



Virtual Center to recover VM from ASM/VE Copy



ASIMIVE integrates Virtual Center Database & Folder View -organize only once

The screenshot displays the Dell EqualLogic ASIMIVE management console. The main window shows the 'Inventory' of a VMware VirtualCenter at 172.17.4.166. The left sidebar contains a tree view with 'Folders' (DR Test VMs, SQL VMs, Snapshot Servers, Snaptest Servers, Test Servers), 'Datacenters', 'Clusters', and 'Hosts'. Under 'Hosts', two hosts are listed: 172.17.4.175 and 172.17.4.177. The 172.17.4.175 host contains several servers: CommServ, SQL ASM Server, Server 2, Server 3, Snapshot Server 1, Snaptest Server 1, VV2k3 Template, and VMSnap Server. The 172.17.4.177 host contains Server 4, Snaptest Server 2, and VMSnap Server.

The main pane shows 'Virtual Center Information' for the selected host, including 'Status Summary' (connected), 'Host Information' (IP: 172.17.4.166, OS: win32-x86), and 'General Settings'. A 'Datastore Browser' window is open, showing a list of folders: Server 2 and SQL ASM Server. A 'Move Items To...' dialog is also open, allowing selection of a 'Datastore' (ESXVol4) and a 'Destination Folder' (Server 4 Snaptest Server).



DEMO

Dell EqualLogic



EQL-VM
Virtual Center
+ ASM



EQL-VM2



Physical Server

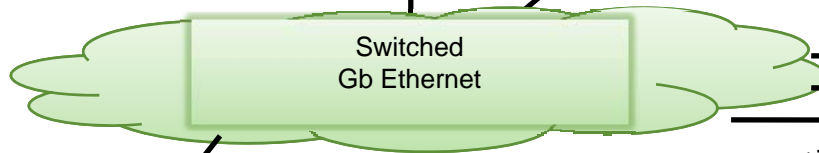
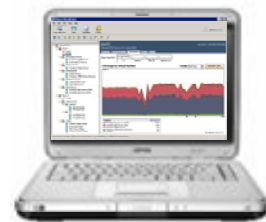


VMWARE PLAYER

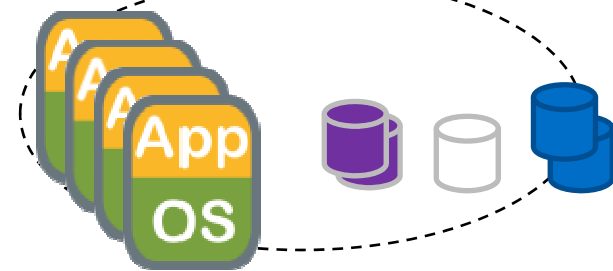
esxi.lab.lan



ESX Server



Switched
Gb Ethernet



esxPE2950.lab.lan

