

# ETERNUS

**Tivoli.** software

## **'ETERNUS MAID + Tivoli HSM' Solution – Test completed**

### **Summary:**

The needs for Green IT solutions are expected to increase.

We conducted the test and confirmed the effectiveness of the combination of MAID(Note 1) and HSM (Note 2). The success of the test now provides us a new Green IT solution by this combination.

(Note 1: MAID: Massive Array of Idle Disks)

(Note 2: HSM: Hierarchical Storage Management)

### **Component products of 'MAID + HSM' Solution:**

We confirmed the correct operation of the combination of Eco-mode function (MAID) (Note3) of ETERNUS2000 and Tivoli's HSM SW (Note 4) in the both Solaris(UNIX) client environment and Windows client environment.

(Note 3: ETERNUS2000, ETERNUS4000, ETERNUS8000 supports gradually)

(Note 4: Tivoli's HSM SW: TSM HSM for Windows (for Windows client environment), TSM for Space Management (for UNIX client environment))

### **Information of operation test (Proof Of Concept(POC)):**

#### 1. HW and OS:

Storage: ETERNUS2000 model 100

Server: PRIMEPOWER1500 (HW) + Solaris 10 (OS)

Client:

- Solaris client environment: PRIMEPOWER1500 (HW) + Solaris 10 (OS)

- Windows client environment: xSeries345 Server (HW) + Windows Server 2003 EE (OS)

#### 2. SW environment:

Server : TSM(Tivoli Storage Manager) v5.5

Client :

- Solaris client environment: TSM HSM Client v5.5, TSM Backup/Archive client v5.5, TSM API client v5.5, VERITAS File System 4.1

- Windows client environment: TSM HSM Client v5.5, TSM Backup/Archive client, v5.5 TSM API client v5.5

#### 3. Steps of the operation test

1) Set 'Eco-mode' function (MAID) of ETERNUS2000

2) Confirmed that ETERNUS2000's disk is in 'motor-off' state

3) During ETERNUS2000's disk is in 'motor-off' state, confirmed the correct migration operation from TSM HSM client (Migrated 5MB File on client side disk to Server side without 'time-out')

4) During ETERNUS 2000's disk is in 'motor-off' state, confirmed the correct recall operation from TSM HSM client ( Recalled 5MB Migrated File in server side to client side disk without 'time-out')

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# ETERNUS

## Additional Technical information:

Detail information of Operation test (Proof Of Concept(POC)):

### 1. HW and OS

Storage: ETERNUS2000 model100 (4port FC, 146GB SAS x 8)

Test volume: 1Volume(RAID1, 137GB)

Server: PRIMEPOWER1500 (HW) + Solaris 10 (OS)

OS patch : recommended patch cluster 1.7.16 + PTF R08051

Driver: FUJITSU PCI Fibre Channel 3.0 Update1 driver,  
ETERNUS Multi-path driver 2.0.3

Client:

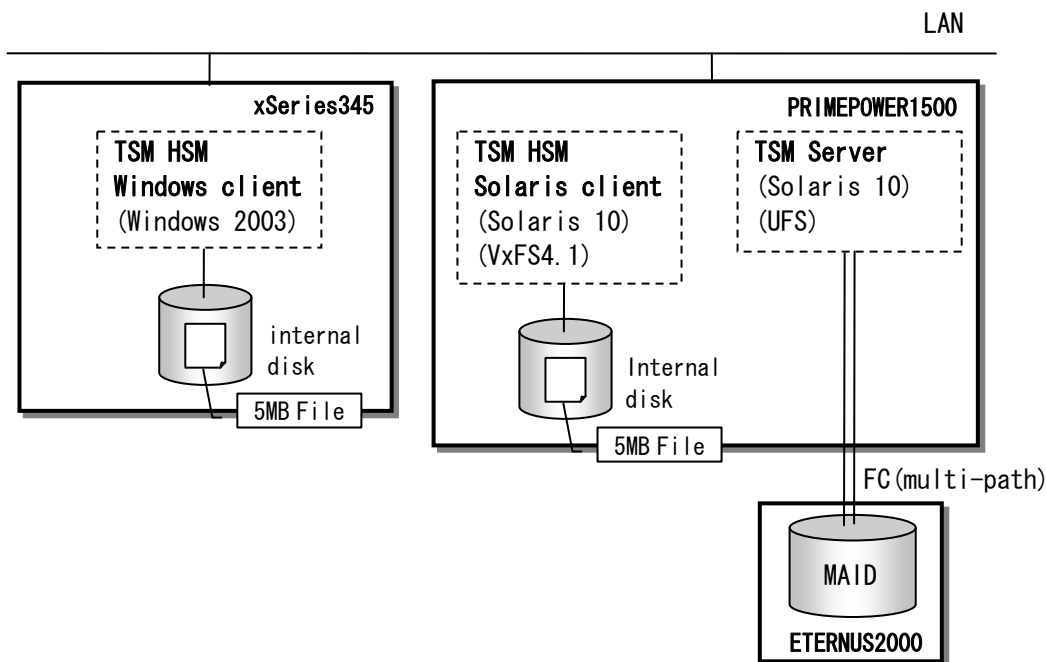
- Solaris client environment: PRIMEPOWER1500 (HW) + Solaris 10 (OS)
- Windows client environment: xSeries 346 Server (HW) + Windows Server 2003 EE (OS)

### 2. SW environment:

Server : TSM(Tivoli Storage Manager) v5.5

Client:

- Solaris client environment: TSM HSM Client v5.5, TSM Backup/Archive client v5.5, TSM API client v5.5, VERITAS File System 4.1
- Windows client environment: TSM HSM Client v5.5, TSM Backup/Archive client, v5.5 TSM API client v5.5



### 3. Steps of the operation test

- 1) Log-in ETERNUSmgr and Set 'Eco-mode' function (MAID) of ETERNUS2000
  - Set 'eco-mode' on
  - Created operation schedule and applied the schedule to target RAID group
- 2) Confirmed that ETERNUS2000's disk is in 'motor-off' state, by checking the screen of ETERNUSmgr
- 3) During ETERNUS2000's disk is in 'motor-off' state, confirmed the correct migration operation from TSM HSM client (Migrated 5MB File on client side disk to Server side without 'time-out') (No abnormal logs were found in logs of OS and TSM)
- 4) During ETERNUS 2000's disk is in 'motor-off' state, confirmed the correct recall operation from TSM HSM client ( Recalled 5MB Migrated File in server side to client side disk without 'time-out') (No abnormal logs were found in logs of OS and TSM)

# ETERNUS



## 4. Result of the operation test (data)

### 1) Process time (measured value)

Measured migration/Recall process time of Migration/Recall in both Windows client environment and in Solaris client environment (once)

#### ■ Windows client environment

|                   | Migration process time | Recall process time |
|-------------------|------------------------|---------------------|
| 'Motor-on' state  | 1sec                   | 0sec                |
| 'Motor-off' state | 34secs                 | 23secs              |

As an additional test, Conducted consecutive Recall operations (5MB x 3Files) in 'motor-off' state.

1st File → 34 secs

2nd File → 0 sec

3rd File → 0 sec

Confirmed that the process time of 1<sup>st</sup> File is equivalent with that in 'motor-off' state, and the process time of 2<sup>nd</sup> and 3<sup>rd</sup> Files are equivalent to that in 'motor-on' state. (The difference between 23secs and 34 secs is because of the difference of number of I/O retries that is caused by timing.)

#### ■ Solaris client environment

|                   | Migration process time | Recall process time |
|-------------------|------------------------|---------------------|
| 'Motor-on' state  | 0 sec                  | 0sec                |
| 'Motor-off' state | 33secs                 | 23secs              |

As an additional test, Conducted the consecutive Recall operations (5MB x 3Files) in 'motor-off' state.

1st File → 23 secs

2nd File → 0 sec

3rd File → 0 sec

Confirmed that the process time of 1<sup>st</sup> File is equivalent with that in 'motor-off' state, and the process time of 2<sup>nd</sup> and 3<sup>rd</sup> Files are equivalent to that in 'motor-on' state.

### 2) Other

Following point was also confirmed by the test this time:

If it is non-operation status at TSM side, disk access to ETERNUS disk doesn't occur and it can continue disk stop status and the disk can be used as archive area. (though the future test is necessary to check if the regular access occurs or not in cases other than by TSM default setting.)

(end)