Storage reallocation and restructuring at Computer Science Department

Phase 1

- **Pallene, Kallimachos and Galatea**

Hermes is almost obsolete machine (Purchase date:11/2007) and single point of failure. We can add new machines, Pallene and Kallimachos, for better nfs performance and load balancing. Email storage(/mail) and /home/students storage are demanding services with too many read/write operations. The aim is to split these two services , on two iScsi storage machines and also on two iscsi/nfs servers. In addition, department decided not to renew the maintenance for the NETApp machine. We have been asked to take precaution measures of /home/faculty

A. Galatea(cs9040)*** and Kallimachos(cs9055)

1. Move from Iasonas 3 x 3 TB HDD and install on Galatea (cs8549/50/51)
2. Prepare Galatea as iSCSI target.
3. Galatea will have 2 pools of disks.
    - Pool1 (consists of cs9040/41/42, 3 x 3TB with Raid-5, there will be 6 TB HDD for email storage)
    - Pool2 (consists of cs8549/50/51, 3 x 3 TB with Raid-5, there will be 6 TB HDD for home dirs)
4. Connect Kallimachos to Galatea as iscsi initiator,as NFS and Samba server.
5. Transfer email, and /sys-data/mail from orfeas and increase quotas for students and research group
6. Kallimachos will act as NFS server for /mail and /sys-data/mail
7. Orfeas can be retired
8. Move /home/faculty from NetApp-Artemis to Galatea, on the second pool of disks (cs8549/50/51). Kallimachos will be act as NFS/Samba server. This is a temporary solution until we get a new filler, (Methone), and then we will redirect the iscsi drives from Kallimachos to Methone. (See Phase 3)
9. Initiate procedures for buying a new server (Methone, cost around 1500€). If budget allows, we can get another to replace Hermes (already in budget of 2016)

~~**Note: *** Can we use machine cs8302 (machine is in store and was purchased as virtualization server). What if we purchase 2.5" SAS 10k/15k Hard disks for email**~~

Phase 2

A. Pallene (cs9056)

1. Connect Pallene as iscsi initiator with Iasonas and as NFS and Samba server
2. Redirect /dev/sdb2 (located on Iasonas) from hermes (/dev/sdc) to Pallene, to export NFS for /home/projects,/home/courses,/home/students
3. Move /home/support from NetApp-Artemis to Iasonas. Pallene will be act as NFS/Samba server
4. Move /home/csstaff from NetApp-Artemis to Iasonas. Pallene will be act as NFS/Samba server
5. Move /WebData and /WebStorage from NetApp to Iasonas, to be served by Pallene (or Hermes, or new-Hermes?????)

B. Argos (cs5293)

1. Argos will be formatted and be used to act as NFS server for OTY storage needs
2. 2 x 1 TB new Hdds can be installed on the server (are in the 003-store)
3. Argos will replace Kalliopi, Leto, Astarti, and part of netgear1.

C. Artemis /Demetra space

1. Move /opnet from Leto to Artemis

Phase 3

A. Methone

Methone will be a new filler purchased by department. (Cost will be around 1500€-1700€).

1. Redirect /dev/sd<X> from Kallimachos to Methone, for /home/faculty
2. Move data of /home/research from NetApp-Artemis to Galatea- and Methone

Phase 4

A. Move /extraspace/faculty from Iasonas to NetApp-Artemis. NFS Filler, will be continue to be Hermes (If we have budget, we can get 2 servers, apart from Methone, to replace also Hermes)

B. Move /extraspace/research from Iasonas to NetApp-Artemis. NFS Filler, will be continue to be Hermes (If we have budget, we can get 2 servers, apart from Methone, to replace also Hermes)
C. Since we have more than 4.1 TB available on Artemis and 9.5 TB free on Demetra we can provide /extraspace/students and W:\ drive to all students
D. Goofy can also be redirected to NetApp/Demetra , so as to free space on Iasonas

Suggestions of items for performance improvements:

1. We can get more ethernet cards for Galatea, Iasonas, Pallene, Kallimachos and Methone and Pallene. Ethernet cards can be used with bonding (combined 2 network cards to work as one), for the iscsi connections.
   OR

Check whether we can have iscsi connection, per Ethernet card per server i.e Galatea, will communicate with one IP/one Ethernet card with Kallimachos, and different card/IP with Pallene

Note: The above suggestion can be applied on a pair of machine, to evalutate the performance, before we buy the cards for all the machines

2. We can increase memory on Iasonas by double it, if we afford it.

Notes for Windows Profiles and Windows RFolders

- Windows Profiles Policy will be revised for students, as there are thoughts to adopt the mandatory profile policy for students. This will reduce our needs for windows storage. In worst scenario, we can install a virtual windows server machine, with free available space as second drive that will store and publish the profiles for faculty and research group.

<table>
<tr><th>HOSTNAME</th><th>RAW SPACE</th><th>Total Available Raw Space</th><th>Space Allocated and Used</th><th>Unallocated Space</th><th></th></tr>
<tr><td rowspan="2">IASONAS

(12/2010)

cs7360</td><td>• 2 x 148 (for OS, Raid 1)</td><td></td><td></td><td></td><td></td></tr>
<tr><td>4 x 2TB
4 x 3TB

8+12 = 20 TB

<table>
<tr><th>Max HDD Slots</th><th>#of HDD Installed</th><th>Availabe Raw Space</th></tr>
<tr><td rowspan="2">12 (Applied Raid 5)</td><td>4 x 2TB</td><td>3 x 2 TB</td></tr>
<tr><td>4 x 3TB</td><td>3 x 3 TB</td></tr>
<tr><td></td><td>3 x 3 TB*</td><td>9 TB</td></tr>
<tr><td>Free HDD Slots</td><td>1</td><td></td></tr>
</table>
*just installed on system with no configuration in raid
** 2 TB allocated to Iraklis but not used</td><td>15 TB+9 TB</td><td>12 TB</td><td>3.5 TB+9*
TB+2TB**</td><td>1. Move and install 3 x 3 TB (unused on Iasonas ,cs8549/50/51) to Galatea
2. /dev/sdb3 (/extraspace/research) and /dev/sdc1 (/extraspace/faculty) to be moved from Iasonas to Galatea
3. Space allocated to Iraklis (2 TB) and has not be used until now, we can get it back.</td></tr>
<tr><td>Net App
(1/2010)
cs6478
cs8196</td><td>12 x 1 TB (Artemis)
12 x 2 TB (Demetra)

12+24 TB=36 TB Raw Space

* 3.7 TB on Artemis of which :
utilitities+contiki+vol0 allocated but not used
(1GB+1TB+160GB =1.16 TB+2.64 free space)
**9.5 TB on Demetra(pittsilides+linuxVMFS) allocated but we can get it back (5TB+600GB+4TB free</td><td>6.6TB (Artemis)
12.9 TB (Demetra)</td><td>2.64 TB *
4 TB**</td><td></td><td>1. 5 TB space allocated on Demetra (pitsillides volume) and 600 GB for linux VMS, can be taken back, so totally 9.5 TB free space (including 4TB free space)
2. Extraspace for students can be provided as W:\ drive.(See section 1 below)
3. Space of ~1TB for TSM pools for KVM images of</td></tr>
</table>

<table>
<tr>
<td></td>
<td>space)</td>
<td></td>
<td></td>
<td></td>
<td>critical machines, to be available at any time
4. /extraspace/faculty and /extraspace/research to be moved from Galatea to NetApp, served by Hermes
5. /opnet from leto to NetApp (Space needed,30GB)</td>
</tr>
<tr>
<td>ARGOS
cs5293

(12/2010)</td>
<td>
<table>
<tr><th>Max HDD Slots</th><th>#of HDD Installed</th><th>Availabe Raw Space (Raid1)</th></tr>
<tr><td rowspan="2">6</td><td>2 x 146GB</td><td>Operating System</td></tr>
<tr><td>2 x 1TB</td><td>1 TB</td></tr>
<tr><td></td><td>2 x 1TB*</td><td>1 TB*</td></tr>
<tr><td>Free HDD Slots</td><td>2</td><td></td></tr>
</table>
* The disks are in Room 003-Store
</td>
<td>1 TB</td>
<td>800 GB</td>
<td>200 GB</td>
<td>Argos will be act as NFS/SAMBA server for OTY purposes:

1. We can install all 4x1 TB, with no raid support
2. /kvmimages from astarti (used space:490GB)
3. /graphics lab from leto (used space:94GB)
4. /DataVG from leto (used space:380GB)
5. /sys-data from kalliopi (used space:144 GB)
6. /otyspace/software from netgear1 (used space:186 GB)
7. /Scratch (used space:147 GB) from leto to Argos</td>
</tr>
<tr>
<td>Orfeas
cs6415

(8/2009)</td>
<td>
<table>
<tr><th>Max HDD Slots</th><th>#of HDD Installed</th></tr>
<tr><td>2</td><td>2x 250GB</td></tr>
</table>
</td>
<td>250 GB</td>
<td>10 GB</td>
<td>240 GB</td>
<td>To retire
1. Move from Orfeas the /sys-data/mail to Galatea)</td>
</tr>
</table>

<table>
<tr>
<td>Astarti
(12/2002)
cs1089</td>
<td>
<table>
<tr><th>Max HDD Slots</th><th>#of HDD Installed</th></tr>
<tr><td>6</td><td>6 x 300GB</td></tr>
</table>
</td>
<td>1.8 TB</td>
<td>465 GB</td>
<td>1.2 TB</td>
<td>To retire
1. /kvmimages from astarti (used space:490GB) to Argos
2.</td>
</tr>
<tr>
<td>Leto
(12/2002)
cs1088</td>
<td>
<table>
<tr><th>Max HDD Slots</th><th>#of HDD Installed</th></tr>
<tr><td>6</td><td>6 x 300GB</td></tr>
</table>
</td>
<td>1.8 TB</td>
<td>1.4 TB</td>
<td>400 GB</td>
<td>To retire
1. /graphics lab from leto to Argos (used space:94GB)
2. /DataVG from leto to Argos (used space:380GB)
3. /opnet from leto to Artemis (Space needed,30GB)
4. /Scratch (used space:147 GB) from leto to Argos</td>
</tr>
<tr>
<td>Kalliopi
(12/2002)
cs917</td>
<td>
<table>
<tr><th>Max HDD Slots</th><th>#of HDD Installed</th></tr>
<tr><td></td><td>1 x 80GB</td></tr>
<tr><td></td><td>1x200GB</td></tr>
</table>
</td>
<td>250 GB</td>
<td>144 GB</td>
<td>0 GB</td>
<td>To retire
/sys-data from kalliopi (used space:144 GB) to argos</td>
</tr>
</table>

<table>
<tr>
<td>Netgear1 (1/2009) cs6468</td>
<td>
<table>
<tr><th>Max HDD Slots</th><th>#of HDD Installed</th></tr>
<tr><td></td><td>3x500</td></tr>
<tr><td></td><td>3x 1 TB</td></tr>
</table>
</td>
<td>3.2 TB</td>
<td>2.2 TB</td>
<td>0</td>
<td>/otyspace/software from netgear1 (used space:186 GB to argos</td>
</tr>
<tr>
<td>Galatea* (Dell R520,with RAID-5)

(12/2014)</td>
<td>
<table>
<tr><th>Max HDD Slots</th><th>#of HDD Installed</th><th>Availabe Raw Space</th></tr>
<tr><td>8</td><td>3 x 3 TB</td><td>9 TB ()</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>Free HDD Slots</td><td>5</td><td></td></tr>
</table>
* The server supports RAID 5
</td>
<td>9 TB</td>
<td>0 GB</td>
<td>6TB (with RAID-5)</td>
<td>Space available on Galatea
6 TB TB(Raid-5, 3 x 3 TB)

1. Move email storage from hermes (/mail) to Galatea.
2. Move from Orfeas the /sys-data/mail to Galatea.
3. Remove 3 x 3 TB δίσκων (Raid-5, space for use 6 TB), from Iasonas to Galatea, to be used for /home/faculty and /home/research</td>
</tr>
<tr>
<td>Kallimachos* (Dell R220) FILER (12/2014)</td>
<td>1 x 1TB Hard Disk
8 GB RAM</td>
<td></td>
<td></td>
<td>NFS Server</td>
<td>1. Kallimachos will be the filer for /mail and /sys-data/mail from Galatea and temporarily for /home/faculty</td>
</tr>
<tr>
<td>Pallene (Dell R220) FILER (In store) (12/2014)</td>
<td>1 x 1TB Hard Disk

8 GB RAM</td>
<td></td>
<td></td>
<td>NFS Server</td>
<td>1. Pallene will be the filer for /home/projects /home/courses, /home/students, /home/csstaff, /home/support</td>
</tr>
</table>

Hermes (11/2007)	**1 x 1TB Hard Disk** **8 GB RAM**			**NFS Server**	1. Will be filer for /extraspace/faculty and /extraspace/research, from Galatea. 2. Will be the filler of /WebData and /WebStorage that will be moved from NetApp to Iasonas

Suggestions:

Methone	**1 x 1TB Hard Disk** **8 GB RAM**			**NFS Server**	1. Methone will be the filer for /home/faculty and /home/research

Section 1

Year	Email Quota	Home Directory Quota	Proposed Email Quota	Proposed Directory Quota	Home Extraspace for Students on NetApp
First	200 MB	480 MB	350 MB	700 MB	300 MB
Second	200 MB	480 MB	350 MB	700 MB	400 MB
Third	300 MB	800 MB	450 MB	1.5 GB	2 GB
Fourth +	500 MB	1 GB	600 MB	1.8 GB	2.5 GB
Master - PhD	2 GB	1.2 GB	2.5 GB	2 GB	3 GB
Research	2 GB	10 GB	4 GB	10 GB	No quotas
Alumni	1.2 GB	500 MB	1.2 GB	500 MB	N/A
Faculty	N/A	N/A			
Projects	N/A	N/A	500 MB	300 MB	N/A
Courses	N/A	N/A	200 MB	300 MB	N/A
Students of other departments	N/A	100 MB	N/A	300 MB	N/A