

Title	<i>Upgrades to APS Central Computing and Networks</i>		
Project Requestor	Kenneth Sidorowicz		
Date	March 25, 2008		
Group Leader(s)	Kenneth Sidorowicz		
Machine or Sector Manager			
Category	Facilities and Infrastructure		
Content ID*	APS_1255509	Rev.	1 03/25/2008 2:32 PM

*This row is filled in automatically on check in to ICMS. See Note ¹

Description:

Start Year (FY)	2008	Duration (Yr)	5 Years
------------------------	-------------	----------------------	----------------

Objectives:

Upgrade the APS Central Computing servers and network systems to improve performance, reliability and to replace aging systems and add additional disk storage.

IT tries to replace all servers and network equipment every five years in order to avoid catastrophic failures and to keep up with demands for greater performance and storage capacity. 20% of equipment is replaced if the budget is available. This does not include any new initiatives.

Benefit:

Improve performance and reliability of the systems and networks. Provides increased storage and high availability services to APS.

Improve central workstation performance and provide redundant servers for the central services. Improve data transfer speeds between central, beamlines, main XOR servers, Argonne, and remote Internet sites. As research is developed which builds on the 10 gigabit connection, it is expected that publications and presentations will be created which highlight the research results and the network infrastructure which made it possible. New backup system and network improves ability of data network to handle high speed data without interference from backup traffic.

Risks of Project: See Note ²

None.

Consequences of Not Doing Project: See Note ³

Not providing upgrades will expose the APS to downtime due to problems with aging equipment. Data communication will become degraded as the performance of desktop systems and user programs exceeds the server and switch capacity.

Reduced performance on beamline computers, slow access to XOR servers. Slow transfer of data over network to other servers at Argonne and to collaborating institutions via the Internet. Existing tape library does not have the capacity to backup the XOR cluster disk farm and additional beamline computers. There is some interference between backup traffic and data traffic slowing both data streams.

Cost/Benefit Analysis: See Note ⁴

Continued maintenance of existing network equipment and servers becomes expensive as the systems age. Vendor support for system will soon be limited.

Description:

Upgrade servers to the latest available from the vendor in order to support increased demand for NFS, Samba services. Upgrade Linux, PC and Macintosh servers. Upgrade network backbone to 10 GigE. This includes core and leaf switches, firewalls, and diagnostic tools.

Add HA Cluster in order to support the central services. Upgrade core network switches to the latest Cisco 6509 series equipment to improve data transfer from beamlines to HA and HPC cluster, MCS cluster, and User home institutions on the Internet. Install 2-stage backup server, and new backup network on central network.

Funding Details

Cost: (\$K)

Use FY08 dollars.

Strategic Project Proposal
Funding Details
FY 08 \$

Cost (\$k)

Year	Noneffort	Contingency
1	925	
2	925	
3	925	
4	925	
5	925	

Contingency may be in dollars or percent. Enter figure for total project contingency.

Effort: (FTE)

The effort portion need not be filled out in detail by March 28

Year	Mechanical Engineer	Electrical Engineer	Physicist	Software Engineer	Tech	Designer	Post Doc	Total
1								0
2								0
3								0
4								0
5								0
6								0
7								0
8								0
9								0

Notes:

¹ **ICMS.** Check in first revision to ICMS as a *New Check In*. Subsequent revisions should be checked in as revisions to that document i.e. *Check Out* the previous version and *Check In* the new version. Be sure to complete the *Document Date* field on the check in screen.

² **Risk Assessment.** Advise of the potential impact to the facility or operations that may result as a consequence of performing the proposed activity. Example: If the proposed project is undertaken then other systems impacted by the work include ... (If no assessment is appropriate then enter NA.)

³ **Consequence Assessment.** Advise of the potential consequences to the facility or to operations if the proposal is not executed. Example: If the proposed project is not undertaken then ____ may happen to the facility. (If no assessment is appropriate then enter NA.)

⁴ **Cost Benefit Analysis.** Describe cost efficiencies or value of the risk mitigated by the expenditure. Example: Failure to complete this maintenance project will result in increased total costs to the APS for emergency repairs and this investment of ____ will also result in improved reliability of _____. (If no assessment is appropriate then enter NA.)

