

Title	<i>Upgrades to XOR Beamline 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_1255511	Rev.	1
			3/25/08

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

Description:

Start Year (FY)	2008	Duration (Yr)	5 Years
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Objectives:

Add HA Cluster to support new XOR beamlines. The number of sectors for XOR has increased from 4 to 15 over the past few years. Beamline servers have not kept pace with the demands from the new sectors. IT is planning on adding additional beamlines servers to accommodate the increased load with a maximum of 5 sectors per HA cluster. This will improve performance and eliminate a single point of failure for all of XOR if the cluster were to fail. An additional cluster is required in order to provide this support plus the existing beams and users needs to be replaced due to age and performance issues.

Upgrade core networking for XOR beamlines. New detectors are increasing data acquisition rates and storage requirements at an alarming rate. A new XOR Cisco 6509 switch is required in order to keep up with the demands from the beamlines to move data from the floor to the HA and HPC clusters.

Provide backup system to support all XOR beamline requirements and add a separate backup network to remove network traffic generated by backups from the data collection network.

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 beamline workstation performance and provide redundant servers for the XOR beamlines. Improve data transfer speeds between beamlines, main XOR servers,

Argonne, and remote Internet sites. As research is developed which builds on the 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

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:

Add HA Cluster in order to support the new XOR beamlines without impacting original sectors 1-4. Upgrade core network switches for XOR to the latest Cisco 6509 series equipment. Install 2-stage backup server, and new backup network on XOR beamline network.

Funding Details

Cost: (\$K)

Use FY08 dollars.

Strategic Project Proposal
Funding Details
FY 08 \$

Cost (\$k)

Year	Noneffort	Contingency
1	700	
2	700	
3	700	
4	700	
5	700	

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.)

