Agency	Project	FY2005-06	FY2006-07
University of Nebraska	University Enterprise Server Upgrade	$ 925,000	$ 925,000

SUMMARY OF REQUEST (Executive Summary from the Proposal)

The University of Nebraska operates an IBM S/390 enterprise server to support our primary administrative business applications. The Enterprise Server supports applications including the Student Information System (SIS+) for UN-L and UNO, Enterprise Resource Planning (SAP), and the PSL/Budget (PSL) systems. Tivoli Storage Manager (TSM) uses an Automatic Tape Library for desktop and server backups and restores. Each of these products/services is continuing to grow as new features and end-users are added to these systems.

The current system is an IBM Z800 with two general purpose engines and two Linux engines. The two general purpose engines are used to support the administrative applications. They provide approximately 350 million instructions per second (mips) or 60 million service units (msu's). The system frequently runs at 100% capacity on this processor and there are times when the daily work load is not completed.

The purpose of this project is to add a new enterprise server to increase the number of processor cycles available in order to complete the ever increasing work load from SIS, SAP, and TSM. Along with the new processor, there will be an increase in software licensing costs.

FUNDING SUMMARY

	FY2005-06 (Year 1)	FY2006-07 (Year 2)	FY2007-08 (Year 3)	FY2008-09 (Year 4)	Future	Total
8. Capital Expenditures						
8.1 Hardware	$ 350,000.00	$ 325,000.00	$ 300,000.00	$ 275,000.00		$ 1,250,000.00
8.2 Software	$ 575,000.00	$ 600,000.00	$ 625,000.00	$ 650,000.00		$ 2,450,000.00
TOTAL COSTS	$ 925,000.00	$ 925,000.00	$ 925,000.00	$ 925,000.00	$ -	$ 3,700,000.00
General Funds	$ 925,000.00	$ 925,000.00	$ 925,000.00	$ 925,000.00		$ 3,700,000.00
TOTAL FUNDS	$ 925,000.00	$ 925,000.00	$ 925,000.00	$ 925,000.00	$ -	$ 3,700,000.00

PROJECT SCORE

Section	Reviewer 1	Reviewer 2	Reviewer 3	**Mean**	Maximum Possible
III: Goals, Objectives, and Projected Outcomes	14	15	13	14.0	15
IV: Project Justification / Business Case	23	23	19	21.7	25
V: Technical Impact	19	20	19	19.3	20
IV: Preliminary Plan for Implementation	10	10	9	9.7	10
VII: Risk Assessment	10	9	9	9.3	10
VIII: Financial Analysis and Budget	20	19	14	17.7	20
			TOTAL	**92**	100

REVIEWER COMMENTS

Section	Strengths	Weaknesses
III: Goals, Objectives, and	- The narrative provides a comprehensive overview of the need for the project to move	- The narrative does not provide any indication of the likely life-cycle of this upgrade. That is,

Section	Strengths	Weaknesses
Projected Outcomes	forward.	growth is expected but at what rate and how quickly is additional hardware likely to be required?
IV: Project Justification / Business Case	- The narrative provides a good overview of the process whereby need was assessed and some of the alternatives.	- The narrative does not provide a very thorough overview of the options that were considered beyond doing nothing. For example, what alternative platforms were considered? - The justification would be strengthened by providing more detail. What types of transactions are impacted, and what are the consequences?
V: Technical Impact	- The narrative provides complete information to support the acquisition of the proposed hardware/software.	- The narrative raises the question of why processor upgrades are available for this model while not being an option for the current hardware.
VI: Preliminary Plan for Implementation	- The narrative is clear and concise in this section and the proposed timelines are reasonable.	
VII: Risk Assessment	- The listed risks and management of them is clear and reasonable.	
VIII: Financial Analysis and Budget	- Costs are broken out and consistent with the scope of the project.	- The timeframe (question 9, Section VI) indicates that the project will be completed by December 2005 (FY06). The budget shows 25% of the costs in FY06 and the balance spread out over the following 3 fiscal years. Are these the most current prices quoted by reputable vendors, and are they subject to much variability?

APPENDIX

AGENCY RESPONSE TO REVIEWER COMMENTS

III. We expect a great deal of changes over the next three years that will affect our growth rate. We will be re-evaluating a student information system and continuing to add features to our ERP environment. In light of these unknowns at this time, it is impossible to accurately predict what the growth rate will be. However, over the past 20-25 years, our life cycle has averaged approximately 3-4 years before we need to upgrade again. Other than a major change in platform support for our major applications, we expect that trend to continue. Based on that typical life cycle, we will need to add processor resources in the 2008-2010 timeframe.

IV. a) The University has looked at several different options/alternatives to this proposal. There are 5 different enterprise server alternatives; however, only one of them meets all of the requirements. The 5 alternatives are:

1) Upgrade the Z800 to a Z890 (low cost and very small increase in resources for initial upgrade, high cost for additional resources)
2) Upgrade the Z800 to a Z900 (high cost and good future expandability)
3) Upgrade the Z800 to a Z990 (high cost and good future expandability, including expandable support for ZLinux on S/390)
4) Remove one of our Z800 Linux processors and replace it with a general purpose processor (medium cost, medium increase in resources)
5) Add an additional Zxxx system (high cost, good expandability, limited expandability for zlinux on S/390)

Of the 5 alternatives listed above, only the 5th one will support the goal of "providing an increased level of disaster recovery".

In addition to evaluating the above upgrade options, we are continually looking at other platforms for our applications. At this time, a platform change would not be cost efficient for our environment. It would require a process of retraining staff to support the new platforms, while at the same time continuing the support for our current systems. A project to change platforms for major operating applications, such as ERP and Student Information, should not be taken lightly. The process would be a multi-year and would not provide support for our current upgrade requirements. As we move forward, we will continue to evaluate other platforms.
Other platforms that have been considered, include moving our ERP to other platforms including:

1) Microsoft Operating System running on Intel processors
2) Unix/Linux Operating System running Intel or Power processors

b) There are numerous transactions that are impacted by the restriction in processor resources. This includes:

1) Student Information Systems: There are too many different processes and features in the Student Information systems to list them all, but the primary ones impacted are:
   a. Student Registration and drop and add: Every semester we go through a process of registering or changing classes for approximately half of the 35,000 students. Delays in accomplishing this registration can delay the start of classes, students missing classes and under the right circumstances; it could even cause us to cancel some classes.
   b. Student requests. We frequently receive requests for transcripts or other pieces of student information. Some of these cases include a student applying for work and

needing their degree verification papers. In extreme cases, a delay could actually affect whether a student would be hired.

c. Perception. If the University is perceived to be having problems supporting its major applications, it could affect the whether students would choose to attend the University.

2) Enterprise Resource Planning: Again, there are too many processes to list all of them, but a sample would be:
   a. Processing payments. A delay in processing payments to vendors can cause the loss of discounts for products purchased. Although we do not have exact numbers, this could be significant.
   b. Payroll processing. All University staff expect to be paid on specific dates throughout the year. Delays in processing the payroll would require alternative methods of paying our employees.
   c. Product Upgrades. We are in the process of upgrading our ERP system. Many of the processes are taking much longer (double or more) than they did the last time we upgraded. This will severely impact the length of time to complete the whole upgrade and extends the cost of the upgrade project.

V. There really are not any processor upgrades for our current Z800. The upgrade path is to upgrade this box to a Z890, which is a model change and processor change. This upgrade path is one of the options we have evaluated. Our initial evaluation of this upgrade (the cheapest), showed a 16% increase in processor power. This small increase would be nice right now, but would not solve our problems for the future. We would require another upgrade almost immediately. To upgrade to the larger Z890 processors will include a high cost and at that point all alternatives (the 5 above) need to be included in the evaluation. This upgrade will not provide any support for improving our disaster recovery capabilities.

VIII. These costs were based on number obtained in April-June of 2004 and came from our IBM business partner and/or used equipment vendors. The University often receives additional “educational discounts” that others do not receive.

This upgrade process will need to follow all University purchasing policies, including the issuance of an RFP. In addition to the potential reduction in cost through the RFP process, we will also explore other options. This includes the possibility of purchasing used equipment (as long as it is eligible for maintenance).