

**Nebraska Information Technology Commission**

**Project Proposal Form**

**New or Additional State Funding Requests  
for Information Technology Projects**

**FY2005-07 Biennium**

<b>Project Title</b>	<b>University Enterprise Server Upgrade</b>
<b>Agency/Entity</b>	<b>University of Nebraska Computing Services</b>

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**About this form...**

The Nebraska Information Technology Commission (“NITC”) is required by statute to “make recommendations on technology investments to the Governor and the Legislature, including a prioritized list of projects, reviewed by the technical panel, for which new or additional funding is requested.” In order to perform this review, the NITC and DAS-Budget Division require agencies/entities to complete this form when requesting new or additional funding for technology projects. For more information, see the document entitled “Guidance on Information Technology Related Budget Requests” available at <http://www.nitc.state.ne.us/forms/>.

Electronic versions of this form are available at <http://www.nitc.state.ne.us/forms/>.

For questions or comments about this form, contact the Office of the CIO/NITC at:

Mail: Office of the CIO/NITC  
521 S 14th Street, Suite 301  
Lincoln, NE 68508  
Phone: (402) 471-3560  
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E-mail: [info@cio.state.ne.us](mailto:info@cio.state.ne.us)

**Submission of Form**

Completed forms must be submitted by the same date biennial budget requests are required to be submitted to the DAS Budget Division. Completed project proposal forms must be submitted via e-mail to [info@cio.state.ne.us](mailto:info@cio.state.ne.us). The project proposal form should be submitted as an attachment in one of these formats: Microsoft Word; WordPerfect; Adobe PDF; or Rich Text Format. Receipt of the form by the Office of the CIO will be confirmed by e-mail. If an agency is unable to submit the application as described, contact the Office of the CIO prior to the deadline, to make other arrangements for submitting a project proposal form.

**Section I: General Information**

Project Title	Enterprise Server Upgrade
Agency (or entity)	University of Nebraska

Contact Information for this Project:

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**Section II: Executive Summary**

Provide a one or two paragraph summary of the proposed project. This summary will be used in other externally distributed documents and should therefore clearly and succinctly describe the project and the information technology required.

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.

**Section III: Goals, Objectives, and Projected Outcomes (15 Points)**

1. Describe the project, including:
  - Specific goals and objectives;
  - Expected beneficiaries of the project; and
  - Expected outcomes.

This project will add an additional enterprise server to provide additional processor cycles to complete our daily work load. It includes all the necessary cost increases to add this service. The previous upgrade was accomplished in early 2002 when it was moved from a 9621-R44 to the Z800 server. That upgrade increased our processor cycles by approximately 100%. Growth, as anticipated, in the past two and a half years has increased such that the processor is now using 80-100% of the current system and frequently the daily work load is not completing in a 24 hour period.

Goals:

- Provide enterprise server capacity to accomplish vendor required software upgrades.
- Provide enterprise server capacity to continue adding new SAP features and functions. This includes functionality in support of business process improvements, as well as new functions in support of University staff (online benefits enrollment, pay advice viewing, W4 viewing, personal data services and updating, etc).
- Provide enterprise server capacity in support of the growing student information systems. This includes additional online, web-based functionality and reporting capabilities.
- Provide an increased level of disaster recoverability.
- Provide enterprise server capacity to continue the use of products that provide backup and recovery services for our other server platforms.

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Beneficiaries:

- Approximately 13,500 employees will benefit from the additional features and functions to be made available in the human resource system
- All University departments will benefit from the added financial management features/functions that will be added to the system.
- Approximately 35,000 active students are in the current student information systems that are running on the enterprise server.
- Vendors that have a relationship with the University will continue to see improvements in our financial transactions.

Outcomes:

- Obtain the additional processor cycles and continue improving the operational business functions in the University.
- New applications can be considered.
- Upgrades to student information, financial, and human resources systems can be considered.
- Improvement in disaster recovery options.

2. Describe the measurement and assessment methods that will verify that the project outcomes have been achieved.

The University technical staff monitors and assess performance issues on a continual basis. These staff members have been working with these systems for several years and have considerable experience in the configuration and monitoring of the system. This includes considerable "Work Load Manager" training, as well as access to other tools, both locally and with trusted vendors, to manage and monitor this system. Processor cycle graphs and usage is maintained on a University web site.

Since the University's need is to obtain additional processor cycles to support the work load, the assessment will determine whether the daily work load is getting completed. Other work load measurements (job run times, etc) will continue to be measured and monitored.

Tools that will be used to measure and assess the outcome, include "Work Load Manager", "Resource Management Facility", response time analysis, work load run time analysis, and end user input (meetings/surveys).

3. Describe the project's relationship to your agency comprehensive information technology plan.

This project proposal is consistent with the University of Nebraska Information Technology Plan and is included in the 2005-2007 plan that was recently submitted. The enterprise server work load has been based on the S/390 architecture for some time. Although alternatives continue to be evaluated, the University will continue to run and expand this architecture for the foreseeable future.

Many of the expected functional enhancements to both student information systems and SAP are listed in the technology plan. The expected need to provide additional enterprise server processing power is also listed, in particular in the "future use of technology" and "It Futures" sections. Section 3.D Disaster Recovery and Business Continuity Planning of the 2005-2007 IT Plan outlines our desire to partner with the State's IMServices and share computer room space for equipment such as disk drives and servers.

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**Section IV: Project Justification / Business Case (25 Points)**

4. Provide the project justification in terms of tangible benefits (i.e. economic return on investment) and/or intangible benefits (e.g. additional services for customers).

This equipment is intended to allow for a larger volume of usage by the CSN customer base and this occurs when considerably more intense Financial and Student Information transactions are burdening the present equipment to very frequently 100% levels of capacity. The requested equipment will be better able to accept this existing workload. The load is centered on greatly enhanced interactive online services originating at the customers' work desk and from web sources. These services are instant requirements rather than waiting overnight for batch processing.

5. Describe other solutions that were evaluated, including their strengths and weaknesses, and why they were rejected. Explain the implications of doing nothing and why this option is not acceptable.

Several solutions have been evaluated to solve this problem. These included making modifications to the current hardware platform, trying to shift work load to other platforms, and eliminating any additional functionality and minimize continued growth. Most were dismissed because they would not be a total solution, or in evaluating costs, they would actually cost more (or close to the same amount) and still not solve all capacity problems. Although most of the alternatives do not have much in the strength category, some would provide a temporary solution (1 year) that might push off the immediate need for an upgrade to the following year.

One of the solutions evaluated includes the "do nothing" option. This option will have a major affect on the business applications and any future growth. This also includes putting product upgrades on hold. Although this is an option, it will end up costing considerably more in the long run and opportunities to improve business processes will be delayed. It would be completely impractical to reduce the growth in the student information system.

Due to the length of time between requests and allocation of funds, there is a possibility of a new option coming available. Although no prospective technology changes are anticipated in the near future that will deviate from this proposal, for due diligence purposes, a final evaluation will be completed to confirm this option.

6. If the project is the result of a state or federal mandate, please specify the mandate being addressed.  
N/A

**Section V: Technical Impact (20 Points)**

7. Describe how the project enhances, changes or replaces present technology systems, or implements a new technology system. Describe the technical elements of the project, including hardware, software, and communications requirements. Describe the strengths and weaknesses of the proposed solution.

This change will enhance the University's present technology since it will increase the available resources and allow us to continue growing our current business and business processes. It may also present options to continue exploration of new open source systems such as Linux on the

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S/390 platform. If the Linux-S/390 configuration is feasible, we could use it to eventually replace our AIX-RS/6000 platform and reduce the number of hardware platforms we support.

The proposed solution includes the addition of a 2<sup>nd</sup> S/390 enterprise server of comparable size to our current system (16 gig of memory, 350+mips, etc). In today's technology, the assumption is for an IBM Z890. A duplication of our current software would be required on this system. This would include the following as well as other minor products not listed:

- IBM z/OSe Operating system (reduced function)
- IBM Z/OS Operating system
- Cobol full function
- Ditto Tape Management
- CICS transaction server
- DB2/UDB database
- Tivoli Netview Enterprise management
- Tivoli Work Station
- Migration Utility
- DB2 Utilities
- Tivoli Storage Manager
- File Manager
- Quickref
- Version Merger
- SAS
- OPC Scheduler
- Hierarchical Storage Manager
- X/PTR
- X/Net
- TCP/IP
- Z/VM
- Suse Linux
- PRO/JCL
- SCT SIS
- SAP ERP

The additional server will communicate via standard enterprise server connections such as FICON channels, gigabit Ethernet, ESCON channels etc. These capabilities are supported with our current infrastructure and should also be supported in the IMServices computer room.

Strengths of this proposal:

- It fits with the University's strategic direction
- It is platforms/equipment/software we currently support and have considerable experience.
- No new training curve, other than increased disaster recovery options.
- Allows continued growth with the current functionality we provide for SIS and SAP.
- Allows additional functionality to be added for SIS and SAP systems.
- No need to modify, rewrite or replace current applications and batch jobs and reports.

Weakness of proposal:

- Cost, in particular software license fees
- Perception that enterprise servers are obsolete

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8. Address the following issues with respect to the proposed technology:
- Describe the reliability, security and scalability (future needs for growth or adaptation) of the technology.
  - Address conformity with applicable NITC technical standards and guidelines (available at <http://www.nitc.state.ne.us/standards/>) and generally accepted industry standards.
  - Address the compatibility with existing institutional and/or statewide infrastructure.
    1. Reliability. The S/390 platform is traditionally accepted as one of the most reliable hardware and software solutions available in the technology industry. The University has had zero down time because of hardware or software failures over the past two and half years. Any down time has either been due to power related problems or intentional system restarts.
    2. Security. The z/OS operating system is very secure. The RACF product is used to provide security. Again, accepted as very secure in the industry.
    3. Scalability. There are several options that make this platform scalable. This includes the ability to add more processor engines, increase engine speed, and even the potential to implement "on demand" resource management strategies.
    4. NITC Technical Standards/Guidelines. We believe that this project conforms to any relevant technical Standards and Guidelines listed at the NITC. This platform and software environment is an industry standard for many larger operations.
    5. This project is compatible with the University's own infrastructure and in fact extends the current technology we already support. The primary network communications is TCP/IP which is the standard for the State Network. The State of Nebraska (IMServices) also uses this same technology to support their strategic direction.

**Section VI: Preliminary Plan for Implementation (10 Points)**

9. Describe the preliminary plans for implementing the project. Identify project sponsor(s) and examine stakeholder acceptance. Describe the project team, including their roles, responsibilities, and experience.

Preliminary plans:

1. Continue monitoring performance statistics – ongoing.
2. Prepare project management tasks and timeline.
3. Prepare RFP – June 2005.
4. Release RFP – July 2005.
5. Determine final hardware/software configuration August 2005.
6. Develop detailed implementation and migration plan August 2005.
7. Order hardware and software – September 2005.
8. Install and test hardware/software – October/November/December 2005 (dependant on vendor shipments).
9. Move into production – December 2005.
10. Update disaster recovery plans.

Project Sponsors:

- Walter Weir – University CIO
- David Lechner – Vice President for Business and Finance
- Campus Student Information Directors.

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Stakeholder Acceptance

- The stakeholder acceptance is very high. We are already pushing the limits of the current processing environment. There is a strong need to increase our current processing capacity as well as improve our disaster recovery options.

Project Team Members:

- Executive support team – made up of sponsors and advisory task force leaders (financial, SIS, IT). Primary role is to ensure project has appropriate resources allocated and that the projects stays on course as planned. CIO and VPBF have extensive experience in supporting major projects.
- Hardware Team – UNCSN Infrastructure team members, including Computer Operations, Operating Systems, Data management, and Networking, and the selected vendor. Roles and responsibilities includes the planning, installation and implementation of the selected hardware. Hardware team members have over 100 years experience and average 20+ years each working with computer hardware.
- Software team – UNCSN Infrastructure team members, including Operating Systems and Computer Operations. Roles and responsibilities includes the planning, installation and implementation of the server operating systems and other critical/required support software products. Team members have over 160 years experience and average 20+ years experience each in Information Technology.
- Applications team – UNCSN Applications support team members including Basis, Financial, Human Resource, and Student Information Systems, including representatives from the campus IT departments. Roles and responsibilities include installation and testing of the application software systems. All team members were part of the previous hardware/software upgrade and many of them have over 20 years of experience in Information Technology.
- Customer Support team – UNCSN Customer Support including the Helpdesk. Roles and responsibilities include any customer training, customer communications, and trouble ticket reporting. Most team members have several years of customer support experience with some having over 20 years of Information Technology experience.
- Advisory Teams – University functional staff in the student information and financial system areas. Roles and responsibilities will be primarily in an advisory role, making sure any pertinent issues are addressed and that critical functional timelines are met. Experience will be based on those appointed to the teams, but it will likely be their most experienced staff members.

10. List the major milestones and/or deliverables and provide a timeline for completing each.

- Budget approval – July 2005
- RFP release and opening August 2005
- Order and installation of hardware October 2005
- Order and installation of software October 2005
- Testing and migration of applications November/December 2005
- Refinement of disaster recovery plans January – March 2006
- Disaster recovery testing April – June 2006

Note: If the process moves forward without any major issues, this timeline could be significantly reduced. Final project management plans will allow this flexibility.



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11. Describe the training and staff development requirements.

Current staff members have adequate training to accomplish a majority of the work related to this project. The exceptions will be in the areas where new functions will be provided by this acquisition, in particular, the implementation and testing of the new disaster recovery procedures.

12. Describe the ongoing support requirements.

Most of the ongoing support will be provided by our current staff members. One or two additional staff members may be needed due to the increased support requirements and the new disaster recovery processes. We will continue to evaluate these needs as we implement this project and adjust our staffing as needed.

**Section VII: Risk Assessment (10 Points)**

13. Describe possible barriers and risks related to the project and the relative importance of each.

- Greatly increased software costs for fundamental operating system software and third party add-on software for user friendly features
- Staff and time to install and maintain this incremental software
- Increased cashflow needed for equipment maintenance
- Increased volumes of data communications

14. Identify strategies which have been developed to minimize risks.

- UNCSN has greatly streamlined the variety of software and removed older products that have become dated and are of much less benefit than in previous times. Offsetting these efforts is the increased system software costs that provided features of a much greater magnitude than older products
- The staff has been trained and practiced at handling an assortment of software and UNCSN has expended effort to obtain products with reduced maintenance needs.
- The maintenance cost per unit of computation power has greatly decreased and UNCSN has diverted very limited amounts of funding to cover these costs, however, it is still insufficient to meet the required costs levels.

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**Section VIII: Financial Analysis and Budget (20 Points)**

15. Financial Information

Financial and budget information can be provided in either of the following ways:

- (1) If the information is available in some other format, either cut and paste the information into this document or transmit the information with this form; or
- (2) Provide the information by completing the spreadsheet provided below.

**Instructions:** Double click on the Microsoft Excel icon below. An imbedded Excel spreadsheet will be launched. Input the appropriate financial information. Close the spreadsheet. The information you entered will automatically be saved with this document. If you want to review or revise the financial information, repeat the process just described.



Excel Spreadsheet  
(Double-click)

**Financial information appears at the end of the document.**

16. Provide a detailed description of the budget items listed above. Include:

- An itemized list of hardware and software.
- If new FTE positions are included in the request, please provide a breakdown by position, including separate totals for salary and fringe benefits.
- Provide any on-going operation and replacement costs not included above, including funding source if known.
- Provide a breakdown of all non-state funding sources and funds provided per source.

Itemized list of hardware and software

1. IBM Z890/Z800 (2 processors, 16 gig memory, etc)
2. IBM z/OSe Operating system (reduced function)
3. IBM Z/OS Operating system
4. Cobol full function
5. Ditto Tape Management
6. CICS transaction server
7. DB2/UDB database
8. Tivoli Netview Enterprise management
9. Tivoli Work Station
10. Migration Utility
11. DB2 Utilities
12. Tivoli Storage Manager
13. File Manager
14. Quickref
15. Version Merger
16. SAS
17. OPC Scheduler
18. Hierarchical Storage Manager
19. X/PTR
20. X/Net
21. TCP/IP

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- 22. Z/VM
- 23. Suse Linux
- 24. PRO/JCL
- 25. SCT SIS
- 26. SAP ERP

- No new FTE will be required at this time. We will continue to monitor the situation and address any changes as needed.
- There will be some minor ongoing operational costs. That will be budgeted for in the UNCSN budget.
- All funds are University/State provided at this time. Additional funding grants (federal, etc) for additional functionality may be requested at a later time.

17. Please indicate where the funding requested for this project can be found in the agency budget request, including program numbers.

The Funding request can be found in the budget request of University of Nebraska Central Administration (UNCA), Program 706, subprogram 64.

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Section VIII: Financial Analysis and Budget

(Revise dates as necessary for your request.)

	Estimated Prior Expended	Request for FY2005-06 (Year 1)	Request for FY2006-07 (Year 2)	Request for FY2007-08 (Year 3)	Request for FY2008-09 (Year 4)	Future	Total
1. Personnel Costs							\$ -
2. Contractual Services							
2.1 Design							\$ -
2.2 Programming							\$ -
2.3 Project Management							\$ -
2.4 Other							\$ -
3. Supplies and Materials							\$ -
4. Telecommunications							\$ -
5. Training							\$ -
6. Travel							\$ -
7. Other Operating Costs							\$ -
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
8.3 Network							\$ -
8.4 Other							\$ -
<b>TOTAL COSTS</b>	\$ -	\$ 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
Cash Funds							\$ -
Federal Funds							\$ -
Revolving Funds							\$ -
Other Funds							\$ -
<b>TOTAL FUNDS</b>	\$ -	\$ 925,000.00	\$ 925,000.00	\$ 925,000.00	\$ 925,000.00	\$ -	\$ 3,700,000.00