

# BID SOLICITATION



STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS  
CAPITOL HILL  
PROVIDENCE RI 02908

**BID NUMBER: B05955**  
**TITLE: VOIP TELEPHONE SYSTEM**  
**BID OPENING DATE AND TIME:**  
**01/31/2006 1:40 PM**

BUYER: LISA HILL  
PHONE #: (401) 222 - 2142 ext. 116

**B** UNIVERSITY OF RHODE ISLAND  
**I** URI ACCOUNTS PAYABLE  
**L** 103 ALBERT CARLOTTI BLDG  
**L** KINGSTON RI 02881  
**T**  
**O**

**S** UNIVERSITY OF RHODE ISLAND  
**H** URI CENTRAL RECEIVING  
**I** ATTN: SEE BELOW  
**P** PLAINS RD  
**T** KINGSTON RI 02881  
**O**

Requisition Number(s): R86A067276

Item	Class-Item	Quantity	Unit	Unit Price	Total
	<p>THERE WILL BE A *** MANDATORY *** PRE-BID CONFERENCE ON 1/17/06 AT 10:00 AM.</p> <p>LOCATION: URI GALANTI LOUNGE - TOP FLOOR UNIVERSITY LIBRARY 15 LIPPITT ROAD KINGSTON, RI 02881</p> <p>BIDDER IS REQUIRED TO PROVIDE A BID SURETY IN THE FORM OF A BID BOND, OR A CERTIFIED CHECK PAYABLE TO THE STATE OF RHODE ISLAND, IN THE AMOUNT OF A SUM NOT LESS THAN FIVE PERCENT (5%) OF THE BID PRICE. BID SURETY MUST BE ATTACHED TO THE BID FORM. THE SUCCESSFUL BIDDER WILL ALSO BE REQUIRED TO FURNISH PERFORMANCE AND LABOR AND PAYMENT BONDS AT TIME OF TENTATIVE CONTRACT AWARD.</p>				

It is the Vendor's responsibility to check and download any and all addenda from the RIVIP. This offer may not be considered unless a signed RIVIP generated Bidder Certification Cover Form is attached and the Unit Price column is completed. The signed Certification Cover Form must be attached to the front of the offer. When delivering offers in person to One Capitol Hill, vendors are advised to allow at least one hour additional time for clearance through security checkpoints.

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	<p>AN INSURANCE CERTIFICATE IN COMPLIANCE WITH PROVISIONS OF ITEM 31 (INSURANCE) OF THE GENERAL CONDITIONS OF PURCHASE IS REQUIRED FOR COMPREHENSIVE GENERAL LIABILITY, AUTOMOBILE LIABILITY, AND WORKERS' COMPENSATION AND MUST BE SUBMITTED BY THE SUCCESSFUL BIDDER(S) TO THE DIVISION OF PURCHASES PRIOR TO AWARD. THE INSURANCE CERTIFICATE MUST NAME THE STATE OF RHODE ISLAND AS CERTIFICATE HOLDER AND AS AN ADDITIONAL INSURED. FAILURE TO COMPLY WITH THESE PROVISIONS MAY RESULT IN REJECTION OF THE OFFEROR'S BID. ANNUAL RENEWAL CERTIFICATES MUST BE SUBMITTED TO THE AGENCY IDENTIFIED ON THE PURCHASE ORDER. FAILURE TO DO SO MAY BE GROUNDS FOR CANCELLATION OF CONTRACT.</p>				

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	<p>NOTE: IF THIS BID COVERS CONSTRUCTION, SCHOOL BUSING, HAZARDOUS WASTE, OR VESSEL OPERATION, APPLICABLE COVERAGES FROM THE FOLLOWING LIST MUST ALSO BE SUBMITTED TO THE DIVISION OF PURCHASES PRIOR TO AWARD:</p> <ul style="list-style-type: none"> <li>* PROFESSIONAL LIABILITY INSURANCE (AKA ERRORS &amp; OMISSIONS) - \$1 MILLION OR 5% OF ESTIMATED PROJECT COST, WHICHEVER IS GREATER.</li> <li>* BUILDER'S RISK INSURANCE - COVERAGE EQUAL TO FACE AMOUNT OF CONTRACT FOR CONSTRUCTION.</li> <li>* SCHOOL BUSING - AUTO LIABILITY COVERAGE IN THE AMOUNT OF \$5 MILLION.</li> <li>* ENVIRONMENTAL IMPAIRMENT (AKA POLLUTION CONTROL) - \$1 MILLION OR 5% OF FACE AMOUNT OF CONTRACT, WHICHEVER IS GREATER.</li> <li>* VESSEL OPERATION - (MARINE OR AIRCRAFT) - PROTECTION &amp; INDEMNITY COVERAGE REQUIRED IN THE AMOUNT OF \$1 MILLION.</li> </ul>				

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	<p>BIDDERS ARE ADVISED THAT ALL PROVISIONS OF TITLE 37 CHAPTER 13 OF THE GENERAL LAWS OF RHODE ISLAND APPLY TO THE WORK COVERED BY THIS REQUEST, AND THAT PAYMENT OF THE GENERAL PREVAILING RATE OF PER DIEM WAGES AND THE GENERAL PREVAILING RATE FOR REGULAR, OVERTIME, AND OTHER WORKING CONDITIONS EXISTING IN THE LOCALITY FOR EACH CRAFT, MECHANIC, TEAMSTER, OR TYPE OF WORKMAN NEEDED TO EXECUTE THIS WORK IS A REQUIREMENT FOR BOTH CONTRACTORS AND SUBCONTRACTORS. THE PREVAILING WAGE TABLE MAY BE OBTAINED AT THE RI DIVISION OF PURCHASES HOME PAGE BY INTERNET at <a href="http://www.purchasing.state.ri.us">www.purchasing.state.ri.us</a>. SELECT "INFORMATION" AND THEN SELECT "PREVAILING WAGE TABLE". THE STATE OF RHODE ISLAND USES THE GENERAL DECISION NUMBER RI20030001. PRINTING THE ENTIRE DOCUMENT AVERAGES APPROXIMATELY ONE MINUTE PER PAGE - YOU MAY WANT TO PRINT ONLY THE PAGES APPLICABLE TO YOUR BID. BIDDERS NOTE: IN THE EVENT THIS BID SPECIFIES PRICE OFFERS ON A TIME-AND-MATERIALS BASIS, i.e., AN HOURLY RATE, ANY OR ALL BIDS SUBMITTED IN AN AMOUNT LESS THAN THE PREVAILING RATE IN EFFECT FOR THE WORK COVERED BY THIS REQUEST AS OF THE DATE OF BID ISSUANCE SHALL BE REJECTED BY THE DIVISION OF PURCHASES.</p> <p>OFFERORS MUST PROVIDE EVIDENCE OF LICENSURE AS A TELECOMMUNICATIONS SYSTEM CONTRACTOR, IN COMPLIANCE WITH TITLE 5 CHAPTER 70 (RIGL), WITH THEIR OFFERS.</p>				

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Item	Class-Item	Quantity	Unit	Unit Price	Total
	CONTRACT PERIOD: 01/02/05 - 09/30/06				
	DELIVER TO: Networking & Telecommunications 109 Tyler Hall Kingston, RI 02881				
1.0	725-57 TOTAL COST TO FURNISH MATERIALS IDENTIFIED IN THE BID SPECIFICATIONS AND IN ACCORDANCE WITH ALL BID SPECIFICATIONS.	1.00	TOTAL	_____	_____
2.0	725-57 ALTERNATE NO. 1 - INSTALL & CONFIGURE MICROSOFT ACTIVE DIRECTORY AND MICROSOFT EXCHANGE AND INTEGRATE WITH THE UNITY VOICE MAIL SERVER IN ACCORDANCE WITH THE BID SPECIFICATIONS.	1.00	TOTAL	_____	_____
	CONTACT PERSON: JAY DAVID (401) 874-2801				
	STARTING DATE _____ NO. OF WORKING DAYS REQUIRED FOR COMPLETION _____				
				<b>TOTAL:</b>	_____

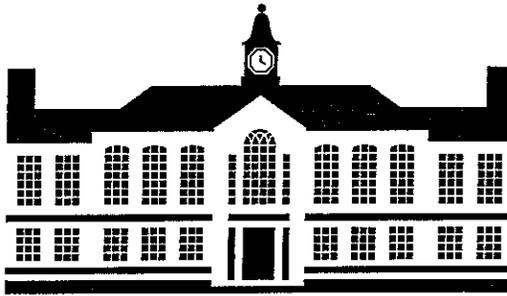
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UNIVERSITY OF  
**Rhode Island**

**Bid for the Installation of**

**A Voice Over IP System**

**for**

**Eight Hundred Resident Students**

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**Introduction:**

The University of Rhode Island is seeking bids from vendors interested in assisting the university in the implementation of a Cisco VoIP solution for 800 residence hall rooms on the Kingston campus. The 800 rooms will be distributed among three residence halls currently under construction and scheduled to be completed in September 2006.

The base bid for this project is broken up into two phases with two optional alternates. The first phase will consist of installing and configuring three Cisco Call Managers and two Cisco Communication Media Modules. The modules would be installed in two Cisco Catalyst 6509 switches with supervisor 720s. The second phase entails installing and configuring one Cisco Unity Voice Mail server and two Cisco Emergency Responder servers in a redundant configuration along with all other hardware and software necessary to provide phone service to these 800 student rooms. The **optional** Alternate involves building stand alone Microsoft Active Directory and Microsoft Exchange servers.

Most of the hardware and software required for this project has already been purchased. In July the university purchased three Cisco Call Managers (part # MCS-7835-H1-IPC1), one Cisco Unity Voice Mail server (part # MCS-7845-H1-ECS1) and 800 Cisco 7940 VoIP telephones. The remaining equipment required for the project including the Cisco Communication Media Modules, Emergency Responder (E911) servers and Catalyst 6509 switches to hold the Communications Media Modules will be purchased and installed by the vendor. The Cisco Communications Media Module will connect to the PSTN through Tie Lines for intra-Centrex calling and PRI circuits for calls outside of Centrex. The university will procure these circuits in time for the installation of Call Manager and the Cisco Communication Media Modules(PSTN Gateways). The university will make available to the vendor a block of 800 DID numbers provided by the digital circuit vendor to be assigned to the new phones. University personnel will be responsible for installing and configuring the powered switches in the wiring closets in the new buildings.

The progress of this project will be closely monitored through weekly meetings between the vendor's and university's staffs. These meetings may be conducted via conference calls or in person.

**Please Note:**

**Pre Bid Meeting:**

A mandatory pre bid meeting will be held at the University of Rhode Island

on SEE BID at \_\_\_\_\_ am/pm in room \_\_\_\_\_

to allow an opportunity for vendors to ask questions regarding this project.

## **Current Network:**

The university network consists of two core 6509s with Supervisor IIs connected to 4507 distribution switches which will connect to POE 3560 switches in the wiring closets in the new residence halls. These switches will be connected to uninterruptible power supplies to guard against power failures of twenty minutes or less. Routing is handled on the distribution switches while the edge switches are layer two only.

The current telephone service for all resident students, faculty and staff offices is provided via Verizon Centrex. Voice mail is provided via two Octel Voice Mail servers – one serving the faculty and staff and the other handling the resident students. The Octel servers are connected to Verizon via analog trunks and SMDI links.

## **Base Bid Scope:**

Install and configure three Cisco Call Managers as one publisher and two subscribers. Call Manager user data will be stored in the local database on the server. One of the CM subscribers will be located off campus at the Foundry building in Providence. The bandwidth connecting this location to the university is sufficient to support the remote Call Manager. Install and configure one Unity server for voice mail only. Microsoft Active Directory and Microsoft Exchange message store will be installed on two separate servers. The vendor will also be responsible for the installation and configuration of two Cisco Emergency Responder (E911) servers in a redundant configuration as well as installation and configuration of two Cisco Communication Media Modules (PSTN gateways) and 800 Cisco 7940 VoIP phones. The Media Modules will be installed in two new Cisco Catalyst 6509 switches provided by the vendor. The phones will be configured to auto register when connected to the network. The university will ensure that the proper DHCP ranges with the tftp option are created for the VoIP phone subnets.

This new VoIP system will be phased in over several months to allow sufficient time for testing and debugging. The first phase, to be completed by the end of April, will involve the installation and configuration of the Call Managers and Cisco Communication Media Modules and 6509s. When these components have been shown to be working properly the project will move to the second phase, installing the Unity Voice mail and the Cisco Emergency Responder servers by the end of May. If the alternate for building the Active Directory and Exchange servers isn't chosen the university will ensure that these servers are configured and ready by the time testing begins. By the end of June any remaining installation and configuration will be completed before testing the entire system. The entire system must be tested and ready for production by the end of July 2006. Testing of the phones in the rooms may be affected by the progress of the building project, requiring the university to make temporary arrangements for testing this piece of the project.

The university will procure the digital tie lines necessary for intra-Centrex calling and the digital circuits, PRIs or FlexPaths, to allow the students to place local calls outside of Centrex. The university presently does not provide long distance calling to

resident students so the Dial Plan created in Call Manager will have to allow for credit card calling.

Due to the nature of VoIP and the fact that down time is unacceptable the university is requesting the vendor to perform detailed testing in the area of system recovery in the event of a hardware failure. The vendor will need to demonstrate that a CallManger, Unity server, and E911 server can be restored to full functionality after a hardware failure requiring a new disk to be installed.

### **Alternate 1 Scope**

In order to complete this project the university may ask the vendor to install and configure Microsoft Active Directory and Microsoft Exchange and integrate them with the Unity Voice Mail server. The university will provide all servers as well as any other hardware required for the Exchange and Active Directory applications.

The vendor will install, on hardware provided by the university, Windows 2003 server with Active Directory and then populate the schema with data from the university's student record system. Some of the relevant data fields are Last Name, First Name, Room #, Phone number etc. In addition to creating a process for initially populating Active Directory the vendor will assist university personnel in designing a process to synchronize the Active Directory with the student record system nightly. Currently the data is exported from the PeopleSoft system to a delimited flat file and then uploaded to the university's LDAP server. The process for synchronizing the Active Directory server may be the same.

The vendor will also install a Windows 2003 server running Microsoft Exchange to function as the message store for Unity voice mails only. This initial implementation will not offer unified messaging to VoIP users. The server will be built to store up to 4800 user mailboxes with each mailbox capable of holding 20 two minute messages for each user. As in the case with Active Directory, the university will provide the hardware sufficient to meet the requirements.

The university will purchase all of the required seat licenses for Active Directory and Exchange and will make them available to the vendor at time of installation.

The vendor will work with university personnel to create a backup procedure for Unity and will then demonstrate that backup and recovery function as intended.

## **Base Bid**

### **Phase 1: Call Managers and PSTN Gateways**

#### **Call Managers**

In anticipation of implementing VoIP services for these new residence halls the university, in July '05, purchased three Cisco Call Managers (MCS-7835-H1-IPC1) running Call Manager version 4.0 on Linux. The university's plan is to implement this system using SIP instead of Skinny so the Call Managers will be upgraded to the latest stable version of Call Manager available at the time of installation – version 5.0 or higher. This equipment was purchased with maintenance that includes software upgrades. The vendor will be responsible for configuring three Call Managers to function with the Cisco Communication Media Modules (PSTN gateways), Unity VM servers and phones to provide a complete and working VoIP system as defined by the acceptance criteria.

The following list of Call Manager configuration tasks is not intended to be exhaustive or to be taken in the order listed. The vendor is responsible for providing a fully functioning VoIP system which meets the requirements of the university.

- Upgrade all three Call Manager servers from version 4.0 to the latest stable version of Call Manager available at time of installation.  
When the call managers were purchased in July '05 they were purchased with version 4.0 and they need to be upgraded to support SIP.
- Define the VoIP gateways to the Call Managers.  
Outgoing calls will be evenly distributed across the gateways so that in the event of a failure of one of the gateways the Call Managers will continue to forward calls to the other gateway.  
Media Gateway Control Protocol (MGCP) will be the protocol used for the communication between Call Manager and the PSTN gateways.
- Configure the Call Managers to function as one publisher and two subscribers.
- Mount Call Manager servers in racks designated by university personnel for that purpose.
- Create dial plan to allow five digit dialing to Centrex extensions and local non-toll calls outside Centrex. Currently the university does not provide long distance service to students living in the residence halls. Toll and long distance calls must be charged to a calling card. Dial plan must allow for:
  - Place 5 digit calls to other numbers in the Verizon Centrex (874 exchange).
  - North American dial plan.
  - Allow call forwarding to extensions within the Verizon Centrex.
  - Allow call forwarding.
  - Directory assistance (411)
  - Emergency 911(students must be able to call 911 without having to dial a preceding 9 to seize an outgoing trunk)

- Credit/Calling card calling
- Create calling search spaces. Currently the students have one Class of service which allows them to make only local non-toll calls.
- Create route patterns/hunt pilots using the dial plan created previously
- Create data backup process for Call Managers and Unity Servers.
  - Vendor will make recommendations to university regarding frequency and retention period of backups.
- Define the phones to Call Manager.
  - Because the students will be receiving their phones upon move-in the phones must be able to auto-register when they are connected to the network. The vendor will advise university on the best way to accomplish this and then implement the solution.
- Define the telephones using the local database on Call Manager as the data repository.
- The new system will be configured to function like Centrex. Please refer to **Appendix A** for a list of Centrex features. The vendor is responsible for configuring Call Manager to provide at a minimum the same level of features the students currently receive from Centrex.

### **PSTN Gateways:**

The connection to the PSTN will be made through two Cisco Communications Media Modules (part #WS-SVC-CMM-6T1=). The modules will be purchased, installed and configured by the vendor with assistance from university personnel. The modules will be installed in two new Cisco 6509s provided by the vendor as part of this project (please refer to pricing page). The interconnection between the two new 6509s and the university's existing core 6509s located in Tyler and Bressler Halls will be performed by university personnel. Both media modules will be configured to use Media Gateway Control Protocol (MGCP) to communicate with Call Manager. Both media modules will be equipped with one six port T1 interface port adapter, part # WS-SVC-CMM-6T1. Two ports on one gateway and three on the other will be configured to use either ISDN or FlexPath signaling to connect to the PSTN. The university will procure these circuits and have them ready for use at the time of installation of the media modules.

## **Phase 2: Unity Voice Mail and Emergency Responder Servers**

### **Unity Installation and Configuration:**

The second phase of this project is concerned with the installation of one Unity Voice Mail Server and two Cisco Emergency Responder (E911) servers in a redundant configuration. The Unity server will be configured for Voice Mail only. Unity will be integrated with stand alone Active Directory and Exchange servers either provided by the university or built by the vendor if Alternate One is chosen. If the university decides to build Active Directory and Exchange servers they will be ready for use by the time the vendor is ready to install Unity. The vendor is responsible for assisting university personnel with populating both MS Exchange and Active Directory with the pertinent data from the university's student record system. Due to the timing of room assignments it may not be until late July that the student residents have been assigned to their rooms and therefore the creation of the mailboxes for these students may be delayed until then.

The Unity server will be configured to store 20 – two minute messages for each user and will be configured to broadcast voice mail messages to all 800 users. Both new and saved messages will be purged from the system after thirty days.

The functions on the Octel server which allow users to access and manipulate their e-mail will be duplicated on the Unity VM system. Please refer to Appendix B for a list of the current Octel commands. The vendor is responsible for programming Unity to function like Octel.

### **Cisco Emergency Responder (E911) Servers:**

The two Cisco Emergency Responders provided by the vendor will be deployed in a redundant configuration. The preferred method for implementing redundancy would be a situation where both servers are active and either one can respond to a 911 call. This is preferred over maintaining one server in standby mode until the primary fails. The vendor is responsible for coordinating the E911 call routing with the vendor providing the PRI circuits for the VoIP system.

Before implementation the vendor must consult with appropriate state and local authorities to determine the requirements for E911 in Kingston RI.

The list of configuration tasks below is provided as an example of tasks which need to be performed during the installation process but is not exhaustive and the vendor is responsible for all tasks required to provide working redundant E911 servers to the university.

- Create the administrative users

- System administrator—Create and configure the Cisco Emergency Responder (CER) groups:
  - a. Create the (CER) group.
  - b. Configure the CER group's telephony settings.
  - c. Add CER servers to the CER group.
  - d. Enter the product license key. See.
  - e. Identify and configure the Cisco CallManager clusters whose emergency calls this CER group will handle.
  
- Identify the switches and configure the connection to them:
  - a. Enter the SNMP read community strings.
  - b. Define the schedule Emergency Responder should use for updating information from the switches.
  - c. Identify the switches that can have phones connected to them.
  - d. Run the switch-port and phone update process so that Emergency Responder can identify the ports on the switches and whether phones are attached to them.
  
- ERL Administrator—Identify your onsite alert (security) personnel, create the emergency response locations (ERLs), assign them to phones, and transmit your ALI data to your service provider.
  - a. Identify the onsite alert (security) personnel that should receive alerts from Emergency Responder.
  - b. Create the ERLs.
  - c. Assign the ERLs to switch ports.
  - d. Add phones that Emergency Responder does not directly support.
  - e. Identify the un-located phones and work with the network administrator to resolve problems that are preventing Emergency Responder from locating these phones.
  - f. Export the ALI and transmit it to your service provider. Work with your service provider to determine transmission requirements.

## Telephones

For this project the university has purchased 800 Cisco 7940 VoIP telephones. The phones will be configured to auto register upon connection to the network. The vendor will be responsible for populating the Call Manager local database with the extension and user information. Call Manager will be configured to use the local database for extension information related to a user and will use Active Directory to authenticate those users who wish to make changes to their telephone options.

## **Knowledge Transfer/Training:**

At the end of the vendor's commitment the vendor will perform a knowledge transfer with key members of the university's staff who will have responsibility for the VoIP system. This knowledge transfer will cover Call Manager configuration, navigating through Call Manager screens, Unity configuration and navigation, E911 configuration and navigation and overall system implementation. This session will be limited to three hours and will be conducted by an adequate number of technical people to cover all of the different functions of the system.

## **Alternate 1:**

The vendor will install and configure a Microsoft Active Directory server using hardware provided by the university. The server will be configured as a stand alone Windows domain which will not be integrated into the university's current Active Directory forest. The vendor will also be responsible for assisting university personnel in developing a process for initially populating this directory with the information related to the 800 students who will be using the VoIP system and also creating a process to keep this directory synchronized with the university's PeopleSoft Student Record System. The university's LDAP directory is the primary directory for all university faculty, staff and students. This directory is updated nightly from the university's personnel and student records systems and it must in turn update the Active Directory used by the VoIP system.

If this alternate is chosen the vendor will also be responsible for the installation and configuration of a Microsoft Exchange server to be used as the message store for the Unity Voice Mail server. The server will be built on hardware provided by the university. Exchange licenses are included in the per seat charge for Unity.

### **Note:**

Even though the initial number of VoIP users is 800, Active Directory and Exchange will be configured to support 4800 mailboxes. The university will purchase the seat licenses for Active Directory and Exchange necessary for a 4800 user install. This will put the university in a better position for adding the remainder of the student residents to the VoIP system in September '07.

## **Miscellaneous:**

### **University responsibilities:**

- Provide rack space for servers with sufficient power
- Procure PRIs or FlexPaths and have them ready for use at time of installation of gateways.
- Provide a staff person to assist with logistics and network configuration

- Provide all fiber and copper patch cords along with network diagrams that show how devices are to be connected to the university's network
- Provide powered switches in all closets where IP phones will be connected.
- Provide a work space for vendor's staff
- Create subnet ranges for phones in DHCP server with option 135
- Procure and install powered switches in the closets in the new residence halls.
- Procure analog POTS lines to connect Unity VM server to Verizon.
- Provide hardware and software for Active Directory and Exchange servers.
- Provide Microsoft Active Directory and Exchange software and licenses for 4800 users.

### **Long Distance Dialing:**

Students living in the residence halls who wish to make long distance or toll calls need to use a calling card. The university currently has no long distance carrier for resident student service. Call Manager will be configured to allow students who want to make a long distance call to use a pre-paid calling card or credit card.

### **Testing:**

The vendor is responsible for testing all components of the system to ensure that they function properly under all circumstances. Testing will involve testing the backup function in both directions, back up and restore. It will also involve placing the following types of calls successfully:

- Five digit calls to other Centrex users not on the VoIP system.
- Local instate calls
- Long distance calls
- E911 calls
- Calling card calls

The functions listed in Appendix A must also be fully operational.

The vendor must also be able to demonstrate that the telephones will auto register and that a user can send and retrieve voice mail.

The vendor will also demonstrate that E911 calls flow through the system and are answered at the correct PSAP. Test E911 calls will be coordinated with the PSAP. In the event of failure of any piece of hardware in the VoIP system it is imperative that the failed system be restored to production as quickly as possible. For this reason the vendor is asked to simulate a hardware failure on each box and then restore Call Manger, Unity, and the E911 servers individually from backup as if each one had failed. This exercise will prove that the backup procedures developed for these servers will in fact work when needed.

## **Documentation**

The vendor will provide a Visio diagram showing all network connections and hardware along with IP addresses. The vendor will also provide complete documentation including passwords and operation manuals for all servers provided as part of this engagement.

## **Acceptance Criteria**

The project will be considered accepted by the university when all testing has been completed to the satisfaction of university personnel and all documentation has been provided to the university.

## **Payment Schedule:**

One third of bid amount after Call Managers and PSTN gateways are installed and functioning.

One third of bid amount after Unity servers and E911 servers are installed and functioning

Final one third of bid amount will be paid upon acceptance of the project by the university.

## **Quality of Service for Voice Packets:**

QOS for voice packets will be implemented using Diffserv Code Point (DSCP) on all layer three devices connecting voice subnets and the PSTN Gateways. The vendor will make recommendations to the university regarding the preferred method of implementation. And university staff will make the necessary changes to university equipment.

## **Vendor qualifications:**

The successful bidder will have at least 3 years experience installing Cisco VoIP systems with one or more systems comprising 1000 Cisco IP phones plus Unity VM and PSTN gateways. The vendor must also have on staff someone with at least three years experience in traditional telephony and be available for consultation and questions from on-site technicians and engineers. The vendor will provide a project manager to be the focal point for project management. The vendor will have on staff at least one person with the Cisco CCIE certification.

## **Hardware:**

The vendor will provide the hardware specified to complete the project and provide the university with a fully functioning VoIP system. The hardware provided will be new

and come with the standard Cisco 90 day warranty. The maintenance for this hardware will be added to the university's overall maintenance contract with Cisco. Please provide pricing for the hardware below.

**Trade in equipment:**

The university will be trading in Cisco equipment toward the purchase of the 6509 switches specified in this project. Please contact the university's Cisco sales representative: Chris Kuselias at 603-896-5051 for the trade in amount.

**PRICING**

**Base Bid Pricing:**

**Please provide pricing on the following hardware/software components:**

**Note:** Unless specifically requested please don't add maintenance into the prices of equipment or software. The university has a maintenance contract to which these items will be added.

**QTY            Description**

2    Cisco 6509 switches with the following    \$ \_\_\_\_\_  
Configuration.

Enh C6509 Chassis, 9slot, 15RU, No Pow Supply, No Fan Tray  
Part # WS-C6509-E  
Cisco CAT6000-SUP720 IOS ENTERPRISE SERVICES SSH  
Part # S733ESK9-12218SXF  
Catalyst 6500 / Cisco 7600 Supervisor 720 Fabric MSFC3 PFC3B  
Part # WS-SUP720-3B  
Cat6500 Sup720/Sup32 Compact Flash Mem 128MB  
Part # MEM-C6K-CPTFL128M  
c6svc-wlan-k9w7.1.4.1.bin  
part # SWLSMW7K9-14  
Catalyst 6509-E Chassis Fan Tray  
Part # WS-C6509-E-FAN  
Catalyst 6500 3000W AC power supply  
Part # WS-CAC-3000W  
Power Cord, 250Vac 16A, twist lock NEMA L6-20 plug, US  
Part # CAB-AC-C6K-TWLK

- 2 Cisco Communications Media Module \$\_\_\_\_\_
  - Part # WS-SVC-CMM
  
- 2 6-PORT T1 INTERFACE PORT ADAPTER \$\_\_\_\_\_
  - Part # WS-SVC-CMM-6T1
  
- 2 Cisco Emergency Responder servers \$\_\_\_\_\_
  - With the following configuration:
    - HW Only MCS-7835-H1 with 2048MB RAM and Two 72GB SCSI HD
    - Part # MCS-7835-H1-IPC1
    - CER 1.2 software on CD, with 100 user licenses
    - Part # SW-CER-1.2-SVR=
    - SW APP SUPP + UPGR Cisco Emergency Responder Server 1x
    - Part # CON-SAU-CERSVR1X
    - CER 1.2 user license, for 1000 phones
    - Part # KEY-CER1.2-1K=
    - SW APP SUPP + UPGR CER 1.x 1,000 User license
    - Part # CON-SAU-CER1K-1X

**Please provide pricing on the following labor components:**

Install and configure three Call Managers \$\_\_\_\_\_

Install and configure one Unity server for 800 users \$\_\_\_\_\_
   
(Exchange and AD will reside on separate servers)

Install and configure two E911 servers \$\_\_\_\_\_

Install and configure two PSTN gateways \$\_\_\_\_\_
   
(university personnel will assist)

Contingency: \$20,000.00

Miscellaneous costs: (please list below) \$\_\_\_\_\_

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Project Sub Total \$ \_\_\_\_\_

Trade in amount \$ \_\_\_\_\_

Total Base Bid \$ \_\_\_\_\_  
**(Please include contingency in total bid amount)**

**Alternate 1:**

Please provide pricing for:

1. Installation and configuration of two redundant Microsoft Exchange servers to support 4800 user voice mail boxes for a Cisco Unity Voice Mail server. Hardware and Software provided by URI. \$ \_\_\_\_\_
2. Installation and configuration of two redundant Microsoft Active Directory Servers for 4800 users. Hardware and Software provided by URI. \$ \_\_\_\_\_

## Appendix A

### List of Centrex Features

**ACCOUNT CODE CAPABILITY**--An adjunct to station message Detail Recording, which provides a station user with the capability to enter a cost accounting or client billing code into the system following completion of dialing a long distance call.

**ADAPTIVE DIGITAL PULSE CODE MODULATION (ADPCM)**--The ability to multiplex the channels of a point-to-point T-1 to increase the amount of communication paths available.

**ADD-ON CONFERENCE**--Almost always used in conjunction with Consultation Hold, allows a station user to add a third party to an existing two-party conversation.

**ANSWER HOLD**--Working in association with an incoming or camped-on call, the station user, upon hearing the appropriate camp-on or call waiting tone, may depress a feature Button or flash the switchhook on the station instrument which places the ongoing call on hold and immediately establishes a connection to the waiting call.

**ANSWER NUMBER IDENTITY (ANI)**--The ability to display the originating party's number on a display phone and include the number as a part of the SMDR field.

**AREA/OFFICE CODE RESTRICTION**--The ability of the switching system to selectively identify 6-digit Area and Office Codes, and either allow or deny passage of long distance calls to those specific 6-digit codes. This type of restriction is usually provided on a trunk group basis, and on an "allowed" rather than "denied" basis.

**ATTENDANT CALLED NUMBER DISPLAY**--This feature is utilized when the switching routes a restricted station's dialed call, whether local or toll, to a Switched Loop Console on an intercept basis. A visual display of the dialed number, as well as the originator's class of service and station number, permits the attendant to intercept, challenge the caller, and to allow or deny the call completions. In effect, the attendant may permit the completion of such calls by overriding the class of service restriction, thus eliminating the need for the station user or the attendant to re-dial the called number.

**AUTHORIZATION CODES**--The ability for a user to input a code to place a call otherwise restricted. This code is also included on the SMDR record.

**AUTOMATIC CALL DISTRIBUTION SERVICE**--Indicates the ability of PBX OR CENTREX system to offer uniform distribution of incoming calls to station users (called agents) on a random basis or to the station which has received the least amount of calls. This facility generally includes the capabilities to queue, on a first-in, first-out basis, a predetermined number of delay announcements, to identify incoming calls, to transfer to Supervisory Positions, to transfer to other groups of agents and to originate non ACD calls.

**AUTOMATIC CALLBACK**--Frequently associated with the Station Camp-On feature, this facility is not necessarily restricted to the association. Also, this feature is normally provided with a time-out condition which completely cancels the feature after a predetermined time period. Some systems provide this facility to all stations within the system, while others provide it to stations which are specifically class marked for such capability. When a station initiates a call to another station which is busy, this feature is

activated at the calling station by dialing a single digit or depressing an instrument Feature Button on receipt of busy signal. After the calling station has activated the feature, the user merely hangs up. While in activation, this feature does not prevent the calling station from either initiating or receiving other calls. When both parties (calling and called) become free, the system automatically rings and connects both parties.

**AUTOMATIC RINGBACK ON HELD CALL**--When a station user or attendant places a given line circuit on hold and goes on-hook, the held line will automatically revert to an incoming call condition after a prescribed period of time.

**BANDWIDTH ALLOCATION ON-DEMAND**--The ability of the switching system to aggregate separate DS-0 channels together to accommodate transmission services between network locations--such as LAN-to-LAN connections, video conferencing, etc.--that require bandwidths above 64 Kbps.

**BATTERY BACKUP INDICATION**--Notifies the attendant or system administrator when the system is operating off of batteries (for systems that are equipped with battery backup).

**CALL FORWARDING**--Allows a station user to program at any time any internal station number (or the attendant), and when activated by the station user, all incoming calls to this station will be automatically re-routed to that preprogrammed number.

**CALL FORWARDING - BUSY LINE**--Automatically reroutes incoming Direct Inward Dialing (DID) calls, attendant processed calls, incoming CCSA calls, or direct terminating Tie Line Calls, directly to attendant or predetermined secondary station when the called station is busy.

**CALL FORWARDING - DON'T ANSWER**--Similar in function to the "busy line" version of Call Forwarding, automatic re-routing of a call, D.I.D., or alternate facility to the attendant or a preprogrammed secondary station occurs when a given station doesn't answer within a prescribed time interval.

**CALL FORWARDING - DON'T ANSWER/BUSYLINE ON A PREVIOUSLY FORWARDED CALL**--In essence, the ability to forward a previously forwarded call.

**CALL FORWARDING EXTERNAL**--The ability to forward a call to a telephone number external to the PBX OR CENTREX; local or long distance.

**CALL FORWARDING-SOURCE DEPENDENT**--Allows the system to be able to be pre-programmed by extension to route calls when an extension is busy, not answered, or in a do not disturb mode to different destinations based on a source being internal or external.

**CALL PARK**--Once a call is placed in the "park" condition, any station within the system may retrieve it by either dialing the appropriate access code or by depressing a special Feature Button on a station instrument.

**CALL PICK-UP**--A user can dial a series of digits to answer a call ringing on another phone.

**CALL WAITING**--A user will hear an audible tone to indicate an additional call is waiting. By depressing the flash, the first call is placed on hold while the other call is handled.

**CALLING NUMBER DISPLAY**--Indicates that a Station Alphanumeric Display or adjunct display unit identifies, via station number, an internal calling party only.

**CIRCULAR HUNTING**--Regardless of whether a given rotary hunt station group is arranged for consecutive or nonconsecutive hunting, this arrangement allows the hunting (for an available nonbusy station) to start with the called station line and then proceed in a prearranged order to test all lines in the group, completing the incoming call to the first idle station line.

**CLASSES OF SERVICE**--An industry term referring to the capability of assigning to each station within a PBX OR CENTREX system a variety of allowed or denied types of calls on both an incoming and an outgoing basis. In some systems, this further extends to "programming" specific stations for access to specialized system features. Each PBX OR CENTREX system has a predetermined number of such "classes" available for assignment to any station.

**CONDITIONAL ROUTING OF INCOMING CALLS**--System will send or route a call to a specific location based on the ANI received.

**CONSULTATION HOLD-ALL CALLS**--By activating an initiating command a Central Office call is automatically placed on "hold," and the station user may then proceed to establish connection with another internal station or outside party, and after speaking with the "consulted" party, the originating station may (1) return to the Central Office call initially "held", (2) reactivate the initiating command, thereby effecting Add-On Conference or (3) Hang up and effect transfer of the Central Office call to the consulted party.

**DATA PRIVACY**--When activated by a station user, the system will deny to other station users the ability to use various overriding features to gain access to this busy line when being used for data transmission or private conversation purposes. The feature is activated by the station user whenever a call is originated for such purposes and is automatically canceled when the station goes on-hook.

**DIRECT INWARD DIALING (DID)**--A basic facility allowing incoming calls from the public telephone network to reach specific lines without attendant intervention or assistance.

**DIRECT INWARD SYSTEM ACCESS (DISA)**--Enables selected outside callers the capability to dial from the switched network directly into the PBX OR CENTREX and gain complete access to facilities without attendant assistance. The caller dials a 7 or 10 digit DISA directory number or an INWATS DISA number to access the PBX OR CENTREX. Automatic answer is provided to the caller prompting either for an authorization code or presenting dial tone. The caller can then access facilities depending upon Network Class of Service restrictions set against the user's authorization code or against the DISA number itself. Full call detail is provided by account code.

**DIRECTED CALL PICK-UP**--A station user is able to answer calls ringing on any other station within the PBX OR CENTREX by dialing a unique answer code of that particular station to be answered.

**DISTINCTIVE RINGING**--Provides a unique patten of station ringing to permit the user to distinguish internal from external calls.

**EXECUTIVE BUSY OVERRIDE**--Preselected stations are provided this facility via Class of Service to enable them, upon encountering busy signal on a call to an internal station, to dial a single digit (or activate a station instrument Feature Button) and gain access to the existing conversation. This "break-in" feature normally provides a warning tone to the parties engaged in conversation.

**EXTENSION ASSIGNABLE ACCOUNT CODES**--In essence, this feature allows account codes to be used in conjunction with long distance calling only to be able to be activated from the specific station it is assigned to.

**HOST INTERACTIVE CALL ROUTING (two-way)**--Ability to send ANI information to a host computer and route a call based on information received from host.

**HOT-LINE STATIONS**--Single line station instruments are specially programmed to dial a specific internal station number of "0" for the attendant when the station user goes off-hook.

**INTEGRATED VOICE/DATA TRANSMISSION**--Simultaneous transmission of voice and data from a single station location over the same wiring. No modems are required for intra-organization transmission and modem pooling is possible for external data transmission.

**INTERCEPT TREATMENT-ATTENDANT**--For calls that cannot be completed by the switching system, automatic routing takes place to the attendant.

**INTERCEPT TREATMENT-RECORDED ANNOUNCEMENT**--For calls that cannot be completed by the switching system, automatic routing occurs to a recorded announcement which provides the caller with a message to that effect.

**INTER-GROUP CALL PICKUP**--A station user may dial a special code to answer any incoming calls ringing in another predesignated call pickup group.

**LAST NUMBER RE-DIAL**--Memory contained either within the PBX OR CENTREX system common equipment or within the station instrument enables the station user to dial a special access digit and activate a Speed Calling treatment of the last number which was dialed from that station instrument.

**LEAST COST ROUTING**--Usually found only in processor-controlled systems, this facility gives to the switching system (via varying degrees of sophistication) the responsibility to select the most economical circuit to use on outgoing calls initiated by stations.

**LOOK-AHEAD ROUTING**--This entry specifies whether the PBX OR CENTREX can determine the busy status of network facilities before attempting to route the call.

**MALICIOUS CALL TRACE**--The ability to pre-program the switch. When an obscene or malicious call is received, a code can be dialed in the system and the internal calling party is then printed out on the call detail recording system

**MEET-ME CONFERENCE**--A conference arrangement which allows any stations dialing a specific access code at a predetermined time (or upon direction by an attendant or a secretary) to be connected in conference.

**MESSAGE WAITING**--The ability to activate a message waiting lamp on the user's telephone from a number of designated positions.

**MULTIPLE TRUNK GROUPS**--An indication that the switching system is capable of being equipped (and accessed accordingly by station dialing) for more than one group of outgoing trunk circuits.

**NETWORK TRUNK OPTIMIZATION**--Network Trunk Optimization is a network feature that allows the switching system to reconfigure the path of a call along the best route between two or more locations. For example, when a call has been established as a result of a call transfer by a third party, centralized voice mail system, or an attendant, the connection may not optimize the use of network facilities. This feature will determine the optimum route between systems and release the redundant path(s) when both a transferred/forwarded and terminating station are within the same network location.

**NORTH AMERICAN DIAL PLAN**--The selected system must accommodate the proposed North American Dial Plan changes which include the expansion to all digits in the NPA/NXX codes. Please state any problems that this may pose for your system in terms of least cost routing or station restrictions.

**OFF HOOK ALARM**--This feature would notify a predetermined location that a particular station has been off hook for more than 50 seconds. (This is automatically recorded on C.D.R. unit.)

**OUTGOING TRUNK CAMP-ON PRIORITY**--Applying to any trunk group within the system, including such circuits as WATS, Foreign Exchange Lines, etc., this facility allows the station user, upon encountering busy signal from the queue. This priority queuing may be assigned on a Classes of Service basis, or the station user may activate this feature by dialing the appropriate code or by depressing a Feature Button for this service.

**RECALL DIAL TONE**--In some systems, when a station user activates a feature which requires presentation of a "second" dial tone, the system provides a unique audible indication when dial tone is first given to the caller to assure the user that an operating feature is being implemented rather than presenting the user with "normal" dial tone.

**SPEED CALLING-STATION**--Allows station users to assign abbreviated codes to certain frequently called numbers, usually associated with outgoing Central Office Calls.

**STATION FORCED-BUSY**--A facility which allows a station user, upon dialing a special code, to "busy-out" the station for temporary periods of time when the user does not wish to be disturbed. A corresponding special code must be dialed to re-establish service to the station. While in activation, this facility does not prevent the station from initiating calls.

**STATION HUNTING-CONSECUTIVE**--When stations are arranged in consecutively numbered "groups" and this facility is provided, an incoming call to any of those stations within the group, if busy, will progressively "search" through the remaining stations within that group and will establish connection to the first available (nonbusy) station.

**STATION MESSAGE DETAIL RECORDING**--Provides a record of the calling station or attendant number, starting time, call duration, all digits of the called number and the specific trunk or trunk group used for outgoing calls.

**TIE TRUNK ACCESS**--Commonly known as Tie Lines, these are special trunk circuits which interconnect, on a dialable basis, two PBX or Centrex systems.

**TRAFFIC REPORTS**--Access by customer to regular detailed data on the traffic carried by the switching equipment, including peg counts, feature usage, and overflow measurements.

**TRAVELING CLASS OF SERVICE**--When automatic route selection or uniform numbering selects a tie trunk to a distant tandem PBX OR CENTREX, the calling party's class of service can be sent over the tie trunk. It is then used by the distant system to determine the best available facility consistent with the user's calling privileges.

**TRUNK-TO-TRUNK CONNECTIONS-ATTENDANT**--An attendant is able to establish a connection between any two trunk circuits which terminate in the PBX OR CENTREX system.

**TRUNK-TO-TRUNK CONNECTIONS-STATION**--A system may provide this feature in either or both of two versions. (1) A station already in connection with either an incoming or outgoing trunk circuit is able to use the Add-on Conference circuitry to effect a conference with another trunk circuit. (2) Once a 3-way conference is so established, the system will maintain control and supervision of the two trunk circuits in connection.

## Appendix B

### Octel Voice Mail commands

#### 1. Log in:

Dial 4-5555 from on-campus  
or 874-5555 from off-campus.  
Enter the # key and your  
voicemail box number.  
Enter your personal security  
code; to initialize a new  
mailbox, use **111597** as the  
security code.

#### 2. Listen to your messages:

Press **5**. While listening to a message, you may perform the following  
options:  
Press **2** to back up the message by 4 seconds.  
Press **2 2** to back up the message to the beginning.  
Press **3** to erase the message; the message will be erased  
automatically if played to the end.  
Press **4** to go forward in the message by 4 seconds.  
Press **5** to listen to the next message.  
Press **1 5** to listen to the last message.  
Press **7** to save the message.  
Press **8** to hear the date and time the was message received.

#### 3. Log off:

Press **9** to initiate the logging off procedure and to hear how many messages will be  
erased.  
Press **9** again to end the session.

#### 4. Other Options (after you've logged in to your mailbox):

##### To hear saved messages:

At the **ready** prompt, press **1 9 2**; you must press **3** to erase a saved message.

##### To change your personal greeting:

At the **ready** prompt, press **4**.

Press **5** to listen to your greeting.

Press **6** to record a new greeting, followed by the # sign.

##### To change your security code:

At the **ready** prompt, press **1 6 2**.

Enter your new code, followed by the # sign.

##### To change your name:

At the **ready** prompt, press **1 6 8**. After recording your full name, press the # key to save  
the change.