June 29, 2012

To: Chuck Rowley, Associate Vice Chancellor

Subject: Internal Audit of Campus Network Renewal and Replacement Plan

Ref: R2012-10

We have completed our audit of the campus network renewal and replacement plan in accordance with the UC Riverside Audit Plan. Our report is attached for your review. We will perform audit follow-up procedures in the future to review the status of management action. This follow-up may take the form of a discussion or perhaps a limited review. Audit R2012-10 will remain open until we have evaluated the actions taken.

We appreciate the cooperation and assistance provided by your department. Should you have any questions concerning the report, please do not hesitate to contact me.

                                    Michael R. Jenson
                                    Director

xc: Audit Committee
          C&C Chief Financial and Administrative Officer Gupta

UNIVERSITY OF CALIFORNIA AT RIVERSIDE

AUDIT & ADVISORY SERVICES

MEMBER OF ASSOCIATION OF COLLEGE & UNIVERSITY AUDITORS

INTERNAL AUDIT REPORT R2012-10

CAMPUS NETWORK RENEWAL AND REPLACEMENT PLAN

JUNE 2012

Approved by:

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Noahn Montemayor   Michael R. Jenson
Principal Auditor   Director

UC RIVERSIDE
NETWORK MANAGEMENT
INTERNAL AUDIT REPORT R2012-10
JUNE 2012

I.   MANAGEMENT SUMMARY

Based upon the results of work performed within the scope of the audit, it is our opinion that, overall, the system of internal controls over the campus network renewal and replacement plan and related processes is operating satisfactorily and is generally in compliance with University policies and procedures.

Information technology is an integral part of the University's education, research, and public service programs. At the core of increasingly complex technologies are broadband communications networks that enable high quality communications, advanced information management, interconnectivity, and interoperability among people, networks, information systems, and devices.

Computing & Communications (C&C) is charged with designing and operating a robust, high capacity, high speed, advanced, and reliable campus network infrastructure as well as supporting access to the California Research and Education Network (CalREN-2) and the Internet. C&C also provides for the availability of the campus network to authorized users from off-campus resources via the UCR Virtual Private Network (VPN), remote access service, and wireless network.

User demands on and off campus are constantly evolving, and maintaining a network infrastructure to meet those demands has become a very complex process.

Positive observations included:

*   UCR considers the network a strategic resource, essential to its research, teaching, and public service mission as well as to campus business processes. Accordingly, C&C is committed to providing a network that is reliable, secure, scalable, functional, and robust.

*   The Campus Committee on Sales and Service Activities (COSSA) has approved the new Communication Infrastructure Fee (CIF) which consolidates and replaces the former Communications Worker Fee and the Telephone Line Charge. The CIF is the recharge mechanism that supports the renewal, expansion, and operations of UCR's voice and data network.

*   C&C provides redundancy measures for the campus network and has a disaster recovery plan for networking capabilities.

We observed an area that needs enhancement to strengthen internal controls and/or effect compliance with University policy. The annual cost of the campus network renewal and replacement plan is not adequately funded.

These item is discussed below. Minor items that were not of a magnitude to warrant inclusion in the report were discussed verbally with management.

II.   PURPOSE, BACKGROUND, AND SCOPE

A.   PURPOSE

UC Riverside Audit & Advisory Services (A&AS), as part of its Audit Plan, reviewed the effectiveness of the network renewal and replacement plan as well as selected management practices and internal controls related to maintaining the campus network infrastructure and ensuring compliance with University policies and procedures, and any applicable local, state, or federal laws and regulations.

B.   BACKGROUND

C&C is UCR's central technology organization. C&C manages the campus network, including the border router that connects the campus network with the internet, the subnets with critical administrative servers and applications, residence hall networking which provides students access to UCR's high-speed network, and the individual subnets at the colleges and administrative offices.

C&C operates campus routers and switches, maintains certain firewalls to protect department servers and desktops from intrusion, and supports core network based people/machine identity services including the Enterprise Directory, Domain Name Service (DNS), and Dynamic Host Configuration Protocol (DHCP).

C.   SCOPE

A&AS reviewed selected areas of network management for compliance with University policies and procedures as well as generally accepted information technology principles and internal control objectives.

The scope of the audit was principally limited to reviewing the campus network renewal and replacement plan and related processes to evaluate whether C&C has adequately identified and is managing risks associated with ensuring network growth and renewal, providing continuous network upgrades, and maintaining flexibility to meet future needs.

D.   INTERNAL CONTROLS AND COMPLIANCE

As part of the review, internal controls were examined within the scope of the audit.

Internal control is a process designed to provide reasonable, but not absolute, assurance regarding the achievement of objectives in the following categories:

*   effectiveness and efficiency of operations
*   reliability of financial reporting
*   compliance with applicable laws and regulations

Substantive audit procedures were performed during May through June 2012. Accordingly, this evaluation of internal controls is based on our knowledge as of that time and should be read with that understanding.

III.   OBSERVATIONS, COMMENTS, AND RECOMMENDATIONS

Funding the Campus Network Renewal and Replacement Plan

The annual cost of the campus network renewal and replacement plan is not adequately funded.

COMMENTS

The campus network renewal and replacement plan, with an annual cost of about $1.7 million, appropriately recognizes the need for flexibility to acquire new technology and upgrades and to respond to the limited useful life of network assets. However, the CIF – the primary recharge mechanism that supports UCR's increasingly converged network infrastructures for data, voice, and/or video – could not be set at a level that would raise enough funds to support the annual cost of the renewal and replacement plan. Network deferred maintenance, or the gap between network renewal and replacement (R&R) plan costs and R&R expenditures funded by the CIF, amounts to more than $1 million annually. Inadequate funding may be a barrier to the continuous delivery of high-quality network services.

RECOMMENDATIONS

Management should consider creating an appropriate and stable funding model or cost recovery system that would support a sustainable campus communications and data networking infrastructure.

MANAGEMENT RESPONSE

C&C concurs with the recommendation and will continue to dialogue with campus leadership and COSSA (Committee on Sales and Service Activities) about appropriate network renewal and replacement funding. Additionally, during these fiscally constrained times, C&C continues to examine any / all opportunities to obtain supplemental funding to support the campus network. For example, the campus Student Technology Fee Advisory Committee recommended a $300,000 annual allocation to expand, enhance, maintain, and renew UCR's wireless network for the next six years and the proposal was approved by the Provost in June.