University of California
Application for 2009 Larry L. Sautter Award for Innovation in Information Technology

University of California, Riverside
Acorn – Off Campus Data Facility

Project Team Members
Josee Larochelle, Shelley Gupta, Phyllis Bruce, Mike Kennedy, Linda Gutterud, Glenn Bradley, Charlene Chan, Toni Henderson, Mike Kennedy, Josee Larochelle, Vicki Long, Jonathan Ocab, Conley Read, Julie Slusser, William Strossman, Chris Webber

Overview
UCR has been expanding in all areas over the last 15 years to meet the needs educational and research needs of California. During this same 15 year period, there has been an unprecedented adoption and creation of new technology and technical services/programs in support of the overall mission of the campus. Of course, this IT growth is mirrored throughout the UC system. As servers were deployed to meet this growing enterprise need, they were placed in UCR’s now aging campus data center.

These technical services/programs are still proliferating. They are being offered by both Computing and Communications (C&C), at the organization and department level. These services/programs run on enterprise level servers with enterprise level needs. Enterprise services generally need to perform well under extreme use, be available 24/7 and remain absolutely secure. A very large part of achieving these goals is related to their physical environment. Placing these servers in an appropriately designed data center with very specific cooling requirements, generator/UPS protected-power in a physically secure building is a prerequisite.

UCR’s data center has been in existence, first as a machine room and then a data center, for over 30 years. For most of those 30 years, that space was sufficient to handle campus needs. About 5-7 years ago, UCR
began reaching the limits of the facility in space, HVAC and electrical capacity (UPS, generator and incoming power). Today, UCR has exceeded the limits of the facility and is in need of a larger facility with greater capacity.

Building an additional or new data center is a very expensive and time consuming endeavor. Amid a depressed economy, it is impossible to fund such a project. An opportunity to outsource campus data center expansion needs to a state-of-the-art facility came about in 2008. This facility is approximately 2 miles away from our campus.

Being able to afford the space, power and racks is only part of the expense when going off-site to outsource data center needs. The other very large expense is connectivity back to the campus. It is especially expensive because of a need for bandwidth that mirror that of the UCR campus backbone and production server needs. The goal was to connect the remote data center to the campus via a 10 gig fiber link. Commercial costs for this type of bandwidth would far exceed UCR’s ability to pay which would impact the viability of this effort.

*Through some very creative work and negotiating, C&C has been able to build out a private 10 gig link back to the Acorn data center at zero incremental costs!* Interest in the facility has been very strong by many departments since UCR has long since run out of room for co-location facilities on the campus. As well, it will allow C&C to keep expanding its Enterprise Services now. All other interested departments on campus have agreed to pay their share of the expense for a caged area with lockable racks as needed/consumed. Monthly expenses are based on power consumption which is measured by the data facility managers and billed back to the customer (department) on a monthly basis.

**Highlights**

- This is a state-of-the-art facility with a lot of available capacity.
- The off-campus data facility is connected to the campus via a 10Gps link.
- The 10Gps link is campus owned so there are no incremental costs.
Summary

This project is a good example of what can happen when UC technology and UC business acumen combine in the right measure. In this case, C&C has been able to maintain its technical growth, plan for future growth, all without the very large capital investment or wait time required for a project of this size. Moreover, it has been able to create a system to meet the needs of every other department on campus through a network that is still wholly managed by the C&C / Network Operations Group end-to-end. Especially innovative is the private 10Gps link and its no incremental costs. The lack of those expenses adds enormous value to this off-site project. Normally, leasing a 10Gps link would be a very large recurring expense. In a sense, C&C has been able to virtually add on to our data center in a most cost effective way in a time when it is needed most and with very large savings over an extended time. There was an enormous amount of work and creativity that went in to this effort with absolutely stellar results.
Testimonials

“The relationship between UC Riverside and Acorn Technologies is a fortuitous one. The combination of a hardened data center with available space, management who understood the university's requirements, and the availability of dark fiber optic connectivity between the campus and the Acorn Tech Data Center allowed the expansion of UCR's IT operations beyond the current space and power constraints on campus. Acorn provides a high level of security and redundancy and has the capacity to provide space for UCR for some time to come.”

Bob Grant / Director of Technology / Computing and Communications

“As the operation of many business and teaching units become more dependent on IT systems, the ACORN facility provides the ability for other departments to provide a safe, secure environment for mission critical systems and servers at a fair and reasonable price to insure the sustainability of core university operations”.

Kipp Smith / Director of VCA IT Services

“I am incredibly grateful to the C&C team that negotiated the terms and conditions, MOUs, etc. that are needed to support this partnership with Acorn. We have a virtually no cost 10 GBs link to the facility, wonderful discounts on racks, and no recurring costs for cages. I have to think UCR’s success in this area contributed to the final UC agreement with SDSC concerning co-location space. UCR and C&C demonstrated that this can be done in a scaleable, meaningful way.”

Charles Rowley / Associate Vice Chancellor / Computing and Communications

Submitted by:
Larry McGrath
Director of Computing Support Services
Computing & Communications
University of California, Riverside
951-827-5585
larry@ucr.edu