

UCI Network Upgrade Needs

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This document summarizes immediate and near-term infrastructure upgrade needs in UCI's network. There is flexibility with respect to near-term upgrades, which can be phased in over the next 1 to 5 years. The immediate needs should be addressed during 2009.

IMMEDIATE NEEDS

Off-campus Network Connectivity Failover

Risk

Currently all UCI and UCIMC connectivity to the Internet depends on a single device known as the "border router" and its associated security equipment. The router is highly reliable, but if it fails, UCI could be disconnected from the rest of the world for 12 hours or longer. We need to add a second router to provide uninterrupted access during such an event (\$260k).

Wireless Networking Service Failover

Risk

The majority of UCI's wireless networking is provided by a single wireless service module chassis. If this device fails, campus wireless service could be down 12 hours or longer. A second chassis and an additional service module must be added to maintain wireless service during a failure (\$100k).

Return Telephone System to a Manageable State

Risk/Performance

Ericsson has not supported the version of the telephone system running at UCI since 2005. The system has become difficult to maintain and expand. An upgrade to the new version of the system that removes current limitations is overdue. The new version operates on standard network protocols and will use our existing fault-tolerant network backbone rather than an independent network. It removes the single point of failure that exists in the current system's "group switch" in Central Plant. It uses the standard SIP telephone protocol to integrate with other systems, Internet-based call routing, and non-proprietary desktop telephones. The new system should be installed during 2009-2010 at the latest (\$845k).

NEAR-TERM NEEDS (1-5 YEARS)

Additional 1 Gigabit Connectivity in Key Buildings

Performance

The majority of the network connections at UCI operate at 100 megabit/second, but researchers increasingly require 1 gigabit/ second access to the network. Although it may not be cost effective to make gigabit access available throughout the campus, it is important to make it available where needed. Providing additional gigabit connections in Engineering, Biological Sciences, Medical Sciences, and Physical Sciences buildings and a few additional campus locations would serve a majority of the need (\$350k).

Upgrade Campus Internet Connection to 10 Gigabit

Performance

UCI's connection to the Internet is currently provided by two 1 gigabit/second links. These links are shared by UCI's research, administrative, and educational network applications. As data transfer demands increase, more bandwidth will be required. UCI will need to upgrade to 10 gigabit/second connections, as several other UC campuses have done already (\$225k).

Replacement of Remaining 10 Megabit Switches

Performance

There are 142 remaining 10 megabit/second network switches (Cisco C1900s) serving campus locations. They need to be replaced to provide everyone with the campus standard service of 100 megabit/second. They are generally dependable devices but their reliability will degrade over time (\$110k).

Complete Indoor Wireless Coverage

Coverage

Wireless coverage on campus is lacking, especially in Medical Sciences. Coverage should be added to all indoor areas that are not currently covered to ensure wireless is available for all applications (\$75k).

Failover Network Service for Campus Buildings Without

Risk

All major UCI buildings have two links to the network backbone. This means that in the event of equipment failure or a fiber cut the building will maintain connectivity during repair efforts. There are a number of smaller classroom facilities and other buildings that are in need of a second failover link (\$400k).

Replacement of Unsupported 100 Megabit Switches

Risk

UCI has 247 older 100 megabit/second network switches (Cisco C3500s) that provide connectivity to many buildings and end-users. Cisco ended support for them in July 2007, which means no further security or other updates will be made available. They must be replaced over time (\$500,000).

Replace Low Speed Cable/Jacks in UCI buildings

Performance

Many UCI buildings still have lower grade cable and/or jacks that cannot support high-speed (1 gigabit/second) connections. All of this cable will need to be replaced in the future as the need for high-speed connections expands. In addition, many of these buildings require additional cabling to increase the number of network ports available. The total cost to upgrade is approximately \$1 million.

BUILDINGS AFFECTED

Buildings with 10 Megabit Switches (C1900s):

Aldrich Hall, Anteater Recreation Center, Arroyo Vista Housing Office, BioSci Food Services, Beckman Laser Facility, Building Services, Centerpointe, Central Plant, Crawford Clubhouse, Crawford Hall, Dinwiddie Trailer, Early Childhood Education Center, EH&S Services Facility, Electrical Substation, Epidemiology, Farm School/Barn, Grounds Maintenance Building, Interfaith Trailer, International Center, Merage School of Business, Multipurpose Academic & Admin, Schneiderman Lecture Hall, Store House/Receiving, Student Center, Student Services 1 & 2, University Extension, University Tower, Verano Infant Toddler Center

Buildings with Single Connections to the Network Backbone:

5171 California, Accounting/HPR, Animal Research Facility, Bio-Sci Administration Trailer, Classroom Trailers, College of Medicine Programs, Center for the Neurobiology of Learning and Memory, EH&S Services Facility, Engineering Lecture Hall, Greenhouse Complex, Interfaith Trailer, Interim Classroom Facility, Med Sci A Annex, Medical Sciences A, Medical Sciences Classroom Facility, Medical Sciences E & F, Parkview Classroom, Physical Sciences Classroom, Physical Sciences High Bay, Physical Sciences Lecture Hall, Schneiderman Lecture Hall, Social Science Lecture Hall, Social Science Trailer, Social Sciences Hall, Tolkien Toys

Buildings with Unsupported 100 Megabit Switches (C3500s):

ACE Trailers, Aldrich Hall, Animal Research Facility, Anteater Field, Arts Instructional Technology, Arts Studio Four, Beall Center, Steinhaus Hall, McGaugh Hall, BPN/BPS, Merage School, Central Plant, Ceramics Studio, Crawford Hall, Drama & Art History, Engineering Gateway, Engineering/ Computing Trailer, Engineering Tower, Epidemiology, LCS, LCS2, Interim Office Building, Irvine Hall, Medical Paza, Medical Sciences A, B, D, E and F, Medical Surge 1, Middle Earth Housing Office, Multipurpose Academic & Administration, NACS/Design & Construction, Natural Sciences I, Painting & Video Studios, Plumwood House (Hitachi), CFEP, Bunney, Rowland Hall, Schneiderman Lecture Hall, Social Science Tower, Sprague Hall, University Extension, University Tower

Buildings with Some Low-speed Cable or Jacks:

Arts Instructional Technology, Arts Studio Four, Beckman Laser Facility, Berkeley Place South, Bren Events Center, Cafe Med, Ceramics Studio, Child Development Center, Choral Studio, Fine Arts Orchestra Hall, Computer Science Trailers 1 & 2, Computer Sciences 1, Crawford Hall, Dance Studio & Costume Shop, Drama & Art History, Engineering Gateway, Engineering Lab Facility, Engineering Tower, Engineering/ Computing Trailer, Faculty Research Facility, Gateway Commons, Grounds Maintenance Building, Humanities Hall, Interim Office Building, International Center, Irvine Hall, Medical Sciences A, Mesa Office Building, Painting & Video Studios, Plumwood House (Hitachi), Production Studio, Public Services Building, Rowland Hall, Science Library, Social Ecology 1, Social Sciences Laboratory, Social Sciences Tower, Store House/Receiving, Student Center, Student Health Center, University Extension B, C, & D, University Tower