The Academic Research Network (ARNe): Vision, Mission and Infrastructure

The School for Computer and Information Sciences (SCIS) at Regis University sponsors the operation of the Academic Research Network (ARNe) for the benefit of students, faculty and staff at the University. The vision of ARNe is to promote reliable access to well-supported hosted applications, appliances, and both physical and virtual networks. The mission of ARNe is to provide stable infrastructure for the teaching of undergraduate and graduate virtual laboratories, student and faculty access to stable hosted systems, data and applications for their thesis projects. It also includes support through the student-run IT practicum, an N-tiered, enterprise network of sufficient complexity to promote IT and CS research and Colorado based business.

ARNe offers a variety of services utilizing either physical or virtual servers running common operating systems which are interconnected through distributed WAN connections between campuses, see Figure 1.

Figure 1. WAN Internet connectivity between ARNe development campuses and production hosting (what is this?)

ARNe is an N-Tiered student and faculty supported network that delivers Vlabs to Regis University students through a Citrix browser based interface, see Figure 2. Beyond the university mission, the ARNe network has three Vlab-specific functions: 1) hosting of our proven production Vlabs in Boulder, CO 2) support of development environment for our next generation of Vlabs at our campus locations, and 3) strategic business partner hosting via extension of our VPN to government, industry, universities and business networks.
Figure 2: ARNe home page provides single entry point to the network from any browser, anywhere, anytime.

The centralized application servers and storage devices are located on the ARNe WAN backbone at a variety of campuses along the Colorado Front Range.

**Campus locations:**

Denver Tech Center (DTC), that is the development center for servers and application development. The campus dev location at Interlocken Broomfield (ILB) where Oracle Database development takes place is service by the DBA (Database Administration practicum students). The Adult Learning Center (ALC) at the Lowell Main Campus and (CS) Colorado Springs located at the Storage Networking Industry Association (SNIA) storage hosting our HDS (Hitachi Data Systems) and HP (Hewlett Packard) SANs. Computer Systems Design, Inc (CSD) the hosting entity for our production servers is strategically located in Boulder. The network is supported by RU, grants from private and public sources and the efforts of students, faculty and alumni.
ARNe uses MS Domain Services to separate users into development and production services and users. For security reasons the production users have restricted access to applications and services that are tied to their Vlabs. Currently, the VPN, see figure 3, restricts access between campuses and separates production from development. Further security will be enhanced by the use of VLAN technology so that server services will be sub-netted giving students access to limited services determined by class standing or enrollment.