Foothills Lab Anthes (FLA) and Foothills Lab 4 (FL4) Building Rewiring Projects

- Cable media is the foundation of all digital connectivity including computer networking, phones, wireless, building automation, and life safety
  - dictates the speed and reliability of all upper layer networking
- Designed to be very flexible, reliable, and serve NCAR/UCAR for a period of 15 or more years
- NETS staff designed, installed, tested, and activated all physical layer networking
- Upgraded redundant backbone capable of 100Gbps intra-building

- 411,000 total feet of cable, 562 wall plates, 23 wireless access points, and 5,200 fiber terminations
  - Cable: 156,000 feet FLA and 255,000 feet FL4
  - Wall plates: 258 FLA and 304 FL4
  - Wireless Access Points: 11 FLA and 12 FL4
  - Fiber Terminations: 2,400 FLA and 2,800 FL4
Cisco equipment replacement

• Five year project to upgrade end of life (EoL) Cisco equipment
  • equipment must be replaced before vendor service is no longer available
  • managed to flatten budget impact over multiple years
  • old equipment traded in for discount credit saving roughly 10% on new orders

• 30 Ethernet switch chassis replacements with
  • 46 supervisors – each requiring conversions/upgrades
  • 109 modules (10/100) upgraded to 1G capable
  • closet cabling upgrade with each module for 1G capability
  • 46 power supply upgrades

• 5 voice gateways
  • combined gateways with existing out of band access servers to reduce equipment being replaced

• Early morning chassis replacements to minimize staff downtime
• **UCAR Guest Wireless Redesign**
  - led by NETS
  - improved scalability and reliability
  - simpler user interface
  - old system retired 06-Sep-2012

• **New UCAR Internal Wireless**
  - provides seamless access to internal network resources for staff
  - industry standard certificate based authentication

• **UCAR 802.11n Upgrade**
  - Replaced over 100 access points
  - Full 802.11 a/b/g/n support
  - Dual radios and GigE uplinks provide a significant capacity increase
Front Range GigaPoP router replacement

- The FRGP serves 32 institutions in Colorado and Wyoming, including all major universities and research organizations. The FRGP is a regional connector to national Research and Education networks including Internet2, National LambdaRail, and ESnet [http://www.frgp.net/]

- Routers had reached their 3-5 year end of life

- NETS FRGP engineers provided a detailed evaluation of replacement router options and proposed a replacement plan that would support 10/40/100Gbps member and intra-router links

- The FRGP approved the purchase of three new Juniper routers (plus spare) for the FRGP collocation facilities and support 100 Gb/s fiber optic interfaces and represents more than a 10-fold increase in total switching capacity over the previous generation router.

- The FRGP bandwidth continues to roughly double every two years and the global routing table doubles approximately every five years (currently 450K routes), demanding ever more router speed and capacity
UCAR Vidyo Pilot Deployment

- Joint effort with staff from
  - CISL/ESS
  - CISL/NETS
  - F&A multimedia services
- Following through on a key recommendation from the Collaborative Technology Advisory Group
- Led by NETS from proof of concept testing to current production pilot
  - Collaboration, management, communication, and coordination between Mesa Lab and NWSC
  - Teleworking and job interview support
  - Business continuity preparedness
- Potential to support many more UCAR users and broader deployment, e.g. NSF, DOE, NOAA collaboration
Boulder Research and Administration Network (BRAN) and Boulder Valley School District (BVSD) Successfully Combine Fiber Optic Assets

• Led by NETS
• Successful R&E collaboration
• Significantly expands the BRAN fiber optic footprint
• Resolves single point of failure issues for NOAA, CU-Boulder, and UCAR/NCAR
• Enables expansion into related R&E facilities in Boulder including UNAVCO and NEON