Network Services

- BNL
  - 8 OSCARS provisioned circuits for ATLAS. Includes CERN primary and secondary to LHCNET, BNL –Tier2 E2E connections, and Prague (RHIC star).
  - 9 Gbps guaranteed minimum for CERN Primary. 1 Gbps guaranteed minimum with scavenger service for over subscription.
  - Direct campus to campus BGP peering across the E2E circuits with generic Internet fallback. Weighted routing selects the operational path.
  - User interface to OSCARS is web-based. Simple interface to use but does require some “network knowledge” to use effectively.
  - OSCARS / SDN has no dynamic failover capability. End sites have to plan for this contingency.

End Site Experiences w/ OSCARS Circuits

- FNAL:
  - Approx. 9 “static” circuits (USCMS):
    - T0/T1 - 2 LHCOPN circuits (soon to be three…)
    - T1/T2 - 5 of 7 US-CMS Tier-2 sites
    - T1/T3 - 2 sites
  - 1 “dynamic US-CMS” circuit (T2 at UNL):
    - via LambdaStation/OSCARS/I2 DCN interaction
  - 1Gbps guaranteed (+ scavenger service) per circuit across shared 10Gbps CHIMAN channels
  - Traffic steered from within USCMS T1 site to circuits via PBR, with object-tracking for controlled failover.

End Site Experiences w/ OSCARS Circuits (II)

- Web interface straightforward, although ESnet involvement required for path hops (URN's) through ESnet SDN backbone
  - Coordination required with remote sites to reach common ESnet connection point
- No OSCARS MPLS failover mechanism:
  - if OSCARS circuit goes down, L3 failover required.
  - No external notification of circuit failures – we discover circuit failures
- OSCARS circuits tend to be very stable