Please provide the following information to get access to the SDN testbed at Caltech and send it to hep-wheel@caltech.edu.

1. Project description:
    - The project, N-DISE (Named Data Networking for Data Intensive Science Experiments), aims to accelerate the pace of breakthroughs and innovations in data-intensive science fields such as the Large Hadron Collider (LHC) high energy physics program and the BioGenome and human genome projects. Based on Named Data Networking (NDN), a data-centric architecture, N-DISE will deploy and commission a highly efficient and field-tested petascale data distribution, caching, access, and analysis system serving major science programs.
2. Project funding:
    - Award Abstract # 2019012 CC* Integration-Large: N-DISE: NDN for Data Intensive Science Experiments
3. Project PIs:
    - Edmund Yeh (Principal Investigator)
      eyeh@ece.neu.edu
    - Lixia Zhang (Co-Principal Investigator)
    - Harvey Newman (Co-Principal Investigator)
    - Jason Cong (Co-Principal Investigator)
    - Susmit Shannigrahi (Co-Principal Investigator)
4. Project timeline:
    - Funding: To September 30, 2023 (Estimated)
    - Tests timeline: To September 30, 2023 (Estimated)
5. Project Goals and Success metrics:
    - What are the project goals and success metrics in terms of using Caltech SDN Resources?

      Achieve 100Gbps throughput with NDN-DPDK forwarder over the wide-area network.

      Test the developed NDN software, like VIP algorithm implementation/XrootD plugin/NDNc consumers, and so on over the testbed.

6. Project Requirements in terms of Hardware:
    - Can your application run inside a Kubernetes container? OR
    - Do you need a dedicated server?

      The NDN-DPDK forwarder program and NDN consumer applications we use are containerized, but the NDN-DPDK requires binding the NIC to it to use the poll

mode driver, which needs us to move the NIC into the container and use root privilege at the host. Also, we need to reserve and mount hugepages on the host.

7. Project Requirements in terms of Software, tools, and System tuning:
    - Is there any known Software needed (besides outside connectivity and Kubernetes)?

      Linux kernel 5.4 or newer, install graphqurl, jq

    - Is there any known System tuning needed?

      We need to reserve and mount huge pages on the host, make sure to use the mlx5_core driver for Mellanox NIC.

8. Project Requirements in terms of Networking and Network connections - LAN/WAN:
    - Any specific LAN Requirements? Dedicated links, VLANS? Private network?

      VLANs

    - Any specific WAN Requirements? A dedicated path between sites? QoS?

      100Gbps path from Caltech to Starlight. A dedicated path and QoS are always welcome but not so necessary.

    - Do you need a public IPv4 Range? What is the minimum range required? Do you need any DNS records for those IPs?

      No

    - Do you need a public IPv6 Range? What is the minimum range required? Do you need any DNS records for those IPs?

      No.

9. In case you do need sudo/root access - please explain why
    - Given security and repeatability - sudo/root access is limited to a few people. Please explain why you think you will need sudo/root access (if you need one, of course). Most of the things on Caltech SDN Testbed are automatically configured using Puppet - and we want to ensure in case of node loss or disk loss - we can fastly redeploy nodes and bring you back up to speed with all config. (So, we need to ensure system changes are present inside the puppet)

      Needed. The NDN-DPDK forwarder program we use is containerized, but it needs to bind the NIC to use the poll mode driver, which needs us to move the

NIC into the container and use root privilege. Also, we need to reserve and mount hugepages on the host.

10. In case you do need to have ‘configure’ or console access to switches - please explain why:
    - Most of the Network Resources in Caltech SDN Testbed are controlled by SiteRM - which covers 90% of all use cases projects require. In this something special - please explain the need - so we can find the best way to achieve and accommodate it.

      Not needed.

11. Which users will need access to SDN Testbed (Whom the account should be created for):
    - Any user needing access must have a Tier2/SDN account created. Please list all users assigned to this project and who should get a Tier2/SDN account.

      All users may access:

      - Yuanhao Wu (Already have an expired the account)
      - Faruk Volkan Mutlu
      - Catalin Iordache
      - Raimondas Sirvinskas