

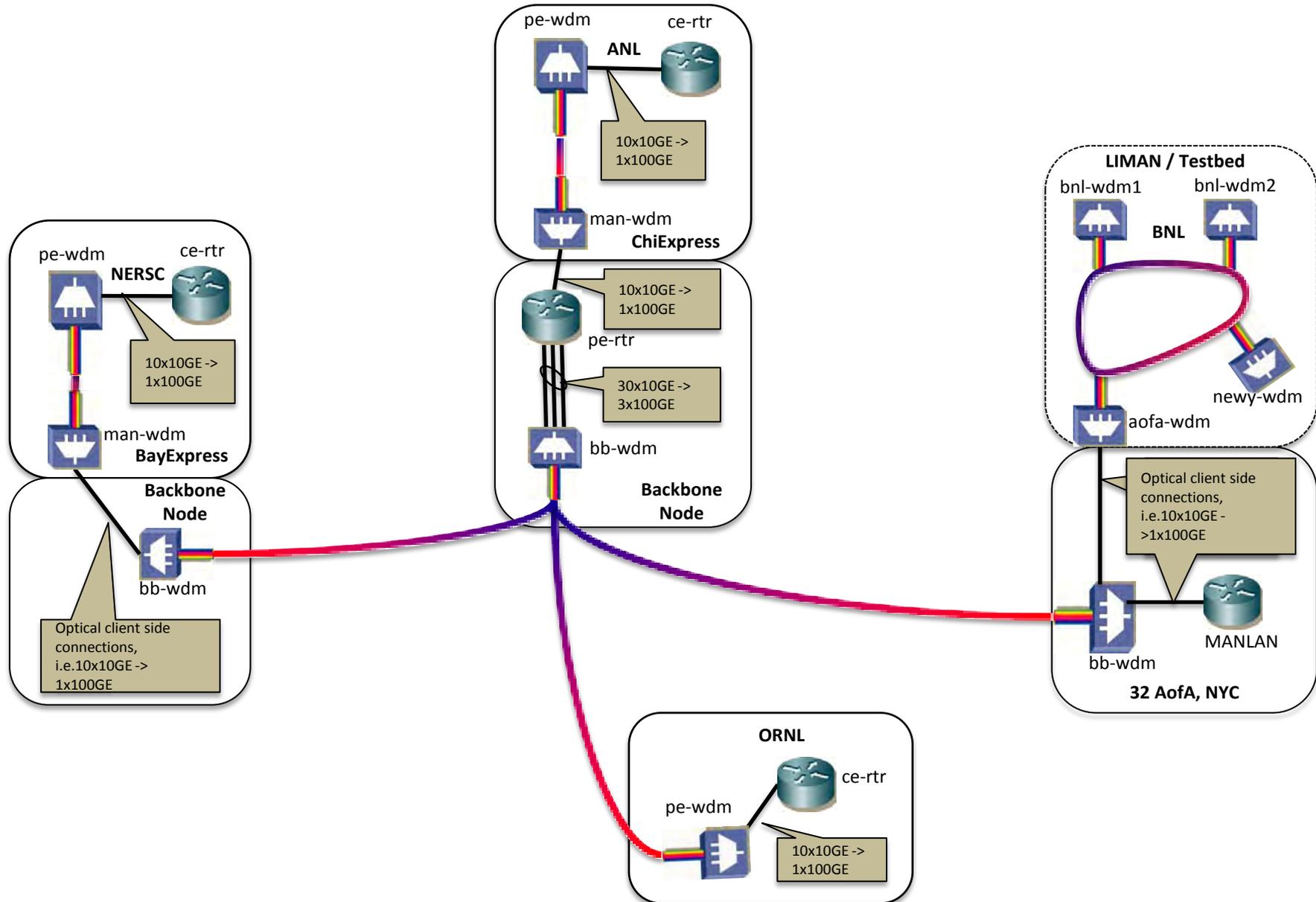
Advanced Networking Initiative

The goal of this project is two-fold: to accelerate the commercialization of 100 Gigabit per second (Gbps) networking technologies by deploying a national-scale prototype network and conducting research and development on an advanced network testbed facility. Initiatives such as this are critical to the Department of Energy's Office of Science, as they support a number of significant research efforts requiring distributed computing and access to large scale scientific data.

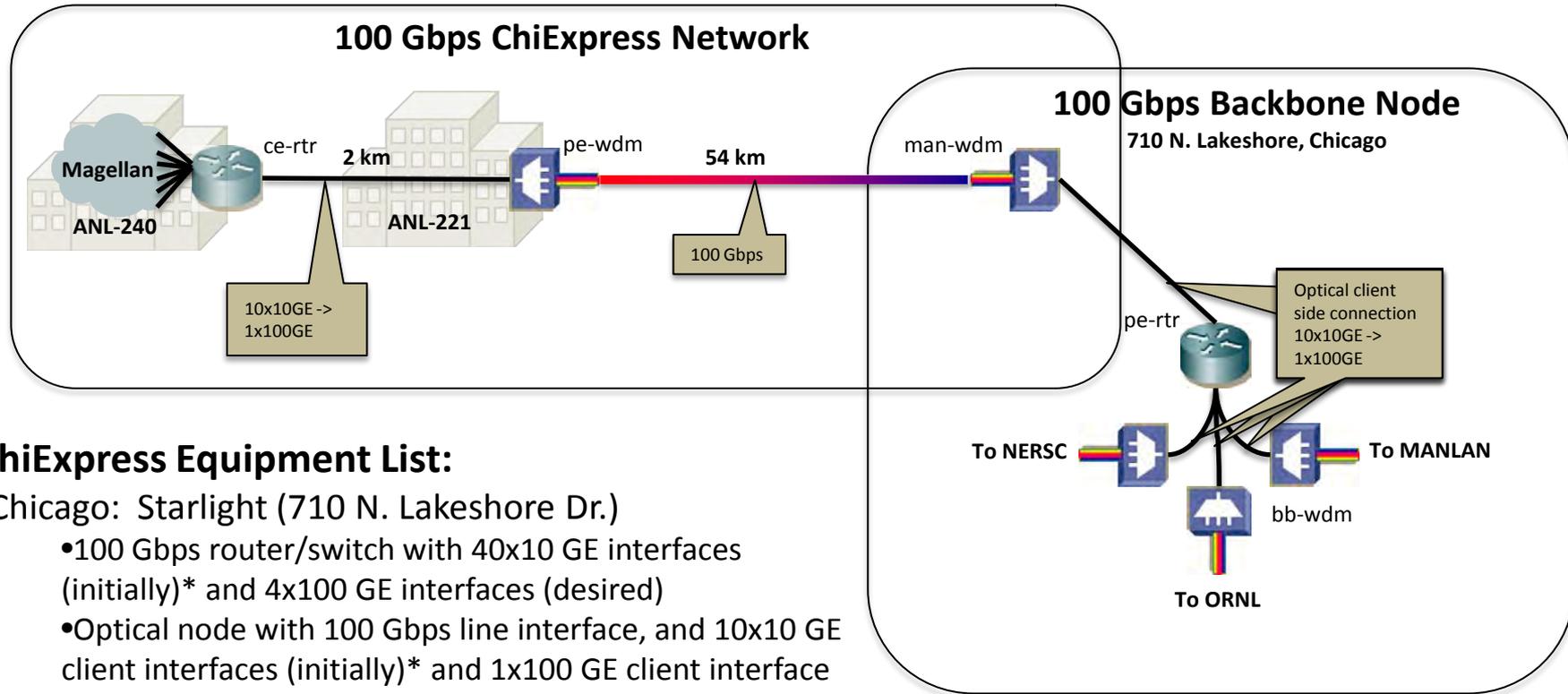
The prototype network will span four distinct geographic regions, connecting the three major Advanced Scientific Computing Research (ASCR) computing facilities and the New York multi-agency peering point providing transatlantic Research and Education (R&E) connectivity at 100 Gbps. The prototype 100 Gbps network will be complemented by a testbed providing an experimental network research environment at sufficient scale to usefully test experimental approaches to next generation networks and applications.

The ChiExpress Network will provide 100 Gbps throughput capacity via point-to-point 10/40/100 Gbps circuits from the border of the Office of Science ASCR computing facility at Argonne National Laboratory to the 100 Gbps capable prototype backbone network node in Chicago. This metropolitan network will utilize a vendor provided solution using existing optical fiber and prototype 100 Gbps capable optical transport equipment, as well as appropriate layer 2 / 3 devices, as needed.

100 Gbps Prototype Network Preliminary Baseline Design



ChiExpress Network Preliminary Baseline Design



ChiExpress Equipment List:

- Chicago: Starlight (710 N. Lakeshore Dr.)
 - 100 Gbps router/switch with 40x10 GE interfaces (initially)* and 4x100 GE interfaces (desired)
 - Optical node with 100 Gbps line interface, and 10x10 GE client interfaces (initially)* and 1x100 GE client interface (desired)
- Argonne National Lab
 - Bldg ANL-221: Optical node with 100 Gbps line interface, and 10x10 GE client interfaces (initially)* and 1x100 GE client interface (desired)
 - Bldg ANL-240: 100 Gbps router/switch with 10x10 GE interfaces (initially)* and 100 GE interface (desired)

*Note: 10x10 GE client interfaces will only be used temporarily until 1x100 GE client interfaces are available