



Phoebus

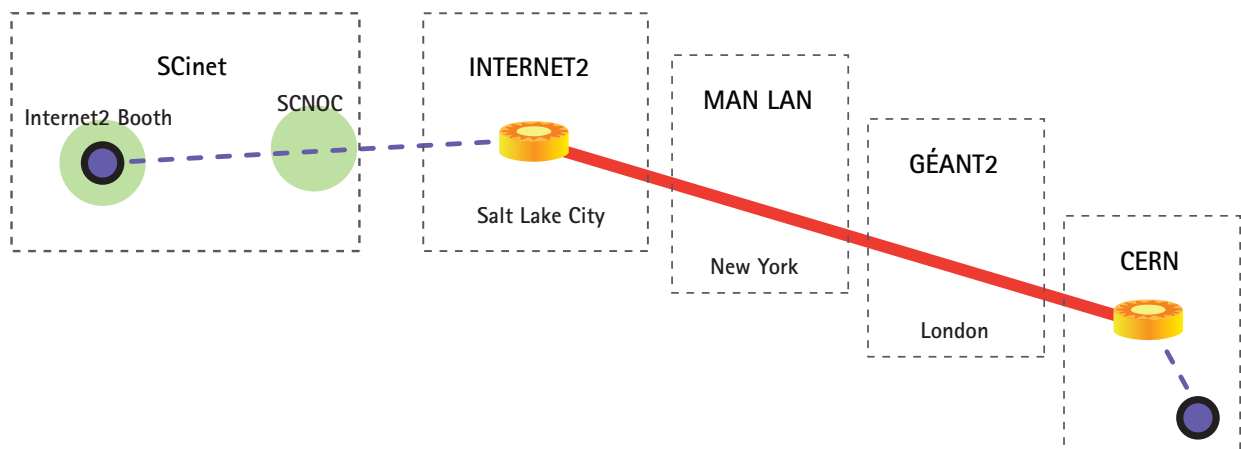
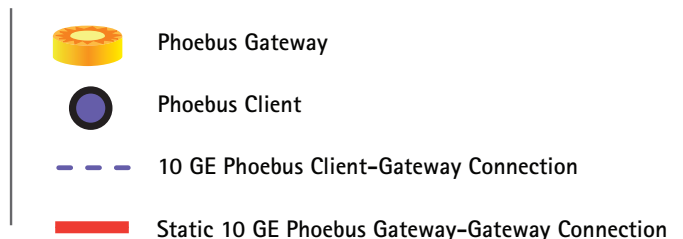
Phoebus helps to seamlessly deliver the high performance capabilities of networks like the advanced Internet2 IP Network and the revolutionary Internet2 Dynamic Circuit (DC) Network to end-users. Phoebus works by splitting a network path into distinct segments, and then leveraging the best performance attributes of each segment to minimize the impact of potential performance issues, such as packet loss or latency.

The Phoebus environment makes this possible by creating various adaptation points in the network (Phoebus Gateways) that determine the best path and transfer protocol for the data, thereby maximizing performance. An end-to-end session protocol is used to control transport and signaling Phoebus Gateways, which provides better performance across the combined network path. With Phoebus, many applications can improve their performance with no modification.

Phoebus Bandwidth Challenge

The Phoebus Bandwidth Challenge entry uses SCinet, the Internet2 IP Network and GÉANT2 to maximize the performance of a 10 GE connection between the SC07 show floor and CERN.

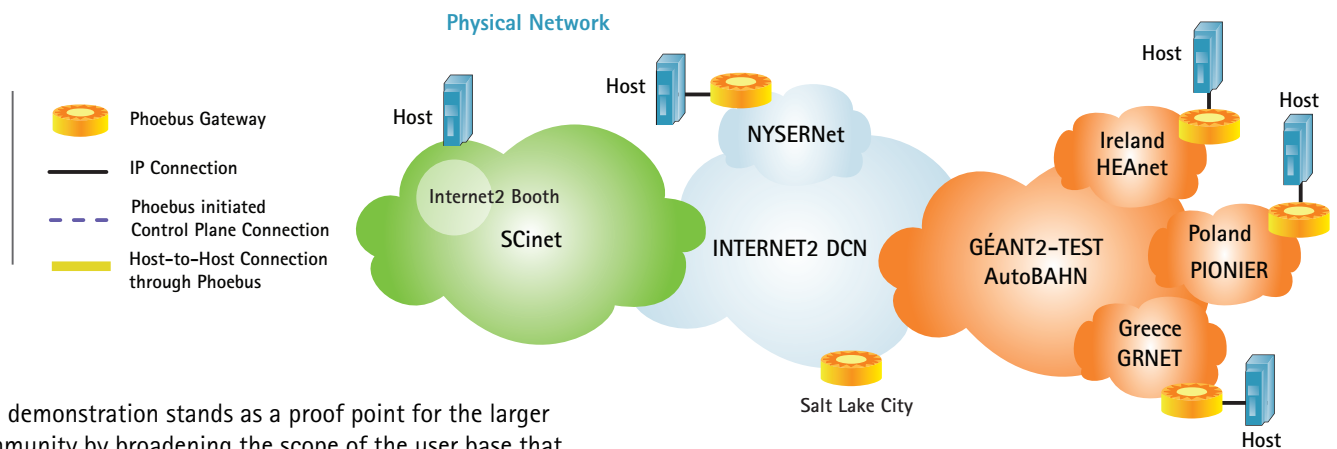
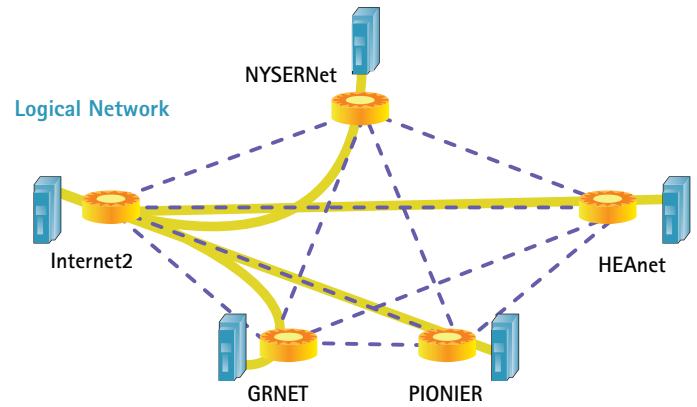
Phoebus Gateways split the network path into distinct segments and leverage the best performance attributes of each network segment. This demonstration examines extremely large and fast data transfers from CERN in anticipation of the Large Hadron Collider (LHC) experiment's future data-intensive network requirements relevant to the Tier 1 through Tier 4 collaborating institutions and their associated researchers.



Phoebus File Transfer

Phoebus file transfer leverages the Internet2 DC Network to improve network performance over the following long-haul, low-loss backbone networks:

- NYSERNet, New York State's Education and Research Network
- HEAnet, Ireland's National Education and Research Network
- PIONIER, Poland's Optical Internet
- GRNET, the Greek Research and Technology Network



This demonstration stands as a proof point for the larger community by broadening the scope of the user base that can benefit from the Internet2 DC Network. The Research and Education community can take advantage of the DC Network, and experience excellent performance, with their existing applications.

"Due to the huge success and growth of the Internet, it has been difficult to deploy disruptive technologies broadly. Phoebus builds on standard Internet infrastructure at the edge of the network, while creating a bridge to advanced optical and packet networks, enabling application communities like bioinformatics and radio astronomy to benefit from hybrid networking in the short term. In the longer term, Phoebus represents an architectural evolution of the Internet in which commercial network providers can offer a richer set of services to their users because they will no longer be constrained by the performance limitations of TCP."

Martin Swany, Assistant Professor, Department of Computer and Information Sciences, University of Delaware

Phoebus is developed by Dr. Martin Swany, Assistant Professor, Department of Computer and Information Sciences, University of Delaware, and an Internet2 Faculty Fellow since 2005.

Phoebus is supported by:

