SC06 Bandwidth Challenge: End-to-End Achievement
Bridging the Hero Gap
Bandwidth Challenge Call for Participation

10 Gbps network links are becoming ever more prevalent; however, achieving data rates close to 10 Gbps or even 1 Gbps across those high bandwidth networks is still unattainable by most users.

Bold, ingenious network engineers, via their heroic efforts, have demonstrated creative applications utilizing exceptionally high data rates across one and numerous 10 Gbps links, in past years Bandwidth Challenge competitions. These networking heroes can now accomplish massive bandwidth utilization on a rather consistent basis, which is quite impressive.

But what about all those scientist and researchers who do not have their own personal networking hero handy to help them achieve high bandwidth utilization? What about all those important users who have vast amounts of data they need to access and share, who can't get into the fast lane?

This year the Bandwidth Challenge will focus on Bridging the Hero Gap. That is, bridging the gap between what can be achieved by networking heroes and what can be achieved by the average researcher with access to high speed networks. We've put these great networks in place, now let's make sure everyone can use them to the fullest extent.

This is a Call for Participation in the Bandwidth Challenge at SC06. The intention is that your participation not only will benefit your home institution, but that your example will serve as a model for other institutions to follow.

To enter the Bandwidth Challenge, please submit your entry, by August 31, 2006, at:
http://www.sc-submissions.org

The Challenge this year is: Can you fully utilize one 10 Gig path, end-to-end, disk-to-disk, from SC06 in Tampa back to your home institution, using the actual production network back home? Can you realize, demonstrate and publish all the configuration, troubleshooting, tuning and policies, not only to show off at SC06, but to leave a legacy at your home institution whereby your scientists can achieve the same results after you?

Bandwidth Challenge entries will be judged on a number of criteria, including:

- Support of science mission:
    - How important is the application to the scientific community it supports?

- o What is the potential impact of this application?
  - o How will this application enable or enhance the science?
- Use of production network at your home institution:
  - o To what degree are you using the normal production network at your home institution, versus a specialized setup which bypasses your normal network and security infrastructure?
  - o How much of the configuration and path will remain after SC06?
  - o To what extent do users at your home institution have access to the same infrastructure and same bandwidth utilization results?
- Serving as a Model
  - o What lessons learned and advice can you share?
  - o What documentation and web pages did you create to communicate how your success was achieved, how others can understand and emulate your model.
- Efficient Bandwidth Utilization – maximum 1 x 10 Gbps
  - o How much total bandwidth utilizing can you achieve on a 1 x 10 Gbps link as compared to the bandwidth available to you? Note that we will make an effort to take into account (to a reasonable extent) the background traffic on shared links/networks with which your application must compete.
- Innovative use of protocols
  - o Use of innovative and fair TCP and non-TCP implementations.
  - o Use of emerging or underutilized technologies such as IPv6.
- End-to-end, disk-to-disk applications
  - o How well does your application put all the pieces together, including going to/from disk? The "disk-to-disk" criteria is not meant to discourage or rule out applications where the natural endpoint for data is not disk, as in visualization applications.

The data throughput amounts will be verified using high performance monitoring gear provided by Spirent Communications®, via network taps provided by Net Optics®. Qwest Communications® is sponsoring and providing the award prize and Force10 Networks® is providing the high-density 10GigE switch at the nexus of the Bandwidth Challenge for SC06.

The deadline for submitting a full entry to the Bandwidth Challenge is August 31, 2006. Please make all submissions through the following website: www.sc-submissions.org

Prior to making your full submission, please communicate your intent to participate in the Bandwidth Challenge as soon as you know you plans, via an e-mail to bwc@sc06.supercomputing.org.

Helps us Bridge the Hero Gap and make the Bandwidth Challenge a success by having your heroes share their networking genius.

For more information, please contact: bwc@sc06.supercomputing.org