

Web100 Web100 based Network Diagnostic Tool (NDT)

Located at ITEM - NTNU; 100 Mbps (Fast Ethernet) network connection

This java applet was developed to test the reliability and operational status of your desktop computer and network connection. It does this by sending data between your computer and this remote NDT server. These tests will determine:

- The slowest link in the end-to-end path (Dial-up modem to 10 Gbps Ethernet/OC-192)
- The Ethernet duplex setting (full or half);
- If congestion is limiting end-to-end throughput.

It can also identify 2 serious error conditions:

- Duplex Mismatch
- Excessive packet loss due to faulty cables.

A test takes about 20 seconds. Click on "start" to begin.



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Use "ctrl-C" to copy data onto the clipboard and then paste it into the email message.

The NDT performs 2 TCP throughput tests between your desktop computer and this NDT server. First, data is streamed for 10 seconds from your desktop to the server and then a second 10 second test is performed in the opposite direction. A [Web100](#) modified linux kernel captures detailed statistics on these TCP data flows. This data is then analyzed to determine why the connection achieved the throughput results it reported.

Understanding the test results

The throughput an application achieves is dependant on the amount of buffer space available in the sending and receiving hosts, packet loss due to errors or congestion, packet size (usually limited to 1500 bytes by Ethernet), and the round trip time between the 2 hosts. If this test reports that the sender or receiver buffer size is the limiting factor, increase the buffer size by [changing the default buffer size](#) on your computer. Win 95/98/NT users can easily set and change their default buffer size by using the [TCPtune application](#) developed by the NLANR MOAT group. Windows users may find that they prefer the [DrTCP](#) tool from the dsreports.com web site.

If a large number of retransmissions occur, check the duplex and speed setting on your host and the network switch it attaches to (duplex mismatches are a serious problem due to broken autonegotiation protocols). Extremely long round trip times (over 1 sec) ususally indicate that a network router or switch

is congested leading to long queuing times. Contact your local network administrator for help in solving this problem

The Bandwidth * Delay product is reported at the bottom of the "more details" page. Throughput limits for the NDT server's transmit buffer, your clients receive buffer, and the network infrastructure. You may use these numbers as a guide to determining what your client's receive buffer is currently set to. Divide the buffer size by the reported round trip time (RTT) to calculate the throughput value.

For more info on TCP tuning, visit [cable/dsl tuning](#) or dslreports.com [tweaks](#) or [UNIX and Windows TCP/IP tuning tips](#).

Other publicly accessible NDT servers:

- [Argonne National Laboratory - IL \(USA\)](#)
- [Swiss Education and Research Network \(Switzerland\)](#)
- [Rochester Institute of Technology - Rochester NY \(USA\)](#)
- [University of Michigan - Flint MI \(USA\)](#)
- [University of California - Santa Cruz CA \(USA\)](#)
- [Stanford University - Palo Alto CA \(USA\)](#)
- [Thomas Jefferson National Accelerator Facility - VA \(USA\)](#)
- [National Science Foundation - VA \(USA\)](#)

Other bandwidth testing sites:

- microsoft's bandwidth [tester](#)
- [upload/download tester](#)
- [bt2kfast](#)
- [www.dslreports.com speed test](#) browser/throughput tester
- [UT web100 bandwidth tester](#), experimental (not always available)
- the older ORNL java [bandwidth tester](#)

You can see the hops (routers) that your packets pass through from your machine to a target Internet site with the *traceroute* command (for Windows, use *tracert* in DOS/command prompt window). The route can actually vary from packet to packet, test to test, and the reverse route (return path) may not be the same. There are several [traceroute servers](#) around the world that can show you the route back to your browser. Tom Dunigan at ORNL also has traceroute servers at [ORNL](#) and at [UT](#).

The NDT server window size for this Java tester is 64KB. Max window used to be 64KB, but newer OS's now support window scaling, so you may be able to request more than 64 KB. (This NDT server a window of 64,000 bytes, and the network interface is 100 Mbs.)

The NDT software (source and compiled programs) is available via the anonymous FTP service at [achilles.ctd.anl.gov/pub/web100](#). This FTP site also contains a web100 patched version of the NLANR Iperf tool.

This java applet was originally developed by ORNL and has been extensively modified at ANL. Complete University of Chicago [Copyright Notice](#)

Comments to [Rich Carlson](#) email:RACarlson@anl.gov

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