Bandwidth Testing

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Preparation

Please note that

- 1. For best results please test while connected to wired ethernet
- 2. The accuracy of this speed test diminishes with larger bandwidth circuits
- 3. The hardware performance of the computer running this test has a significant impact on results
- 4. Any other activity on your network and any devices between your computer and the Internet will impact your speed.

You will see the best results if you schedule a time to disconnect your local network and plug your test computer directly into the WiscNet router.

If you cannot take down your network, we recommend connecting your test computer to your network as close as you can to the WiscNet device and using graphs.wiscnet.net or local monitoring to estimate how much bandwidth is being used before you start your test.

Web Browser based speed test

- http://speedtest.wiscnet.net/openspeedtest WiscNet's locally hosted web based speedtest. Server has 10gbps connectivity.
- https://fast.com/ Alternate speedtest hosted by Netflix but served from WiscNet's network

WiscNet-hosted iperf

iperf is a network testing tool used to help measure network throughput. It's developed by ESnet / Lawrence Berkeley National Laboratory. For more information please visit http://software.es.net/iperf/ and https://github.com/esnet/iperf

Overview

- iperf is an open source tool. There are clients for Mac, Linux, BSD, etc. There is a port for Windows; however, in our testing we found it to lack certain features and to lag in performance.
- iperf operates where one end is the client, the other is the server.

WiscNet Server Details

- WiscNet runs an iperf version 2 server in Madison, WI. This server has a 10gbps uplink.
- The server is restricted to WiscNet IP addresses
- iperf2 and iperf3 are incompatible
- iperf.wiscnet.net runs a TCP iperf server on the default port 5001
- iperf.wiscnet.net runs a UDP iperf server on port 5001
- iperf.ipv6.wiscnet.net runs a v6 TCP iperf server on port 5001
- iperf.ipv6.wiscnet.net runs a v6 UDP iperf server on port 5001

TCP vs UDP Testing

- iperf uses TCP by default. TCP has built in congestion avoidance. If TCP detects any packet loss, it assumes that the link capacity has been reached, and it slows down. This works very well, unless there is packet loss caused by something other than congestion. If there is packet loss due to errors, TCP will back off even if there is plenty of capacity. iperf allows TCP to send as fast as it can, which generally works to fill a clean, low latency link with packets. If a path is not clean/error free or has high latency, TCP will have a difficult time filling it. For testing higher capacity links and for links with higher latency, you will want to adjust the window size (-w option).
- By using the -u option, you have told iperf to use UDP packets, rather than TCP. UDP has no built in congestion avoidance, and iperf doesn't
 implement it either. When doing a UDP test, iperf requires that the bandwidth of the test be specified. If it isn't, it defaults to 1Mb/s. You can use
 the -b option to specify bandwidth to test. iperf will then send packets at the request rate for the requested period of time. The other end
 measures how many packets are received vs how many were sent and reports its results.

Some Common iperf Flags

• Enter iperf -h or man iperf depending on your operating system. Here are some common flags:

Flag	Details	Example
-C	Client mode	-C
-t	Time to run the test in seconds	-t 30
-P	Number of parallel connections	-P 2
-u	UDP (default is TCP)	-u
-b	Bandwidth per thread	-b 250m
-i	Interval between bandwidth reports in seconds	-i 1
-L	Listen on port	-L 5001
-r	bidirectional test (individually)	-r
-d	bidirectional test (simultaneously)	-d
-V	Use ipv6 (this is required even when specifying an IPv6 address)	-V

A The hardware performance of the client running this test has a significant impact on results

WiscNet has noticed that the iperf clients for Linux, Unix, and macOS perform better than the ports for Windows

These commands are for iperf 2, not iperf 3

Unidirectional UDP 1Gbps circuit test

Command



Results

When runing multiple threads you must look at the SUM lines for total throughput. Output below shows successfully getting 953Mbits/sec through

\$ iperf -c iperf.wiscnet.net -t 10 -P 4 -u -b 250m -i1 _____ Client connecting to iperf.wiscnet.net, UDP port 5001 Sending 1470 byte datagrams UDP buffer size: 208 KByte (default) _____ [5] local 10.0.10.105 port 44098 connected with 205.213.14.56 port 5001 [3] local 10.0.10.105 port 46090 connected with 205.213.14.56 port 5001 [4] local 10.0.10.105 port 38200 connected with 205.213.14.56 port 5001 6] local 10.0.10.105 port 59296 connected with 205.213.14.56 port 5001 [ID] Interval Transfer Bandwidth [5] 0.0-1.0 sec 28.4 MBytes 238 Mbits/sec [3] 0.0-1.0 sec 28.5 MBytes 239 Mbits/sec [4] 0.0-1.0 sec 28.6 MBytes 240 Mbits/sec [6] 0.0-1.0 sec 28.6 MBytes 240 Mbits/sec [SUM] 0.0- 1.0 sec 114 MBytes 957 Mbits/sec [5] 1.0- 2.0 sec 28.5 MBytes 239 Mbits/sec 3] 1.0- 2.0 sec 28.4 MBytes 238 Mbits/sec [[4] 1.0-2.0 sec 28.5 MBytes 239 Mbits/sec [6] 1.0- 2.0 sec 28.2 MBytes 236 Mbits/sec [SUM] 1.0- 2.0 sec 114 MBytes 953 Mbits/sec [5] 2.0- 3.0 sec 28.4 MBytes 238 Mbits/sec 2.0- 3.0 sec 28.2 MBytes 237 Mbits/sec ſ 31 4] 2.0- 3.0 sec 28.6 MBytes 240 Mbits/sec Г [6] 2.0- 3.0 sec 28.5 MBytes 239 Mbits/sec [SUM] 2.0- 3.0 sec 114 MBytes 953 Mbits/sec [5] 3.0- 4.0 sec 28.3 MBytes 238 Mbits/sec [3] 3.0- 4.0 sec 28.3 MBytes 238 Mbits/sec 41 3.0- 4.0 sec 28.5 MBytes 239 Mbits/sec ſ 6] 3.0- 4.0 sec 28.4 MBytes 239 Mbits/sec [SUM] 3.0- 4.0 sec 114 MBytes 952 Mbits/sec [5] 4.0- 5.0 sec 28.3 MBytes 237 Mbits/sec [3] 4.0-5.0 sec 28.3 MBytes 238 Mbits/sec [4] 4.0- 5.0 sec 28.3 MBytes 238 Mbits/sec [6] 4.0-5.0 sec 28.7 MBytes 241 Mbits/sec 4.0- 5.0 sec 954 Mbits/sec [SUM] 114 MBytes [5] 5.0- 6.0 sec 28.6 MBytes 240 Mbits/sec [3] 5.0- 6.0 sec 28.4 MBytes 238 Mbits/sec [4] 5.0-6.0 sec 28.3 MBytes 238 Mbits/sec [6] 5.0-6.0 sec 28.5 MBytes 239 Mbits/sec [SUM] 5.0- 6.0 sec 114 MBytes 955 Mbits/sec [5] 6.0- 7.0 sec 28.5 MBytes 239 Mbits/sec 3] 6.0-7.0 sec 28.3 MBytes 238 Mbits/sec ſ 4] 6.0-7.0 sec 28.5 MBytes 239 Mbits/sec Г [6] 6.0-7.0 sec 28.3 MBytes 237 Mbits/sec [SUM] 6.0- 7.0 sec 114 MBytes 953 Mbits/sec [5] 7.0-8.0 sec 28.4 MBytes 238 Mbits/sec 3] 7.0- 8.0 sec 28.4 MBytes 238 Mbits/sec ſ ſ 41 7.0- 8.0 sec 28.3 MBytes 238 Mbits/sec 6] 7.0- 8.0 sec 28.5 MBytes 239 Mbits/sec Г [SUM] 7.0-8.0 sec 114 MBytes 953 Mbits/sec [5] 8.0- 9.0 sec 28.5 MBytes 239 Mbits/sec [3] 8.0-9.0 sec 28.3 MBytes 237 Mbits/sec [4] 8.0-9.0 sec 28.4 MBytes 238 Mbits/sec Γ 61 8.0- 9.0 sec 28.4 MBytes 238 Mbits/sec [SUM] 8.0- 9.0 sec 114 MBytes 953 Mbits/sec read failed: Connection refused [3] WARNING: did not receive ack of last datagram after 1 tries. [5] 9.0-10.0 sec 28.5 MBytes 239 Mbits/sec 239 Mbits/sec [5] 0.0-10.0 sec 284 MBytes 5] Sent 202875 datagrams ſ ſ 3] 0.0-10.0 sec 284 MBytes 238 Mbits/sec 3] Sent 202276 datagrams ſ [4] 0.0-10.0 sec 284 MBytes 239 Mbits/sec [4] Sent 202852 datagrams [6] 0.0-10.0 sec 285 MBytes 239 Mbits/sec [6] Sent 203078 datagrams [SUM] 0.0-10.0 sec 1.11 GBytes 954 Mbits/sec read failed: Connection refused [5] WARNING: did not receive ack of last datagram after 5 tries.

read failed: Connection refused
[6] WARNING: did not receive ack of last datagram after 9 tries.
[4] WARNING: did not receive ack of last datagram after 10 tries.

Bidirectional UDP 1Gbps circuit test

Check your firewall settings and NAT to ensure port 5001 is open to your host

Command

```
iperf -c iperf.wiscnet.net -t 60 -P 20 -u -b 50m -i1 -r
```

iperf Server

iperf can be run as a server so someone else can run tests against your machines.

iperf -s

iperf Installation

Microsoft Windows

Windows - Install

- Download and extract iperf2: iperf-2.0.10-win.zip
- Right-click the downloaded iperf-2.0.10-win32.zip file and extract the contents of the .zip to any folder (seen here under \Users\Administrator)
 Open a command prompt and navigate to the extracted iperf2 folder:

	- 🐌 ► Administrator ► iperf-2.0.9-win32								
cd \Users\Administrator\iperf-2.0. dir	10-win\ Name	Date modified	Туре	Size					
	checkdelay	7/12/2017 11:06 AM	Application	63 KB					
	🗟 cyggcc_s-1.dll	7/12/2017 11:06 AM	Application extens	108 KB					
	🚳 cygstdc++-6.dll	7/12/2017 11:06 AM	Application extens	1,451 KB					
	🚳 cygwin1.dll	7/12/2017 11:06 AM	Application extens	3,571 KB					
	💷 iperf	7/12/2017 11:06 AM	Application	160 KB					

C4.	 x	
Microsoft Windows [Version (c) 2013 Microsoft Corporat	6.3.9600] ion. All rights reserved.	^
C:\Users\Administrator>cd \	Wsers\Administrator\iperf-2.0.9-win32	
C:\Users\Administrator\iper Volume in drive C has no I Volume Serial Number is A4	rf-2.0.9-win32>dir Label. 14A-EFBE	
Directory of C:\Users\Admi	inistrator\iperf-2.0.9-win32	
07/12/2017 11:06 AM (D) 07/12/2017 11:06 AM (D)		
07/12/2017 11:06 AM 07/12/2017 11:06 AM	63,671 checkdelay.exe	
07/12/2017 11:06 AM	1,485,341 cygstdc++-6.dll 3,656 581 cygstdc++-6.dll	
07/12/2017 11:06 AM	163,262 iperf.exe	
2 Dir(s) 23	3,222,792,192 bytes free	
C:\Users\Administrator\iper	f-2.0.9-win32>_	
		~

Windows - Example



Apple macOS

- Download and extract: iperf-2.0.5-macos-x86_64.zip
- Open a terminal cd to your extracted iperf folder

macOS - Install

```
iMac:~ $ cd Downloads/iperf-2.0.5-macos-x86_64
iMac:iperf-2.0.5-macos-x86_64 $ ls -lh
total 176
-rw-r--r-- 1 staff 693B Feb 20 2011 README
drwxr-xr-x@ 8 staff 272B Feb 20 2011 doc
-rwxr-xr-x@ 1 staff 78K Feb 20 2011 iperf
-rw-r--r--@ 1 staff 3.7K Feb 20 2011 iperf.1
```

macOS - Example

\$./iperf -c iperf.wiscnet.net -t 10 -P 20 -u -b 50m -i1 _____ Client connecting to iperf.wiscnet.net, UDP port 5001 Sending 1470 byte datagrams UDP buffer size: 9.00 KByte (default) _____ [24] local 10.0.10.144 port 56371 connected with 205.213.14.56 port 5001 5] local 10.0.10.144 port 64614 connected with 205.213.14.56 port 5001 8] local 10.0.10.144 port 53381 connected with 205.213.14.56 port 5001 [[6] local 10.0.10.144 port 62212 connected with 205.213.14.56 port 5001 [10] local 10.0.10.144 port 50300 connected with 205.213.14.56 port 5001 [14] local 10.0.10.144 port 62009 connected with 205.213.14.56 port 5001 [15] local 10.0.10.144 port 50449 connected with 205.213.14.56 port 5001 [13] local 10.0.10.144 port 56271 connected with 205.213.14.56 port 5001 [16] local 10.0.10.144 port 53114 connected with 205.213.14.56 port 5001 [9] local 10.0.10.144 port 56503 connected with 205.213.14.56 port 5001 [19] local 10.0.10.144 port 64738 connected with 205.213.14.56 port 5001 [17] local 10.0.10.144 port 51477 connected with 205.213.14.56 port 5001 [18] local 10.0.10.144 port 57188 connected with 205.213.14.56 port 5001 [12] local 10.0.10.144 port 60351 connected with 205.213.14.56 port 5001 7] local 10.0.10.144 port 61574 connected with 205.213.14.56 port 5001 [20] local 10.0.10.144 port 59632 connected with 205.213.14.56 port 5001 [22] local 10.0.10.144 port 60200 connected with 205.213.14.56 port 5001 [21] local 10.0.10.144 port 50617 connected with 205.213.14.56 port 5001 [23] local 10.0.10.144 port 61880 connected with 205.213.14.56 port 5001 [11] local 10.0.10.144 port 61734 connected with 205.213.14.56 port 5001 [ID] Interval Transfer Bandwidth [24] 0.0-1.0 sec 5.94 MBytes 49.8 Mbits/sec [5] 0.0-1.0 sec 5.94 MBytes 49.9 Mbits/sec [8] 0.0-1.0 sec 5.96 MBytes 50.0 Mbits/sec [6] 0.0-1.0 sec 5.95 MBytes 49.9 Mbits/sec [10] 0.0- 1.0 sec 5.93 MBytes 49.8 Mbits/sec [14] 0.0-1.0 sec 5.93 MBytes 49.7 Mbits/sec 0.0- 1.0 sec 5.92 MBytes 49.7 Mbits/sec [15] [13] 0.0- 1.0 sec 5.90 MBytes 49.5 Mbits/sec [16] 0.0-1.0 sec 5.87 MBytes 49.3 Mbits/sec [9] 0.0-1.0 sec 5.84 MBytes 49.0 Mbits/sec [19] 0.0- 1.0 sec 5.82 MBytes 48.9 Mbits/sec [17] 0.0-1.0 sec 5.77 MBytes 48.4 Mbits/sec [18] 0.0-1.0 sec 5.69 MBytes 47.7 Mbits/sec [12] 0.0-1.0 sec 5.63 MBytes 47.2 Mbits/sec [7] 0.0-1.0 sec 5.63 MBytes 47.2 Mbits/sec [20] 0.0-1.0 sec 5.58 MBytes 46.8 Mbits/sec [22] 0.0-1.0 sec 5.57 MBytes 46.7 Mbits/sec [21] 0.0- 1.0 sec 5.54 MBytes 46.5 Mbits/sec [23] 0.0-1.0 sec 5.58 MBytes 46.8 Mbits/sec [11] 0.0- 1.0 sec 5.57 MBytes 46.7 Mbits/sec [SUM] 0.0- 1.0 sec 116 MBytes 969 Mbits/sec [24] 1.0- 2.0 sec 5.93 MBytes 49.7 Mbits/sec [5] 1.0- 2.0 sec 5.93 MBytes 49.8 Mbits/sec [8] 1.0- 2.0 sec 5.93 MBytes 49.7 Mbits/sec [6] 1.0- 2.0 sec 5.93 MBytes 49.8 Mbits/sec [10] 1.0- 2.0 sec 5.92 MBytes 49.7 Mbits/sec [14] 1.0- 2.0 sec 5.92 MBytes 49.6 Mbits/sec [15] 1.0- 2.0 sec 5.89 MBytes 49.4 Mbits/sec [13] 1.0- 2.0 sec 5.86 MBytes 49.2 Mbits/sec

[16]	1.0-	2.0	sec	5.83	MBytes	48.9	Mbits/sec
[9]	1.0-	2.0	sec	5.81	MBvtes	48.7	Mbits/sec
[10]	1 0-	2 0	200	5 77	MBytec	18 1	Mhits/sec
[19]	1.0-	2.0	sec	5.77	MBytes	40.4	MDILS/Sec
[17]	1.0-	2.0	sec	5.70	MBytes	47.8	Mbits/sec
[18]	1.0-	2.0	sec	5.59	MBytes	46.9	Mbits/sec
[12]	1.0-	2.0	sec	5.53	MBytes	46.4	Mbits/sec
[7]	1.0-	2.0	sec	5.42	MBvtes	45.5	Mbits/sec
[20]	1 0-	2 0	990	5 46	MByteg	45 8	Mhite/sec
[20]	1 0	2.0	500	E 20	MDistor	45.0	Mbita/aca
	1.0-	2.0	sec	5.30	MBytes	45.1	MDILS/Sec
[21]	1.0-	2.0	sec	5.37	MBytes	45.0	Mbits/sec
[23]	1.0-	2.0	sec	5.36	MBytes	45.0	Mbits/sec
[11]	1.0-	2.0	sec	5.40	MBytes	45.3	Mbits/sec
[SUM]	1.0-	2.0	sec	114	MBytes	956	Mbits/sec
[24]	2.0-	3.0	sec	5.91	MBvtes	49.6	Mbits/sec
[5]	2 0-	3 0	Sec	5 93	MBytes	49 8	Mhits/sec
[8]	2.0	3 0	200	5 9/	MPuter	10 8	Mbits/sec
	2.0	2.0	See	5.24	MDestar	40.0	Mbits/Sec
[6]	2.0-	3.0	sec	5.93	MBytes	49.8	MD1ts/sec
[10]	2.0-	3.0	sec	5.93	MBytes	49.8	Mbits/sec
[14]	2.0-	3.0	sec	5.92	MBytes	49.7	Mbits/sec
[15]	2.0-	3.0	sec	5.90	MBytes	49.5	Mbits/sec
[13]	2.0-	3.0	sec	5.87	MBytes	49.3	Mbits/sec
[16]	2.0-	3.0	sec	5.82	MBytes	48.8	Mbits/sec
[0]	2 0-	3 0	god	5 70	MBytog	48 F	Mhite/sec
ניי. [101	2.0-	2.0	000	5.79	MDyrtaa	10.0	Mbita/aar
[19]	∠.∪-	٥.U	sec	5./8	MBytes	40.5	MULTS/SEC
[17]	2.0-	3.0	sec	5.71	MBytes	47.9	Mbits/sec
[18]	2.0-	3.0	sec	5.64	MBytes	47.3	Mbits/sec
[12]	2.0-	3.0	sec	5.58	MBytes	46.8	Mbits/sec
[7]	2.0-	3.0	sec	5.45	MBytes	45.7	Mbits/sec
[20]	2.0-	3.0	sec	5.39	MBvtes	45.2	Mbits/sec
[22]	2 0-	3 0	Sec	5 36	MBytes	45 0	Mbits/sec
[21]	2.0	2.0	000	5.50	MButog	15.0	Mbita/aca
[21]	2.0-	3.0	sec	5.30	MBytes	45.0	MDILS/Sec
[23]	2.0-	3.0	sec	5.3/	MBytes	45.0	Mbits/sec
[11]	2.0-	3.0	sec	5.35	MBytes	44.9	Mbits/sec
[SUM]	2.0-	3.0	sec	114	MBytes	956	Mbits/sec
[24]	3.0-	4.0	sec	5.82	MBytes	48.8	Mbits/sec
[5]	3.0-	4.0	sec	5.85	MBytes	49.1	Mbits/sec
[8]	3.0-	4.0	sec	5.82	MBvtes	48.9	Mbits/sec
[6]	3 0-	4 0	200	5 79	MByter	48 5	Mhite/sec
[10]	2 0	1.0	000	5.75	MButog	10.0	Mbita/aca
	3.0-	4.0	sec	5.75	MBytes	40.0	MDILS/Sec
[14]	3.0-	4.0	sec	5.66	MBytes	47.5	Mbits/sec
[15]	3.0-	4.0	sec	5.58	MBytes	46.8	Mbits/sec
[13]	3.0-	4.0	sec	5.60	MBytes	47.0	Mbits/sec
[16]	3.0-	4.0	sec	5.51	MBytes	46.2	Mbits/sec
[9]	3.0-	4.0	sec	5.49	MBytes	46.1	Mbits/sec
[19]	3.0-	4.0	sec	5.43	MBvtes	45.5	Mbits/sec
[17]	3 0-	4 0	200	5 44	MByter	45 6	Mhite/sec
[10]	2.0	1.0	300	5.11	MDutog	10 6	Mbita/acc
[10]	3.0-	4.0	sec	5.60	MBytes	40.0	MDILS/Sec
[12]	3.0-	4.0	sec	5.54	MBytes	46.5	Mbits/sec
[7]	3.0-	4.0	sec	5.80	MBytes	48.6	Mbits/sec
[20]	3.0-	4.0	sec	5.82	MBytes	48.8	Mbits/sec
[22]	3.0-	4.0	sec	5.83	MBytes	48.9	Mbits/sec
[21]	3.0-	4.0	sec	5.81	MBytes	48.7	Mbits/sec
[23]	3.0-	4.0	sec	5.81	MBvtes	48.7	Mbits/sec
[11]	3 0-	4 0	Sec	5 79	MBytes	48 6	Mbits/sec
	2 0	1.0	000	114	MButog	0.0	Mbita/aca
[30M]	3.0-	4.0	sec	TT4	MBytes	950	MDILS/Sec
[24]	4.0-	5.0	sec	5.79	MBytes	48.5	Mbits/sec
[5]	4.0-	5.0	sec	5.85	MBytes	49.0	Mbits/sec
[8]	4.0-	5.0	sec	5.81	MBytes	48.8	Mbits/sec
[6]	4.0-	5.0	sec	5.77	MBytes	48.4	Mbits/sec
[10]	4.0-	5.0	sec	5.71	MBytes	47.9	Mbits/sec
[14]	4.0-	5.0	sec	5.66	MBytes	47.5	Mbits/sec
[15]	4.0-	5.0	sec	5.60	MBvtes	47 0	Mbits/sec
[12]	4 0-	5 0	g 6 7	5 56	MBytec	46 7	Mhite/sec
[1 <i>c</i>]	1.0-	5.0	000	5.50	MDyrtaa	10.7	Mbita/aar
[TO]	4.0-	J.U	Sec	5.50	MD.	40.1	Mults/Sec
[9]	4.0-	5.0	sec	5.47	MBytes	45.8	Mbits/sec
[19]	4.0-	5.0	sec	5.42	MBytes	45.5	Mbits/sec
[17]	4.0-	5.0	sec	5.43	MBytes	45.5	Mbits/sec
[18]	4.0-	5.0	sec	5.81	MBytes	48.7	Mbits/sec
[12]	4.0-	5.0	sec	5.53	MBytes	46.4	Mbits/sec
[7]	4.0-	5.0	sec	5.80	MBytes	48.6	Mbits/sec
[2.01	4.0-	5.0	sed	5.82	MBvteq	48 8	Mbits/sec
. 20]		2.0	200	2.02		10.0	

[22]	4.0-	5.0	sec	5.87	MBytes	49.2	Mbits/sec
[21]	4.0-	5.0	sec	5.81	MBytes	48.8	Mbits/sec
[23]	4 0-	5 0	997	5 81	MByteg	48 8	Mhite/sec
	1.0-	5.0	Sec	5.01	MByces	10.0	MDICS/SEC
[11]	4.0-	5.0	sec	5.80	MBytes	48.6	Mbits/sec
[SUM]	4.0-	5.0	sec	114	MBytes	955	Mbits/sec
[24]	5.0-	6.0	sec	5.80	MBvtes	48.7	Mbits/sec
	F 0	c.o		F 04	MDt	40.0	
[5]	5.0-	6.0	sec	5.84	MBytes	49.0	MDITS/Sec
[8]	5.0-	6.0	sec	5.77	MBytes	48.4	Mbits/sec
[6]	5.0-	6.0	sec	5.76	MBytes	48.3	Mbits/sec
[10]	5 0-	6 0	666	5 7/	MBytec	19 1	Mhite/sec
[10]	5.0-	0.0	Sec	5.74	MByces	10.1	MDICS/SEC
[14]	5.0-	6.0	sec	5.66	MBytes	47.5	Mbits/sec
[15]	5.0-	6.0	sec	5.61	MBytes	47.0	Mbits/sec
[13]	5.0-	6.0	sec	5.57	MBvtes	46.7	Mbits/sec
[16]	F 0	6 0	~~~~	E EE	MDutea	16 6	Mbita/aca
[10]	5.0-	0.0	sec	5.55	MBytes	40.0	MDILS/Sec
[9]	5.0-	6.0	sec	5.47	MBytes	45.8	Mbits/sec
[19]	5.0-	6.0	sec	5.49	MBytes	46.0	Mbits/sec
[17]	5 0-	6 0	sec	5 44	MBvtes	45 7	Mhits/sec
L 1 0 1	5.0	0.0	BCC	5.11	MByccs	10.7	MD103/BCC
[18]	5.0-	6.0	sec	5./8	MBytes	48.5	MD1ts/sec
[12]	5.0-	6.0	sec	5.56	MBytes	46.6	Mbits/sec
[7]	5.0-	6.0	sec	5.79	MBvtes	48.6	Mbits/sec
[20]	F 0	6 0	~~~~	E 00	MDutea	10 0	Mbita/aca
L 20]	5.0-	0.0	SeC	5.02	mbyces	10.0	INDICS/SEC
[22]	5.0-	6.0	sec	5.86	MBytes	49.1	Mbits/sec
[21]	5.0-	6.0	sec	5.82	MBytes	48.8	Mbits/sec
[23]	5 0-	6 0	Sec	5 80	MBvtee	48 7	Mhite/eec
[11]	5.0-	c		5.00	MD	10.7	
[II]	5.0-	ю. О	sec	5.79	MBytes	48.6	MOITS/Sec
[SUM]	5.0-	6.0	sec	114	MBytes	956	Mbits/sec
[24]	6.0-	7.0	sec	5.75	MBvtes	48.2	Mbits/sec
[[]	6 0	7 0	200	E 00	MBurtog	10 0	Mbita/aca
[]]	6.0-	1.0	sec	5.02	MBytes	40.0	MDILS/Sec
[8]	6.0-	7.0	sec	5.80	MBytes	48.6	Mbits/sec
[6]	6.0-	7.0	sec	5.70	MBytes	47.8	Mbits/sec
[10]	6 0-	70	997	5 70	MByteg	47 8	Mhite/sec
[14]	6.0	7.0	BCC	5.70	MByccs	47.0	MD103/BCC
[14]	6.0-	7.0	sec	5.65	MBytes	47.4	Mbits/sec
[15]	6.0-	7.0	sec	5.59	MBytes	46.9	Mbits/sec
[13]	6.0-	7.0	sec	5.58	MBvtes	46.8	Mbits/sec
[16]	6 0	7 0	~~~~	E E0	MDutea	16 0	Mbita/aca
[10]	6.0-	1.0	sec	5.59	MBytes	40.9	MDILS/Sec
[9]	6.0-	7.0	sec	5.58	MBytes	46.8	Mbits/sec
[19]	6.0-	7.0	sec	5.56	MBytes	46.6	Mbits/sec
[17]	6 0-	70	997	5 56	MByteg	46 6	Mhite/sec
[10]	0.0-	7.0	Sec	5.50	MByces	10.0	MDICS/SEC
[18]	6.0-	7.0	sec	5.78	MBytes	48.5	Mbits/sec
[12]	6.0-	7.0	sec	5.61	MBytes	47.1	Mbits/sec
[7]	6.0-	7.0	sec	5.79	MBvtes	48.6	Mbits/sec
[20]	c 0	7 0	200	E 70	MDutea	10.0	Mbita/aca
[20]	6.0-	1.0	sec	5.79	MBytes	48.0	MD1ts/sec
[22]	6.0-	7.0	sec	5.78	MBytes	48.5	Mbits/sec
[21]	6.0-	7.0	sec	5.77	MBytes	48.4	Mbits/sec
[23]	6 0-	7 0	Sec	5 75	MBytes	48 2	Mhits/sec
[11]	c 0	7.0	500	5.75	MDestar	40.4	Mbits/BCC
ι ⊥⊥] -	ю.U-	1.0	sec	5.77	MBYTES	48.4	MDICS/SEC
[SUM]	6.0-	7.0	sec	114	MBytes	956	Mbits/sec
[24]	7.0-	8.0	sec	5.76	MBvtes	48.4	Mbits/sec
- [5]	7 0-	8 0	gor	5 70	MBytec	48 6	Mhite/sec
r)]	,.0-	0.0	960	5.19	yces	10.0	MULCS/SEC
[8]	/.0-	8.0	sec	5.76	MBytes	48.4	MD1ts/sec
[6]	7.0-	8.0	sec	5.74	MBytes	48.1	Mbits/sec
[10]	7.0-	8.0	sec	5.72	MBvtes	48.0	Mbits/sec
 [1/1	7 0	Q ^		5 70	MDrrt or	10 0	Mbita/asa
L 14]	/.0-	0.0	SeC	5.72	INDY Les	40.0	mutus/sec
[15]	7.0-	8.0	sec	5.71	MBytes	47.9	Mbits/sec
[13]	7.0-	8.0	sec	5.72	MBytes	48.0	Mbits/sec
[16]	7 0-	8 0	gor	5 K1	MBytec	47 0	Mhite/sec
L TAI	,.0-	0.0			MD	47.0	1010100/DCC
[9]	7.0-	8.0	sec	5.62	MBytes	47.1	Mbits/sec
[19]	7.0-	8.0	sec	5.68	MBytes	47.6	Mbits/sec
[17]	7.0-	8.0	sec	5.64	MBvtes	47.3	Mbits/sec
 [101	7 0	Q ^		5 67	MDrrt or	17 6	Mbita/asa
L TO]	/.0-	0.0	SeC	5.0/	INDY Les	4/.0	mutus/sec
[12]	7.0-	8.0	sec	5.62	MBytes	47.2	Mbits/sec
[7]	7.0-	8.0	sec	5.67	MBytes	47.6	Mbits/sec
- [20]	7 0-	8 0	SPC	5 70	MByter	47 Q	Mhits/gec
[20]	7.0-	0.0	500	5.74	MD	47.2	
[22]	7.0-	8.0	sec	5.71	MBytes	47.9	MD1ts/sec
[21]	7.0-	8.0	sec	5.72	MBytes	48.0	Mbits/sec
[23]	7.0-	8.0	sec	5.69	MBvtes	47.8	Mbits/sec
[11]	7 0	0 0		5.00	MDurtor	47 5	Mbita/acc
[]	/.0-	0.0	sec	00.C	mbytes	4/.5	mutus/sec
[SUM]	7.0-	8.0	sec	114	MBytes	956	Mbits/sec
[24]	8.0-	9.0	sec	5.74	MBytes	48.1	Mbits/sec
[5]	8 0-	9 0	SPC	5 70	MByter	48 5	Mhits/gec
r)]	0.0-	2.0	960	5.19	yces	40.0	INTER/SEC
[8]	8.0-	9.0	sec	5.77	MBytes	48.4	Mbits/sec

6] 8.0- 9.0 sec 5.73 MBytes 48.0 Mbits/sec Γ [10] 8.0- 9.0 sec 5.69 MBytes 47.8 Mbits/sec [14] 8.0-9.0 sec 5.71 MBytes 47.9 Mbits/sec [15] 8.0- 9.0 sec 5.72 MBytes 48.0 Mbits/sec [13] 8.0- 9.0 sec 5.69 MBytes 47.7 Mbits/sec [16] 8.0- 9.0 sec 5.63 MBytes 47.2 Mbits/sec [9] 8.0- 9.0 sec 5.62 MBytes 47.2 Mbits/sec [19] 8.0- 9.0 sec 5.72 MBytes 48.0 Mbits/sec [17] 8.0- 9.0 sec 5.68 MBytes 47.7 Mbits/sec [18] 8.0- 9.0 sec 5.69 MBytes 47.8 Mbits/sec [12] 8.0- 9.0 sec 5.59 MBytes 46.9 Mbits/sec [7] 8.0-9.0 sec 5.69 MBytes 47.7 Mbits/sec [20] 8.0- 9.0 sec 5.70 MBytes 47.8 Mbits/sec [22] 8.0- 9.0 sec 5.71 MBytes 47.9 Mbits/sec [21] 8.0-9.0 sec 5.71 MBytes 47.9 Mbits/sec [23] 8.0- 9.0 sec 5.68 MBytes 47.6 Mbits/sec [11] 8.0- 9.0 sec 5.67 MBytes 47.6 Mbits/sec [SUM] 8.0- 9.0 sec 114 MBytes 956 Mbits/sec [24] 9.0-10.0 sec 5.67 MBytes 47.5 Mbits/sec [24] 0.0-10.0 sec 58.1 MBytes 48.7 Mbits/sec [24] Sent 42554 datagrams [5] 0.0-10.0 sec 58.4 MBytes 49.0 Mbits/sec [5] Sent 42553 datagrams [8] 0.0-10.0 sec 58.3 MBytes 48.9 Mbits/sec [8] Sent 42553 datagrams [6] 0.0-10.0 sec 57.9 MBytes 48.6 Mbits/sec Γ 6] Sent 42553 datagrams [10] 0.0-10.0 sec 57.8 MBytes 48.5 Mbits/sec [10] Sent 42553 datagrams [14] 0.0-10.0 sec 57.5 MBytes 48.2 Mbits/sec [14] Sent 42553 datagrams [15] 0.0-10.0 sec 57.2 MBytes 48.0 Mbits/sec [15] Sent 42553 datagrams [13] 0.0-10.0 sec 57.0 MBytes 47.8 Mbits/sec [13] Sent 42553 datagrams [16] 0.0-10.0 sec 56.6 MBytes 47.5 Mbits/sec [16] Sent 42553 datagrams [9] 0.0-10.0 sec 56.4 MBytes 47.3 Mbits/sec [9] Sent 42553 datagrams [19] 0.0-10.0 sec 56.4 MBytes 47.3 Mbits/sec [19] Sent 42553 datagrams [17] 0.0-10.0 sec 56.1 MBytes 47.0 Mbits/sec [17] Sent 42553 datagrams [18] 0.0-10.0 sec 57.2 MBytes 48.0 Mbits/sec [18] Sent 42553 datagrams [12] 0.0-10.0 sec 55.9 MBytes 46.9 Mbits/sec [12] Sent 42552 datagrams [7] 0.0-10.0 sec 56.8 MBytes 47.6 Mbits/sec [7] Sent 42553 datagrams [20] 0.0-10.0 sec 56.8 MBytes 47.6 Mbits/sec [20] Sent 42553 datagrams [22] 9.0-10.0 sec 5.69 MBytes 47.7 Mbits/sec [22] 0.0-10.0 sec 56.7 MBytes 47.6 Mbits/sec [22] Sent 42553 datagrams [21] 9.0-10.0 sec 5.67 MBytes 47.6 Mbits/sec [21] 0.0-10.0 sec 56.6 MBytes 47.5 Mbits/sec [21] Sent 42553 datagrams [23] 0.0-10.0 sec 56.6 MBytes 47.5 Mbits/sec [23] Sent 42553 datagrams [11] 9.0-10.0 sec 5.70 MBytes 47.8 Mbits/sec [11] 0.0-10.0 sec 56.5 MBytes 47.4 Mbits/sec [11] Sent 42553 datagrams [SUM] 0.0-10.0 sec 1.11 GBytes 957 Mbits/sec [12] Server Report: [12] 0.0-10.0 sec 55.8 MBytes 46.7 Mbits/sec 0.066 ms 2759/42551 (6.5%) [12] 0.0-10.0 sec 1 datagrams received out-of-order [14] Server Report: [14] 0.0-10.0 sec 57.4 MBytes 48.1 Mbits/sec 0.086 ms 1615/42552 (3.8%) [14] 0.0-10.0 sec 1 datagrams received out-of-order [16] Server Report: [16] 0.0-10.0 sec 56.4 MBytes 47.2 Mbits/sec 0.080 ms 2352/42552 (5.5%)

[16] 0.0-10.0 sec 2 datagrams received out-of-order [23] Server Report: [23] 0.0-10.0 sec 56.0 MBytes 46.9 Mbits/sec 0.067 ms 2571/42552 (6%) [23] 0.0-10.0 sec 1 datagrams received out-of-order [6] Server Report: [6] 0.0-10.0 sec 57.6 MBytes 48.2 Mbits/sec 0.076 ms 1492/42552 (3.5%) 6] 0.0-10.0 sec 3 datagrams received out-of-order Γ [13] Server Report: [13] 0.0-10.0 sec 56.9 MBytes 47.6 Mbits/sec 0.069 ms 1977/42552 (4.6%) [13] 0.0-10.0 sec 1 datagrams received out-of-order [10] Server Report: [10] 0.0-10.0 sec 57.4 MBytes 48.1 Mbits/sec 0.072 ms 1577/42552 (3.7%) [10] 0.0-10.0 sec 5 datagrams received out-of-order [15] Server Report: [15] 0.0-10.0 sec 56.9 MBytes 47.6 Mbits/sec 0.068 ms 1963/42552 (4.6%) [15] 0.0-10.0 sec 8 datagrams received out-of-order [22] Server Report: [22] 0.0-10.0 sec 56.5 MBytes 47.3 Mbits/sec 0.064 ms 2272/42552 (5.3%) [22] 0.0-10.0 sec 1 datagrams received out-of-order [19] Server Report: 0.079 ms 2396/42552 (5.6%) [19] 0.0-10.0 sec 56.3 MBytes 47.1 Mbits/sec [19] 0.0-10.0 sec 7 datagrams received out-of-order [11] Server Report: [11] 0.0-10.0 sec 56.3 MBytes 47.1 Mbits/sec 0.091 ms 2379/42551 (5.6%) [11] 0.0-10.0 sec 1 datagrams received out-of-order [24] Server Report: [24] 0.0-10.0 sec 57.8 MBytes 48.3 Mbits/sec 0.086 ms 1359/42553 (3.2%) [24] 0.0-10.0 sec 1 datagrams received out-of-order [17] Server Report: [17] 0.0-10.0 sec 55.8 MBytes 46.7 Mbits/sec 0.066 ms 2775/42552 (6.5%) [17] 0.0-10.0 sec 3 datagrams received out-of-order [21] Server Report: [21] 0.0-10.0 sec 56.1 MBytes 47.0 Mbits/sec 0.063 ms 2546/42551 (6%) [21] 0.0-10.0 sec 1 datagrams received out-of-order 8] Server Report: 8] 0.0-10.0 sec 57.9 MBytes 48.5 Mbits/sec 0.070 ms 1243/42552 (2.9%) ſ 8] 0.0-10.0 sec 1 datagrams received out-of-order [[5] Server Report: 5] 0.0-10.0 sec 58.1 MBytes 48.7 Mbits/sec 0.080 ms 1085/42552 (2.5%) ſ 5] 0.0-10.0 sec 5 datagrams received out-of-order Γ [7] Server Report: 7] 0.0-10.0 sec 56.6 MBytes 47.4 Mbits/sec 0.075 ms 2183/42552 (5.1%) Γ [7] 0.0-10.0 sec 4 datagrams received out-of-order [18] Server Report: [18] 0.0-10.0 sec 57.1 MBytes 47.8 Mbits/sec 0.068 ms 1844/42552 (4.3%) [18] 0.0-10.0 sec 4 datagrams received out-of-order 9] Server Report: 9] 0.0-10.0 sec 56.3 MBytes 47.1 Mbits/sec 0.073 ms 2410/42552 (5.7%) 9] 0.0-10.0 sec 4 datagrams received out-of-order Γ [20] Server Report: [20] 0.0-10.0 sec 56.5 MBytes 47.3 Mbits/sec 0.053 ms 2265/42552 (5.3%) [20] 0.0-10.0 sec 2 datagrams received out-of-order

Unix/Linux

Many Lunix and Unix distros will have iperf in official repositories. Make sure to install iperf2 (iperf), not iperf3, to have compatability with WiscNet's iPerf server.

Ubuntu - Install

apt-cache search iperf | grep -i iperf iperf - Internet Protocol bandwidth measuring tool iperf3 - Internet Protocol bandwidth measuring tool

sudo apt-get install iperf

Ubuntu - Example

iperf -c iperf.wiscnet.net -t 10 -P 20 -u -b 50m -i1

_____ Client connecting to iperf.wiscnet.net, UDP port 5001 Sending 1470 byte datagrams UDP buffer size: 208 KByte (default) _____ [21] local 10.0.10.105 port 33836 connected with 205.213.14.56 port 5001 5] local 10.0.10.105 port 39264 connected with 205.213.14.56 port 5001 Γ 4] local 10.0.10.105 port 55180 connected with 205.213.14.56 port 5001 ſ 6] local 10.0.10.105 port 41089 connected with 205.213.14.56 port 5001 3] local 10.0.10.105 port 48475 connected with 205.213.14.56 port 5001 ſ [7] local 10.0.10.105 port 37402 connected with 205.213.14.56 port 5001 Γ 8] local 10.0.10.105 port 35544 connected with 205.213.14.56 port 5001 9] local 10.0.10.105 port 38899 connected with 205.213.14.56 port 5001 Γ [11] local 10.0.10.105 port 55616 connected with 205.213.14.56 port 5001 [10] local 10.0.10.105 port 45343 connected with 205.213.14.56 port 5001 [12] local 10.0.10.105 port 52147 connected with 205.213.14.56 port 5001 [15] local 10.0.10.105 port 48943 connected with 205.213.14.56 port 5001 [13] local 10.0.10.105 port 55655 connected with 205.213.14.56 port 5001 [14] local 10.0.10.105 port 37942 connected with 205.213.14.56 port 5001 [16] local 10.0.10.105 port 44809 connected with 205.213.14.56 port 5001 [17] local 10.0.10.105 port 37378 connected with 205.213.14.56 port 5001 [18] local 10.0.10.105 port 60936 connected with 205.213.14.56 port 5001 [20] local 10.0.10.105 port 54895 connected with 205.213.14.56 port 5001 [19] local 10.0.10.105 port 47884 connected with 205.213.14.56 port 5001 [22] local 10.0.10.105 port 46874 connected with 205.213.14.56 port 5001 [ID] Interval Transfer Bandwidth [5] 0.0-1.0 sec 5.97 MBytes 50.0 Mbits/sec 4] 0.0-1.0 sec 5.97 MBytes 50.0 Mbits/sec [6] 0.0-1.0 sec 5.97 MBytes 50.0 Mbits/sec Γ 3] 0.0- 1.0 sec 5.97 MBytes 50.0 Mbits/sec Γ Γ 7] 0.0- 1.0 sec 5.96 MBytes 50.0 Mbits/sec 8] 0.0- 1.0 sec 5.96 MBytes 50.0 Mbits/sec ſ 91 0.0-1.0 sec 5.96 MBytes 50.0 Mbits/sec Γ 0.0- 1.0 sec 5.97 MBytes 50.0 Mbits/sec [11] [10] 0.0- 1.0 sec 5.97 MBytes 50.0 Mbits/sec [12] 0.0-1.0 sec 5.97 MBytes 50.0 Mbits/sec [15] 0.0- 1.0 sec 5.97 MBytes 50.0 Mbits/sec [13] 0.0- 1.0 sec 5.97 MBytes 50.0 Mbits/sec [14] 0.0- 1.0 sec 5.97 MBytes 50.0 Mbits/sec [16] 0.0-1.0 sec 5.97 MBytes 50.0 Mbits/sec [17] 0.0-1.0 sec 5.97 MBytes 50.0 Mbits/sec [18] 0.0-1.0 sec 5.97 MBytes 50.0 Mbits/sec [20] 0.0- 1.0 sec 5.97 MBytes 50.0 Mbits/sec [19] 0.0- 1.0 sec 5.97 MBytes 50.0 Mbits/sec [22] 0.0- 1.0 sec 5.97 MBytes 50.0 Mbits/sec [21] 0.0- 1.0 sec 5.97 MBytes 50.1 Mbits/sec 0.0- 1.0 sec 119 MBytes 1.00 Gbits/sec [SUM] [21] 1.0- 2.0 sec 5.97 MBytes 50.0 Mbits/sec [5] 1.0- 2.0 sec 5.97 MBytes 50.1 Mbits/sec [4] 1.0- 2.0 sec 5.97 MBytes 50.1 Mbits/sec 6] 1.0- 2.0 sec 5.97 MBytes 50.1 Mbits/sec ſ 3] 1.0- 2.0 sec 5.97 MBytes 50.1 Mbits/sec Γ Γ 71 1.0- 2.0 sec 5.97 MBytes 50.1 Mbits/sec [8] 1.0- 2.0 sec 5.97 MBytes 50.1 Mbits/sec 9] 1.0- 2.0 sec 5.97 MBytes 50.1 Mbits/sec ſ [11] 1.0- 2.0 sec 5.97 MBytes 50.1 Mbits/sec [10] 1.0- 2.0 sec 5.97 MBytes 50.1 Mbits/sec [12] 1.0- 2.0 sec 5.97 MBytes 50.1 Mbits/sec [15] 1.0- 2.0 sec 5.97 MBytes 50.0 Mbits/sec [13] 1.0- 2.0 sec 5.97 MBytes 50.1 Mbits/sec [14] 1.0- 2.0 sec 5.97 MBytes 50.1 Mbits/sec [16] 1.0- 2.0 sec 5.97 MBytes 50.1 Mbits/sec [17] 1.0- 2.0 sec 5.97 MBytes 50.1 Mbits/sec [18] 1.0- 2.0 sec 5.97 MBytes 50.1 Mbits/sec [20] 1.0- 2.0 sec 5.97 MBytes 50.0 Mbits/sec [19] 1.0- 2.0 sec 5.97 MBytes 50.1 Mbits/sec [22] 1.0- 2.0 sec 5.97 MBytes 50.0 Mbits/sec [SUM] 1.0- 2.0 sec 119 MBytes 1.00 Gbits/sec [21] 2.0- 3.0 sec 5.97 MBytes 50.0 Mbits/sec

[5]	2.0-	3.0	sec	5.97	MBytes	50.0	Mbits/sec
[4]	2.0-	3.0	sec	5.97	MBytes	50.0	Mbits/sec
[6]	2 0-	3 0	997	5 97	MByteg	50 0	Mhite/sec
[0]	2.0-	5.0	Sec	5.97	MByces	50.0	MDICS/SEC
[3]	2.0-	3.0	sec	5.97	MBytes	50.0	Mbits/sec
[7]	2.0-	3.0	sec	5.97	MBytes	50.0	Mbits/sec
[8]	2.0-	3.0	sec	5.97	MBvtes	50.0	Mbits/sec
[0]	2.0	2.0		F 07	MDartar	F0.0	
[9]	2.0-	3.0	sec	5.97	MBytes	50.0	MDITS/Sec
[11]	2.0-	3.0	sec	5.96	MBytes	50.0	Mbits/sec
[10]	2.0-	3.0	sec	5.97	MBytes	50.0	Mbits/sec
[10]	2 0	2 0	aoa	E 07	Moutod	E0 0	Mbita/aca
	2.0-	5.0	Sec	5.91	MByces	50.0	MDICS/SEC
[15]	2.0-	3.0	sec	5.97	MBytes	50.1	Mbits/sec
[13]	2.0-	3.0	sec	5.97	MBytes	50.0	Mbits/sec
[14]	2.0-	3.0	sec	5.97	MBvtes	50.0	Mbits/sec
[16]	2 0	2 0	~~~~	E 07	MDutog	E 0 0	Mbita/aca
[10]	2.0-	5.0	sec	5.97	MBytes	50.0	MDILS/Sec
[17]	2.0-	3.0	sec	5.97	MBytes	50.0	Mbits/sec
[18]	2.0-	3.0	sec	5.97	MBytes	50.0	Mbits/sec
[20]	2 0-	3 0	Sec	5 97	MBvtes	50 1	Mhits/sec
[10]	2.0	2.0	bee	5.07	IID/CCD	50.1	MDICD/DCC
[19]	2.0-	3.0	sec	5.97	MBytes	50.0	MD1ts/sec
[22]	2.0-	3.0	sec	5.97	MBytes	50.0	Mbits/sec
[SUM]	2.0-	3.0	sec	119	MBvtes	1.00	Gbits/sec
[01]	2 0	4 0	~~~~	E 07	MDutog	E0 0	Mbita/aca
L 41]	5.0-	1.0	SeC	5.97	mby Les	50.0	INDICS/SEC
[5]	3.0-	4.0	sec	5.97	MBytes	50.0	Mbits/sec
[4]	3.0-	4.0	sec	5.97	MBytes	50.0	Mbits/sec
[6]	3 0-	4 ∩	SPC	5 97	MBytee	50 0	Mhite/eec
	2.0-	1.0		5.97	MD	50.0	
[3]	3.0-	4.0	sec	5.97	MBytes	50.0	MOITS/Sec
[7]	3.0-	4.0	sec	5.97	MBytes	50.0	Mbits/sec
[8]	3.0-	4.0	sec	5.97	MBvtes	50.0	Mbits/sec
[0]	2 0	1 0	202	5 07	MButog	E0 0	Mbita/aca
[9]	5.0-	4.0	sec	5.97	MBytes	50.0	MDILS/Sec
[11]	3.0-	4.0	sec	5.97	MBytes	50.1	Mbits/sec
[10]	3.0-	4.0	sec	5.97	MBytes	50.0	Mbits/sec
[12]	3 0-	4 0	997	5 97	MByter	50 0	Mhite/gec
[12]	2.0	1.0	BCC	5.57	MDyces	50.0	MD103/BCC
[15]	3.0-	4.0	sec	5.97	MBytes	50.0	Mbits/sec
[13]	3.0-	4.0	sec	5.97	MBytes	50.0	Mbits/sec
[14]	3.0-	4.0	sec	5.97	MBvtes	50.0	Mbits/sec
[16]	2 0	4 0	~~~~	E OF	MDutog	40 0	Mbita/aca
[10]	5.0-	4.0	sec	5.95	MBytes	49.9	MDILS/Sec
[17]	3.0-	4.0	sec	5.97	MBytes	50.0	Mbits/sec
[18]	3.0-	4.0	sec	5.95	MBytes	49.9	Mbits/sec
[20]	3 0-	4 0	997	5 97	MByter	50 0	Mhite/sec
[20]	5.0-	1.0	Sec	5.97	MByces	50.0	MDICS/SEC
[19]	3.0-	4.0	sec	5.97	MBytes	50.0	Mbits/sec
[22]	3.0-	4.0	sec	5.97	MBytes	50.0	Mbits/sec
[SUM]	3.0-	4.0	sec	119	MBvtes	1.00	Ghits/sec
[01]	4 0	F 0		F 07	MDuter	E0 0	Mbita/aca
[ZI]	4.0-	5.0	sec	5.97	MBytes	50.0	MD1ts/sec
[5]	4.0-	5.0	sec	5.97	MBytes	50.1	Mbits/sec
[4]	4.0-	5.0	sec	5.97	MBytes	50.1	Mbits/sec
[6]	4 0-	5 0	Sec	5 97	MBytes	50 1	Mhits/sec
[0]	1.0	5.0	bee	5.07	IID/CCD	50.1	MDICD/DCC
[3]	4.0-	5.U	sec	5.97	MBYTES	50.1	MDICS/SEC
[7]	4.0-	5.0	sec	5.97	MBytes	50.0	Mbits/sec
[8]	4.0-	5.0	sec	5.97	MBvtes	50.1	Mbits/sec
[0]	4 0-	5 0	gor	5 07	MBytec	50 0	Mhite/sec
	1.0	5.0	BCC	5.57	hiby ces	50.0	10103/300
[⊥⊥]	4.0-	5.0	sec	5.97	MBytes	50.0	MDITS/Sec
[10]	4.0-	5.0	sec	5.97	MBytes	50.1	Mbits/sec
[12]	4.0-	5.0	sec	5.97	MBvtes	50.1	Mbits/sec
	1 0	5 0	0.00	5 07	MDyrt c ~	50 1	Mbita/asa
I TO]	4.0-	. U	sec	5.9/ -	mpytës	T	mutus/sec
[13]	4.0-	5.0	sec	5.97	MBytes	50.0	Mbits/sec
[14]	4.0-	5.0	sec	5.97	MBytes	50.0	Mbits/sec
[16]	4 0-	5 0	SPC	5 97	MByteg	50 1	Mhite/gec
[10]	1.0	5.0	BCC	5.57	hiby ces	50.1	10103/300
[17]	4.0-	5.0	sec	5.97	MBytes	50.0	Mbits/sec
[18]	4.0-	5.0	sec	5.97	MBytes	50.1	Mbits/sec
[20]	4.0-	5.0	sec	5.97	MBvtes	50.0	Mbits/sec
[10]	1 0	5 0	200	5 07	MDyrt c ~	50 0	Mbita/asa
Γ ΤΆ]	4.0-	. U	sec	5.9/ -	mpytës	50.0	mutus/sec
[22]	4.0-	5.0	sec	5.97	MBytes	50.1	Mbits/sec
[SUM]	4.0-	5.0	sec	119	MBytes	1.00	Gbits/sec
[21]	5 0-	6 0	Sec	5 97	MBytee	50 1	Mhits/gec
ι Δ±] Γ Γ'	5.0-	c	500	5.97	MD- 1	50.1 F0 7	
[5]	5.0-	ь.О	sec	5.97	MBytes	50.0	MD1ts/sec
[4]	5.0-	6.0	sec	5.97	MBytes	50.0	Mbits/sec
[6]	5.0-	6.0	sec	5.97	MBvtes	50.0	Mbits/sec
	5.0 E 0	c 0	200	5.J/ E 07	MDart	E0.0	Mbita /
[3]	5.0-	0.0	sec	5.9/	mbyces	50.0	mutus/sec
[7]	5.0-	6.0	sec	5.97	MBytes	50.1	Mbits/sec
[8]	5.0-	6.0	sec	5.97	MBytes	50.0	Mbits/sec
[0]	5 0-	6 0	Sec	5 97	MBytee	50 1	Mhits/gec
L 9]	5.0-	0.0	aeC	5.9/	mbytes	50.1	MULLS/SEC
[11]	5.0-	6.0	sec	5.97	MBytes	50.0	Mbits/sec

[10]	5.0- 6.0	sec	5.97	MBytes	50.0	Mbits/sec
[12]	5.0- 6.0	sec	5.97	MBytes	50.0	Mbits/sec
[15]	50-60	990	5 97	MByter	50 0	Mhite/gec
[10]	5.0- 0.0	Sec	5.97	MByces	50.0	MDICS/SEC
[13]	5.0- 6.0	sec	5.97	MBytes	50.1	Mbits/sec
[14]	5.0- 6.0	sec	5.97	MBytes	50.1	Mbits/sec
[16]	5.0- 6.0	sec	5.97	MBvtes	50.0	Mbits/sec
[17]	E 0 6 0	200	E 07	Mputod	E 0 1	Mhita/aca
	5.0- 0.0	sec	5.97	мвусев	50.1	MDILS/Sec
[18]	5.0- 6.0	sec	5.97	MBytes	50.0	Mbits/sec
[20]	5.0- 6.0	sec	5.97	MBytes	50.1	Mbits/sec
[19]	50-60	Sec	5 97	MBytes	50 1	Mhits/sec
[22]	5.0 0.0	500	5.57	MDester	50.1	Maita (aca
[22]	5.0- 6.0	sec	5.97	MBytes	50.0	MDIts/sec
[SUM]	5.0- 6.0	sec	119	MBytes	1.00	Gbits/sec
[21]	6.0- 7.0	sec	5.97	MBytes	50.0	Mbits/sec
[5]	6 0 - 7 0	990	5 97	MByter	50 0	Mhite/sec
[]]	0.0 7.0	BCC	5.57	HDyces	50.0	110103/300
[4]	6.0- 7.0	sec	5.97	MBytes	50.0	Mbits/sec
[6]	6.0- 7.0	sec	5.97	MBytes	50.0	Mbits/sec
[3]	6.0- 7.0	sec	5.97	MBytes	50.0	Mbits/sec
[7]	6 0 - 7 0	202	5 97	MPuter	50 0	Mhits/sec
	0.0- 7.0	sec	5.97	мвусев	50.0	MDILS/Sec
[8]	6.0- 7.0	sec	5.97	MBytes	50.0	Mbits/sec
[9]	6.0- 7.0	sec	5.97	MBytes	50.0	Mbits/sec
[11]	6.0-7.0	sec	5.97	MBvtes	50.1	Mbits/sec
[1 A I	6070		5.57	MD	E0 0	Mbita/
[10]	0.0- /.0	Sec	5.96	mbytes	50.0	MULCS/SEC
[12]	6.0- 7.0	sec	5.97	MBytes	50.0	Mbits/sec
[15]	6.0- 7.0	sec	5.97	MBytes	50.0	Mbits/sec
[13]	6.0-7.0	sec	5 97	MBvteg	50 0	Mbits/sec
	C O T O		5.97	MD	50.0	Malta /
[14]	6.0- 7.0	sec	5.97	MBytes	50.0	Mbits/sec
[16]	6.0- 7.0	sec	5.97	MBytes	50.0	Mbits/sec
[17]	6.0- 7.0	sec	5.97	MBytes	50.0	Mbits/sec
Г 191	6 0 - 7 0	202	5 97	MPuter	50 0	Mhits/sec
[10]	0.0- 7.0	Sec	5.97	MByces	50.0	MDICS/SEC
[20]	6.0- 7.0	sec	5.97	MBytes	50.0	Mbits/sec
[19]	6.0- 7.0	sec	5.97	MBytes	50.0	Mbits/sec
[22]	6.0- 7.0	sec	5.97	MBvtes	50.1	Mbits/sec
	6070	200	110	Mputod	1 00	Chita/aca
[SUM]	0.0- 7.0	sec	119	MBytes	1.00	GDILS/SEC
[21]	7.0- 8.0	sec	5.97	MBytes	50.1	Mbits/sec
[5]	7.0- 8.0	sec	5.97	MBytes	50.1	Mbits/sec
[4]	7.0-8.0	sec	5.96	MBvtes	50.0	Mbits/sec
[]	7 0 0 0	200	E 07	MDuter	E0 1	Mbita/aca
[0]	7.0- 8.0	sec	5.97	MBytes	50.1	MDILS/Sec
[3]	7.0- 8.0	sec	5.96	MBytes	50.0	Mbits/sec
[7]	7.0- 8.0	sec	5.97	MBytes	50.0	Mbits/sec
[8]	7 0 - 8 0	sec	5 97	MBytes	50 1	Mhits/sec
[0]	7.0 0.0	500	5.57	MDester	F0.1	Maita (aca
[9]	7.0- 8.0	sec	5.97	MBytes	50.1	MDILS/Sec
[11]	7.0- 8.0	sec	5.97	MBytes	50.0	Mbits/sec
[10]	7.0- 8.0	sec	5.97	MBytes	50.1	Mbits/sec
[12]	7.0-8.0	sec	5.97	MBvtes	50.1	Mbits/sec
	7.0 0.0	500	5.57	MDester	50.1	Maita (aca
[15]	7.0- 8.0	sec	5.97	MBytes	50.0	MDIts/sec
[13]	7.0- 8.0	sec	5.97	MBytes	50.0	Mbits/sec
[14]	7.0- 8.0	sec	5.97	MBytes	50.0	Mbits/sec
[16]	7.0-8.0	sec	5 97	MBvtes	50.0	Mbits/sec
[17]	7 0 0 0	200	E 07	MDutog	E0 0	Mbita/aca
	1.0- 8.0	Sec	5.9/	mbytes	50.0	INTER/SEC
[18]	7.0- 8.0	sec	5.97	MBytes	50.1	Mbits/sec
[20]	7.0- 8.0	sec	5.97	MBytes	50.0	Mbits/sec
[19]	7.0- 8.0	sec	5.97	MBvtes	50.0	Mbits/sec
[22]	7 0 - 9 0	000	5 07	MBytog	50 0	Mhita/acc
	7.0- 0.0	500	5.9/	indytes	1	mults/sec
[SUM]	7.0- 8.0	sec	119	MBytes	1.00	Gbits/sec
[21]	8.0- 9.0	sec	5.97	MBytes	50.0	Mbits/sec
[5]	8.0- 9.0	sec	5.97	MBvtes	50.0	Mbits/sec
Г Л I	8 0 - 0 0	000	5 07	MBytog	50 1	Mhits/sec
[4]	8.0- 9.0	sec	5.91	Mbytes	50.1	MDILS/Sec
[6]	8.0- 9.0	sec	5.97	MBytes	50.0	Mbits/sec
[3]	8.0- 9.0	sec	5.97	MBytes	50.0	Mbits/sec
[7]	8.0- 9.0	sec	5.97	MBytes	50.1	Mbits/sec
[0]	8 0. 0 0	000	5 07	MPytoc	50 0	Mbite/coc
	0.0- 9.0	960	5.9/	yces	50.0	INTER/SEC
[9]	8.0- 9.0	sec	5.97	MBytes	50.0	Mbits/sec
[11]	8.0- 9.0	sec	5.97	MBytes	50.0	Mbits/sec
[10]	8.0- 9.0	sec	5.97	MBvtes	50.1	Mbits/sec
[10]	8 0 - 0 0	000	5 07	MBytog	50 0	Mhita/acc
	0.0- 9.0	960	5.9/	yces	50.0	INTER/SEC
[15]	8.U- 9.O	sec	5.97	MBytes	50.1	MD1ts/sec
[13]	8.0- 9.0	sec	5.97	MBytes	50.1	Mbits/sec
[14]	8.0- 9.0	sec	5.97	MBytes	50.1	Mbits/sec
[16]	8 0- 0 0	god	5 07	MBytog	50 1	Mhite/sec
[10]	0.0- 9.0	500	5.9/	MD	50.1	MLL /
[17]	8.0- 9.0	sec	5.97	MBytes	50.1	Mbits/sec
[18]	8.0- 9.0	sec	5.96	MBytes	50.0	Mbits/sec

[20] 8.0- 9.0 sec 5.97 MBytes 50.1 Mbits/sec [19] 8.0- 9.0 sec 5.97 MBytes 50.1 Mbits/sec [22] 8.0- 9.0 sec 5.97 MBytes 50.0 Mbits/sec [SUM] 8.0- 9.0 sec 119 MBytes 1.00 Gbits/sec [21] 9.0-10.0 sec 5.96 MBytes 50.0 Mbits/sec [21] 0.0-10.0 sec 59.6 MBytes 50.0 Mbits/sec [21] Sent 42549 datagrams 5] 0.0-10.0 sec 59.6 MBytes 50.0 Mbits/sec 5] Sent 42548 datagrams Γ ſ 4] 0.0-10.0 sec 59.6 MBytes 50.0 Mbits/sec [4] Sent 42547 datagrams [6] 0.0-10.0 sec 59.6 MBytes 50.0 Mbits/sec 6] Sent 42549 datagrams ſ 3] 0.0-10.0 sec 59.6 MBytes 50.0 Mbits/sec Γ [3] Sent 42547 datagrams 7] 0.0-10.0 sec 59.6 MBytes 50.0 Mbits/sec Γ 7] Sent 42549 datagrams ſ [8] 0.0-10.0 sec 59.6 MBytes 50.0 Mbits/sec Γ 8] Sent 42549 datagrams 9] 0.0-10.0 sec 59.6 MBytes 50.0 Mbits/sec Γ 9] Sent 42550 datagrams [11] 0.0-10.0 sec 59.6 MBytes 50.0 Mbits/sec [11] Sent 42547 datagrams [10] 0.0-10.0 sec 59.7 MBytes 50.0 Mbits/sec [10] Sent 42551 datagrams [12] 0.0-10.0 sec 59.7 MBytes 50.0 Mbits/sec [12] Sent 42551 datagrams [15] 0.0-10.0 sec 59.7 MBytes 50.0 Mbits/sec [15] Sent 42551 datagrams [13] 0.0-10.0 sec 59.7 MBytes 50.0 Mbits/sec [13] Sent 42551 datagrams [14] 0.0-10.0 sec 59.7 MBytes 50.0 Mbits/sec [14] Sent 42552 datagrams [16] 0.0-10.0 sec 59.6 MBytes 50.0 Mbits/sec [16] Sent 42538 datagrams [17] 0.0-10.0 sec 59.6 MBytes 50.0 Mbits/sec [17] Sent 42547 datagrams [18] 0.0-10.0 sec 59.6 MBytes 50.0 Mbits/sec [18] Sent 42541 datagrams [20] 0.0-10.0 sec 59.7 MBytes 50.0 Mbits/sec [20] Sent 42553 datagrams [19] 0.0-10.0 sec 59.7 MBytes 50.0 Mbits/sec [19] Sent 42553 datagrams [22] 0.0-10.0 sec 59.7 MBytes 50.0 Mbits/sec [22] Sent 42553 datagrams [SUM] 0.0-10.0 sec 1.17 GBytes 1.00 Gbits/sec 5] Server Report: 5] 0.0-10.0 sec 58.1 MBytes 48.7 Mbits/sec 0.173 ms 1100/42547 (2.6%) Γ [5] 0.0-10.0 sec 8 datagrams received out-of-order [3] Server Report: [3] 0.0-10.0 sec 57.6 MBytes 48.2 Mbits/sec 0.156 ms 1473/42546 (3.5%) [3] 0.0-10.0 sec 4 datagrams received out-of-order [13] Server Report: [13] 0.0-10.0 sec 56.3 MBytes 47.2 Mbits/sec 0.164 ms 2368/42550 (5.6%) [13] 0.0-10.0 sec 3 datagrams received out-of-order [9] Server Report: [9] 0.0-10.0 sec 57.1 MBytes 47.8 Mbits/sec 0.153 ms 1826/42549 (4.3%) [9] 0.0-10.0 sec 2 datagrams received out-of-order [15] Server Report: [15] 0.0-10.0 sec 56.0 MBytes 46.9 Mbits/sec 0.148 ms 2596/42550 (6.1%) [15] 0.0-10.0 sec 5 datagrams received out-of-order [10] Server Report: [10] 0.0-10.0 sec 56.9 MBytes 47.6 Mbits/sec 0.161 ms 1971/42550 (4.6%) [10] 0.0-10.0 sec 2 datagrams received out-of-order [7] Server Report: 7] 0.0-10.0 sec 57.1 MBytes 47.8 Mbits/sec 0.161 ms 1827/42547 (4.3%) Γ 7] 0.0-10.0 sec 1 datagrams received out-of-order [16] Server Report: [16] 0.0-10.0 sec 55.7 MBytes 46.7 Mbits/sec 0.212 ms 2770/42537 (6.5%) [16] 0.0-10.0 sec 11 datagrams received out-of-order [17] Server Report:

[17] 0.0-10.0 sec 55.8 MBytes 46.7 Mbits/sec 0.159 ms 2756/42546 (6.5%) [17] 0.0-10.0 sec 4 datagrams received out-of-order [21] Server Report: [21] 0.0-10.0 sec 57.5 MBytes 48.1 Mbits/sec 0.178 ms 1546/42548 (3.6%) [21] 0.0-10.0 sec 1 datagrams received out-of-order [22] Server Report: [22] 0.0-10.0 sec 56.9 MBytes 47.6 Mbits/sec 0.204 ms 1969/42552 (4.6%) [22] 0.0-10.0 sec 13 datagrams received out-of-order 4] Server Report: Γ 4] 0.0-10.0 sec 57.3 MBytes 48.0 Mbits/sec 0.178 ms 1656/42545 (3.9%) ſ 4] 0.0-10.0 sec 10 datagrams received out-of-order [8] Server Report: ſ 8] 0.0-10.0 sec 57.2 MBytes 47.9 Mbits/sec 0.159 ms 1763/42548 (4.1%) ſ 8] 0.0-10.0 sec 1 datagrams received out-of-order Γ [6] Server Report: 6] 0.0-10.0 sec 57.3 MBytes 48.0 Mbits/sec 0.170 ms 1644/42548 (3.9%) ſ [6] 0.0-10.0 sec 5 datagrams received out-of-order [11] Server Report: [11] 0.0-10.0 sec 58.6 MBytes 49.1 Mbits/sec 0.160 ms 736/42546 (1.7%) [11] 0.0-10.0 sec 2 datagrams received out-of-order [14] Server Report: [14] 0.0-10.0 sec 56.2 MBytes 47.0 Mbits/sec 0.180 ms 2481/42551 (5.8%) [14] 0.0-10.0 sec 5 datagrams received out-of-order [20] Server Report: [20] 0.0-10.0 sec 55.8 MBytes 46.7 Mbits/sec 0.211 ms 2736/42552 (6.4%) [20] 0.0-10.0 sec 2 datagrams received out-of-order [18] Server Report: [18] 0.0-10.0 sec 56.0 MBytes 46.9 Mbits/sec 0.213 ms 2582/42540 (6.1%) [18] 0.0-10.0 sec 10 datagrams received out-of-order [19] Server Report: [19] 0.0-10.0 sec 55.6 MBytes 46.6 Mbits/sec 0.215 ms 2887/42552 (6.8%) [19] 0.0-10.0 sec 9 datagrams received out-of-order [12] Server Report: [12] 0.0-10.0 sec 56.8 MBytes 47.5 Mbits/sec 0.200 ms 2048/42550 (4.8%) [12] 0.0-10.0 sec 1 datagrams received out-of-order

BadgerNet Overview

The overview portion of this document has been created by BadgerNet / AT&T and edited by WiscNet. Its intent is to explain the requirements needed in order to procure accurate circuit testing results

Internet speed tests results may be impacted by several variables, including

- · Tool used to test
- · Location of testing laptop/PC in the network
- Time of day when test is run

Speed Testing Tools

Most of our members test their internet connection speeds using online browser based tests against servers hosted somewhere on the Internet, for example, http://speedtest.wiscnet.net/. These tests work fine for low bandwidth internet services but don't scale well for high speed internet connections. In order to get an accurate speed test a different testing tool like iperf should be used.

Location of testing laptop/PC in the network

Location of the testing PC/Laptop is critical for accurate test results. Note, from the diagram below, that location D is the best place to test your Internet speed from. The reliability of test results go down as we move the test point to C, B and A.

The configuration and capacity of the laptop is equally critical for the accuracy of circuit testing. Please ensure your laptop network cards and configuration are Gig/Capable.

Time of Day

Browser-based speed test results can also vary based on time of day, depending on the bandwidth consumed by the site users at the time the tests are run. For example, if a site has a 100Mbps connection and the users at the site are already consuming 60Mbps download and 25 Mbps upload sustained bandwidth for their business use, the test results will only show 40Mbps download and 75Mbps upload speeds. Therefore, it is recommended that these tests are run before and after business hours if you are using a browser base testing tool.

Mid-day Testing

Some WiscNet members desire to run speed test during business hours to see if they are getting full bandwidth during the day. In others instances, WiscNet will require the test to by-pass any LAN equipment in order to isolate the testing entirely to the circuit. Note that an <u>accurate</u> mid-day test with iperf will be service impacting. In order to run an accurate test during the day, a test window with be scheduled with WiscNet and in some cases with AT&T and WiscNet. The test will entail disconnecting the red cable, as shown in the drawing below, and connecting a laptop to the juniper switch at point D, thus effectively isolating the WAN from the site LAN. Disconnecting the red cable will disrupt service for the site users.

