Real World Performance Results

Using Application Acceleration to improve Bandwidth and Reduce Latency

Featuring Blue Coat MACH5 Technology

Oak Hill House, Somerton Road, Hartest, IP29 4NA. Tel : 01284 830 841. www.linchpinnetworks.co.uk
VAT Number : 855 9292 78. Company Reg : 5224922

MACH^5 Real-World Performance Results

Every wide area network is different and each customer transmits different data around this network. Below are tables of real-world reductions in wait-time and increases in WAN throughout that customers have seen from deploying Blue Coat's patent-pending MACH^5 technology,. The characteristics of the network and the types of traffic transmitted are shown to demonstrate the wide traffic types enhanced by MACH^5.

Latency Elimination

The Latency Elimination table displays the performance improvements (reduction in "wait time") MACH^5 delivers using different data and network conditions. Most results were when the network was "warm"; the traffic had previously been transmitted across the network, some results show the improvements when the network was "cold", with no previous data having been transmitted.

- Network characteristics usually shows network single-trip delay in milliseconds and bandwidth available and other characteristics if pertinent.
- Data type is either the protocol or application being tested, with details on the user activity.
- The two columns of data are shown in seconds (if recorded).
- There are then two columns showing the benefits received; the Reduction in wait-time column shows the percentage reduction in the delay seen by the customer.
- An alternative method of displaying this data is the Multiplier column, this shows the amount of data that could now be transmitted in the same length of time – a 90% reduction in latency is equivalent to a 10-fold multiplier in throughput available.

Network	Activity	Without MACH^5	With MACH^5	Reduction in wait-time	Multiplier
T1, 150ms, packet loss 0.1%	CIFS copy 170MB file	28m33s	14s	99.18%	122
80ms, 1.5Mbps	CIFS copy 5.44MB PDF			44.44%^{cold} 94.23%	1.8^{cold} 17.33
80ms , 1.5Mbps	HTTP 27MB			66.78%^{cold} 96.45%	3.01^{cold} 28.17
80ms, 1.5Mbps	HTTPS 20MB .PDF			96.72%	31
80ms, 1.5Mbps	CIFS .PPT open 6.1MB			91.2% 63.37%^{cold}	11.36 2.73^{cold}
40ms, 2Mbps	CIFS 5MB copy	28sec	1.5sec	94.64%	18.67
700Miles, 1126Km	CIFS 10MB file copy	2min 34sec	3sec	98.05%	51.33
50ms, 64Kbps	Login to application	20sec	2sec	90%	10
T1, 150ms, pkt loss 0.1%	80GB Double-Take backup	500sec	66sec^{cold} 13sec	86.89%^{cold} 97.4%	7.63^{cold} 38.49
40ms, bandwidth 2Mbps	CIFS remote open PPT 5MB	29sec	3.5sec	87.93%	8.29

Network	Activity	Without MACH[5]	With MACH[5]	Reduction in wait-time	Multiplier
200ms, 5Mbps	Notes file open 10MB	76sec	10sec	86.84%	7.6
40ms, 2Mbps	MAPI 5MB attach	186sec	3sec	98.39%	62
150ms, packet loss 0.1%	MAPI 6MB attach	127sec	30sec	76.38%	4.23
300ms	CIFS 6MB Word File	7min 30sec	1min 30sec	80%	5
150ms, 256Kbps	Lotus Domino 17MB	11min 28sec	5min 59s[cold] 20sec	48%[cold] 97%	1.9 34.4

Bandwidth gain

This table shows the bandwidth gain achieved by MACH[5]. Again there are some results from when the network was cold, as the devices were initially powered up. Network characteristics are less important in this test, as the results are bytes transmitted and these are the same whatever the underlying network.

Network	Activity	Without MACH[5]	With MACH[5]	Reduction in bandwidth	Multiplier
80ms, 1.5Mbps	CIFS copy 5.44MB PDF			99.26% 47.35%[cold]	135.88 1.9[cold]
80ms, 1.5Mbps	HTTP 27MB			66.89% 98.79%[cold]	3.02 82.56[cold]
80ms, 1.5Mbps	HTTPS 20MB .PDF			99.99%	10625
80ms, 1.5Mbps	CIFS .PPT open 6.1MB			99.72% 37.5%[cold]	355.96 1.6[cold]
50ms, 64Kbps	Login to application	100% WAN usage	25% WAN usage	75%	4
Unknown	Bitorrent 1GB .EXE			99.99%	9219
[Unknown]	Bitorrent 80MB .MP3			28.03%[cold] 99.99%	1.39[cold] 9867
T1, 150ms, 0.1% pkt loss	4.6GB Double-Take Replication	8 MB/min	61 MB/min[cold] 308 MB/min		7.63[cold] 38.5
[Unknown]	CIFS 9MB Word file, change two lines and save remotely	9MB	100KB	98.67%	75
[Unknown]	CIFS 79MB directory copy mix of .DOC and .ZIP	79MB	2.8216MB	96.43%	28
[Unknown]	9MB .PDF MAPI attachment	9MB	2.1988MB[cold]	75.57%[cold]	4.09[cold]
150ms , 256Kbps	Lotus Notes 13MB database	13MB	400KB	97%	32.5
150ms, 256Kbps	Lotus Domino	17MB	10MB[cold] 343K	37%[cold] 98%	1.5[cold] 50
150ms, 256Kbps	Lotus Domino (insert action)	2.8MB	73K	97%	38
[Unknown]	Oracle SQL	808986	110424	86.35%	7.326

Nov 17th 2006 –v4

[cold] Result of a "cold" transfer.