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Wireless Performance Comparison Tests

Model / Feature	100Mb LAN Cable	Netgear WG602	Netgear WG102 (high power)	Netgear WG102 (low power)	Engenius NCB-3220 (low power)	Engenius NCB-3220 (high power)	Engenius ECB-3610S (low power)	Engenius ECB-3610S (high power)	Solwise WL109RN	
PCATTCP(6) test, perfect link	89.7Mbps	20, 54meg connection speed	23, 54meg connection speed	9, 11meg connection speed	23, 54meg connection	23, 54meg connection	25, 54meg connection	25, 54meg connection	50meg (via AV network)	84meg (via 100meg LAN)
Comments	Direct LAN connection	EL-362EXT at client end	EL-362EXT at client end	EL-362EXT at client end	EL-362EXT at client end	EL-362EXT at client end	EL-362EXT at client end	EL-362EXT at client end	The 109RN is both 2.4Gz 11n and 11n plus Homeplug 200AV (mains) networking. Tests were done via the LAN ports of the router and also via the AV inteface of the router. Wireless was tested using an EL-9701EXT2 11n client.	

Model / Feature	Engenius ESR-9710 (11g mode)	Engenius ESR-9710 (11n mode)	Netgear WN802T (11n mode)	Netgear WN802T (11g mode)	Solwise BWAP608 (high power)	Solwise BWAP608 (low power)	Solwise WL950RT4	Solwise WL950RT4	Engenius ECB-8610 (11a mode)	Pheenet WLn-501	
PCATTCP test, perfect link	22, 54meg connection	88meg	78meg	22, 54meg connection	23, 54meg connection	20, 54meg connection	72meg (100meg LAN)	53meg (100meg LAN)	23, 54meg connection	85meg	74meg
Comments	EL-9701EXT2 at client end	EL-9701EXT2 at client end	EL-9701EXT2 at client end	EL-9701EXT2 at client end	EL-362EXT at client end	EL-362EXT at client end	EL-9701EXT2 at client end	WL-950USB at client end	EL-862EXT client, running channel 36 (Band A)	EL-9701EXT2 at client end	WLn-301 at client end

Conclusions:

1. In our office environment it was not possible to do extended testing on the ability of wireless to cope with a tricky, in-building link: We achieved 'Excellent' signal quality everywhere within our building!
2. All the 11n products fell well short of the advertised 300meg connectivity! Even with perfect signals we could not acheive better than 88meg (with the Engenius 11n ESR-9710 client).
3. It was noticable that the 11n products took a finite time, after placing, for the best performance to be attained. i.e. we could place the USB client at one position and it would take anything up to 2 or 3 minutes for stable, best, performance to be attained. If the USB client was then moved (even if just a foot on the desk) then the speed would drop and it would take another 3 minutes to reach best speed. One assumes this is due to the time taken for the product to remap its wireless neighbour-hood. Perhaps related to this, we found the 11n products were much more sensitive with respect to position - simply moving the unit a few inches on the desk could alter the tested speed by up to 30% - this made it quite hard to get best results from the units.
4. The WL950RT4 and WLn-501 products have 100meg LAN ports so it should have been limited by the 100meg LAN ports (the other two 11n router/AP's in the test had 1gig LAN ports). Despite this the performance results obtained were very good indeed; comparible with the 1gig units. Also, in a multi-user environment with multiple users connected using more than one LAN ports then the limiting factor of the 100meg ports would not be siginificant.
5. The USB dongle style 11n clients (like the WL-950USB and the WLn-301) gave lower performance than the desk style, twin external antenna, Engenius USB unit (EL-9701EXT2). It is assumed that this was because of the superior antenna arrangement of the Engenius desk unit, however, it might be linked to the number of transmitters and receivers present in the respective units.
6. PCATTCP (Test TCP) is a command-line sockets-based benchmarking tool for measuring TCP and UDP performance between two systems (http://www.pcausa.com/Utilities/pcattcp.htm). For the purposes of these tests raw TCP performance was tested (since this is the prefered protocol used for IP networking) - it is assumed that UDP performance would have been higher (due to the reduces packet handshaking used for UDP). These perfomance tests are intended as illustrative measurments allowing us to compare the different products. They should NOT be taken as definite indications of the performance which a user might obtain in a real world scenaorio - more a means allowing the user to judge between the different units. BTW, if users were to test using file transfer then much lower figures would have been obtained - file transfer protocols, such as dragging and dropping a file via Windows explorer, are very inefficient ways of sending data!