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Nightly Build 1265 contains a number of improvements broadly called Link Quality Management. It's designed to make the AREDN network more stable and improve the available bandwidth. Tests with these changes have shown improvements from modest to close to 200% in link throughput, tested end to end with iperf3.
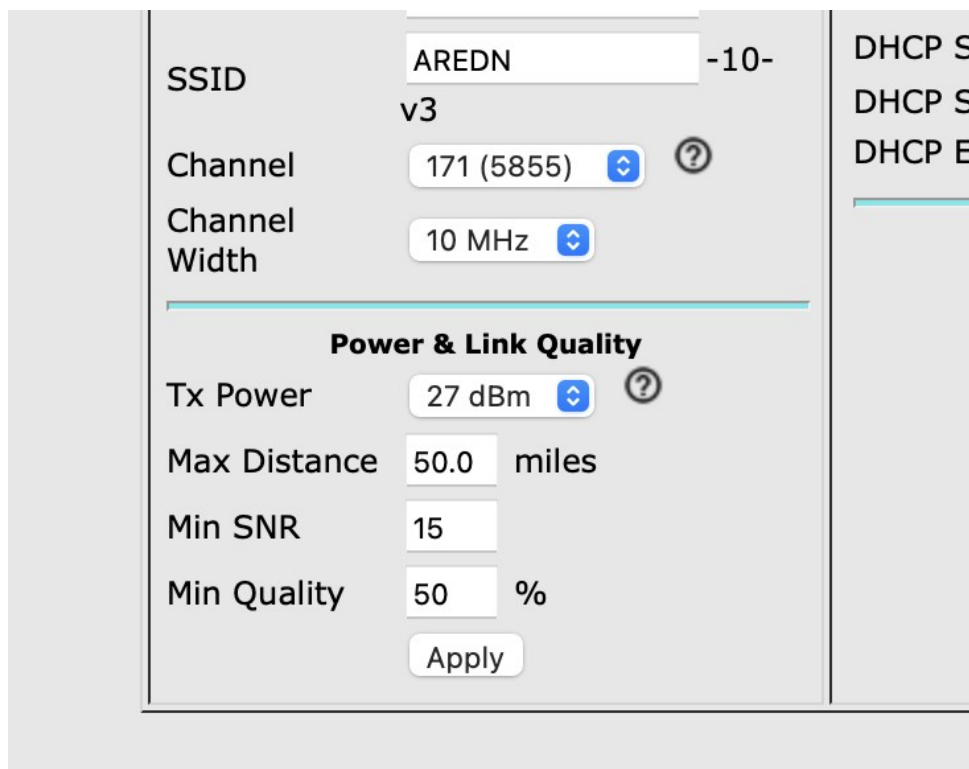
NOTE: LQM is turned off by default.

When enabled LQM accomplishes this in two ways:

First, it drops links to neighbors which won't work well. Links are dropped that don't have good SNR, are too far away, and have low quality (forcing retransmissions).

Second, it uses the distance to the remaining links to optimize the radio which improves the bandwidth. This mechanism replaces the older 'auto-distance' system which was often confused by distant nodes with which it could barely communicate.

Note that the default settings can show substantial improvements as is. Recommend running with those settings for a while before tweaking anything.

If you do decide to tweak these settings, **use caution**. As with changing other settings, an incorrect setting could badly impact performance or in a worst case cut you off from a remote node.

Basic Status Page

LQM Controls on the Advanced Configuration page - tweak with caution

LQM Controls parameter explanations

margin_snr - When the SNR calls below the min_snr value, this is the additional amount the SNR must rise above the min_snr before the node is considered good again. This avoid nodes bouncing in and out of a valid state.

min_distance - When long and short links are mixed, the short links performance will be effected by the longs links. You may want to increase this value to exclude the short links, forcing them to use a more performant connection to a different node.

margin_quality - Similar to the margin_snr, but for the quality value (hysteresis)

ping_penalty - Every link to a neighbor is pinged once per minute to measure the connection latency. If this latency is > 1 second, this amount is subtracted from the quality value to reflect the poor link performance.

user_blocks - a comma separated list of MAC addresses which will be blocked regardless of anything else. MAC addresses must be upper case only, colon delimited, comma separated, no whitespace.   *USE AS A LAST RESORT.*

KN6PLV-BrkOxfLA-Gurt neighbor status

Location: 37.888 -122.268

Berkeley. Oxford St & Los Angeles, Elevation 130m. Ubiquiti
NanoStation M5 XW. Heading 208

Refresh   Quit

Neighbor	SNR	Distance	Quality	TX Estimate	Status
kn6plv-brkoxfla-effelsberg	52	0.00 miles	-	-	blocked - dtd
kj6weg-berk-strcrk-pbm5	14/12	1.88 miles	-	-	blocked - signal
kj6weg-berk-strcrk-nsm5	23/25	1.89 miles	90%	17.20 Mbps	active
B4:FB:E4:58:29:6D	1	-	-	-	blocked - signal
04:18:D6:0E:00:BC	7	-	-	-	blocked - signal
68:D7:9A:90:01:20	6	-	-	-	blocked - signal
aa6ax-twinpeaks-nsm5-lab	7	13.51 miles	-	-	blocked - signal
w6nmc-cg-island-arc	5	7.22 miles	-	-	blocked - signal

Example Neighbor Page

Also present in the LQM is a "first time safety net" feature.   If the first time LQM is activated it would cut the node off from all other nodes, it will adjust the default settings to ensure the node can at least talk to one other node.