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**Multi-Channel Link-level Measurements in 802.11 Mesh
Networks**

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Abstract.

Several routing protocols for 802.11 mesh networks that operate at multiple rf channels have been described before [10][13][12]. However, only few facts about link-level characteristics in multi-channel environments have been published. This paper presents observations, made in an indoor testbed, about the impact of channel-assignment on the quality of links..

We argue that the assumption ‘all radio channels are equal’ does not hold in almost all indoor scenarios. Hence, great care must be taken when assigning radio channels to individual links, in order not to spoil network performance. We found that for any given environment the quality and symmetry of a wireless link (quantified by delivery probability) varies significantly depending on the radio channel used. The delivery probability between the best and the worst case could easily exceed a factor of two.

However, existing 802.11 multi-channel protocols assume that all channels are equal, which does not reflect real-world conditions. To remedy to this shortcoming we present the Multi Channel Extremely Opportunistic Routing (MCExOR) protocol [12].

Keywords. Multi-channel, link-level measurement, wireless mesh network, IEEE 802.11.

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