The Ryu-Takayanagi (RT) formula relates the entanglement entropy of a region in a holographic theory to the area of a corresponding bulk minimal surface. Using the max flow-min cut principle, a theorem from network theory, we rewrite the RT formula in a way that does not make reference to the minimal surface. Instead, we invoke the notion of a "flow", defined as a divergenceless norm-bounded vector field, or equivalently a set of Planck-thickness "bit threads". The entanglement entropy of a boundary region is given by the maximum flux out of it of any flow, or equivalently the maximum number of bit threads that can emanate from it. The threads thus represent entanglement between points on the boundary, and naturally implement the holographic principle. As we explain, this new picture clarifies several conceptual puzzles surrounding the RT formula. We give flow-based proofs of strong subadditivity and related properties; unlike the ones based on minimal surfaces, these proofs correspond in a transparent manner to the properties' information-theoretic meanings. (This abstract is taken from 1604.00354 and not written for this talk by M. Headrick! )