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We generalize P. Eberlein's (1994) results on totally geodesic subalgebras of nonsingular 2-step nilpotent Lie algebras to include the singular case. Results to be discussed include the complete description of all totally geodesic submanifolds of a 2-step nilpotent Lie algebra, the decomposition of any totally geodesic submanifold, and sufficient conditions for a totally geodesic submanifold to be a totally geodesic subalgebra. Several examples will be given. (Received February 08, 2011)