Uniqueness of product decompositions of topological spaces

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Given a decomposition of a topological space as a product $X = X_1 \times ... \times X_n$ of indecomposable factors it is natural to ask whether this decomposition is in some sense unique. It turns out that the answer is negative even when the factors are manifolds. However, one can prove that the p-localizations of X for any prime p admit essentially unique decompositions as products of indecomposable factors. We will sketch the proof of this fact using a combination of algebraic and topological methods.