It is generally conceivable to assume that high dimensional data points are on submanifolds of the space. These submanifolds can be modeled by a number of linear subspaces. This is the main intuition behind a majority of subspace clustering algorithms. However, subspaces computed by these algorithms, consist of disconnected subsets of the submanifolds and therefore, they do not form localized clusters. We propose Low Dimensional Localized Clustering (LDLC), a new method for subspace clustering. LDLC, unlike existing methods, respects the topology of the submanifolds and assigns the data points to localized clusters such that the total reconstruction error is minimized.