This paper proposes a reformulation of the scenario-based two-stage unit commitment problem under uncertainty that allows finding unit-commitment plans that perform reasonably well both in expectation and for the worst-case realization of the uncertainties. The proposed reformulation is based on partitioning the sample space of the uncertain factors by clustering the scenarios that approximate their probability distributions. It is, furthermore, very amenable to decomposition and parallelization using a column-and-constraint generation procedure.