In this talk we will describe a new approach to classify 2-generated $p$-groups of class two, by recognizing each such group of order $p^n$ as a central extension of $[G, G] \cong C_{p^\gamma}$ by $C_{p^\alpha} \times C_{p^\beta}$, where $\alpha + \beta + \gamma = n$.

We use the presentations to obtain the number of non-isomorphic 2-generator groups of class at most 2 and order $p^n$, some invariants of the groups, and to compute some of their homological invariants and properties (e.g., determine which ones are capable). (Received August 20, 2008)