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Eric Swartz* (easwartz@wm.edu), Department of Mathematics, College of William and Mary,
P.O. Box 8795, Williamsburg, VA 23187-8795. *2-arc-transitive graphs of order kp^n .*

In recent years, there has been great interest in classifying graphs with a given amount of symmetry (e.g., 2-arc-transitive, arc-transitive, vertex-transitive) of a specific order (e.g., $4p$, where p is a prime). Many of these results follow a familiar pattern, and, in this spirit, we prove the following result: there exist functions c and g such that, if k , n and d are positive integers with $d > g(n)$ and Γ is a d -valent 2-arc-transitive graph of order kp^n with p a prime, then $p \leq kc(d)$. In other words, there are only finitely many d -valent 2-arc-transitive graphs of order kp^n with $d > g(n)$ and p prime, generalizing a recent result of Conder, Li and Potočnik. This is joint work with Luke Morgan and Gabriel Verret. (Received August 12, 2016)