Extensible software-based routers running on commodity off-the-shelf hardware and open-source operating systems have been motivated by the progress in hardware technologies and by the demand for routers with new capabilities. The Click modular router is one such software system. Click provides a mechanism to extend packet processing functions while supporting higher packet forwarding performance compared with other software-based routers. However the limitation of executing on a PC is in tension with the requirement for higher performance. In this paper, we explore the scalability of an extended version of Click that runs on a cluster of PCs connected by a high-speed/low latency InfiniBand interconnection network. We present the implementation and evaluation of our prototype. Our measurements show that the performance of this router can be scaled nearly linearly with increasing cluster size.