Abstract. We investigate the Arens products on the biduals of certain algebras of operators on nonreflexive Banach spaces. To be precise, we study the α-nuclear operators, where α is a tensor norm. This includes the approximable and nuclear operators, and we use these, together with the 2-nuclear operators, as motivating examples. The structure of the two topological centres of the bidual are studied, and typical results are that for the approximable operators, the two topological centres are always distinct, neither contains the other, and both strictly contain the original algebra. In contrast, on a nonpathological Banach space, the topological centres of the bidual of the nuclear operators coincide. Our methods allow us to also study the algebra of compact operators, even when the compacts are not equal to the approximable operators.