Guaranteed services (GS) are important in that they provide predictability in the complex dynamics of shared communication structures. This paper discusses the implementation of GS in asynchronous Network-on-Chip. We present a novel scheduling discipline called Asynchronous Latency Guarantee (ALG) scheduling, which provides latency and bandwidth guarantees in accessing a shared media, e.g., a physical link shared between a number of virtual channels. ALG overcomes the drawbacks of existing scheduling disciplines, in particular the coupling between latency and bandwidth guarantees. A 0.12 μm CMOS standard cell implementation of an ALG link has been simulated. The operation speed of the design was 702 MD/s.