

Kubernetes provides an orchestration framework for micro-services based on containerised solutions. Individual services are instantiated a number of times within a Kubernetes deployment and the orchestration framework manages the network traffic between the individual services to each other and network elements outside a deployment. The communication between the components of a deployment, the control plane managing a deployment and the networks elements outside a deployment is generally based on a very traditional setup of HTTP/1.1 over TCP over IPv4. The evolution of HTTP has resulted in a development towards encrypted protocols that implement stream-based communication over connection-less transport protocols e.g. the current version of HTTP/3 is layered on top of QUIC which in turn is based on UDP and implements TLS 1.3 and individually synchronised streams. This development is in stark contrast to the traditional approach taken in Kubernetes and introduces significant challenges when attempting to connect network elements outside a deployment to services inside a deployment using HTTP/3 and to traffic from individual streams to specific services within a deployment. The research provides an attempt to apply the QUIC based HTTP3 protocol within a kubernetes environment, for the purpose of ingress based communication. The focus lays on the difficulties which lay therein, and the methods taken to circumvent and ultimately get a working solution. We intend to avoid simplistic implementations which mirror a simplified architecture, as that would defeat the purpose of applying it to the Kubernetes environment. As such the focus is on ingress or ingress controller based implementations. Finally we will compare the ease of setup against global use of the protocol, highlighting the discrepancy within the current open source environment.