**CHAPTER-1**

**INTRODUCTION**

In the dynamic realm of software development, the ability to effectively manage and scale applications has become increasingly crucial. With the ever-growing demands of modern applications, traditional monolithic architectures often struggle to adapt to fluctuating workloads, leading to performance bottlenecks and potential downtime. To address these challenges, the combination of Kubernetes and microservices architecture has emerged as a powerful solution, providing a robust and scalable foundation for building modern applications.

In this report, we will delve into the implementation of a custom controller autoscaler within a Kubernetes environment to dynamically scale our microservices based application. This approach leverages the strengths of both Kubernetes and microservices to achieve seamless scalability and ensure optimal performance under varying load conditions.