**The Differences Between HTTP1.1 and HTTP2**

HTTP, or Hypertext Transfer Protocol, is a communication protocol used to transfer data between servers and web browsers. With the rise in the number of internet users and the increasing demand for speed and efficiency, the HTTP protocol has gone through a number of updates over the years. HTTP1.1 and HTTP2 are two of the most commonly used versions of HTTP.

**The Basics**

HTTP1.1 has been the standard for about 15 years and still forms the basis of most web interactions. HTTP2 was introduced in 2015 to offer a faster, more efficient, and more secure protocol. The key difference between the two is primarily the way that data is packaged and transferred between web servers and browsers.

**Multiplexing**

HTTP1.1 only allows for one request at a time per TCP connection, with the others waiting in a queue. This can result in slow loading times, especially when multiple requests are made. In contrast, HTTP2 utilises multiplexing, meaning that multiple requests can be sent and received in parallel over a single connection. This can lead to significant improvements in load times and faster website speeds overall.

**Compression**

HTTP1.1 does not feature native compression, which often results in redundant data transfers and slow load times. While compression can be enabled through the addition of gzip compression algorithms, it still adds another layer to the protocol, impacting its efficiency. HTTP2, however, has compression built-in, which means that web content can be more efficiently compressed and transferred, leading to faster load times.

**Security**

While HTTP1.1 allows for encryption through the use of SSL certificates, this is not automatic. Due to its security vulnerabilities, the use of SSL certificates is becoming increasingly necessary to encrypt data in transit and prevent online threats. HTTP2, on the other hand, requires encryption through the use of SSL/TLS certificates as standard. This ensures that data is protected at all times.

**Server Push**

HTTP1.1 requires a separate request to be made for each file, meaning that a slow connection can result in lag times. HTTP2 features server push, which means that a web page and all its elements can be sent as a single package, leading to faster loading speeds, even on slower internet connections.

**Conclusion**

There are clear advantages to migrating from HTTP1.1 to HTTP2. By using the more advanced and efficient protocol, web developers and administrators can improve the performance of web pages and applications, enhance security, and provide a better experience for users overall. While the transition may require some initial effort, the benefits are worth it and will ultimately help to drive your web performance forward.