Estudo aumentando gradativamente a carga UDP. Qual o impacto no TCP? Ocorre starvation

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Objetivo do Trabalho: realizar uma análise comparativa de desempenho entre conexões TCP e UDP em diferentes cenários.

Implementando um um programa servidor e outro cliente para estabelecer uma conexão direta e realizar análises comparativas entre diferentes cenários

PONTOS LEVANTADOS:

- número de pares
- algoritmos de congestionamento
- variações na vazão do UDP

O uso do iperf3 como ferramenta principal nos permitiu obter resultados precisos e confiáveis para a avaliação.

Detalhes

O código do cliente permitiu que fossem definidos parâmetros como o número de conexões TCP, algoritmos de congestionamento, vazão do UDP, duração dos envios e formato de exportação dos arquivos (JSON ou TXT)

O código do servidor foi responsável por iniciar os servidores iperf3 para atender às conexões do cliente, permitiu a configuração do número de servidores a serem iniciados e o formato de exportação dos arquivos. O código iniciou os servidores iperf3 usando subprocessos e redirecionou a saída para arquivos de texto correspondentes.

Testes:

Cubic -> **utilização agressiva da rede**

Reno -> **priorizando evitar congestionamentos**

Par Cubic:

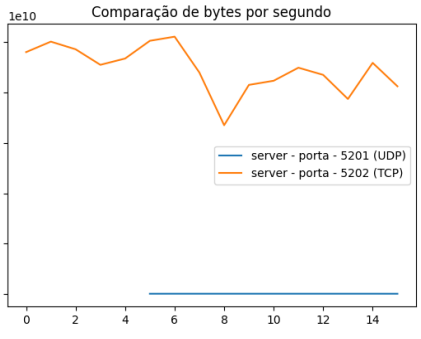
TCP UDP

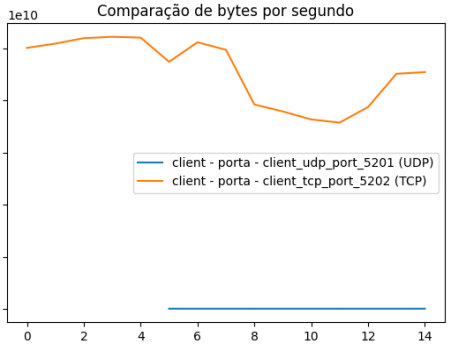
90Mb

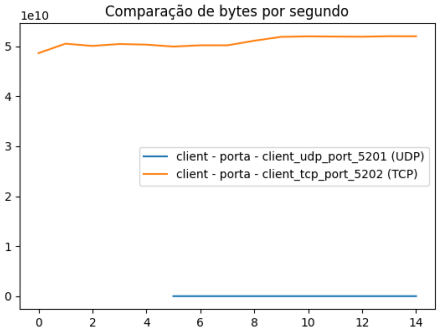
50Mb

20mb

client:





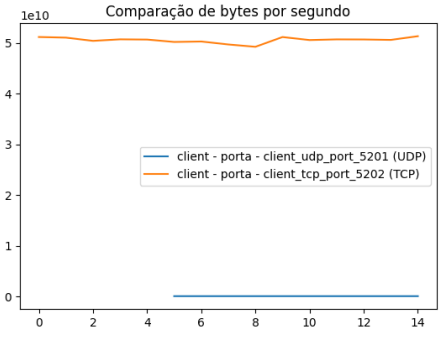


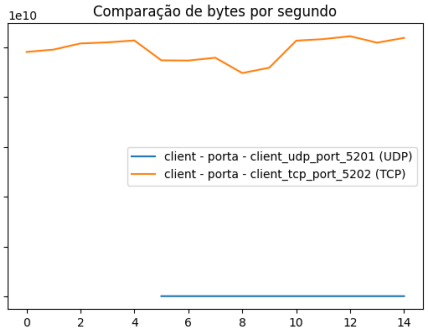
Par Reno:

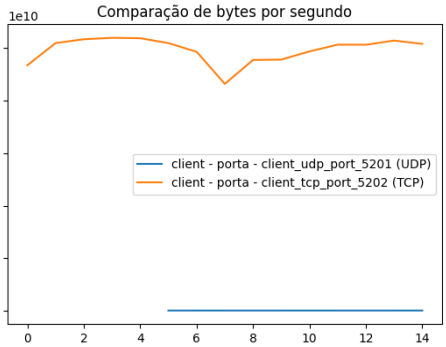
90Mb

50Mb

20m



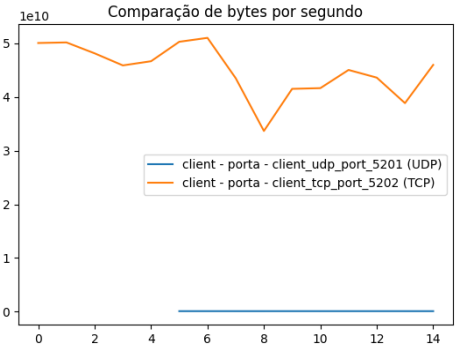




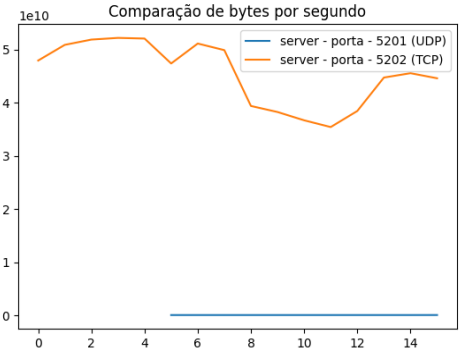
Par Cubic:

TCP UDP

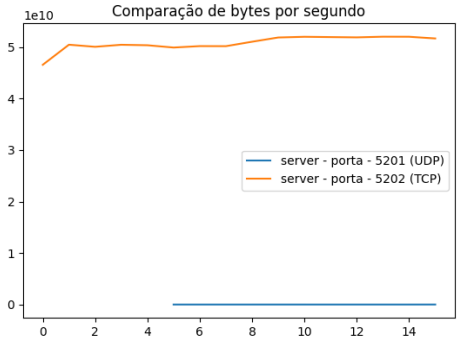
90Mb



50Mb

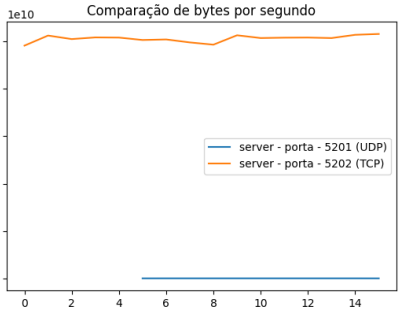


20mb

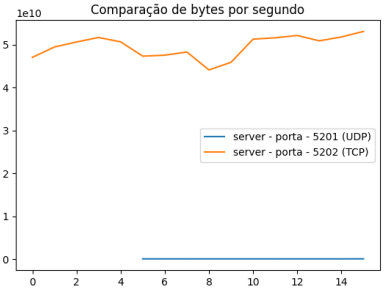


Par Reno:

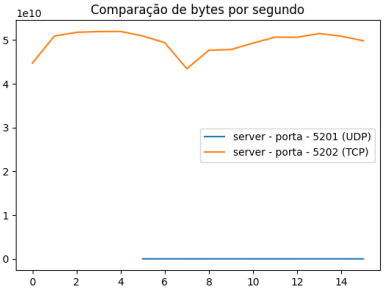
90Mb



50Mb



20m

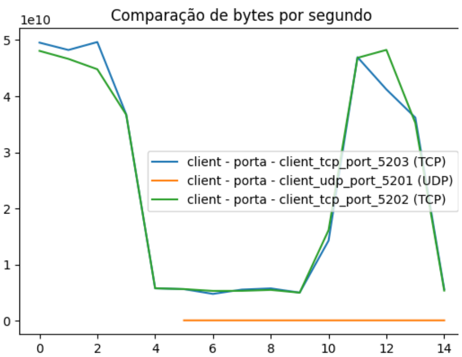


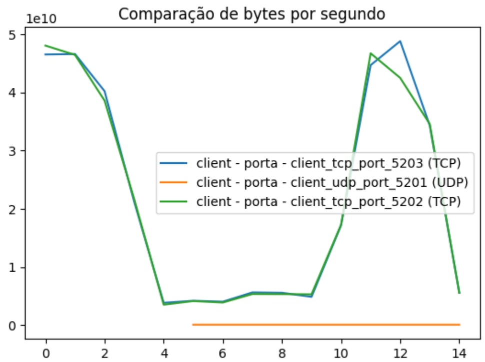
2 Pares Reno:

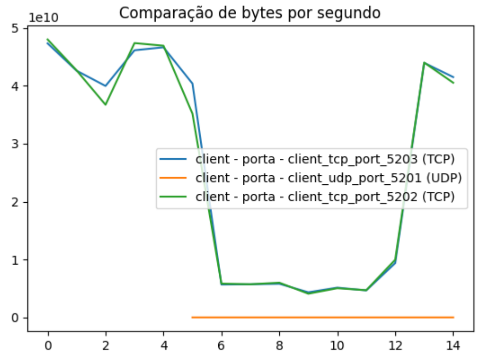
TCP TCP UDP

90Mb 50Mb 20mb

client:

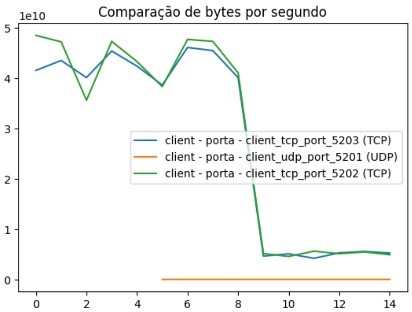


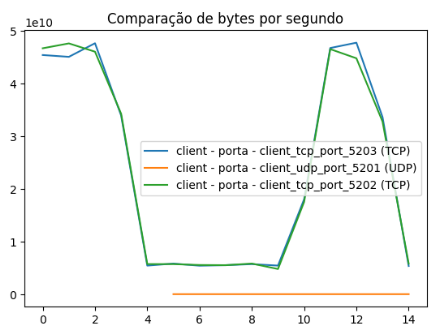


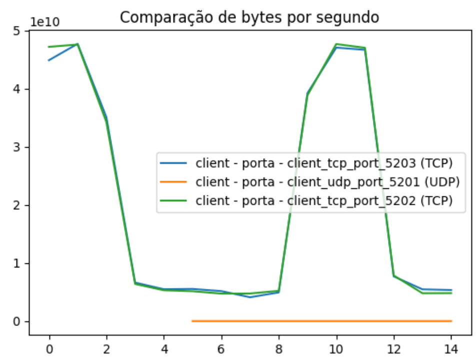


2 Pares Cubic:

90Mb 50Mb 20mb



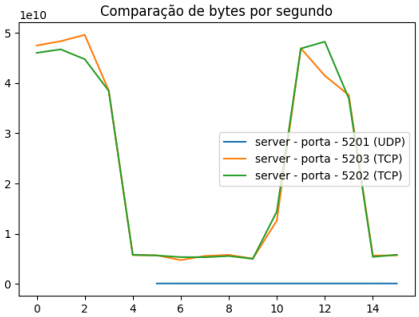


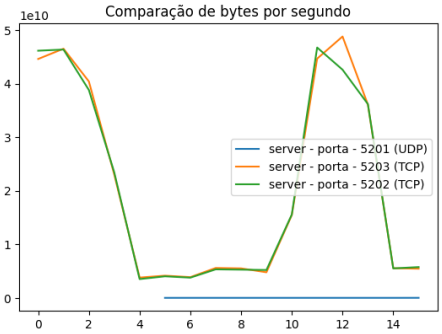


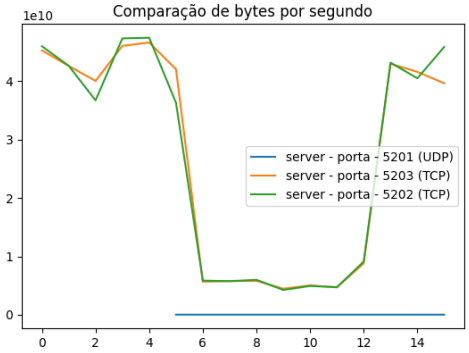
2 Pares Reno: TCP TCP UDP

90Mb 50Mb 20mb

server:

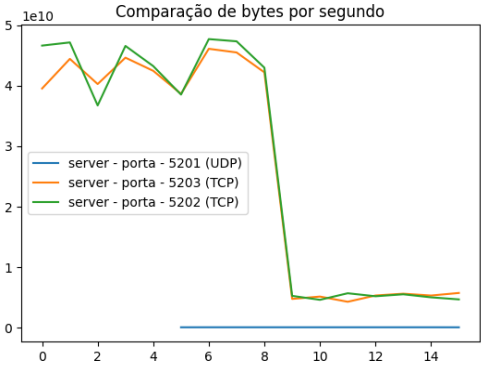


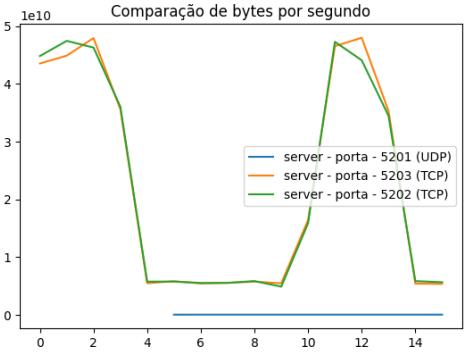


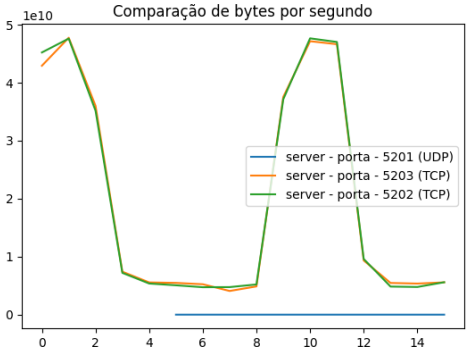


2 Pares cubic:

90Mb 50Mb 20m



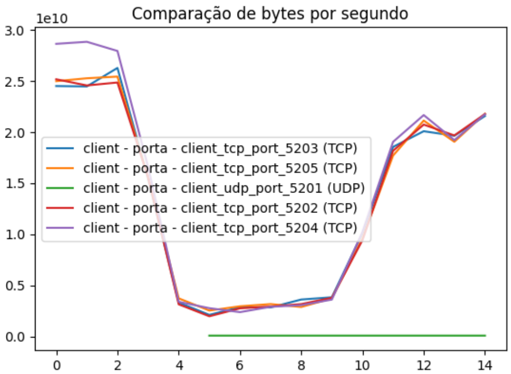


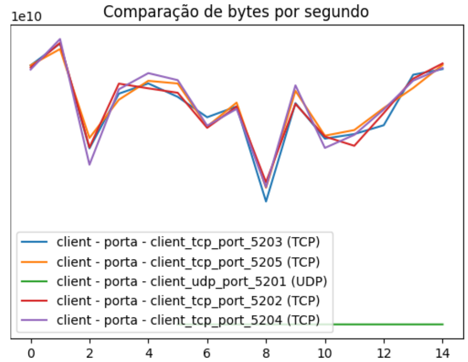


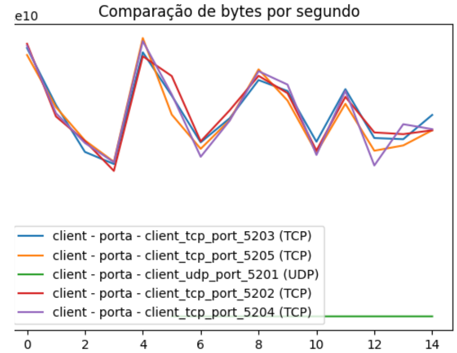
4 Pares 2Reno/2cubic:

90Mb 50Mb 20mb

client:

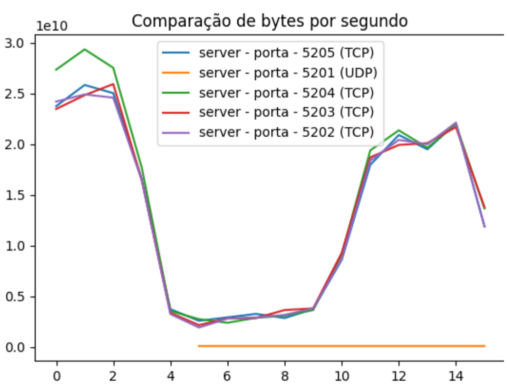


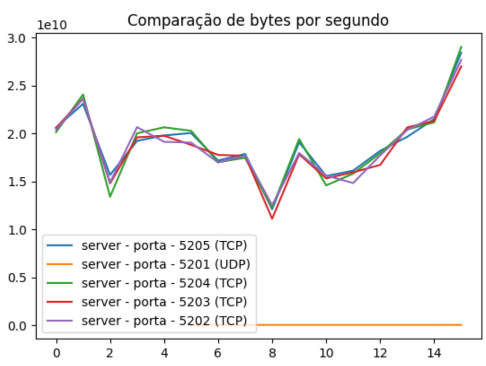


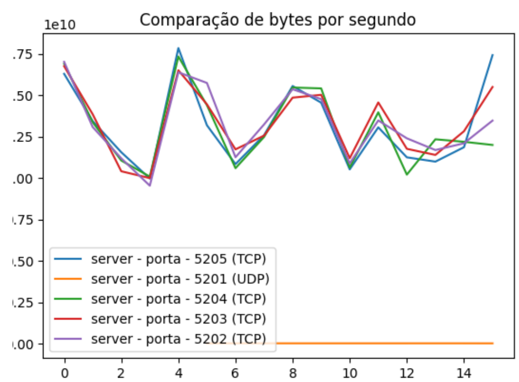


server:

90Mb 50Mb 20mb







referencias:

Diniz, Pedro Henrique Carretta and Nilton Alves Júnior. “Ferramenta IPERF: geração e medição de Tráfego TCP e UDP.” (2014).