Network Performance Criteria

- Response Time
- Throughput (b/s)
- Normalized throughput

$$S = \frac{R}{C} \; where$$

$R \; = \; Average\ error\ free\ b/s\ passing\ through\ a\ reference\ point\ in\ the\ network$

$S \; = \; \%\ time\ the\ network\ is\ carrying\ error\ free\ packets$

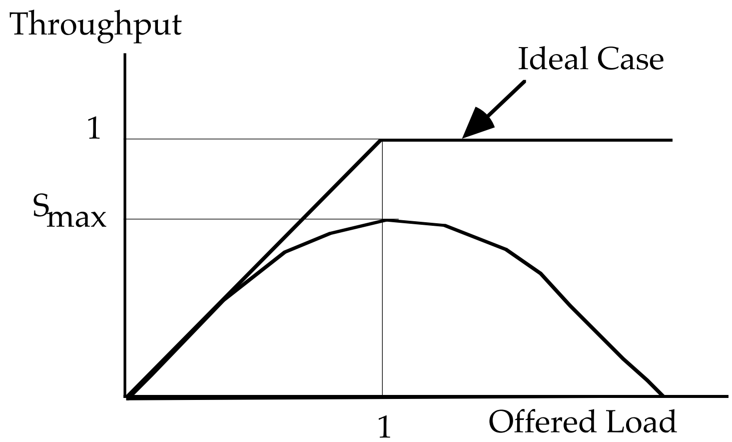
- Channel (or link) utilization is the % time the channel (or link is busy).

- Channel Efficiency is the % time the channel is carrying user information.

$$\begin{aligned}
&Let \\
&\quad D = \#\, user\ data\ bits / packet \\
&\quad H = \#\ network\ overhead\ bits / packet \\
&then
\end{aligned}$$

$$Channel\ efficiency = S\left(\frac{D}{D+H}\right)$$

- Channel Capacity, S_{max}, is the maximum obtainable throughtput over the entire range of input traffic intensities, i.e., offered load.



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- Blocking Probability

    + Packet
    + Call

- Reliability

Network Performance Perspectives

- User-Oriented
  + Minimum delay
  + Maximum throughput
  + Highly reliable
  + Very flexible
  + Secure

- Network Manager
  + Maximum throughput for all users
  + Effictive congestion control
  + Easy of management
  + Highly reliable

- Network Designer/developer
  + Simple design
  + Robust
  + Scales
  + Efficent use of resourecs, CPU, links and memory