Titile: throughput

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1. P2P

google it!(百度一下)

2. instantaneous throughput : the rate at which Host B is receiving the file.

R(rev) = the rate at which Host B is receiving the file

单位时间内，数据从link流入Host B的速度(bit/sec)

3. (原文)If the file consists of F bits and the transfer takes T seconds for Host B to receive all F bits, then the average throughput of the file transfer is F/T bits/sec

计算 the average throughput 的意义？

4. (1) simple two link network

条件：

rsc: server,client,two links, a router

data: a file

R: R(s->ro) = Rs, R(ro->c) = Rc (两者保持不变，即没有突发传输)

other: the only bits being sent in the entire network are those from the server to the client

结果

throunghput = min{Rc, Rs}

(2) N links network

条件：

rsc: server,client,N links,

data: a file

R: R1,R2...RN

other: the only bits being sent in the entire network are those from the server to the client

结果

throunghput = min{R1, R2, R3...RN}

throughput小结：

1、throughput分为 instantaneous throughput 和 average throughput。我们关心的是instantaneous throughput。

2、 （1）没有其他传输介入（a server to a client）时，instantaneous throughput 由传输路径上速度最小的link决定

（2）如果有其他传输介入(n server to n client)时，instantaneous throughput 不仅受传输路径上速度最小的link影响，还受介入传输的影响。

具体：

设R(core)为每个link（server or client）从核心网络中均分的速度, Rs服务端link speed，Rc客户端link speed

R(core) > (Rs, Rc), instantaneous throughput由Rs,Rc中的较小者决定

R(core) < (Rs, Rc), instantaneous throughput被R(core)限制

ps:实际生活中的情况是核心网络的速度远远大于access network的接入速度，so, 现实中的瓶颈在于access network

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5. Figure 1.22 has divided the airline functionality into layers, providing a frame-work in which we can discuss airline travel .Note that each layer, combined with the layers below it, implements some functionality, some service.

combined with the layers below it?

Figure 1.22:

Ticket (purchase) Ticket (complain)

Baggage (check) Baggage (claim)

Gates (load) Gates (unload)

Runway takeoff Runway landing

Airplane routing--------->Airplane routing--------> Airplane routing

(出发地) (到达地)

6. Layered Architecture中各个层次的功能(function)和服务(service)是什么鬼？（本小节讲的主要内容，并没有理解）

layer需要为below it的layers提供same服务？

layer自身也需要完成某种功能

so, 这样的服务与功能之间有联系和区别，这个点作者主要是想表达什么鬼？

Layered Architecture小结:

1、分层使得让人们有可能去研究和讨论complex system，而不至于淹没在细节中

2、分层（模块化）结构设计减小成员之间的影响——某一层次实现的变动，不会影响到其他层次，即层次之间提供的是透明service.

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