Review

This paper is mainly about some reasons which shaped the Internet protocols, discussing the realation between some original goals and import features of the protocols.

Goals

The top level goal is to develop an effective technique for multiplexed utilization of existing networks. The technique selected for multipflexing was packet switching.

There are many goals to achieve “effective” .the most import goal between these goals is that the Internet should continue to supply communications service, even though networks and gateways are failing. To achieve this goal, the state information must be protected.

The second goal of the Internet architecture is that it should support a variety of types of service. Such as TCP, it attempted to support any needed type of service. But it seemed too diidicult to build support for all of services into one protocol, such as XNET and real time delivery. The archtecture did not wish to assume that the underlying networks themselves support multiple types of services, which would violate the goal of using existing networks.

It was also very import for the success of the Internet architecture that be able to utilize a wide varitey of network technologies. The Internet achieve this goal by make a minimum set of assumptions about the function which the net will provide.

There are some remaining goals,that were lower in importance, were perhaps less effectively met. Such as distributed management. In certain circumstances, the Internet architecture does not produce as cost effective a utilization of expensive communication resource as a more tailored architecture would. Accountability is the last goal. At persent, the Internet architecture contains few tools for accounting for packetflows. This problem is only now being studied.

Architecture and Implementation

The architecture tried very hard not to constrain the range of service which the Internet could be engineered to provide. It means that to understand the service which can be offered by a particular implementation of an Internet, one must look not to the architecture, but to the actual engineer of sofeware. The Internet architecture leaves the designer of a particular realization with a great deal of engineering to do.

Datagrams

The fundamental archtectural feature of the Internet is the use of datagrams as the entity which is transported across the underly networks. The decision to use datagram was an extremely succesful one , which allowed the Internet to meet its most important goals very successfully. The role of the datagram is as a building block, and not as a service in itself.

TCP

TCP went through several major versions before it became a reasonably standard.

The original ARPANET host-to host protocol seemed overly complex, and the designers of TCP felt thst only one form of regulation would be sufficient. The choice was to regulate the delivery of bytes, rather than packet.

One reanson to acknowledge bytes was permit the insertion of control information. A second reason for the byte stream was to permit the TCP packet to be broken up into smaller packets. A third reason was to permit a number of small packets to be gathered together into one large packet in the sending host if retransmission of the data was necessary.

Another design decision related to the byte stream was EOL. The original idea of EOL was to break the byte stream into records. In the evolution of EOL semantics, there was a little known intermediate form, which generated great debate. Finally ,it was proposed that EOL should be a tool for mapping the byte stream to the buffer management of the host.