**Reading Assignment 1**

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1. **Introduction**

This abstract demonstrates specific details of how the Internet Architecture were constructed via explaining the history of its development and motivations behind it. Considering that this was written in 1988, we as a reader can observe the early stages of the Internet as well as comparing some differences with current Internet architecture. The abstract starts with introducing the Advanced Research Projects Agency of the U.S. Department of Defense (DARPA), which is the key organization in the development of protocols for packet switched networking, which include the Internet Protocol (IP) and the Transmission Control Protocol (TCP).

1. **Fundamental Goal**

The top priority of DARPA Internet Architecture was to design an effective system that integrates and utilizes existing interconnected networks. To achieve such goal, they adopted packet switching.

1. **Second Level Goals**

The abstract continues to suggest more detailed goals to support the aforementioned top goal:

1. Internet communication must resume despite the loss of networks or gateways.
2. It must support multiple types of communications service.
3. It must be applicable for variety of networks.
4. It allows distributed management of its resources.
5. It must be cost effective.
6. It allows host attachment with a low level of effort.
7. The resources used in the Internet Architecture must be accountable.

These goals are in order of priority. In fact, the network was originally designed for military purpose, thus survivability was prioritized against accountability and cost effectiveness.

1. **Survivability in the Face of Failure**

Focusing on the first goal, the architecture aims to preserve state information which describes the ongoing conversation. Unlike other network architectures, the DARPA architecture stores state information at the endpoint of the net, adopting the concept of “fate-sharing”. Fate-sharing offers a protection against any number of intermediate failures, as well as ease of engineering.

1. **Types of Service**

This part discusses how the architecture achieves the second goal: supporting a variety of types of service. Early attempts to achieve this goal was using the TCP. The initial concept of TCP was to provide generality to support any needed type of service. It further demonstrates the process of which TCP and IP were separated in order to serve different purposes.

1. **Other Goals**

In this part, goals other than the previous three goals are discussed. It is mentioned that these goals are low in importance, thus the architecture is imperfect to deal with such objectives. It discusses cost inefficiency as well as loss of packets during retransmission, and lack of accountability.

1. **Architecture and Implementation**

This part argues that the architecture is designed to be applicable for range of services which the Internet could provide. The author further emphasizes the importance of actual engineering of services rather than the implementation of the Internet. Later in the paragraph, it argues that there are insufficient standards to evaluate the performance of an architecture and urges to provide such standards that can be applicable to general architectures.

1. **Datagrams**

This part discusses the importance of datagrams as the entity which is transported across the networks.