

Idea Paper for
DISS 740 Term Report Titled
Satellite Broadband Communication Networks

by

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Rationale for Selecting

Over the next five years, satellite broadband communication networks will begin global operation. These networks will help redefine high-speed networking in the next century by providing point to point data transfer rates of 2 Mbps, 20 Mbps, and even 155 Mbps anywhere on Earth. Investigation into these unborn networks will prove both interesting and revealing.

Brief Introduction

The enormous demand for high-speed networking, recent advances in technology, and new regulations have made high-speed satellite networks a real possibility. Conservative estimates suggest that more than 500 broadband satellites will be in service in the next 10 years. The bulk of these satellites will operate in the newly released Ka-band.

The paper will begin with a brief history of satellite communications. This will be followed by a look at current digital satellite broadcasting services such as Hughes Communications' DirecPC and EchoStar Communications' ESS Network. Next, advances in technology brought about by NASA's ACT project will be discussed.

At this point, the differences between LEO and GEO satellites will be discussed prior to taking an in-depth look at the following broadband networks, their backers, and a few their technical characteristics:

- CyberStar
- Teledesic/Celestri
- Astrolink
- Spaceway
- Skybridge

In conclusion, issues such as network security, loss of service, and satellite congestion will be discussed.

Role of Satellite Broadband Communication Networks

Satellite broadband communication networks will have a definite impact on data communication in the 21st century. In well-developed areas such as the U.S. and Europe, satellite systems will compete primarily in the "last mile" where very little high-speed infrastructure exists today. However in underdeveloped and rural areas, broadband satellite systems will provide the total network infrastructure.

Reference List

Bonafield, C. (1998, March 15). Networking in the 21st century: The sky's the limit
Network Computing. <http://www.techweb.com/se/directlink.cgi?NWC19980315S0017>

- Bonafield, C. (1998, March 15). The Achilles heel of next-generation satellites. *Network Computing*. <http://www.techweb.com/se/directlink.cgi?NWC19980315S0011>
- Brownstein, M. (1997, October). Batter up for broadband. *Byte*.
<http://www.byte.com/art/9710/sec5/art5.htm>
- Cooper, P., & Bradley, J. (1998, January). Communications: A satellite network for Internet access in space. *IEEE Spectrum*, 35(1).
<http://www.spectrum.ieee.org/spectrum/jan98/features/comms1.html>
- Craig, A. (1998, May 20). U.S. pagers hit by satellite outage. *TechWeb*.
<http://www.techweb.com/wire/story/TWB19980520S0001>
- Craig, A. (1998, October 5). Satellite operators brace for meteor shower. *TechWeb*.
<http://www.techweb.com/wire/story/TWB19981005S0016>
- DirecPC Web Site: <http://www.direcpc.com>
- Dishnetwork Web Site: <http://www.dishnetwork.com/satserv/data/dataintro.htm>
- Lange, L. (1998, March 22). Net task force drafts TCP upgrade for satellite links. *TechWeb*. <http://www.techweb.com/wire/story/TWB19980322S0002>
- Montgomery, J. (1997, November). The orbiting Internet: Fiber in the sky. *Byte*.
<http://www.byte.com/art/9711/sec5/art1.htm>
- NASA ACTS Web Site: <http://kronos.lerc.nasa.gov/acts/acts.html>
- O'Keefe, S. (1997, December). Upward mobility. *Telecommunications*.
<http://www.telecoms-mag.com/issues/199712/tcs/okeefe.html>
- OnStar Web Site: <http://www.onstar.com/action/index.htm>
- Riezenman, M. (1997, July). These aren't your father's birds. *Spectrum*.
<http://www.spectrum.ieee.org/30years/30years10.html>
- Salamone, S. (1997, May 20). Satellites spin into net space. *InternetWeek*.
<http://www.techweb.com/se/directlink.cgi?WIR1997052005>
- Shankar, B. (1997, February). The Ten Commandments of mobile satellite communications. *Telecommunications*.
<http://www.telecoms-mag.com/issues/199702/tcs/shankar.html>