

# **Broadband Internet Access at The Sea Ranch**



## **2-Way Satellite System as a Possible Alternative**

**Walt Custer  
October 26, 2000**

**And now . . .**

**"The Good, the Bad & the Ugly"**

**Starband**

**One Possible Approach to High  
Speed Internet Access at Sea  
Ranch**

# Topics

**Broadband Overview**

**Satellite Systems**

- **Hughes DirecPC**

- **Gilat Starband**

**Starband Beta Experience**

**Conclusions**

- Advantages & Concerns**

- Costs**

**Recommendations**

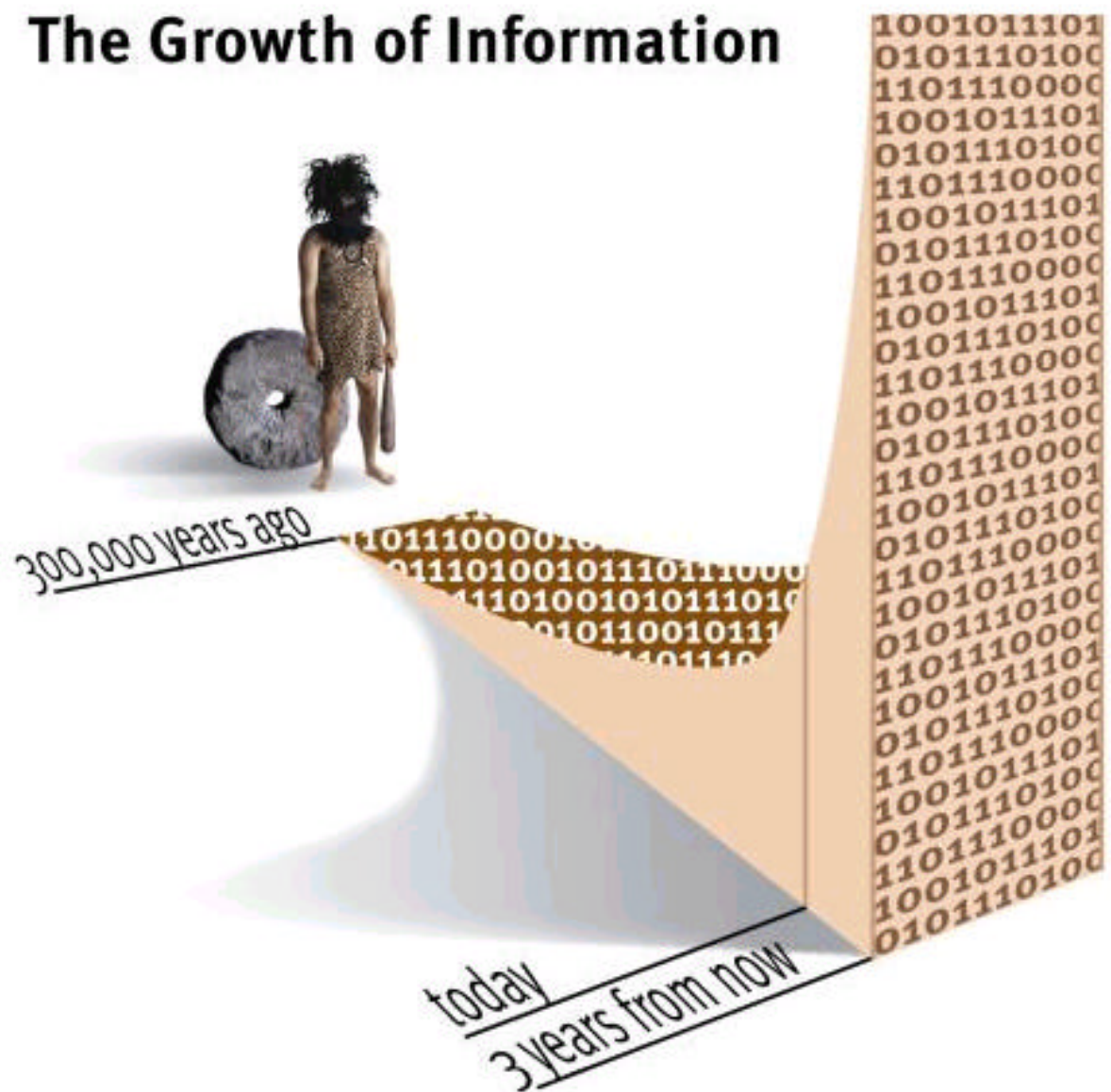
# Broadband Overview

# Today in the USA

**Data exceeds voice volume  
on phone lines**

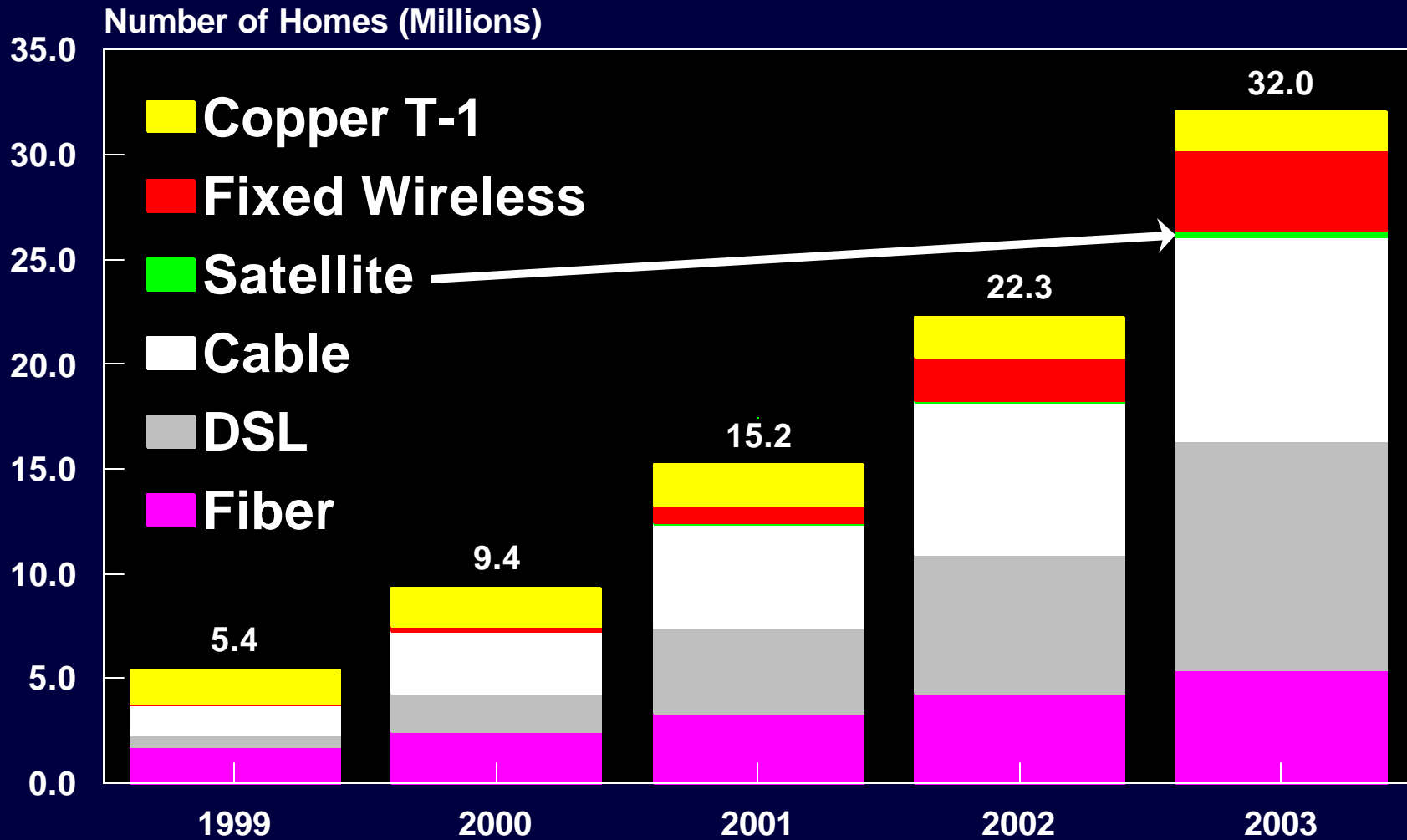
**E-Mail exceeds  
hand-delivered mail volume**

# The Growth of Information

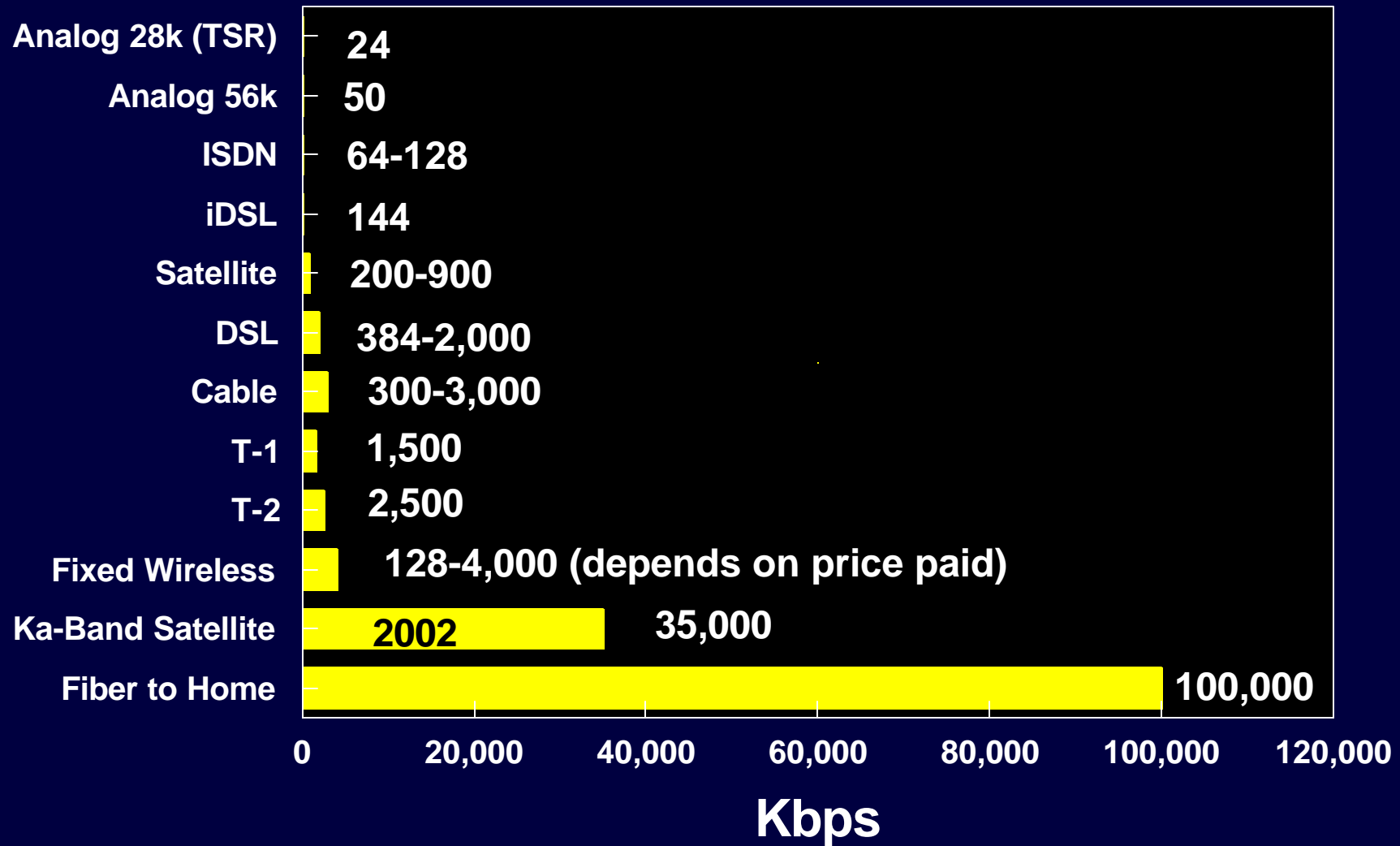


Source: UC Berkeley study sponsored by EMC Corporation

# US Broadband Users



# Speed Comparisons



Maximum PC 10/2000

# Nancy & Walt's Internet Needs

## Genealogy

*[www.cursiter.com](http://www.cursiter.com)*

## Market Research

## Custer Consulting Group

*[www.custerconsulting.com](http://www.custerconsulting.com)*

# Broadband - Cost & Availability

	<b>Cost \$/Month</b>	<b>Available @ TSR</b>
<b>T-1 Frame Relay *</b>	<b>900</b>	<b>yes</b>
<b>Starband Satellite</b>	<b>70</b>	<b>Beta</b>
<b>DirecPC Satellite *</b>	<b>40</b>	<b>yes</b>
<b>Dialup *</b>	<b>20</b>	<b>yes</b>
<b>Cable</b>	<b>40</b>	<b>no</b>
<b>DSL *</b>	<b>40</b>	<b>no</b>
<b>ISDN *</b>	<b>75</b>	<b>no</b>
<b>Fixed Wireless</b>	<b>MCN Investigating</b>	

**\* plus ISP**

# Satellite Alternatives

**Hughes DirecPC**

**Starband  
(formerly Gilat-to-Home)**

# DirecPC



## Dish

### Elevation

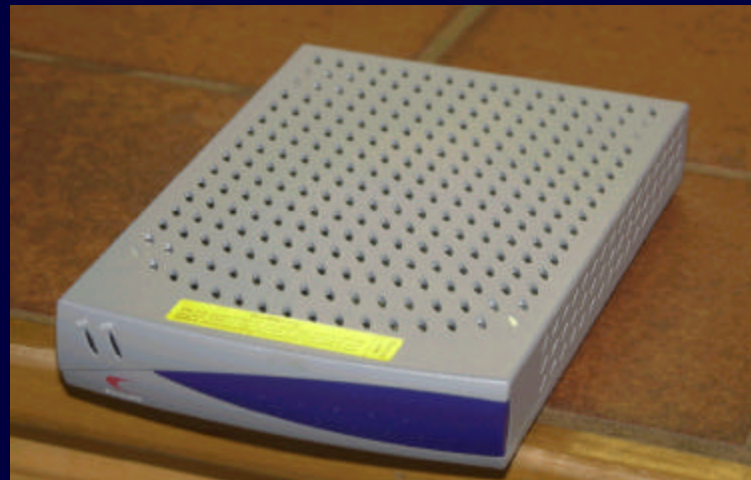
42.904 degrees

### Compass Bearing

143.362 degrees



## Horn



## USB Modem

# Current DirecPC

**Satellite downloads**

**Phoneline uploads**

**But . . .**

**Most websurfing involves downloads**

**Net result: MUCH faster than dialup  
Internet connection**

# Hughes DirecPC

**1-way available now**

- **Equipment: \$150 (\$200 with DirecTV)**
- **\$39.95/month - unlimited usage**  
**(plus ISP and phone line)**
- **recent AOL partnership**
- **Mac not supported**
- **Number of existing Sea Ranch users**
- **Web surfing at 10-20x dialup speeds**
- **Viable approach for many**

**2-way available about Jan 2000**



**STARBAND**

## **Who is Gilat-To-Home (now Starband)?**

**Gilat-To-Home is a new consumer-focused company formed by Gilat Satellite Networks Ltd. – with considerable investment from Microsoft, EchoStar Communications, and ING Furman Selz Investments – to deliver two-way broadband satellite Internet access to consumers. These companies are contributing significant technology and financial resources to the new company, which is headquartered in McLean, VA.**

# Custer's Starband History

Beta registration 7/2000, sign up and \$500 fee 8/2000, installation 9/1/2000

## Beta Test Package

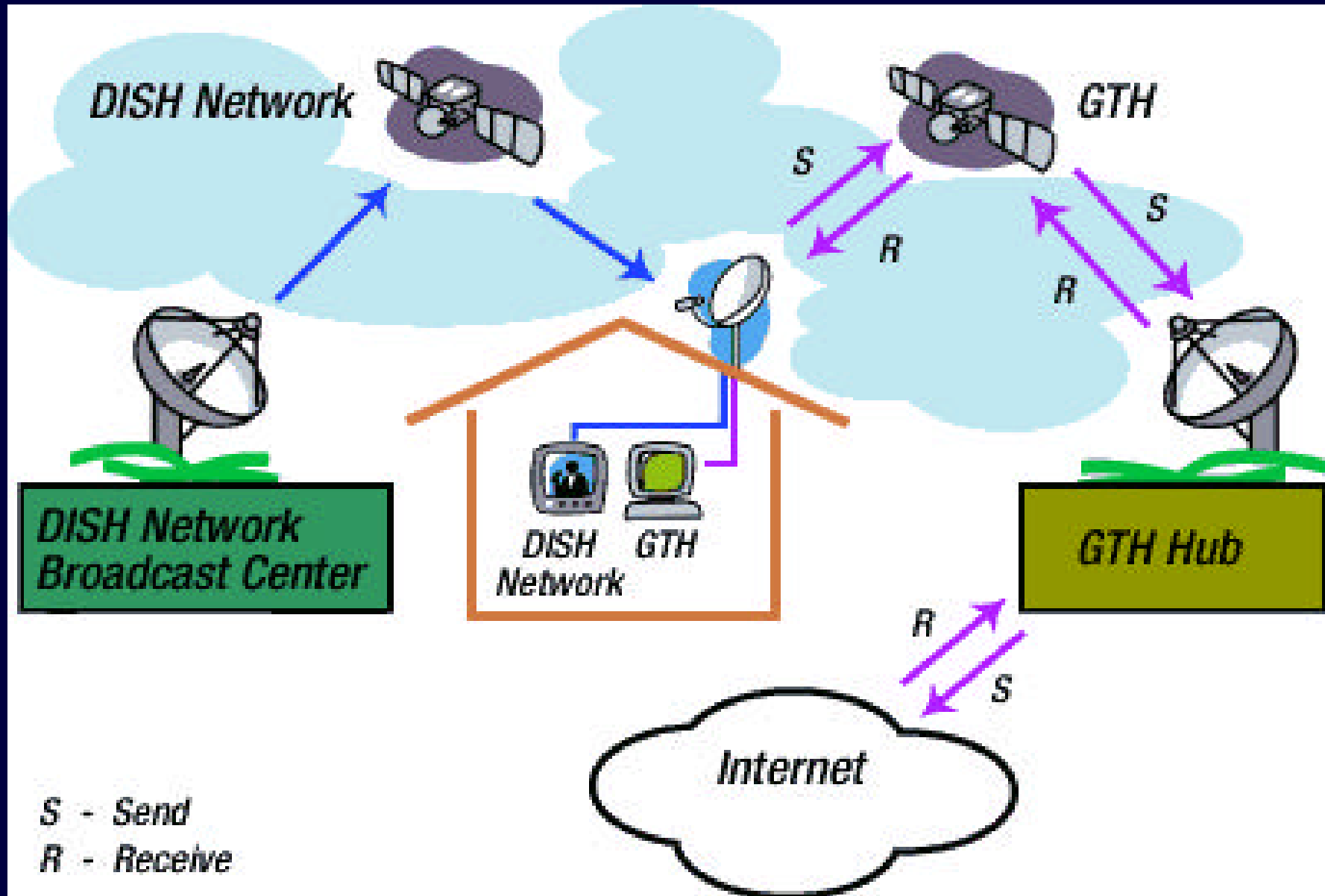
- Dell Celeron 433 PC, 6 GB HD, 64 Meg DRAM, CDROM drive, 15" monitor
- Dish, pole, wiring & & two PCI cards (send & receive)
- Professional installation
- Unlimited usage
- EchoStar Dish Network TV support extra

Beta trial runs until 10/31/2000 (now extended)

- Either return dish & cards, pay \$500 more & keep PC or 3 year contract @ 69.95/month



# Starband Internet & TV Support



# Ideal Market



Satellite Delivered To Havasupai Tribe

**Remote areas without DSL or Cable  
Modem availability**

# Performance Comparisons

**Bandwidth**

**Pinging**

**File Transfer Speed**

**General Surfing**

# Bandwidth

# Starband (late night) 885 Kbps



The image shows a screenshot of a Windows application window titled "2Wire Bandwidth Meter - Microsoft In...". The application has a dark blue header with the "2WIRE" logo in red and white, and the text "BANDWIDTH METER" in white. Below the header, there is a green banner with the text "Want the latest news on I". The main content area is black and contains the following text: "Welcome to the 2Wire Bandwidth Meter. This meter will accurately determine your maximum throughput to our Web site." Below this text is a green box with a grid pattern containing the text "Status: Test completed... Bandwidth = 885 Kbps". To the left of this text are icons of two computers connected by a network cable. At the bottom of the window, there are two buttons: "Run Test Again" and "Close Window".

2WIRE BANDWIDTH METER

Want the latest news on I

Welcome to the 2Wire Bandwidth Meter.  
This meter will accurately determine your maximum throughput to our Web site.

Status:  
Test completed...  
Bandwidth = 885 Kbps

Run Test Again

Close Window

# **Bandwidth Comparison (Kbps)**

Data from *<http://www.2wire.com>*

	<b>Range</b>	<b>Typical</b>
<b>Starband</b>	<b>200-900</b>	<b>300 day, 550 night</b>
<b>DirecPC</b>	<b>511-575</b>	<b>550</b>
<b>Dialup</b>	<b>18-24</b>	<b>20</b>

**Starband is 10 to 45 times faster than a standard phone modem (24 k Sea Ranch connection) but DirecPC is just as fast for downloads. Cable & DSL probably faster but not available at TSR. MCN investigating Fixed Wireless.**

# Pinging

# Starband Ping Results

```
Finished - PING_HUB
Auto
C:\WINDOWS>ping 148.78.255.1 -w 5000

Pinging 148.78.255.1 with 32 bytes of data:

Reply from 148.78.255.1: bytes=32 time=744ms TTL=255
Reply from 148.78.255.1: bytes=32 time=770ms TTL=255
Reply from 148.78.255.1: bytes=32 time=740ms TTL=255
Reply from 148.78.255.1: bytes=32 time=735ms TTL=255

Ping statistics for 148.78.255.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 735ms, Maximum = 770ms, Average = 747ms

C:\WINDOWS>
```

## **Pinging (ms)**

**Ping 148.78.255.1 -w 5000**

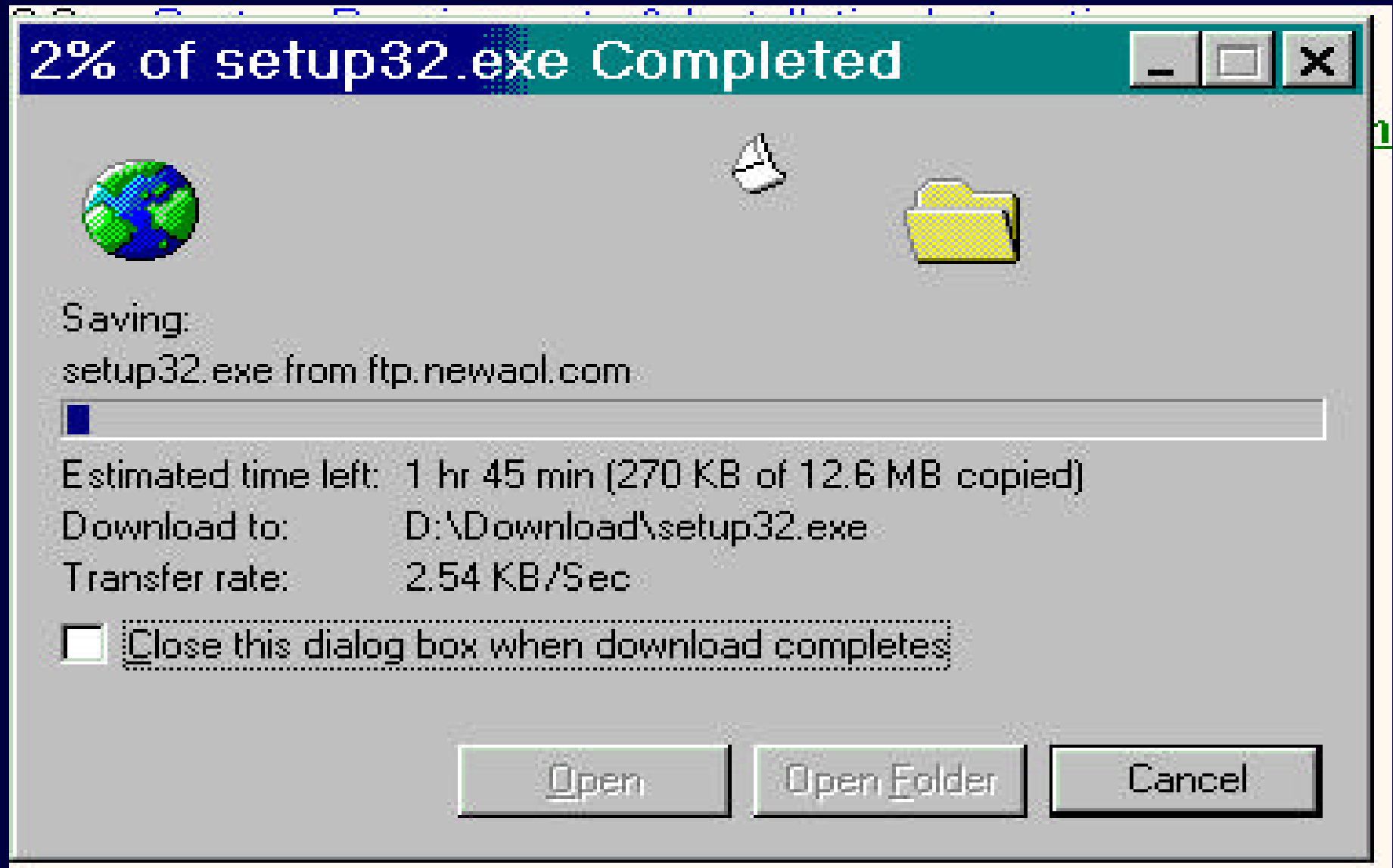
	<b>Range</b>
<b>Starband</b>	<b>735-770</b>
<b>DirecPC</b>	<b>490-580</b>
<b>Dialup</b>	<b>220-247</b>

**Starband is slowest - probably due to long time for send & receive signals to travel to & from satellite**

**This latency effect degrades "small packet" web surfing & data transfer**

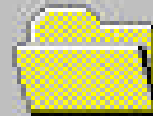
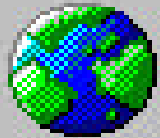
# File Transfer Speed

# Phone Modem 3 KB/Sec



# Starband 90 KB/Sec

33.1 MB of setupaol60me.exe Copied



Saving:

setupaol60me.exe from ftp.newaol.com

Estimated time left: Not known (Opened so far 33.1 MB)

Download to: D:\Download\setupaol60me.exe

Transfer rate: 90.6 KB/Sec

Close this dialog box when download completes

Open

Open Folder

Cancel

# General Web Surfing

**Small files & non-Graphic  
Intensive sites**

**Starband = Dialup modem**

**Large files & Graphic Intensive  
sites**

**Starband and DirecPC both  
dramatically faster than Dialup  
modem**

# Sharing over a LAN

# Our Setup



# "Modem Sharing" on LAN

**"Server" - Starband Dell Desktop (Win98SE)**

**"Clients" - IBM Thinkpad (Win ME) and Sony VAIO (Win 98SE) notebooks**

**3COM 100/10 5-port Hub**

**Winproxy 3.0 (with Firewall software)**

## Results

**Internet access at full speed**

**No noticable performance degradation over LAN**

**No e-mail or news group support**

**Problematic setup & no Starband tech support**

# Future Plans

**"Coming Soon" from Starband**

**Mail & News Servers**

**USB "modem"**

**Windows 2000 & ME support**

**Modem sharing over LAN**

- procedure & support**
- PC & Mac as clients**

**Commercial availability 11/2000**

# Starband Conclusions

**It does work - assuming a "view" of SE sky**

**Still in Beta - a bit "bumpy" at times**

**Mail & News Servers "soon"**

**Costs not "firm"**

**Microsoft, Radio Shack & MCN support**

**Sharing over LAN possible**

**Windows supported directly, Mac only via LAN**

**Fast large file downloads, surfing hurt by latency**

**No phone line needed**

**Hughes to have competitive 2-way system soon**

**Technology moving fast, avoid a long contract**

# **Special Thanks to:**

**Jer Skibbins**

**Marshall Sayegh**

**Rennie Innis**

**Reva Basch**

**Jim Flessner**

**and many more**

# See it live at:

**267 Walk On Beach**

**From Del Mar Center**

- Left on Leaward**
- Right on Masthead (2nd street after Leaward Spur)**
- Right on Walk On Beach**