

Bridging the Broadband Gap: Can Hawaii Catch Up to the World's Leaders?

David Lassner

University of Hawaii VP for IT & CIO

Hawaii Broadband Task Force Chair

david@hawaii.edu

(Speaking as an Individual)

Hawaii Broadband Task Force: Background & Charge

- Established through Act 2 of the First Special Session of 2007
- Primary aims
 - Removing barriers to broadband access, including gaining wider access to public rights-of-way
 - Identifying opportunities for increased broadband development and adoption, including very high speed broadband services
 - Enabling the creation and development of new advanced communication technologies in Hawaii

Task Force Members

Senator Will Espero

Senator Carol Fukunaga

Senator David Ige

Representative Marcus Oshiro

Representative Gene Ward

Representative Kyle Yamashita

Gordon Bruce, CIO Honolulu

Gary Caulfield, Vice Chair FHB

David Lassner, CIO UH

Joel Matsunaga / Ken Hiraki

Hawaiian Telcom

Henk Rogers, BluePlanet Wireless

Jennifer Goto Sabas,

Office of Senator Inouye

Nate Smith/Kiman Wong

Oceanic Time Warner

Clyde Sonobe, DCCA

Nam Vu, ShakaNet (resigned)

Hawaii Broadband Task Force Work Schedule

- Startup: July-Sep 2007
- First meeting: Oct 2007
- Interim Report: December 2007
- (Slow season: Jan-April 2008)
- Final Report: Dec 2008
- Initial Decisions: Jan-April 2009
- Sunset: June 2009

Hawaii Broadband Task Force Vision

Hawaii understands that advanced broadband services are an essential infrastructure for an innovation economy and a knowledge society in the 21st century. As a result of proactive policy initiatives, Hawaii residents and businesses throughout the State have access to advanced broadband services of the caliber and at the pricing available in the leading developed nations of the world.

What's the Problem?

Universal, affordable broadband access is as important to advancement in the 21st century as universal access to education, roads and phone service were in the last century. Broadband Internet has become critical for everything from jobs to education, health care and public safety. The U.S., including Hawaii, now faces a broadband gap that is unlikely to be bridged by market forces alone in the current regulatory environment. Change is necessary both to ensure that all citizens have affordable access to broadband and to accelerate the deployment of the kinds of high-speed residential broadband services commonly available in other developed nations at affordable costs.

Adapted from "Why Broadband Matters" by Charles Benton

U.S. Lags in Broadband Penetration

“The United States (U.S.) is ranked 15th in the world in broadband penetration, behind most of Europe, Japan, Korea and Canada. Denmark is first with 31.9 subscribers per 100 inhabitants while the U.S. had 19.6. The OECD has been tracking this data over time and the U.S. has been losing ground since it was 4th in 2001, 8th in 2002, and 9th in 2003. The U.S. also ranked 19th in the world in the growth rate of subscribers at 4.21 percent, while the fastest growth rate came from Ireland at 6.6 percent.”

HBTF Interim Report Dec 2007, Data from OECD, 2007

U.S. Lags in Broadband Speeds

“The U.S. ranked 19th with an average advertised download speed of 8.86 mbps. Japan was 1st at 93.693 mbps followed by France (44.157 mbps) and Korea (43.301 mbps). ”

HBTF Interim Report Dec 2007, Data from OECD, 2007

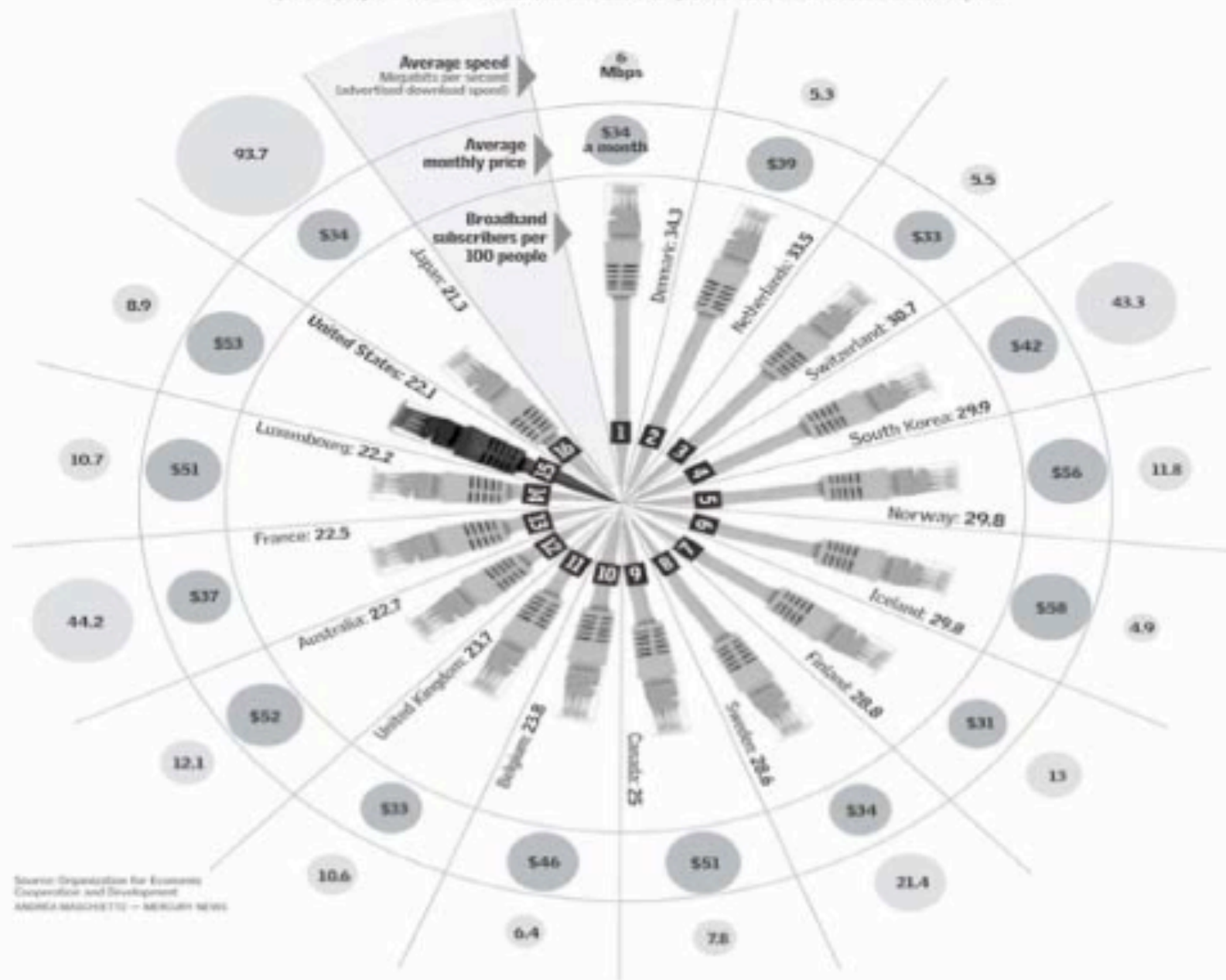
U.S. Lags in Broadband Pricing

“Purchasing Power Parity, as defined by the OECD adjusts prices to equalize the purchasing power of different currencies measured against a fixed basket of goods. The U.S. ranked 18th in price per mbps per month with a \$2.83 Pricing Power Parity (PPP). Japan had the lowest prices with a PPP of \$0.13 per mbps per month. Finland has the lowest Average Subscription Price at \$31.18 PPP, while the U.S. is ranked 22nd at \$53.06. ”

HBTF Interim Report Dec 2007, Data from OECD, 2007

U.S. lags in broadband

While the United States has the most broadband subscribers, it ranks only 15th when counting subscribers per 100 people — well behind other countries that often provide faster Internet access at a lower price.




Source: Organization for Economic Cooperation and Development
ANDREA MAGGIORIO — MORGAN NEWS

Multiple Sources of Data

US high-speed Internet is slow

Submitted by Canada IFP on Sun, 2007-05-20 16:14.

The average broadband download speed in the US is only 1.9 megabits per second, compared to 61 Mbps in Japan, 45 Mbps in South Korea, 18 Mbps in Sweden, 17 Mbps in France, and 7 Mbps in Canada, according to the Communication Workers of America.



Hong Kong FTTH

TeleGeography's CommsUpdate

Part of the GlobalComms Database



Hong Kong

Thursday, 20 September 2007

Hot in the City: HKBN launches residential FTTH

Hong Kong telco City Telecom's broadband unit Hong Kong Broadband Network (HKBN) has announced the commercial launch of residential fibre-to-the-home (FTTH) internet access services, adding to its existing portfolio of fibre-to-the-building (FTTB) services. In a press release, it claims that the 'FiberHome' service is the first of its kind in the Special Administrative Region. HKBN is charging consumers USD48.50 per month for a 100Mbps fibre connection (FiberHome100), USD88.20 for a 200Mbps service (FiberHome200) and USD215.40 for its FiberHome1000 package, which gives users a maximum data transfer speed of 1Gbps. HKBN is ceasing to accept new applications for its entry-level bb10 service, which provides symmetrical speeds of up to 10Mbps, and its bb25 (25Mbps symmetrical) service is now the slowest package offered to new subscribers. HKBN introduced its first 1Gbps fibre access service, bb1000, in 2004. Chairman of HKBN, Ricky Wong, said in the press release: 'High speed broadband service (FTTH) is a foreseeable inevitability that we had prepared for three years ago. Holding onto the belief that a service provider should deliver the best and most up-to-date services available to the public, we are pleased to be able to launch the massively-deployed FTTH version of 100Mbps, 200Mbps and 1000Mbps in Hong Kong, which also contribute to further enhance Hong Kong's role as Asia's telecommunications hub.'

High Speed in Japan

NTT DoCoMo Tests Super-Fast Wireless Data

By Ed Oswald, BetaNews
July 13, 2007, 1:47 PM

Over the next month, NTT DoCoMo plans to test a Super 3G, or LTE (long-term evolution) cellular system capable of sending data at 300Mbps.

The test will take one antenna for the test and antennas for data.

KDDI to launch 1Gbps fiber-optic service in Oct

Saturday 27th September, 05:46 AM JST

TOKYO — KDDI Corp will launch a fiber-optic communications service with upload and download speeds each of up to one gigabit per second on Oct 1. The new service will target people living in single-family homes and low-rise apartment buildings. The traffic speeds will be the fastest in eastern Japan, up drastically from the current 100 megabits per second.

With the service, KDDI aims to catch up with Nippon Telegraph & Telephone Corp, which has a share of over 70% in the market for fiber-optic broadband services for single-family houses.

KDDI will charge 5,985 yen in basic monthly fees for Internet and telephone services, down 1,155 yen from the current price, if a user subscribes for two consecutive years.

KDDI will start offering its fiber-optic services, which are now available only in six prefectures in the Kanto region and nearby Yamanashi Prefecture, in four cities in the northern prefecture of Hokkaido.

JCN

Hawaii Services

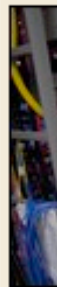
Oceanic debuts turbo Road Runner in Hawaii Internet-service war

By [Sean Hao](#)
Advertiser Staff Writer

Oceanic Time Warner Cable today is rolling out a faster version of its market-leading Road Runner Internet service.

Dubbed Road Runner Turbo Plus, the service offers a maximum download speed of 15 megabits per second, or three times faster than standard Road Runner service. That's the fastest, mainstream residential Internet service available in Hawai'i so far.

The new service represents the latest salvo in a battle for customers being waged between Hawai'i's two main Internet providers — Oceanic Cable and phone company Hawaiian Telcom. Oceanic's faster Internet offering comes just one month after Hawaiian Telcom launched the state's fastest residential Internet service at the time, which featured a maximum speed of 11 megabits per second,



Lionel
engineer
equip
Cable
Runn

JOAO
Adve

"Wh
the
cons
choi
two

Mike Paxton | principal analyst
for the State

Hawaiian Telcom raises Internet speed limit

The company says it is the fastest residential connection in Hawaii

■ Star-Bulletin staff

Hawaiian Telcom has raised the speed limit on its Internet service, a move the telephone company says gives it the fastest residential connection in the state.

Depending on where they live, subscribers will be able to get download speeds of 3, 7 or 11 megabits per second (Mbps) under the new service, which the telephone company unveiled yesterday. Upload speeds will be 1 Mbps.

"This acceleration in speed establishes a performance benchmark against which all other providers will be measured," said Mike Ruley, Hawaiian Telcom's chief executive officer.

Hawaii's Throughput?

“ According to Akamai, Delaware is the fastest state in the union, with 60% of users hitting the Akamai network at speeds greater than 5Mbps. Rhode Island, New York, Nevada and Oklahoma round out the top five. ... According to Akamai, seven states had less than 10% of their connections occur at speeds greater than 5 Mbps, with Hawaii coming in last place at 2.4%.”

Akamai Data, May 2008

Does it matter? How much bandwidth do we really need?

Picture the applications of affordable bandwidth:

4

- ◆ High Definition TV: Streaming and Downloading
- ◆ Telehealth with High-Definition Imaging
- ◆ Telework with Real-Time High Definition Collaboration
- ◆ High Definition Distance Learning
- ◆ Collaborative Video & Digital Media Production -- Global
- ◆ e-Democracy Reaching All Islands
- ◆ Low-Impact Astronomy
- ◆ Ocean Observatories
- ◆ Scientific Research
- ◆ IT- & Telecom-based Innovation
- ◆ ... An Evolution from Physical Tourism to the Holodeck?

Now, imagine all this in one home/office – at once!

(Adapted from John Windhausen)

Estimated Economic Impact

- ♦ A seven percentage point increase in broadband adoption could result in:
 - ♦ \$92 billion through 2.4 million jobs created or saved
 - ♦ \$662 million saved per year in healthcare costs
 - ♦ \$6.4 billion per year in mileage saving
 - ♦ \$18 million in carbon credits associated with 3.2 billion fewer lbs of CO2 emissions per year
 - ♦ \$35.2 billion in value from 3.8 billion more hours saved per yr from accessing broadband at home
- ♦ \$134 billion **per year** in total direct economic impact of accelerating broadband across the United States
- ♦ Estimate for Hawaii: \$578m **per year**

Connected Nation, Feb 2008

Hawaii's Network Infrastructure

- ♦ Vibrant Duopoly
 - ♦ Hawaiian Telcom
 - ♦ Independent incumbent carrier
 - ♦ Extensive DSL Coverage
 - ♦ Video Franchise Pending
 - ♦ Time Warner Oceanic Cable
 - ♦ Extensive Cable Modem Coverage
 - ♦ Isolated/rural areas underserved by both
- ♦ Other Facilities-Based Players
 - ♦ Sandwich Isles Communication
 - ♦ Focused on services to Hawaiian Homelands
 - ♦ PLNI
 - ♦ twtelecom
- ♦ Wireless
 - ♦ AT&T, Sprint, Verizon 3G in populated areas
 - ♦ Clearwire rolling out WiMax
- ♦ Hawaii has lost our role as fiber cross-roads of the Pacific
 - ♦ Advances in engineering (just like planes)
 - ♦ Reputation as difficult to deal with permitting

Hawaii is like much of the U.S.

- ♦ Duplicative 90s infrastructure positions Hawaii well --- for the 90s
 - ♦ Nearly all homes can get “current” service for ~ \$40-45/mo
 - ♦ Not ready for global competitiveness
- ♦ Duopoly not conducive to individual transformational investment
- ♦ U.S. regulatory structure not conducive to shared investment
- ♦ Current regulatory, policy and permitting framework makes it even more difficult

Hawaii's Additional Barriers

- ♦ Need 2500 miles of submarine fiber optic cable to get anywhere else
 - ♦ Hawaii not perceived as “friendly” to new cables that would increase global connectedness
- ♦ Population dispersed on 6 different islands
- ♦ Mountains on each island

Environmental Scan: Summary

- ♦ Broadband is essential in the 21st century
 - ♦ Health, education, public safety, cultural preservation, sustainability, economic development
- ♦ (Notwithstanding Akamai data) Hawaii is doing ok relative to other States
 - ♦ But not compared to other countries
 - ♦ Not when compared to leading communities
- ♦ We're all hampered by the (lack of) federal broadband policy relative to other countries
 - ♦ Federal epiphany is not imminent, although there's movement in the right direction
- ♦ Wide range of initiatives at the community and state level in other parts of the country
 - ♦ Most of these are too new for us to understand which are most effective in what settings

Personal Observations

- ♦ In the current environment, our providers are economic agents that behave in accord with the market structures and regulations -- which are the result of our public policy
- ♦ The countries and communities that have advanced have done so through intentional public policy
 - ♦ Pervasive advanced low-cost services don't just happen
 - ♦ We don't leave it to "the market" to build roads, sewers, water systems (or the intelligent power grid?)
- ♦ Competitive access to shared infrastructure is a common element of success; Otherwise consumers pay for multiple duplicate infrastructures
 - ♦ Unbundling failed in the U.S.; Sharing is unnatural here
- ♦ Need to understand and stimulate demand as well as supply
 - ♦ Government can lead by example
 - ♦ Low income families and children can't be left behind

Two Ways to Get to Shared Infrastructure

- ◆ (Re-)regulate what was built with public subsidies & support
 - ◆ Japan, France, Germany
- ◆ Build new shared facilities
 - ◆ Singapore & Australia
 - ◆ Canadian “condominium networks”
 - ◆ Loma Linda and many U.S. municipal/regional initiatives

Ideas on Moving Forward

- ◆ Hawaii needs a shared vision and leadership
- ◆ Per Wayne Gretzky ("I skate to where the puck is going to be"): Aim for 100Mbps leading to Gbps
- ◆ It's not about wired vs. wireless, but wired (fiber) AND wireless
- ◆ Rural areas will always lag, but a rising tide raises all boats
- ◆ Upstream bandwidth matters too, including in rural areas
- ◆ New developments may be the easiest environments in which to create infrastructure models for the future
- ◆ Geographic data on supply and uptake is critical
- ◆ Interest in undergrounding of utilities may synergize with approaches to shared infrastructure investment for next gen networks (FTTH)
- ◆ Maximizing access to next-gen submarine fiber is critical for Hawaii
- ◆ We need a Hawaii broadband authority with a proactive advocacy agenda and fully consolidated regulatory authority

www.hbtf.org