

Broadband and New Mexico

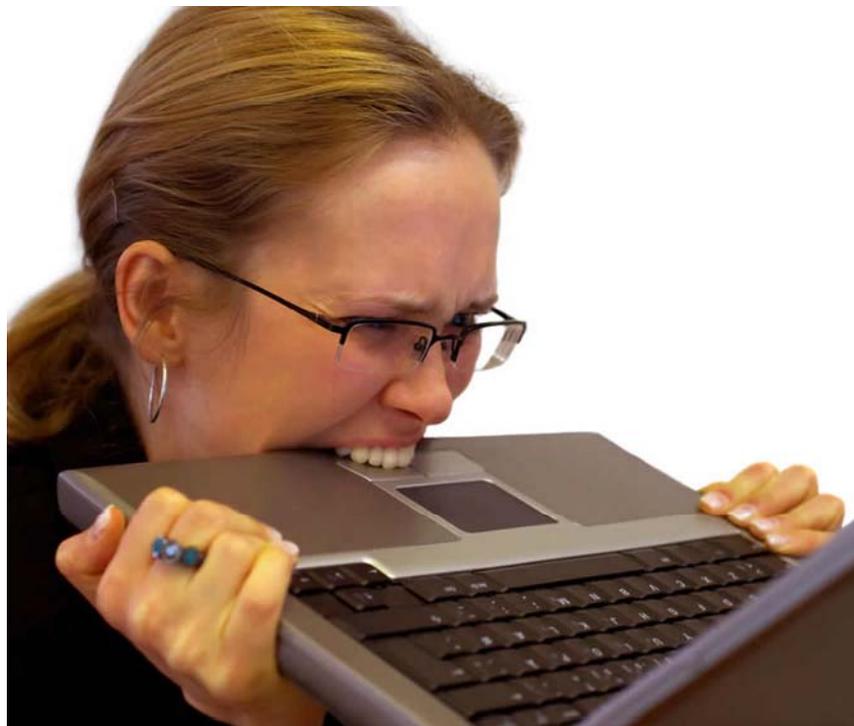
Dr. Gil Gonzales

Chief Information Officer

Science, Technology and Telecommunications Committee

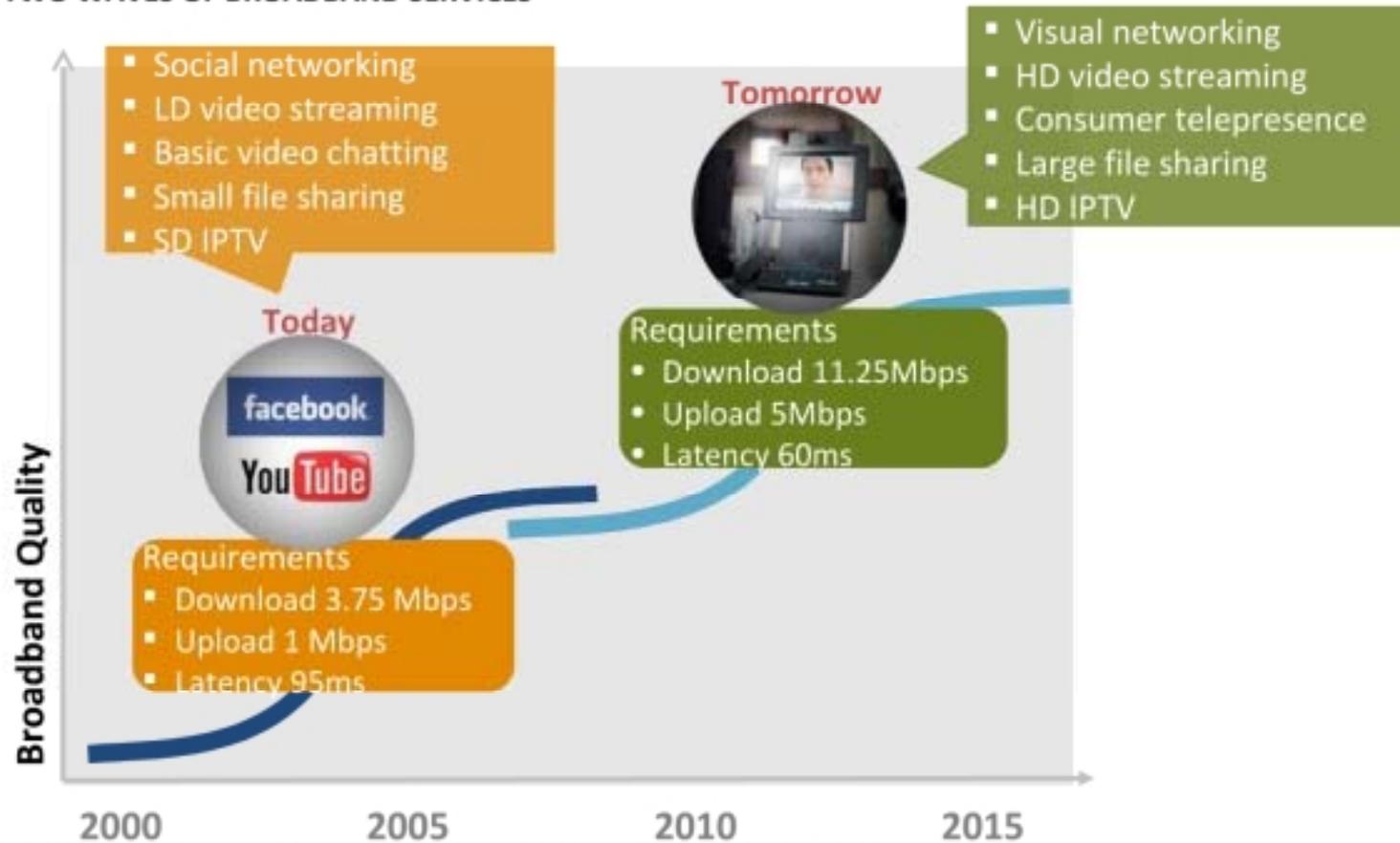
September 1, 2011

Good enough in networking is
never good enough



Changing Quality Requirements

TWO WAVES OF BROADBAND SERVICES



Source: ComScore, Nielsen; Expert interviews; Oxford Team analysis, Aug 2008



Said Business School
UNIVERSITY OF OXFORD

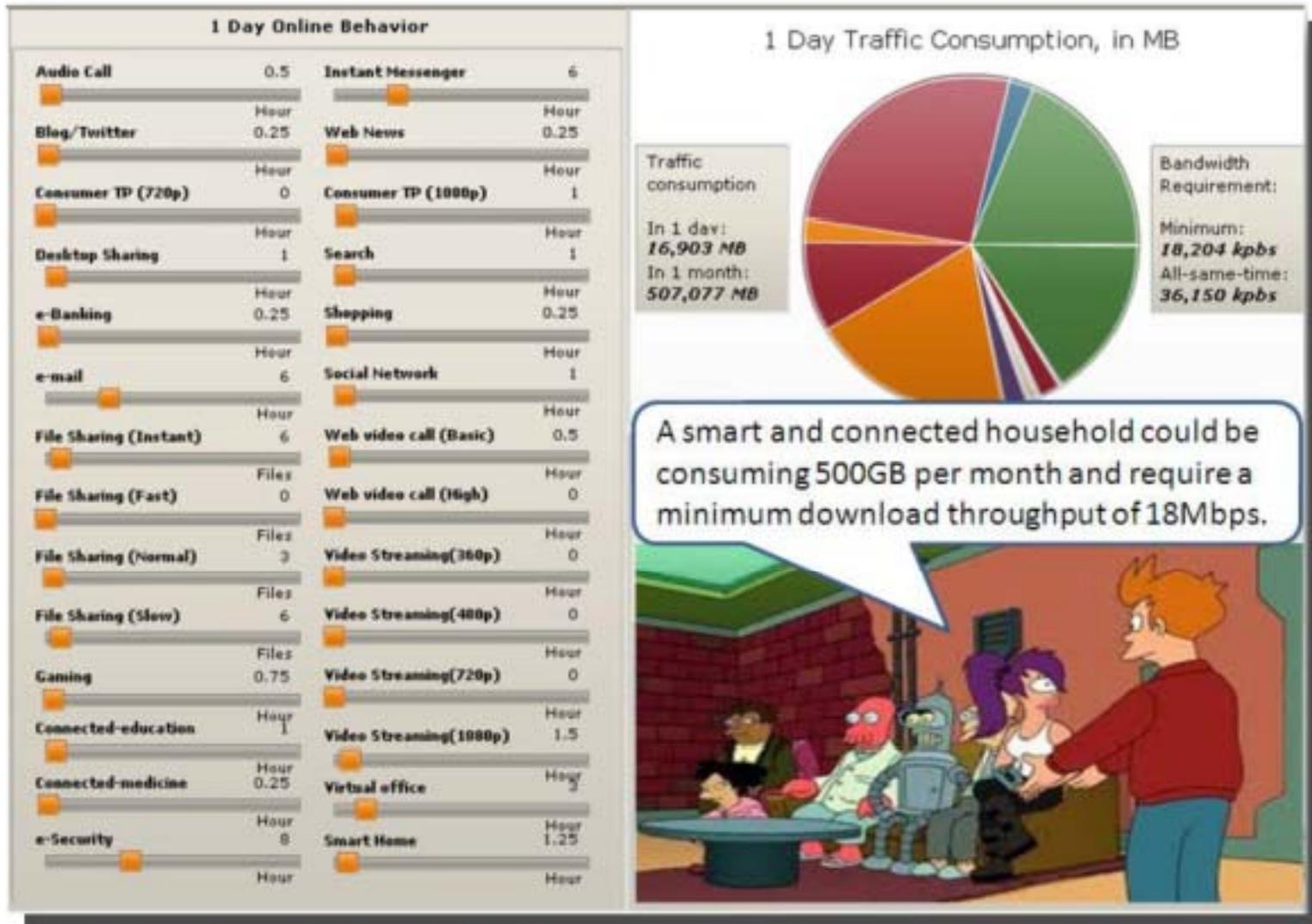


Universidad
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Smart and Connected Household



Worldwide Broadband 2009

Country/ Region	Q4 09 Mbps	QoQ Change	YoY Change
- Global	1.7	-1.2%	-2.7%
1 South Korea	11.7	-24%	-29%
2 Hong Kong	8.6	11%	17%
3 Japan	7.6	-4.0%	6.8%
4 Romania	7.2	14%	28%
5 Latvia	6.2	23%	28%
6 Sweden	6.1	5.8%	2.0%
7 Netherlands	5.3	1.9%	10%
8 Czech Republic	5.2	9.1%	17%
9 Denmark	5.2	8.8%	16%
10 Switzerland	5.1	3.7%	-0.4%
...			
22 United States	3.8	-0.9%	-2.5%

Average measured connection speed (All graphics courtesy:
Akamai)

U.S. By Fastest City (2009)

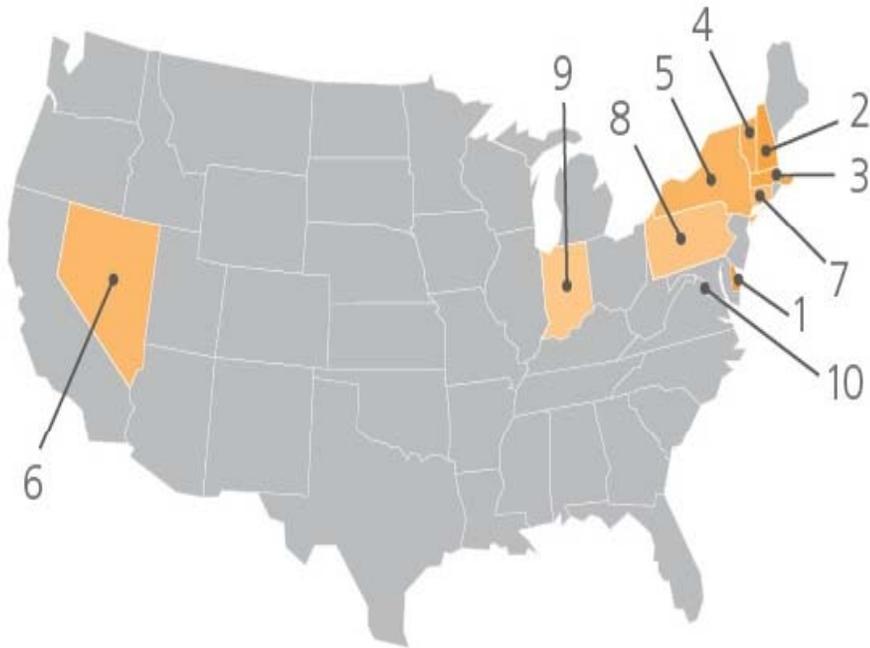
City	Q4 09 Kbps
1 New York, NY	5139
2 San Diego, CA	5258
3 Oakland, CA	6734
4 Las Vegas, NV	5597
5 Baltimore, MD	5428
6 Pittsburgh, PA	5054
7 San Jose, CA	6507
8 Rochester, NY	5220
9 Austin, TX	5804
10 Providence, RI	5148

Fastest American Broadband Cities by Unique IP

Best Average Speed (2009)

City	Q4 09 Kbps
1 Berkeley, CA	18730
2 Chapel Hill, NC	17483
3 Stanford, CA	16956
4 Durham, NC	13636
5 Ithaca, NY	13265
6 Ann Arbor, MI	13178
7 College Station, TX	13129
8 Urbana, IL	11764
9 Cambridge, MA	11708
10 University Park, PA	11066

Fastest States (2009)



State	% above 5 Mbps	QoQ Change	YoY Change
1 Delaware	72%	15%	17%
2 New Hampshire	51%	-3.4%	-7.4%
3 Massachusetts	45%	3.0%	5.2%
4 Vermont	44%	-0.7%	-3.3%
5 New York	44%	-3.2%	-1.7%
6 Nevada	41%	9.4%	7.4%
7 Connecticut	41%	1.9%	-0.7%
8 Pennsylvania	38%	17%	11%
9 Indiana	36%	17%	21%
10 District Of Columbia	36%	-3.1%	-0.3%

Bulgaria – Fiber to the Home

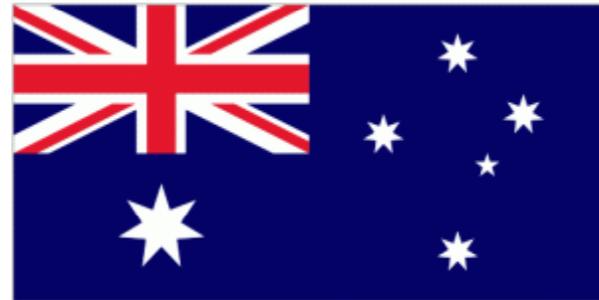
Bulgaria's capital city, Sofia, will be blanketed in fiber-to-the-home broadband by the year 2014, according to Bulgarian Internet provider EVO.bg. The company is investing \$860 million to roll out its fiber network, which it says will deliver some of Europe's fastest broadband speeds.



Australia – Fiber to the Home

Australia's march towards **an all-fiber future** took an important step last week when the government announced a wide-ranging agreement with Telstra, the country's largest phone company, to use Telstra's existing infrastructure to help construct a national fiber network.

After two years of negotiations, Australian Prime Minister Julia Gillard on Thursday announced an \$11 billion deal between Telstra and NBN Co to allow NBN to use Telstra's existing conduits, poles, and network facilities to provide a foundation for the **construction of the all-fiber network and the removal of existing copper wiring.**



FCC National Broadband Plan

Reasons to Fail

- Cost (36%)
- Lack of digital literacy (22%)
- Perception that broadband is not needed (19%)
- Other factors (availability, inability to use equipment)

Price of the Pipe (2010)

Broadband Service Speed and Price (High Tier)

Country	Downstream	Upstream	Price
Canada[3]	25	7	\$67
Denmark[4]	40	2	\$72
Finland[5]	24	1	\$67
Hong Kong[6]	100	Unlisted	\$38
Japan[7]	200	100	\$60
South Korea[8]	100	Unlisted	\$29
Sweden[9]	100	100	\$46
Taiwan[10]	100	5	\$37
U.K.[11]	50	Unlisted	\$57
United States[12]	50	20	\$145

Price of the Pipe (2010)

Broadband Service Speed and Price (Low Tier)

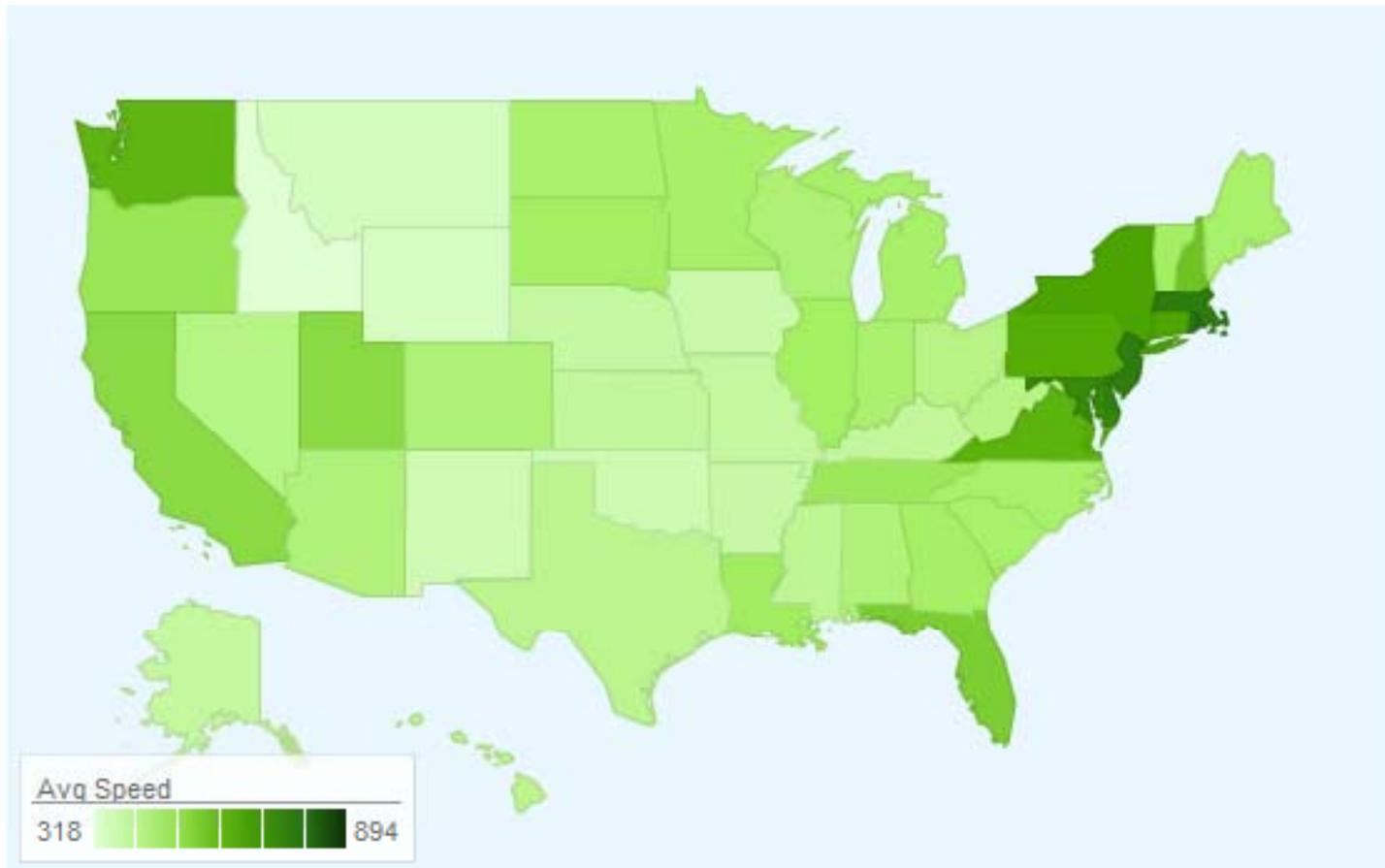
Country	Downstream	Upstream	Price
Canada[13]	2	800 Kbps	\$31
Denmark[14]	2	512 Kbps	\$30
Finland[15]	1	512 Kbps	\$36
Hong Kong[16]	1.5	Unlisted	\$13
Japan[17]	1	512 Kbps	\$34
South Korea[18]	8	640 Kbps	\$26
Sweden[19]	1	1	\$19
Taiwan[20]	3	768 Kbps	\$14
U.K.[21]	10	Unlisted	\$30
United States[22]	1	1	\$35

New Mexico



Slowest Networks

Average Download Speed By State (Kilobytes Per Second)



Ranked 5th Slowest @ 372kbs

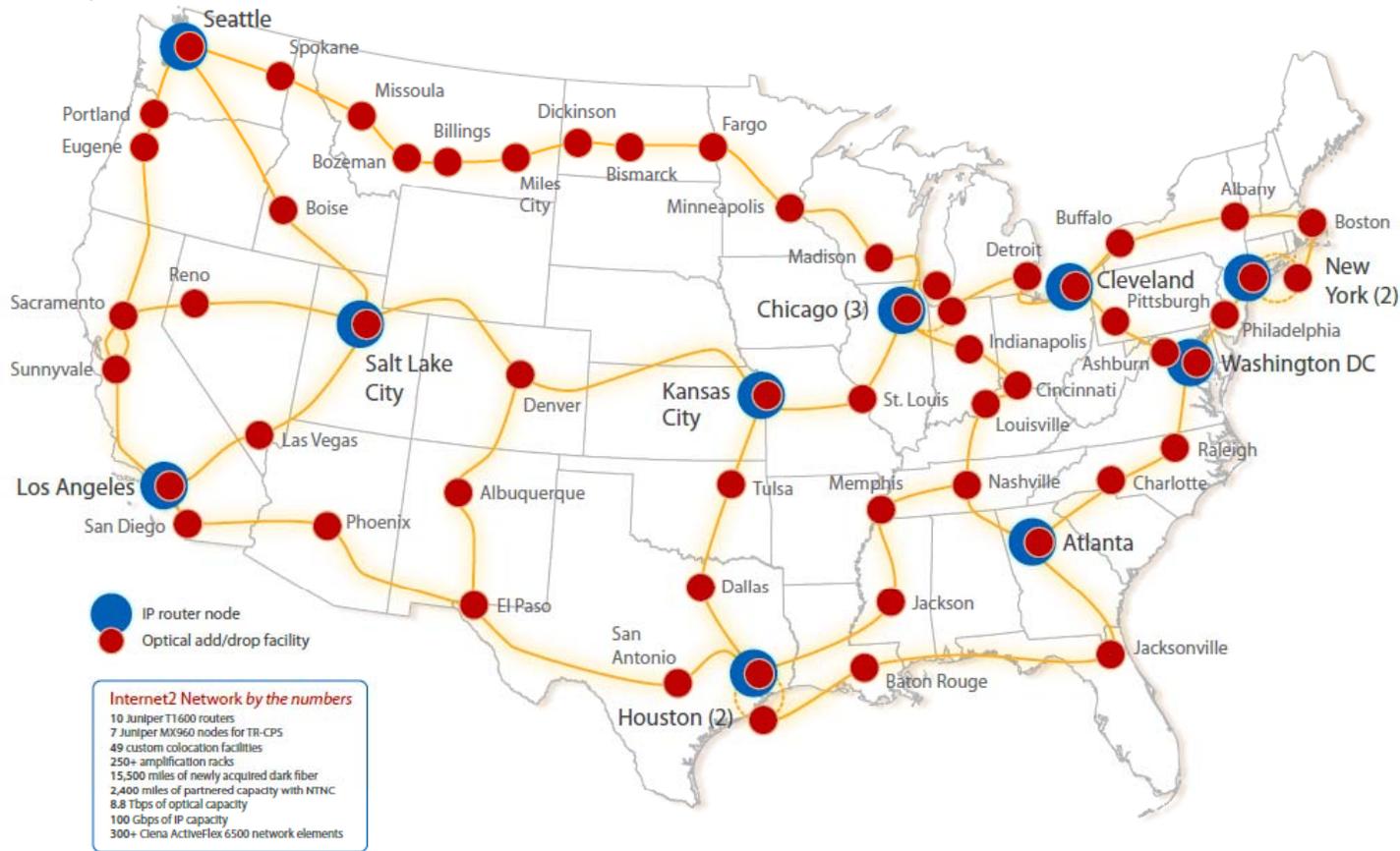


Internet2 – 100gb



Internet2 Planned 100 Gigabit Infrastructure Topology (DRAFT)

Draft – Last updated 28 Jun 2011



IN SUPPORT OF
U.S. UCAN

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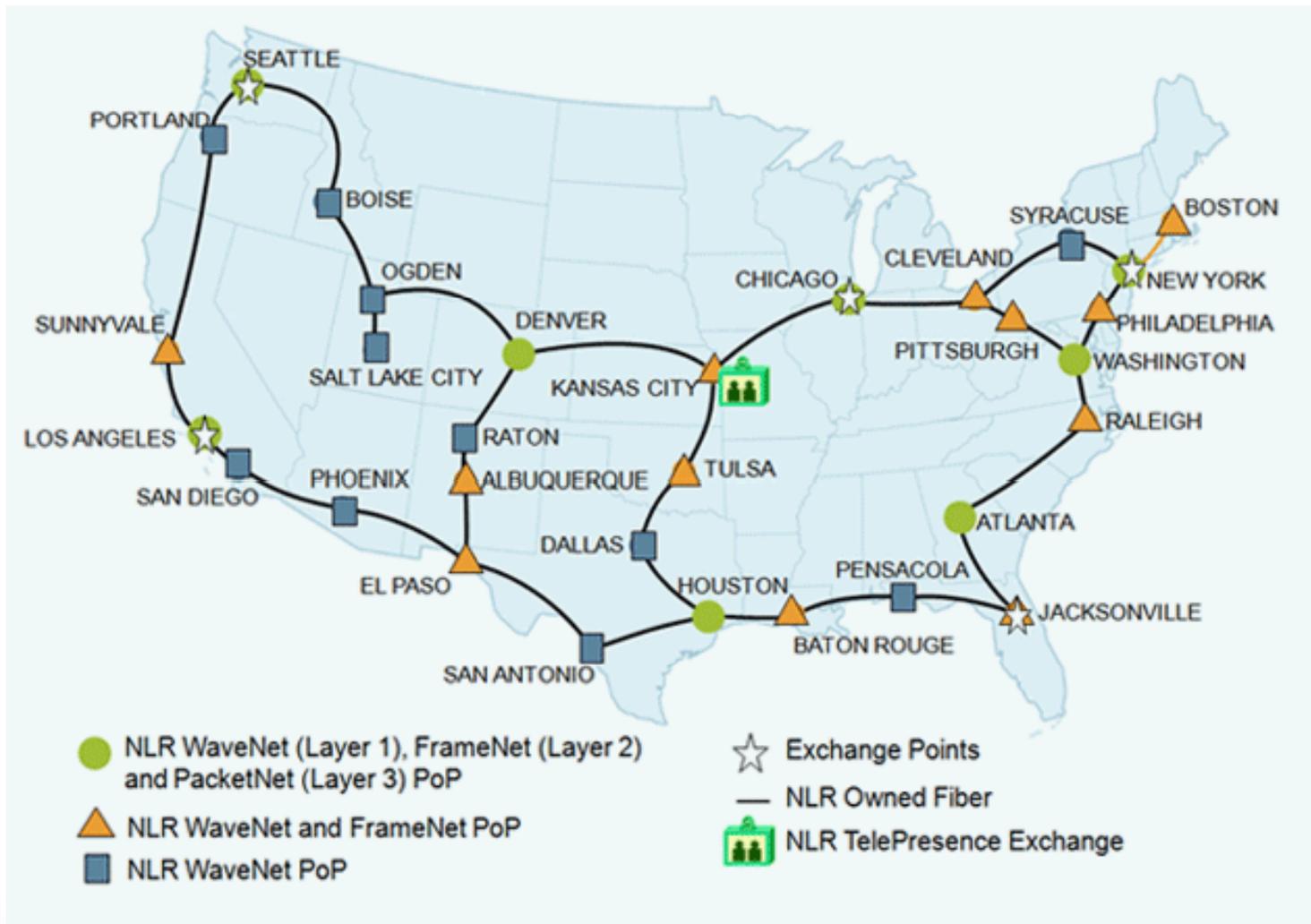
Level(3)



Internet2 - USUCAN

The **United States Unified Community Anchor Network (U.S. UCAN)** is a new national project dedicated to connecting community anchor institutions, including public libraries, schools, community colleges, research parks, public safety and health care institutions with advanced broadband capabilities. Utilizing the Internet2 Network and in collaboration with regional research and education networks across the country, U.S. UCAN will enable these anchor institutions to serve their communities with telemedicine, distance learning and other life-changing applications.

New National LambdaRail



National Health Intranet



Institute for Advanced Health Announces High Performance Secure "National Health Intranet"

Chan Soon-Shiong Institute for Advanced Health Provides \$100 million Funding of National LambdaRail to Bring the Power of Supercomputing and Genomic Analysis to the Point of Care

Los Angeles, CA, July 27, 2011 – The Chan Soon-Shiong Institute for Advanced Health (CSS Institute) announced today it has achieved a major milestone in its establishment of a secure "medical information superhighway" as first envisioned by founder Patrick Soon-Shiong, M.D. and outlined to the Institute of Medicine in July 2009. The CSS Institute has assumed financial responsibility for the nation's premier advanced research communications network - National LambdaRail (www.nlr.net). NLR consists of over 12,000 miles of high performance optical fiber from coast to coast, capable of speeds of up to 100 gigabits per second. In partnership with Cisco Systems and their technology platform, NLR provides universities and government agencies with massive data transmission services required by leading-edge research.

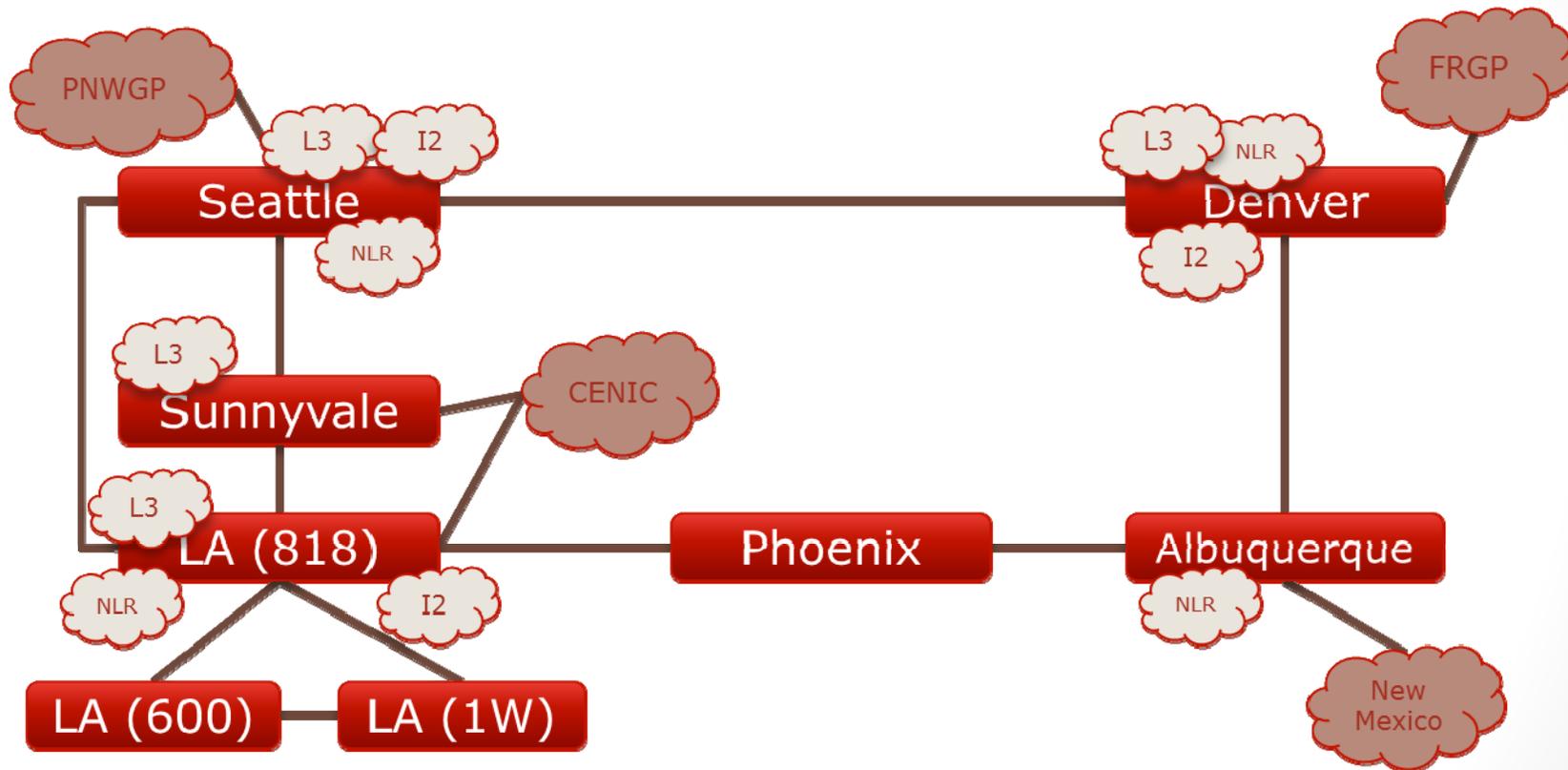
University Approaches



Regional Optical Networks (RONS)

- Aggregation points, Peering to reduce costs, Shared services
- **Advanced research**
- **Operations**
- **Academics**
- **Economic Development**
- **Inter-regional services**

Western Regional Network (WRN) 'Super' Aggregation



NTIA and the NSF

- **Campus Cyberinfrastructure (CI) Days**, along with the NSF
- **Bridging CI between research campuses** – Building a seamless **“continuous collaborative computational cloud”**
- Best practices:
 - **The process to bridge to national infrastructure**
 - **Interoperable identification and authentication**
 - **Dissemination and use of shared data collections**



Gig.U



- **The University Community Next Generation Innovation Project**
 - Over 30 leading research universities
 - Community-led innovation in research & entrepreneurship
 - Accelerate the deployment of ultra high-speed networks to Universities and their surrounding communities
 - Drive economic growth
 - Stimulate innovation
 - Address critical needs: health care, education

Gig.U in Hawai'i



- August 23, 2011: Honolulu, HI,
- Governor Neil Abercrombie : major economic development initiative to provide statewide access to affordable ultra high-speed Internet by 2018.
 - **1 gigabit per second**
 - **At every public school, every public library, every public university and college campus**
 - **\$33.6 million of federal monies** received through the American Recovery and Reinvestment Act (ARRA)
- Led by the Department of Business Economic Development and Tourism (DBEDT) and the Department of Commerce and Consumer Affairs (DCCA) and is supported by the state's Chief Information Officer, and the University of Hawai'i.



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DISCUSSION