

DIGITAL COMMUNICATION NETWORKS

Winning the Race 2012 is a series of ten policy briefs that lay out broad principles and actionable ideas for the next administration to embrace to help the United States win the race for global innovation advantage.

Context and Policy Divide

We live in an information-rich world in which we increasingly depend on advanced digital networks to connect our smart phones and computers with databases and information processing systems in the cloud. The opportunities for IT to deliver improvements in the economy and quality of life are multiplied by fast, reliable and pervasive digital networks. Innovation is particularly fast in the mobile world, but next-generation wireline networks form the essential foundation of all digital networking. Pervasive digital networks are also essential prerequisites for the smart grid, intelligent transportation systems, and improvements in health care. The United States leads the world in the adoption of fourth generation LTE mobile networks, but we lag our competitors in provisioning spectrum. While the United States is not the world leader in wired broadband because of our disadvantages over some nations in population density and low rates of computer ownership, policy here can help as well.

Communications policy was historically characterized by bipartisan consensus. Today that has weakened. Democrats are more likely to support an expansive research agenda and digital literacy and computer ownership programs, but they're sometimes inclined to over-regulate and to support government in the network operations business. Republicans are more likely to rely on markets incentives to spur investment, but they're also less inclined to intervene in areas where markets are not solving the problems that need to be solved.

Innovation Race Principles

- **Use a light touch to regulate legitimate uses of digital technology.** Given the rapid rate of innovation, policymakers should apply a light touch and rely primarily on measurement and disclosure to govern legitimate network industries through market mechanisms. Overly prescriptive network regulation notions such as network neutrality have the unintended consequence of limiting opportunities for advances in platform performance and the emergence of new business models. A third way on network neutrality that ensures an improving level of basic service while permitting advanced network services to emerge is the preferred approach.
- **Remove obstacles to next-generation wired and wireless networks.** Advanced networks, both wired and wireless, require high-capacity fiber optic infrastructure.

Better infrastructure depends on conditions favorable for investment, access to rights of way, tower siting permits, and cooperative ventures such as Metro Ethernet Exchanges. Parochial interests, misinformation, NIMBY-ism, and the mass of local regulations are barriers to infrastructure improvement, and a stronger federal role can address these issues. Moreover, the federal government has unwittingly created additional burdens on the deployment of advanced spectrum systems by appropriating an excessive amount of spectrum for its own use and failing to upgrade its systems on a regular basis. Performance standards for government systems will mitigate these problems.

- **Government action is essential for digital network improvement.** Government has a unique role to play in stimulating improved digital networks, beginning with demand creation. Converting government systems that interact with the public to Internet-based platforms creates demand. Programs that increase computer ownership and digital literacy enable more citizens to conduct their business with the government and the private sector more efficiently. Government is the custodian of the airwaves; consequently it must ensure that its own use of spectrum is exemplary. Finally, government is the only reliable sponsor of basic research in networking and an important sponsor of applied research.
- **Clarify and limit the government role in network support.** The market cannot solve all the problems of network deployment and operations on its own, especially in rural, tribal, and low-income areas, which is why universal service is an important commitment that provides benefits to all citizens. However, historic programs such as the Universal Service Fund need to be updated to provide support for infrastructure development in hard-to-serve areas for both wireline and wireless services. Moreover, government should not support provision of networks in markets already served by commercial networks except under exceptional conditions such as extremely poor service quality or excessive prices by the incumbent. In these cases, voter approval should be a required before government entities take on public debt to build competitive networks.

Policy Recommendations

- ✓ **Upgrade government systems that use spectrum:** Commercial systems that use spectrum are routinely improved. Cellular technology has undergone three new generations of improvement, increasing data rates from 64 Kbps to 20 Mbps and beyond. Incorporating an ethic of “continual upgrade” into government planning will not only improve system reliability and effectiveness, it will make additional spectrum available to commercial systems with direct and immediate economic benefit.
- ✓ **Review spectrum transactions according to consumer benefits and competitive impact only:** Spectrum transaction reviews should not convey Christmas presents to special interests. The public interest is best served by allowing those carriers who are doing the best jobs of investing in their networks and attracting and retaining customers to acquire



sufficient spectrum resources to serve their customers well. Every division of spectrum introduces inefficiency; hence the wireless marketplace will never support a large number of nationwide competitors. Spectrum transactions bring out requests from special interests for extraneous conditions that have more to do with long-standing wishes on the part of advocates than the immediate consequences of the deals. Policy makers should view these transactions according to competition screens and consumer welfare conditions.

- ✓ **Examine “network neutrality” complaints carefully:** No formal complaints of the FCC’s 2010 Open Internet (“network neutrality”) rules have been lodged, although a number of firms complain about unfair conduct. In the event that an actual Open Internet complaint is made to the FCC, it should be carefully examined by an expert panel such as the Broadband Internet Technical Advisory Group before the FCC takes action.
- ✓ **Employ “reverse auctions” to bring subsidized broadband to remote areas:** The Universal Service program has succeeded in bringing telephone service to remote areas, but it is now obsolete. The next administration should encourage the FCC to push forward with its plan for replacing telephone-based Universal Service with a program that brings wireless and wireline broadband to high-cost areas. Broadband subsidies need to be well targeted and cost-controlled; in most cases, “reverse auctions” that allow potential suppliers to compete for subsidies on a cost/benefit basis are the right tool. To the extent that the FCC requires legislative support for this historic transition, the next administration should urge Congress to supply it.
- ✓ **Set a goal of having 90 percent of American households subscribing to broadband within five years:** This program would increase the number of households with computers, teach digital literacy and on-line safety, and subsidize broadband subscriptions for low income households. Studies support the common-sense conclusion that the vast majority of unconnected households lack the means to utilize the Internet, so eliminating this barrier is essential. The practicality of this approach has been proved in every country where computer ownership programs have been conducted. Achieving this goal can decrease the cost of government operation, increase the public’s ability to communicate, and enhance educational opportunities.

Related ITIF Resources

Powering the Mobile Revolution: Principles of Spectrum Allocation

House Science Committee Testimony on “Avoiding the Spectrum Crunch: Growing the Wireless Economy through Innovation”

ITIF Comments on Universal Service



Further Inquiry into Two Under-Developed Issues in the Open Internet Proceeding

A “Third Way” on Network Neutrality



The United States is losing the race for global innovation advantage and the jobs and income that come with that. Many other nations are putting in place better tax, talent, technology and trade policies and reaping the rewards of higher growth, more robust job creation, and faster income growth. It’s not too late for the United States to regain its lead but the federal government will need to act boldly and with resolve to design and implement strategies that include cutting business taxes and boosting public investment. *Winning the Race 2012* is a series of ten policy briefs that lay out broad principles and actionable ideas for the next administration to embrace to help the United States win the race for global innovation advantage. For more actionable policy ideas, visit ITIF’s *Policymakers Toolbox* at www.itif.org/policymakers-toolbox.

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