

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

In the Matter of	)	
	)	
Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band	)	PS Docket No. 06-229
	)	
Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Communications Requirements Through the Year 2010	)	WT Docket No. 96-86
	)	

To: The Commission

**REPLY COMMENTS OF CISCO SYSTEMS, INC.**

**I. INTRODUCTION AND SUMMARY**

The Commission is presented in this proceeding with the fundamental question of whether the old (and largely unsuccessful) models for interoperable first responders' communications networks will continue to hinder our homeland security capabilities. In opening comments in response to the *Ninth NPRM*,<sup>1</sup> a wide array of commenters, including Cisco Systems, Inc. ("Cisco"),<sup>2</sup> public safety entities,<sup>3</sup> manufacturers,<sup>4</sup> commercial service providers,<sup>5</sup> and other concerned parties<sup>6</sup> have answered this question

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<sup>1</sup> *Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band*, PS Docket No. 06-229, *Ninth Notice of Proposed Rulemaking*, 21 FCC Rcd 14837 (2006) ("*Ninth NPRM*").

<sup>2</sup> *See* Comments of Cisco.

<sup>3</sup> *See, e.g.*, Comments of the State of Nebraska; Comments of the Missouri State Highway Patrol; Comments of the First Response Coalition.

<sup>4</sup> *See, e.g.*, Comments of CEA; Comments of Alcatel-Lucent; Comments of Ericsson.

<sup>5</sup> *See, e.g.*, Comments of AT&T Inc.; Comments of Verizon Wireless; Comments of CTIA – The Wireless Association®.

with a clear and resounding “no”. Instead, despite some differences on the details of implementation, there is a striking degree of consensus that the Commission should follow through on the model boldly proposed in the *Ninth NPRM*. As Cisco described in its opening comments, the Commission should move swiftly to designate the proposed 12 MHz to a single national licensee that would deploy a broadband network. Moreover, the Commission should provide public safety with the flexibility to utilize the other 12 MHz in the public safety allocation for this broadband network as well.<sup>7</sup> Cisco files these reply comments primarily to respond to some assertions in the record about the respective technical capabilities of broadband networks as compared with the wideband TIA-902 (SAM) standard.

## **II. BROADBAND SOLUTIONS ARE VASTLY SUPERIOR TO WIDEBAND TECHNOLOGIES**

Broadband technologies offer tremendous short- and long-term advantages over wideband. Some parties raise a concern that certain purported advantages of wideband over broadband could be lost under the Commission’s proposal. However, perhaps the most dramatic evidence that a broadband solution is superior to a wideband one can be found in the marketplace. Cisco is not aware of any other country in the world that is contemplating national deployment of a TIA-902 wideband system. Nor is Cisco aware of any similar commercial deployments. If wideband offered such benefits, why is no one else taking advantage of them? And why – in this important decision for our

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<sup>6</sup> See, e.g., Comments of the Center for Individual Freedom; Comments of the Council for Citizens Against Government Waste; Comments of the High Tech DTV Coalition; Comments of the National Taxpayers Union.

<sup>7</sup> To the extent that some members of the public safety community are concerned that 12 MHz alone may not be enough to meet their needs (see, e.g., Comments of APCO at 4), granting public safety the flexibility to use all 24 MHz for broadband – as Cisco proposes – is consistent with their stated goals.

homeland security future – would the country chose a technology that will not have the scale and scope to support it in the future global marketplace? Broadband is the overwhelming global choice for today’s network investment dollars – America’s first responder networks deserve nothing less. Even in the face of this overwhelming marketplace evidence, and although many of the concerns were largely expressed in passing, there are some important misconceptions raised in this debate that require further clarification.

Broadband technologies provides more cost effective solutions for public safety than the TIA-902 wideband standard can, due to the diversity of broadband suppliers, the higher data throughput rates achievable over broadband with the equivalent infrastructure, and the long-term flexibility and adaptability afforded by broadband. Some commenters argue that wideband offers a cheaper solution to public safety communications needs.<sup>8</sup> This assertion, however, cannot survive any serious analysis.

Even if wideband technologies were cheaper than broadband at one time, that is certainly not true today – and the cost advantages of broadband over the long-term are clear. Creation of a broadband network will offer tremendous advantages to public safety by creating a large and diverse vendor ecosystem that will promote competition and drive down costs. Ample evidence of the benefits of a broad manufacturing community is found in commercial radio systems today – where competition has driven costs down – and in today’s public safety providers’ networks, where a limited vendor community has failed to produce such benefits.<sup>9</sup>

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<sup>8</sup> See Comments of APCO at 2-3; Comments of Motorola at 6.

<sup>9</sup> Handsets provide a readily identifiable measure of costs. A typical wireless handset runs consumers \$100-400. See, e.g., <http://www.t-mobile.com/shop/phones/Default.aspx?pgrShowAll=true>. In contrast, a

Broadband networks offer greater functionality at about the same cost as wideband systems. Motorola asserts that 4-5 times as many cell sites are required to build a broadband system as a wideband one.<sup>10</sup> This is not the case. The infrastructures needed to support a TIA-902 wideband network built to achieve its highest data throughput rate and an 802.16e broadband network built to achieve its minimum data throughput rate are roughly equivalent – but the broadband network would offer speeds at least as fast as those of wideband.

Furthermore, broadband networks – with their inherent flexibility and adaptability often through software changes – also will enable public safety entities to operate far more efficient and dynamic networks over time. Thus, even if initial deployment costs for a broadband network were higher than they would have been with a wideband network (and Cisco is not convinced they would), the long term costs of keeping an adaptable public safety broadband network current would be far lower than a wideband system.

Broadband networks also offer reliability and quality of service (“QOS”) standards that meet or exceed those offered by wideband networks. Some have questioned the ability of IP technologies to deliver the reliability and quality of service that first responders need.<sup>11</sup> Here too the criticism misses the mark. There are numerous

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typical public safety handset often runs in the thousands of dollars. *See, e.g.*, State of Connecticut Department of Information Technology, Two-Way Radio Equipment and Accessories, [http://www.ct.gov/doi/lib/doi/purchase/radios2/efjohnson\\_mp.pdf](http://www.ct.gov/doi/lib/doi/purchase/radios2/efjohnson_mp.pdf) (quoting prices for a Connecticut state system in the thousands of dollars). While there may be good reason why a public safety client device is more expensive to produce than a commercial one, the exponential differential that characterizes today’s pricing differences could be substantially eased if a public safety broadband network is constructed using commercial technologies supported by a robust vendor ecosystem.

<sup>10</sup> *See* Comments of Motorola at 6; *see also* Comments of Dataradio at 1.

<sup>11</sup> *See, e.g.*, Comments of APCO at 10.

examples of broadband deployments – EVDO, IEEE 802.16 – that have QOS standards as high or higher than wideband. Indeed, WiMAX IEEE 802.16 builds multiple QOS options into its standard, providing users with the ability to control the priority of its service. Similarly, broadband networks are capable of being even more robust than wideband systems. Therefore there is no basis for retreating to the wideband standard based on costs, QOS or reliability.

Many of the concerns about broadband may reflect a misconception about the nature of “broadband.” Broadband – with its inherent flexibility and multiple manufacturers and uses – does not have a defined set of operational parameters like TIA-902. As Cisco described in its opening comments, today there are several competing standards-based wireless broadband technologies from which a national public safety licensee could reasonably choose. Not all of them are “native IP”, but all of them have the capability of delivering IP-based communications at high data throughput rates, and each is supported by a substantial community of vendors who continually are looking to improve their technologies. These various competing “flavors” of broadband each have distinct characteristics that may make them more or less effective in a given setting. A national licensee will have this vast broadband “menu” to choose from – and may select the level of cost, reliability, quality of service and other factors that best suit the needs of America’s first responders. That process can and must select a broadband system that greatly exceeds the capabilities offered by the wideband alternative.

Finally, the FCC should choose a broadband framework for the public safety band, and reject calls to allow a certain subset of jurisdictions to choose wideband

instead.<sup>12</sup> Tremendous benefits can be derived from having a national licensee that can select an interoperable solution for the country that will provide for efficient and cost effective deployment of the most robust public safety radio system ever. If certain states and localities are permitted to “opt out” of this approach, America will “lose out” on the efficiencies of one provider, key aspects of interoperability, and the inherent benefits of competitive providers. The stakes are too high to allow individual jurisdictions to choose their own path – that is the policy approach that led to the tragic consequences that the FCC is now trying to ensure will never happen again. Only a national broadband network can achieve these goals.

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<sup>12</sup> See Comments of NPSTC at 6; Comments of Motorola at 5.

