

**Before the  
Federal Communications Commission  
Washington, DC 20554**

In the Matter of	)	
	)	
Schools and Libraries Universal Service Support Mechanism	)	CC Docket No. 02-6
	)	
A National Broadband Plan for Our Future	)	GN Docket No. 09-51
	)	
To: The Commission		

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

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

Cisco Systems, Inc. (“Cisco”) submits these reply comments in response to the Commission’s Notice of Proposed Rulemaking<sup>1</sup> on implementation of various National Broadband Plan<sup>2</sup> recommendations for reform of the E-rate component of the Commission’s universal service program.<sup>3</sup>

**I. THE FCC FACES TOUGH CHOICES IN DECIDING HOW TO EVOLVE E-RATE TO SUPPORT THE NATIONAL BROADBAND PLAN’S EDUCATIONAL OBJECTIVES**

As stated in its initial comments in response to the NPRM, Cisco supports the NBP recommendation that the Commission provide E-rate support for internal connections to more

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<sup>1</sup> *Schools and Libraries Universal Service Support Mechanism, A National Broadband Plan for Our Future*, CC Docket No. 02-6, GN Docket No. 09-51, Notice of Proposed Rulemaking, FCC 10-83 (rel. May 20, 2010) (“NPRM”).

<sup>2</sup> Federal Communications Commission, *Connecting America: The National Broadband Plan* (rel. Mar. 16, 2010) (“National Broadband Plan” or “NBP”).

<sup>3</sup> The Commission’s E-rate rules are generally codified in 47 C.F.R. §§ 54.500 *et seq.*

schools and libraries, so they can employ this internal infrastructure to utilize increased broadband capacity.<sup>4</sup>

There are difficult tradeoffs inherent in these efforts to spread what ultimately is a fixed resource – E-rate funding – across a larger pool of deserving applicants.<sup>5</sup> Cisco urges the Commission, in its struggle to resolve these tradeoffs, to remain focused on the central goal shared by many parties that the Commission take steps to ensure broader and more predictable funding for internal connections.

Accordingly, Cisco offers these reply comments not to respond to other parties’ specific proposals, but to provide additional specific information in support of the view that increasing access to broadband technologies in the classroom can transform our public education system to produce graduates who are better informed, better critical thinkers, and who can collaborate effectively in work environments.

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<sup>4</sup> See NPRM, ¶ 65; Cisco Comments at ii, 8-15. Among other things, Cisco stated that an internal connections funding “set-aside” could be a good first step, and that the Commission also should re-examine whether the distinction between Priority 1 and Priority 2 services remains useful given changes in technology. Cisco Comments at 13-14. Cisco also offered input on other Priority 2 issues, such as urging the Commission not to cap or eliminate support for basic maintenance of internal connections, to clarify that such support can be used to fund standard updates for networking software, and to allow schools and libraries to finance a portion of their share of the cost of supported services. Cisco Comments at 10-11.

<sup>5</sup> See, e.g., Comments of the American Library Association at 17 (“The proposals to improve access to Priority Two services are all at the cost of funds applicants now depend on for priority one.”); Comments of the New York State Education Department at 8.

## **II. FUNDING FOR INTERNAL CONNECTIONS SHOULD BE EXPANDED BECAUSE BROADBAND TECHNOLOGIES ARE INCREASINGLY CRITICAL TO IMPROVING EDUCATION**

### **A. Federal Education Policy Correctly Seeks to Foster a Learning Environment That is Collaborative, Engaging and Adaptable to Educational Needs**

As Cisco did in its initial comments, the Obama Administration identifies the crucial nexus between technology and education policy:

Our nation's economic competitiveness and the path to the American Dream depend on providing every child with an education that will enable them to succeed in a global economy that is predicated on knowledge and innovation.<sup>6</sup>

Improving education thus is an imperative not just for the nation's children but for the nation as a whole. With ongoing challenges for maintaining the nation's global leadership and expanding the benefits of that leadership to more Americans, the time is now to ensure that students not only know how to *use* technology but also reap the full benefits of it in all aspects of their educations.

The draft National Educational Technology Plan developed by the U.S. Department of Education expands on this point by articulating a bold vision for harnessing the power of technology to transform the nation's educational system dramatically.<sup>7</sup> This vision encompasses leveraging technology "to provide engaging and powerful learning experiences," to "execute

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<sup>6</sup> This language was copied from the White House website, *avail. at* <http://www.whitehouse.gov/issues/education> (last visited July 25, 2010); *see also* Cisco Comments at 2-5.

<sup>7</sup> U.S. Department of Education, Office of Educational Technology, Transforming American Education: Learning Powered by Technology (Draft National Educational Technology Plan 2010, Executive Summary), March 5, 2010, *avail. at* <http://www.ed.gov/sites/default/files/NETP-2010-final-report.pdf> (last visited July 25, 2010) ("NETP").

collaborative teaching strategies” with real-time methods of improving such strategies, and to tailor learning to the “individual goals, needs, interests, and prior experience of each learner.”<sup>8</sup>

The NETP highlights the potential for “connected teaching,” an approach that empowers students and educators to engage in broad collaborations with educational staff and resources throughout school systems and across the globe. Connected teaching will enable the educational system “to provide access to effective teaching and learning resources where they are not otherwise available and provide more options for all learners at all levels.”<sup>9</sup> This teaching and learning model is “always on,” providing access not just to *information* but also to *people* in dispersed classrooms, labs, libraries, museums, workplaces and homes – all of whom are linked via technology into online learning communities.<sup>10</sup>

**B. Access to Broadband Technologies Will Be Critical to Transforming Education, Especially with Respect to Enhancing Collaboration and Use of Multimedia Applications**

Cisco shares the Administration’s compelling vision for American education. As stated in Cisco’s initial comments, virtual classrooms and online learning tools enhance learning opportunities by expanding access to teaching resources beyond the boundaries of classroom and academic discipline, by providing opportunities for collaborative work and by promoting job-critical digital literacy skills – all while permitting real-time assessment and feedback to make teaching more effective.<sup>11</sup> Cisco emphasized the importance to this educational model of allowing students and educators to share and create video and other visual content flexibly (such

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<sup>8</sup> *Id.* at 3-4.

<sup>9</sup> *Id.* at 6.

<sup>10</sup> *Id.* at 7.

<sup>11</sup> Cisco Comments at 3.

as by using Cisco's new Cius offering), mirroring the increasingly intensive use of online video forecast and analyzed in Cisco's Visual Networking Index (VNI).<sup>12</sup>

Cisco is actively helping transform education to meet the needs of 21<sup>st</sup> century learners, educators and organizations, and has seen first-hand the benefits of integrating technology into the educational process. In 2005, Cisco launched the 21<sup>st</sup> Century Schools Initiative (21S) to help rebuild the Gulf Coast in the wake of Hurricane Katrina, while creating a model for education reform.<sup>13</sup> The program turned the hurricane's devastation into an opportunity to start fresh with a new educational approach. In conjunction with corporate, academic and community partners, Cisco helped establish a fully-converged voice, video and data technology infrastructure in 54 schools in Mississippi and Louisiana.<sup>14</sup> This investment has enabled more than 100,00 students to use engaging technologies such as interactive white boards, laptops and video conferencing, as well as participate in web 2.0 activities such as podcasting and use of Skype.<sup>15</sup> Many school districts involved in the 21S initiative have seen positive results in terms of reduced drop-out rates, increased graduation rates and higher enrollment in Advanced

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<sup>12</sup> *Id.* at 2-3. VNI, Cisco's ongoing effort to forecast and analyze the growth and use of IP networks worldwide, predicts that by 2014, global online video will approach 57 percent of consumer Internet traffic (up from 40 percent in 2010). *Id.* at 2. Cisco's new Cius offering combines a powerful, mobile broadband-connected tablet computer with two high-definition cameras capable of capturing video or still images with collaborative technologies like WebEx and Show and Share to allow teachers, students, and parents to interact with each other in new and more effective ways. *Id.* at 3.

<sup>13</sup> Cisco, 21<sup>st</sup> Century Schools Initiative (21S) at a Glance (2009), *avail. at* <http://www.cisco.com/web/about/citizenship/socio-economic/docs/CSRExternalBrief21Sprogram2.pdf> (last visited July 25, 2010).

<sup>14</sup> *Id.*

<sup>15</sup> *Id.*

Placement (AP) classes.<sup>16</sup> The educational impact has been especially great in Jefferson Parish, which has extended the 21S framework to buildings throughout that district.<sup>17</sup> With connectivity and broadband-empowered learning tools available, state assessment test scores have steadily improved across all grade levels.<sup>18</sup> Some increases in achievement have been striking – for example, tenth grade math achievement scores increased more than 6% in one year from 2007-2008.<sup>19</sup> In addition, more students are meeting promotion standards and advancing into the next grade, and online assessment has facilitated faster intervention and individualized instruction.<sup>20</sup>

The benefits of broadband technologies also are illustrated with respect to the goal of promoting collaboration in learning and teaching more generally. Despite the long history of schools treating collaboration among students as “cheating” (and collaboration among teachers as atypical), federal and state educators recently have begun to encourage teaming and collaboration. The goal is both to deepen learning and to prepare students for work environments, which are increasingly dependent on virtual, online collaborations.<sup>21</sup> Research indicates that collaborative learning positively impacts student achievement compared to traditional, teacher-directed class work.<sup>22</sup> This positive impact is more significant when students

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<sup>16</sup> Cisco, “21S Initiative Supports New Educational Paradigm in Post-Katrina Schools,” Case Study (2008), *avail. at* [http://www.cisco.com/web/about/citizenship/socio-economic/docs/21S\\_Initiative\\_CS-R4b.pdf](http://www.cisco.com/web/about/citizenship/socio-economic/docs/21S_Initiative_CS-R4b.pdf) (last visited July 25, 2010).

<sup>17</sup> *Id.*

<sup>18</sup> *Id.*

<sup>19</sup> Cisco, “System-Wide Change Enabled by Technology Drives Student Improvement,” Case Study, *avail. at* <http://www.cisco.com/web/about/citizenship/socio-economic/docs/JPPSStechDrivesImprovement.pdf> (last visited July 25, 2010), at 3.

<sup>20</sup> *Id.*

<sup>21</sup> Susan M. Williams, Metiri Group, *The Impact of Collaborative, Scaffolded Learning in K-12 Schools: A Meta-Analysis* (2009), *avail. at* [http://www.cisco.com/web/about/citizenship/socio-economic/docs/Metiri\\_Classroom\\_Collaboration\\_Research.pdf](http://www.cisco.com/web/about/citizenship/socio-economic/docs/Metiri_Classroom_Collaboration_Research.pdf) (last visited July 25, 2010), at 4.

<sup>22</sup> *Id.* at 12.

collaborate to solve complex problems, particularly with the aid of instructional supports or “scaffolds,” which may involve interaction with teachers or, increasingly, technology.<sup>23</sup>

Technology also can improve student achievement by facilitating collaboration among teachers, which tends to help improve the quality of instruction.<sup>24</sup>

**C. Capitalizing on the Educational Benefits of Broadband Technologies Requires Expanded, Flexible E-Rate Funding for Internal Connections**

Making this vision of broadband-enhanced education a reality, however, will require sustained investment in technological infrastructure that “unleashes new ways of capturing and sharing knowledge based on multimedia that integrate text, still and moving images, audio, and applications that run on a variety of devices . . . enabl[ing] seamless integration of in- and out-of-school learning.”<sup>25</sup> Students and teachers need access to these diverse, demanding and rapidly evolving functions, and this will require high-bandwidth internal connections, in addition to broadband services.

The development of cloud computing, in which organizations move computer software and storage from users’ desktops to a centralized server,<sup>26</sup> emphasizes the need for flexibility in the arbitrary line drawing between internal connections support, on the one hand, and monthly telecommunications or Internet access services support, on the other.<sup>27</sup> Cloud computing enables organizations to enhance storage, computing power and services while saving money on

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<sup>23</sup> *Id.* at 12-13.

<sup>24</sup> Cheryl Lemke, Metiri Group, *Policy Brief: Teacher Learning Through Collaboration and System Innovation* (2009), avail. at [http://www.cisco.com/web/about/citizenship/socio-economic/docs/Metiri\\_Teacher\\_Collaboration\\_Policy.pdf](http://www.cisco.com/web/about/citizenship/socio-economic/docs/Metiri_Teacher_Collaboration_Policy.pdf) (last visited July 25, 2010), at 8.

<sup>25</sup> NETP at 7.

<sup>26</sup> See, e.g., ESchool News, *Computing in the Cloud* (June 2, 2010), avail. at <http://www.eschoolnews.com/2010/06/02/computing-in-the-cloud/> (last visited July 25, 2010).

<sup>27</sup> See also Cisco comments at 13-14.

equipment and services that might otherwise have to be purchased – everything from expensive servers to the monthly electricity costs of powering and cooling such servers.<sup>28</sup> The funding priority rules should not freeze schools into a last-generation architecture in which they must physically support all of their own educational computing capabilities, with all attendant costs and burdens. Schools and libraries should not be denied the benefits of cloud computing or other architectures as a result of funding priority rules that encourage recipients to address voice or other needs as Priority 1 services, when those needs can be met more efficiently through use of Priority 2 internal connections. Cisco thus renews its call for flexibility in this area.

The creation of, and ever-expanding demand for, the E-rate program demonstrates the nation's resource-strapped schools are ill-equipped to carry out sustained investment in broadband technologies on their own, especially at a time of deep budget cuts. Cisco urges the Commission to hold fast to its commitment to transform the E-rate program so that the program, in turn, can continue to be a positive force in the transformation of American education. To do so, the Commission must advance the National Broadband Plan's vision for broader and more predictable funding for internal connections.

### **III. ANY REFORMS SHOULD GIVE E-RATE RECIPIENTS A REASONABLE TRANSITION PERIOD TO ADJUST TO NEW POLICIES**

As stated in its initial comments, Cisco supports the Commission's effort to modernize the E-rate program for the Internet age, including several of the proposals on which the NPRM seeks comment.<sup>29</sup> No matter what it decides with respect to any of the issues raised in the

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<sup>28</sup> Dennis Carter, Cloud Computing Envelops EDUCAUSE Talk (Nov. 12, 2009), *avail. at* <http://www.ecampusnews.com/technologies/cloud-computing-envelops-educause-talk-2/> (last visited July 25, 2010).

<sup>29</sup> Cisco Comments at 1.

NPRM, the Commission should spread any significant reforms out over a reasonable period to give recipients time to adjust. Given the long planning and administrative process in which schools and libraries must engage prior to applying for E-rate support, spreading reforms out over a couple of years would enable applicants to adjust their planning processes accordingly.<sup>30</sup>

The American Library Association made this point most clearly:

Often, a 12-18 month lead time is required prior to actually filing a funding request. Attempting to make changes for Funding Year 2011 when over 42,000 applicants are in various stages of developing Requests for Proposals, filing FY 2011 Forms 470, and entering into or carrying out long-term contracts is akin to simultaneously changing 42,000 tires on a bus while driving 65 mph down the road.<sup>31</sup>

Further, spreading out significant reforms is consistent with the reality that, along with changes to the rules, recipients also may face changes to the mix of services needed to meet their evolving needs.<sup>32</sup> This approach also would afford the Commission itself more time to conduct outreach to all potential applicants and confirm that the Universal Service Administrative Company has made adequate adjustments to its systems and procedures.<sup>33</sup>

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<sup>30</sup> *See, e.g.*, Comments of the Pittsburgh School District at 7 (noting that “the application process for Funding Year 2011 has essentially already begun for many large districts”).

<sup>31</sup> American Library Association Comments at 19.

<sup>32</sup> *See* Comments of the California Public Utilities Commission and the People of the State of California at 8 (recommending a longer transition period for recipients in the process of upgrading to higher bandwidth connectivity).

<sup>33</sup> Comments of the Pittsburgh School District at 6-7.

## CONCLUSION

Cisco again commends the Commission for taking on the difficult work of modernizing the E-rate program for the broadband age, and urges the Commission to adopt reform consistent with these reply comments.

Respectfully submitted,

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