

# Internet2 K20 Initiative FAQ

The logo for Internet2, featuring the word "INTERNET2" in a stylized font with a large, curved "2" that loops around the text.

## ABOUT INTERNET2

### *What is Internet2?*

- Internet2 is a consortium led by 205 universities working in partnership with industry and government to develop and deploy advanced network applications and technologies, accelerating the creation of tomorrow's Internet. Internet2 is recreating the partnership between academia, industry and government that fostered today's Internet in its infancy. The primary goals of Internet2 are to:
- Create a leading-edge network capability for the national research community
- Enable revolutionary Internet applications
- Ensure the rapid transfer of new network services and applications to the broader Internet community

See <http://www.internet2.edu/about/aboutinternet2.html>

### *Is Internet2 a separate network? Will Internet2 replace the current commercial Internet?*

- Internet2 is not a separate physical network and will not replace the Internet. The backbone of Internet2 consists of high-speed networks (primarily Abilene, but also the Defense Research and Engineering Network (DREN), the U.S. Department of Energy's Energy Sciences Network (ESnet), NASA's Integrated Services Network (NISN) and Research and Education Network (NREN), and the vBNS+). These backbone networks traversing the country link to 53 regional networks that are scattered strategically across the United States. Each regional network provides a connection called a Giga Pop that links Abilene to its access node(s). Approximately 150 such access nodes are disbursed across the United States.

More on Abilene: <http://abilene.internet2.edu/>

### *Why do we need Internet2?*

- Today's Internet (also called the commercial or commodity Internet) is heavily used. Using the analogy that an Internet is an information super-highway, the commercial Internet is experiencing traffic congestion and road construction. For many applications (e-mail and simple Web pages) this makes no difference, but for those applications where reliability is critical and delay is unacceptable (e.g. videoconferencing, real time events, large databases or applications where huge files are transferred), the commercial Internet is proving inadequate. Internet2's continuing development is providing a reliable platform for innovative projects, applications, and research.

### *So how will Internet2 benefit regular Internet users?*

- Internet2 and its members are developing and testing new technologies, such as IPv6, multicasting, and quality of service (QoS) that will enable revolutionary Internet applications, but that require performance not possible on today's Internet. More than a faster Web or email, these new technologies will enable completely new applications such as digital libraries, virtual laboratories, distance-independent learning and tele-immersion. A primary goal of Internet2 is to ensure the transfer of new network technology and applications to the broader education and networking communities. Close collaboration with Internet2 corporate members will ensure that these new applications and technologies are rapidly deployed throughout today's commercial Internet.

If my site is an Internet2 site, how do I know whether I am using the commercial Internet or Internet2?

- From the user perspective, accessing Internet2 will be transparent. You will use the same applications (i.e., Web browsers and email clients) that you currently use on the commercial Internet, but with improved performance. There is nothing that the user will need to do differently to access and use Internet2. If you are at an Internet2 site and have another Internet2 site as your destination address, the connection will automatically be made over the Internet2 links. This includes all applications even, for example, email. Users will experience a more reliable, "steady-state" network that is less congested and free from commercial traffic.

To check whether you have access to Abilene (Internet2), the speed of your connection (bandwidth), and whether you have multicast capability, go to <http://detective.internet2.edu/> and download the Internet2 Detective.

## ABOUT THE INTERNET2 K20 INITIATIVE

### *Why was the K20 Initiative started?*

- The diffusion of what is now the commodity Internet took nearly 25 years after its inception in the research community to reach the broad education community (K12, community colleges, libraries, museums, science centers, etc.). For this reason, many Internet2 member concluded that it was essential to engage the education community in the development of Internet2, the next generation Internet - and to do so as close to its launch as possible, thereby engaging the innovators (across all education sectors) in the development of new applications that take advantage of this new network. Connecting state education networks (made up of K12 schools, post-secondary institutions, libraries, museums, science centers and aquariums, and other scientific and cultural institutions) was the most effective means of bringing the largest number of institutions into the Internet2 community quickly.

### *What are the goals of the Internet2 K20 Initiative?*

- To bring innovators in K12, community colleges, universities, libraries, and museums into appropriate regional, national, and international advanced networking efforts, via the Sponsored Education Group Participant (SEGP) process.
- To encourage and help sustain partnerships among these education institutions, the private sector, and government.
- To enhance teaching and learning by facilitating projects that explore the ways in which advanced network applications, services, tools, and digital content can extend access to education and educational resources.
- To develop mechanisms for timely communication across all educational sectors and regions in order to enable quick, pervasive technology diffusion.

For more background on the Internet2 K20 Initiative, please see <http://k20.internet2.edu/about/background.html>

**How are state networks connected to Internet2?**

- State networks are connected via the Sponsored Education Group Participant (SEGP) Program. Since the inception of the SEGP program about two years ago, 30 state networks have connected to Internet2. There are 5-10 additional networks interested in connecting to Internet2 in the near future.

**How does the SEGP process work?**

- A state education network interested in connecting to Abilene, the Internet2 national telecommunications broadband backbone, must find an Internet2 primary member to sponsor the connection. The entire state network is then connected to Abilene via one of the 20 or so network aggregation points called GigaPops. This state network is then known as a Sponsored Education Group Participant (SEGP). All network traffic destined for another SEGP or Internet2 member is routed over Abilene at little or no cost to the SEGP. The sponsoring Internet2 member generally covers the cost of the SEGP traffic.

For more information on this process please see the Abilene and Internet2 K20 websites:

<http://abilene.internet2.edu/>

<http://k20.internet2.edu/segp/background.html>

**How do I find out if my state is a SEGP state?**

- There is a great map at <http://k20.internet2.edu/segp/currentparticipants.html> that lists the states and the state education network(s), connector, and sponsor(s). Contact an advisory committee member for additional information <http://k20.internet2.edu/advise/members.php>.

**What kind of institutions do these state education networks connect via the SEGP program?**

- The Internet2 K20 Initiative brings together Internet2 member institutions, primary and secondary schools, colleges and universities, libraries, and museums to get innovative technologies applications, middleware, and content, across all educational sectors in the United States, as quickly as possible. It is important to note that school districts and libraries, etc., are not members of Internet2, although they may make a connection to Abilene through an existing member (university) or state education network (a non-member SEGP). SEGPs are state networks that connect to Abilene through an existing Internet2 member in order to provide a high performance connection to the school district, library or other group on the state network.

**How many institutions are connected via the SEGP program?**

- Based on a high level SEGP connectivity survey done in September 2002, there are an estimated 10,000 institutions connected. Here is a rough breakdown by institution type:

K12 Schools . . . . .	7200
Community Colleges . . . . .	550
Four-Year Colleges and Universities . . . . .	500
Public Libraries . . . . .	1500
Museums, Zoos, Aquariums, and Science Centers . . . . .	100

It is difficult to tell exactly how many school districts or libraries are part of each state SEGP, or how many will connect in the future, as this type of survey would be too resource intensive and difficult to maintain. The K20 Initiative is currently working to update the survey.

For more information on the September 2002 survey results please see <http://k20.internet2.edu/segp/survey/index.html>.

**How will you determine whether the initiative is succeeding?**

- One measure of success will be whether the initiative can get the existing opportunities into, for example, K12 classrooms and public libraries across the country in measurable numbers. Only then can we assess whether the K20 Initiative is adding real value for the people these organizations serve.

**What have been the most important accomplishments thus far?**

- For the first two years, the K20 Initiative worked to establish the communication and leadership infrastructure necessary to broadcast the Internet2 message and stimulate and support innovation within the SEGP communities. A National Advisory Committee for the K20 Initiative was established, consisting of representatives from each of the SEGP states. The K20 initiative Web site serves as a place for K20 innovators to meet each other and discover projects they can participate in. The stage is now set for the K20 Initiative to begin focusing more closely on driving opportunity to individual SEGP institutions and stimulating the development of communities around those opportunities.

**How does the K20 Initiative help drive innovation to the individual institution level?**

- The first step is to identify a critical mass of innovative K12 practitioners at libraries, museums, zoos, and science and cultural centers in the SEGP community. We are focusing on those with excellent technical infrastructure and support available in their organizations. Second, we are identifying a handful of compelling, "ready-for-primetime" projects that resonate with the community of innovators. Third, the K20 Initiative tries to provide the communication vehicles needed to build a community and culture where innovation can thrive. Lastly, the K20 Initiative helps provide the technical support and expertise necessary for the innovators to be successful in integrating the projects into their classrooms, libraries, and cultural institutions.

**Please describe a few of the challenges the K20 Initiative faces.**

- Spreading the word about what opportunities Internet2 offers the classroom teacher, the public librarian, or the museum director directly to these individuals is challenging. In addition, bandwidth bottlenecks exist at various locations between the state education network and the individual institutions it connects. Many of these last-mile issues must be resolved before some of the Internet2 opportunities can become ubiquitous throughout the SEGP community.

## GETTING CONNECTED

### *How does my K12 school, public library, zoo, museum, or science center get connected to Internet2?*

- If your institution is connected to one of the 30 state education networks listed here <http://k20.internet2.edu/segp/currentparticipants.html>, then you are already connected to Internet2 via the SEGP program. Contact your state network for more information. Organizations permitted to join through the SEGP program include networked aggregates of educational institutions (including non-profit and for-profit K20, technical, and trade schools), museums, art galleries, libraries, or hospitals that require routine collaboration on instructional, clinical, and/or research projects, services, and content with other Internet2 users. Remember, becoming an institution connected to Internet2 through the SEGP initiative does not, however, make you a member of Internet2, just a participant through the SEGP program.

If your institution is not connected via one of the current lists of education networks, it still might be possible to connect to Internet2 as an Abilene Sponsored Participant. Please see <http://abilene.internet2.edu/connect/> for more information.

### *How do I find out about the Internet2 member institutions in my state?*

- Each state has at least one connection to Internet2. For a complete list of current members, go to <http://members.internet2.edu/>. The list is divided by type of member: universities, corporate partners, corporate sponsors, corporate members, affiliate members, and international MoU partners.

## GETTING INVOLVED

### *How can I find out about K20 Initiative projects?*

- A searchable database of K20 projects can be found on the myK20 project page [http://k20.internet2.edu/projectfinder\\_index.php](http://k20.internet2.edu/projectfinder_index.php)

### *How can I connect with teachers or librarians, etc. involved in things I'm interested in?*

- One way is to search the people directory using myK20.

[http://k20.internet2.edu/peoplefinder\\_index.php](http://k20.internet2.edu/peoplefinder_index.php)

### *How can we get involved in the projects listed on the Internet2K20 Web site?*

- Once you've found a project that interests you, the best way to get involved is to contact the person listed on the project description. myK20 also allows you to add a project to your project "watch list." Once you have added a project to your list, you can access the project bulletin board and email or chat with other people associated with that project.

For more information on myK20, please visit

<http://k20.internet2.edu/faq.htm>

### *I have an idea on how I'd like to use Internet2 in the classroom. How do I find others who would be interested in working together?*

- Sign up for myK20 and submit a project description detailing your idea. Others will be able to find your project description and contact you if they are interested in collaborating. You can also search for people with similar interests using myK20.

### *What is myK20?*

- myK20 is your personal window into the Internet2 K20 Initiative. With myK20, it is easy to find people and projects that match your interests. You can even manage your own personal profile and add project descriptions. Soon you will be able to create customized snapshots of SEGP connectivity by state, institution type, and date. It is easy to sign up for myK20 – just visit the K20 website <http://k20.internet2.edu/index.php> and discover how easy it is to start taking advantage of what the Internet2 K20 Initiative has to offer you.

### *What can myK20 do for me?*

- Develop and maintain your personal profile, including a description of your interests.
- Find others with similar interests across the broad K20 community.
- Search for K20 projects that meet your criteria.
- Coming Soon! You will soon be able to create customized snapshots of SEGP connectivity by state, institution type (public libraries, K12 schools, museums, etc.), and date.
- All this can be yours by filling in a few simple sign up forms. It is quick and easy. Just visit <http://k20.internet2.edu> and you'll be on your way!

### *Does it cost anything to use myK20?*

- No. myK20 is completely free. You will never see a banner advertisement on the K20 website. Our mission is purely to help connect you with K20 projects and people in the SEGP community.

### *What are the system requirements for myK20?*

- Any computer system with a Web browser and at least a 28.8 Kbps dial-up connection to the Internet will work. Your experience will be more enjoyable with a faster connection. Many myK20 pages have links to Adobe PDF documents and audio or video clips. The following are links to the free media players and plug-ins your computer will require to use myK20:
- Real Player
- Windows Media Player
- Adobe Acrobat Reader
- Macromedia Flash Player
- QuickTime

## K20 PROJECTS AND OPPORTUNITIES

### *What are the most popular or fastest growing Internet2 projects and applications being used in the K20 community?*

- There are four main categories of applications that SEGP participants find most compelling.
- Using interactive collaboration environments, where you can truly interact with others without the barriers of distance.
- Providing common access to remote resources, such as telescopes and microscopes.
- Using the network as a “backplane” to build network-wide computation and data services, such as those under development in the Grid (see [www.gridforum.org/](http://www.gridforum.org/)).
- Displaying information through virtual reality environments—moving from static graphics and images to moving, three-dimensional animations. However, the “killer app” is digital video, because it provides the widest benefit and largest aggregate use of the Internet2 network capacity. Video-based applications cover everything from videoconferencing and on-demand content to remote control of microscopes and other instruments.

The VideoConferencing Cookbook is a great way to get started with videoconferencing <http://www.videnet.gatech.edu/cookbook/>

### *What are some sample projects for Internet2 in the K20 environment?*

- One of the most commonly asked questions is: “So, I know I’m connected to Internet2 but what can I do?”. For a complete list of K20 projects see <http://k20.internet2.edu/projectfinder.php>. Projects involving H.323 videoconferencing are some of the most popular. Videoconferencing is something that can be set up fairly inexpensively and does not necessarily require a great deal of bandwidth.

*Some examples of its use are:*

Virtual field trips or having a “visiting” expert give a lecture

[http://k20.internet2.edu/view\\_project.php?id=97&submit=Full+Project](http://k20.internet2.edu/view_project.php?id=97&submit=Full+Project)

Connecting with classrooms from around the world

[http://k20.internet2.edu/view\\_project.php?id=65&submit=Full+Project](http://k20.internet2.edu/view_project.php?id=65&submit=Full+Project)

Giving music lessons to students located elsewhere

[http://k20.internet2.edu/view\\_project.php?id=24&submit=Full+Project](http://k20.internet2.edu/view_project.php?id=24&submit=Full+Project)

Offering distance education classes where the instructor and students are not all at the same location

[http://k20.internet2.edu/view\\_project.php?id=2&submit=Full+Project](http://k20.internet2.edu/view_project.php?id=2&submit=Full+Project)

Providing access to events not available locally

[http://k20.internet2.edu/view\\_project.php?id=57&submit=Full+Project](http://k20.internet2.edu/view_project.php?id=57&submit=Full+Project)

For more information on the opportunities Internet2 connectivity offers the K20 community please see

<http://www.more.net/programs/internet2/background/news/news04.html>

<http://k20.internet2.edu/files/pdf/i2vision.pdf>

## TECHNICAL ISSUES

### *What is bandwidth?*

- Non-technically speaking, bandwidth refers to the amount of data (files, video, audio) that is sent across a network. It can also refer to a minimum or optimum allocation needed for the transfer of the data, based on time and file size. The bandwidth table found at [www.hostile.org/coredump/bandwidth.html](http://www.hostile.org/coredump/bandwidth.html) compares the times needed to transfer one megabyte, ten megabytes, and one gigabyte of data at speeds ranging from a 9600-baud modem connection to an OC-255 fiber connection. Go to [www.webopedia.com/TERM/B/bandwidth.html](http://www.webopedia.com/TERM/B/bandwidth.html) for a definition of bandwidth and some excellent references.

### *Our school or library only has a T1, how does this affect our use of Internet2?*

- It really depends on what else is running over that link. For example, if you were conducting a videoconferencing event running at 384K, you would use approximately 500K, or a third of the T1. If others are downloading huge files, or running another videoconferencing event, there may be a bandwidth problem at your site.

Problems can occur when you are connecting to a site not on Internet2, but on the commercial Internet (commonly just called the Internet). If your application is congestion sensitive (e.g., videoconferencing), the commercial Internet may not provide the quality necessary for a successful event.

## COSTS

### *What will an Internet2 connection cost?*

- Internet2 will charge the K20 SEGPs connector the annual fee of \$30,000, plus a variable fee of \$2,000 times the current number of congressional representatives for that state. SEGPs may pay annual fees to the connector and/or to the sponsoring Internet2 member, when these fees apply to the specific conditions of connection. Internet2 assesses no fees directly to the SEGP itself. <http://abilene.internet2.edu/community/segp/> provides additional information.

If you have further questions about SEGP fees please contact Heather Bruning, Program Manager for the Abilene network.

<http://events.internet2.edu/speakers/speakers.php?go=people&id=206>.

### ***Where can I get funding to develop applications?***

- Many universities provide local support for Internet2 applications development. But the primary source of advanced-applications funding is the federal government. Federal agencies and departments, most notably the National Science Foundation ([www.nsf.gov/](http://www.nsf.gov/)), NASA ([www.nasa.gov/](http://www.nasa.gov/)), the Department of Energy ([www.energy.gov/](http://www.energy.gov/)), and the National Institutes of Health's National Library of Medicine ([www.nlm.nih.gov/](http://www.nlm.nih.gov/)), provide millions of dollars in research funding each year directly to Internet2 member universities. Those grants support research in applications and technology that can take advantage of Internet2 networks. Details on those funding opportunities can be found at their Web sites.

## **INTERNATIONAL COLLABORATION OPPORTUNITIES**

### ***What if my colleagues are at institutions outside the United States? Can I still use Internet2 networks to collaborate?***

- Increasingly the answer is yes, you can use advanced networks to collaborate with colleagues around the world. There are national research network efforts similar to Internet2 around the world. Internet2 has signed agreements (memoranda of understanding) with over 30 such organizations, with the objective of working together on both connectivity and applications. Internet2 doesn't provide connectivity directly to those countries, but many of them connect to the United States (some with support from the National Science Foundation). Details on Internet2's international activities can be found at [www.internet2.edu/international/](http://www.internet2.edu/international/).

For information about which networks connect to the United States, visit the StarTap Website at [www.startap.net/](http://www.startap.net/).

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