



www.internet2.edu

Number of Addresses in IPv4

4,294,967,296

World Population (2003 est.)

6,314,000,000

Number of Addresses in IPv6

340,282,366,920,938,463,463,374,607,431,768,211,456

IPv6

ipv6.internet2.edu

IPv6 is the next version of the Internet Protocol, the data packaging and routing standard on which the Internet is based. The current version is IPv4; IPv5 was experimental and was never widely deployed.

IPv6 offers several improvements over IPv4. Most importantly, with 128-bit Internet addresses instead of the 32-bit addresses of IPv4, IPv6 vastly increases the number of addresses available from about 4 billion to about 340 trillion trillion trillion.

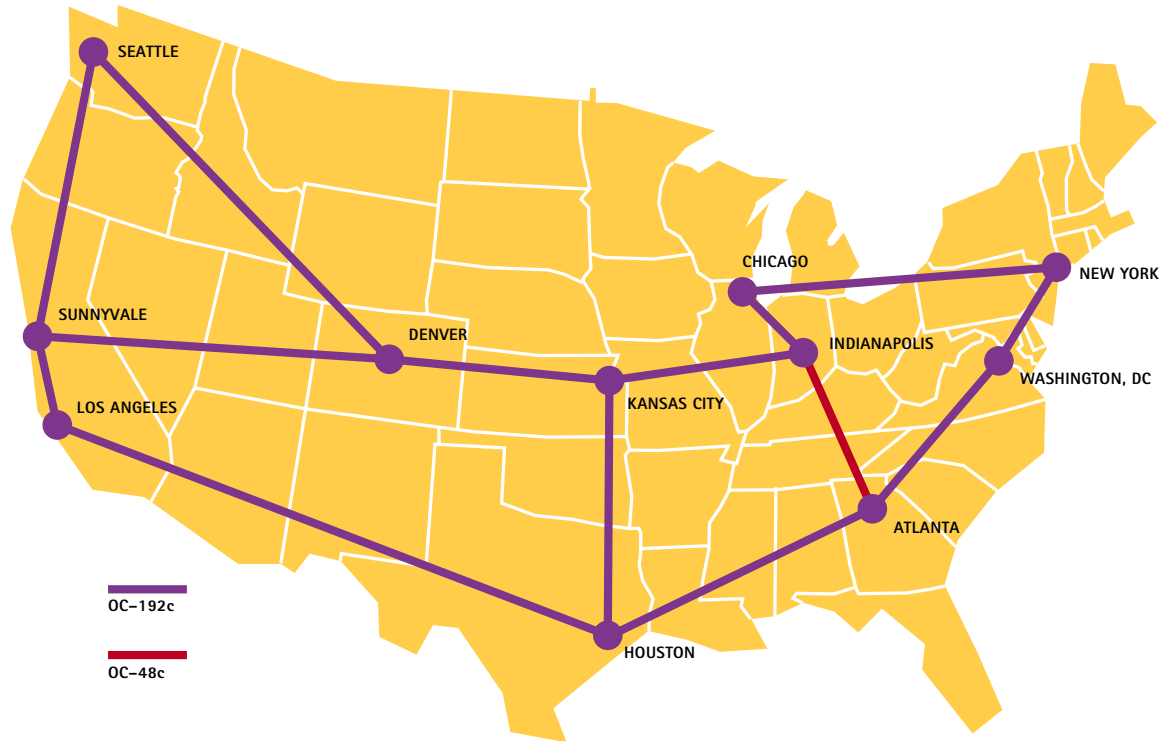
Given the continued rapid growth of the Internet, ensuring an abundance of addresses is crucial. The proliferation of wired and (especially) wireless devices means that in the near future not one or two, but many addresses will be required for each person who uses the Internet. The techniques currently employed to cope with the shortage of IPv4 addresses are reaching their limits, and many of these techniques — such as temporary address assignment and network address translation — compromise engineering principles fundamental to the Internet's success, thus jeopardizing its future growth.

Internet2 is committed to offering world-class IPv6 connectivity to its members, affiliates and partners.

The Internet2 **IPv6 Working Group** coordinates Internet2's IPv6 efforts. The working group discusses and implements IPv6 policies, responds to deployment questions, and disseminates IPv6-related news.

IPv6 hands-on workshops provide opportunities to learn about the IPv6 protocol and how to design, implement and maintain an IPv6 network. All workshop materials, including presentations and lab equipment, are available for Internet2 members, affiliates and partners to use in providing their own regional workshops.

Abilene's Dual-Stack IPv4/IPv6 Network



Abilene is a dedicated backbone network for the Internet2 community. Abilene is a dual-stack IPv4/IPv6 network and supports bandwidths of up to 10 Gbps; the network is designed to provide optimal performance to both IPv4 and IPv6 packets. Abilene connects high-performance regional networks to support the work of Internet2 members as they develop advanced Internet applications and the advanced networking capabilities needed to support them; many of these members and regional networks are now deploying IPv6. Abilene also maintains IPv6 peerings with many other US and international backbone networks, helping to secure the future of connectivity for research and education worldwide.

The Abilene backbone is monitored 24 hours a day, 7 days a week by the **Abilene NOC** at Indiana University. Abilene NOC engineers treat IPv6 as they would any production service and are experienced at handling IPv6 issues at the backbone, regional, and campus levels.

The Internet2 Technology Evaluation Centers (**ITECs**) in Ohio, North Carolina, California, and Texas are test facilities for Internet technologies being evaluated for deployment in the Abilene backbone and throughout the Internet2 networking infrastructure. Evaluating IPv6 technologies such as IPv6 routing and IPv6 multicast is a principal focus of the ITECs' work.

Internet2 is working to realize the potential of IPv6 for the global Internet community. Find out more at:

Abilene: abilene.internet2.edu

Abilene NOC: www.abilene.iu.edu

ITECs: itecs.internet2.edu

IPv6 Working Group: ipv6.internet2.edu