



# Advanced Internet Initiatives

**Christopher Buja**  
**International Development Manager**  
**Advanced Internet Initiatives**  
**Office of the CTO**  
**[cbuja@cisco.com](mailto:cbuja@cisco.com)**



# US Deployments

Internet2 – [www.internet2.edu](http://www.internet2.edu)



Top 100 US universities

University Corporation for Advanced Internet Development (UCAID)



Next Generation Internet – [www.ngi.gov](http://www.ngi.gov)



NGI

US Federal Agencies

Mission: NASA, DOE, NIH

Research: DARPA, NSF

STAR\*TAP – [www.startap.net](http://www.startap.net)



1997: vBNS, Canada, Singapore, Taiwan  
coming: APAN, Europe, Latin America

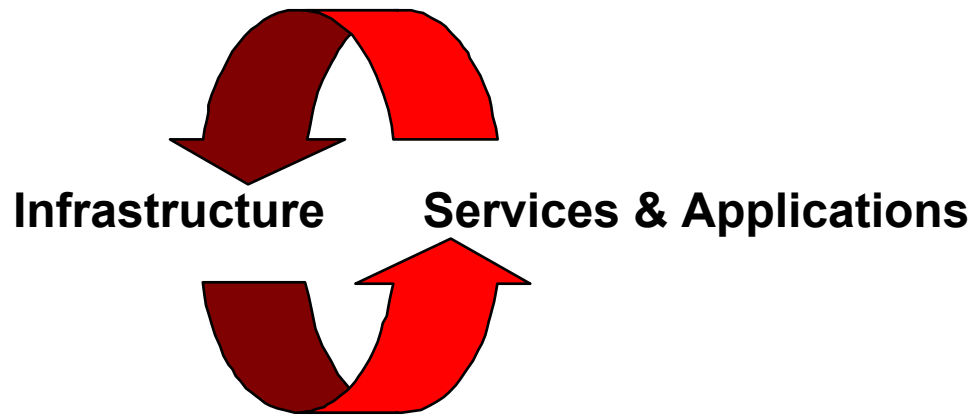


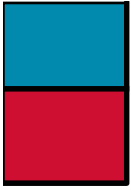


# Internet2 Mission

## Higher Education and Internet Evolution

"Facilitate and coordinate the development, deployment, operation and technology transfer of advanced, network-based applications and network services to further U.S. leadership in research and higher education and accelerate the availability of new services and applications on the Internet."





# Internet2 Principles

- **Buy rather than build**
- **Open rather than closed**
- **Redundancy rather than reliance**
- **Basics before complexity**
- **Production not experimentation**

**Support collaboration/development goals**



# Comparing Internet2 and NGI



**NGI**

<b>Members</b>	<b>Universities</b>	<b>Federal agencies</b>
<b>Model</b>	<b>Decentralized</b>	<b>Centralized</b>
<b>Use</b>	<b>Production</b>	<b>Research</b>
<b>Plan</b>	<b>Buy</b>	<b>Build</b>
<b>Method</b>	<b>Deploy -&gt; Study</b>	<b>Study -&gt; Deploy</b>
<b>Backbone</b>	<b>vBNS</b>	<b>agency contract</b>
<b>support</b>	<b>NSF HPN</b>	<b>NSF HPN</b>





# STAR TAP

## ▮ Science Technology and Research Transit Access Point

## ▮ Members

National Center for Super Computing Applications  
Argonne National Laboratory  
University of Illinois, Chicago  
Ameritech Advanced Data Services

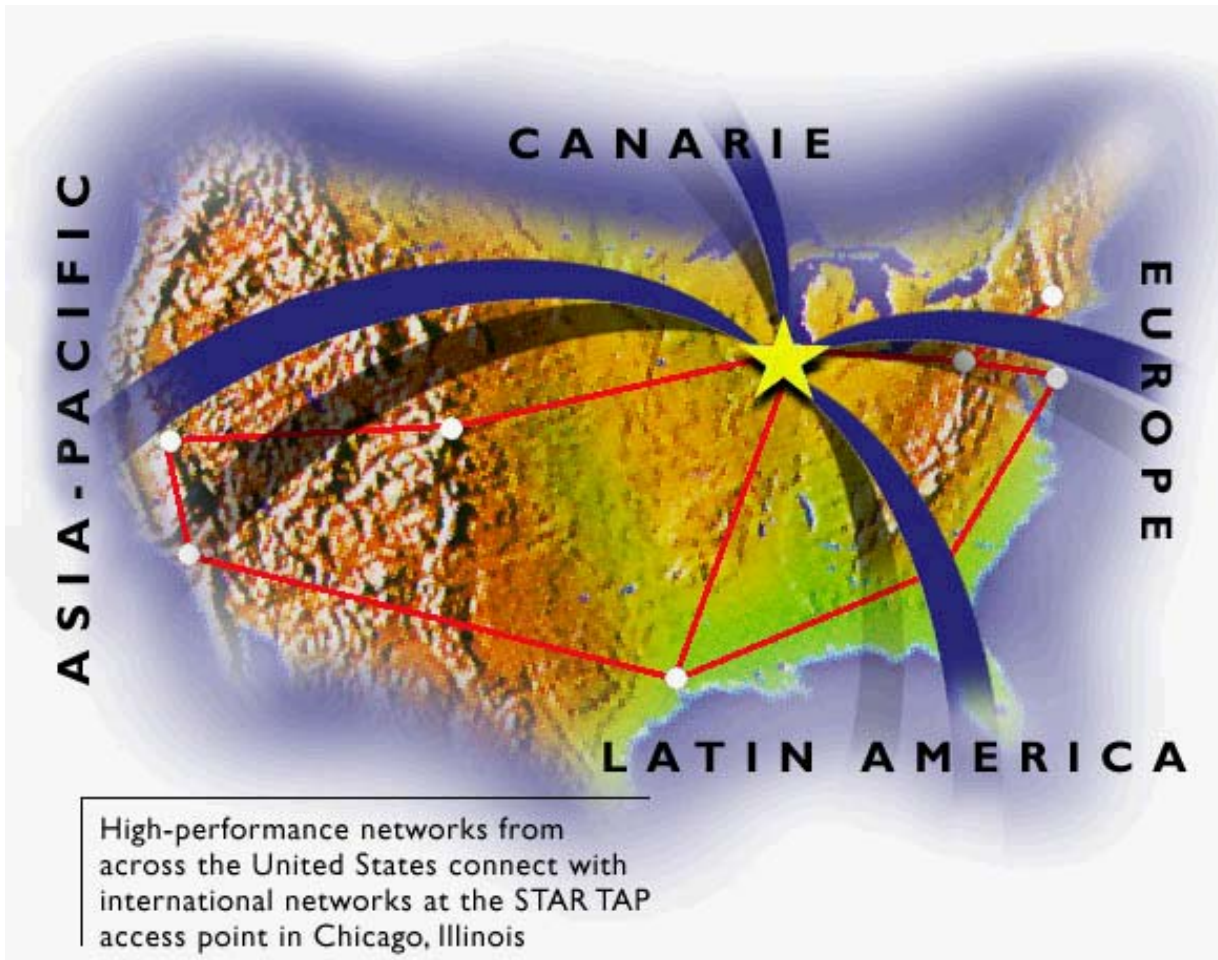
## ▮ Connections

vBNS (OC3)	Canada (OC3)
Singapore (DS3)	Taiwan
Nordunet	Asia Pacific Advanced Network
Brazil	Europe





# STAR\*TAP Topology





# Internet2 Members

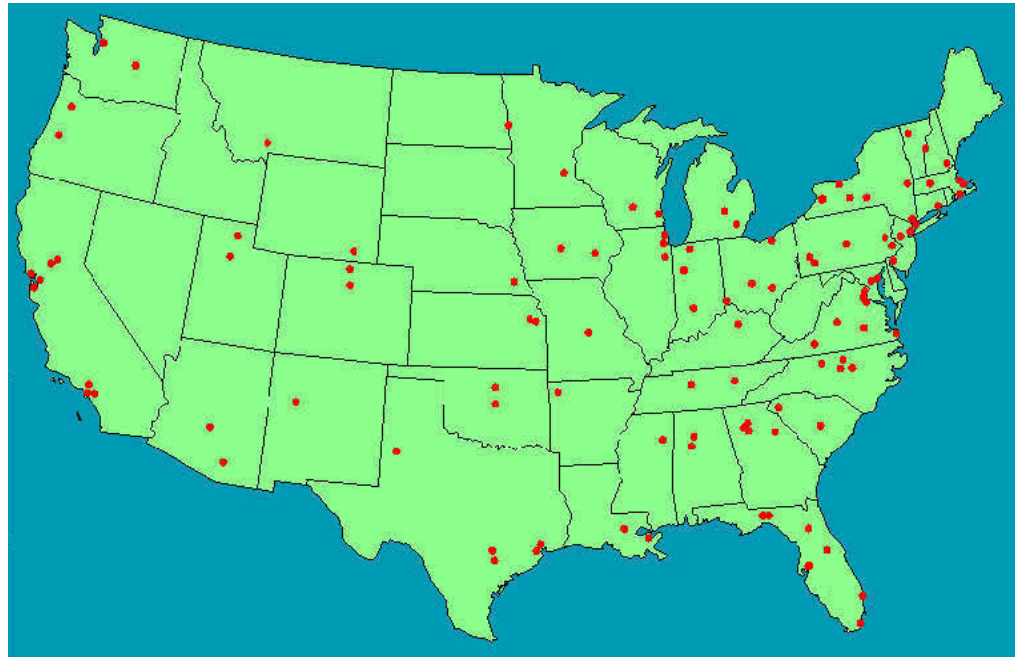
## Corporate

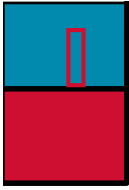
3Com Corporation  
Advanced Network & Services  
Bay Networks  
Cisco Systems  
FORE Systems  
IBM Corporation  
Newbridge Networks  
Nortel

## Affiliates

Alabama Supercomputer Authority  
CICNet, Inc.  
DePaul University  
MCNC  
National Center for Supercomputing  
Applications  
NW Academic Computing Consortium  
NYSERNET, Inc.  
PeachNet  
OARnet  
Merit  
State University of New York (SUNY)  
SURA  
State University System of Florida  
Advanced Internet  
Initiatives

## Universities





**MREN**

# Leading Internet2 Projects

International

## **CENIC**

Distributed

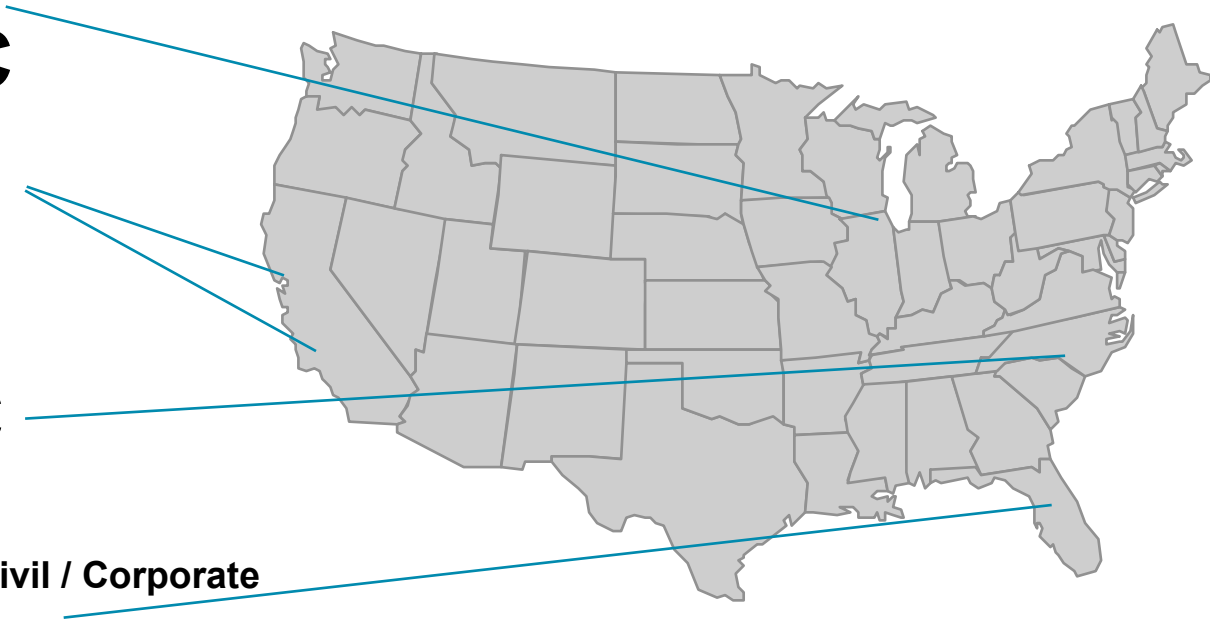
Scalability

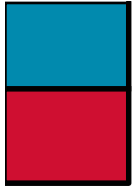
## **NCMC**

Academic / Civil / Corporate

## **Florida**

Setting benchmarks for Internet2 implementation  
Management and ultimately for the broader Internet community.  
Cost





# Internet2 Core Requirements

- ▮ Flexible design to accommodate current *and* future requirements
- ▮ Common bearer service (IPv4 → IPv6)
- ▮ Cost effective services
- ▮ Predictable costs for services
- ▮ End user management of costs and services



# I2 Engineering Meetings

## ▮ Explicit Routing (July)

Differentiated Routes

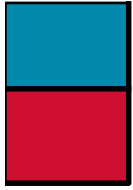
“Quality of Service Provider”

## ▮ Quality of Service (August)

Internet Draft

## ▮ Multicast (August)

Internet Draft



# I2 Operations Meetings

▮ **Applications (July)**

▮ **Campus (September)**

▮ **Members Meeting (October)**

**MOU between CA\*net II and Internet2**

▮ **Gigapop Operators (November)**

**November 11-13 San Jose CA**



# Cisco Support for Internet2

- ▮ **Corporate Partner**
- ▮ **Stephen Wolff, Steering Comm Member**
- ▮ **Regional Design Workshops**
- ▮ **Symposium and Caucus**
- ▮ **Engineering & Applications collaboration**



# Why is Cisco involved?

- ▮ **Founded in university setting**
- ▮ **Technology and innovation**
- ▮ **Future direction of the Internet**



# Thank you

- ▮ **Commitment**
- ▮ **Support for change**
- ▮ **Risk taking**
- ▮ **Time**

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