

I2 Multicast:
Not WIDE-scale Deployment
FULL-scale Deployment

Kevin C. Almeroth
Univ of California-Santa Barbara
<http://www.cs.ucsb.edu/~almeroth>
almeroth@cs.ucsb.edu

The Power of Multicast

- **Solves bottlenecks, etc. etc.**
 - ? ...the obvious scalability issues
- **Enables new applications**
 - ? and new paradigms for communication

I2's Responsibility

- **I2 is the right place to work on multicast**
 - ? after all, that's our mission
 - ? I2 is a great testbed
- **Multicast as a worthwhile topic:**
 - ? a next evolution of IP
 - ? beyond the protocols there is the challenge of deployment and new applications

The Creeping Fog

- **Multicast is already well on its way in I2**
- **Proof is in the deployment statistics:**
 - ? 11 peer networks
 - ? 35 connectors
 - ? 110 participants
- **See also <http://imj.ucsb.edu/mantra/>**

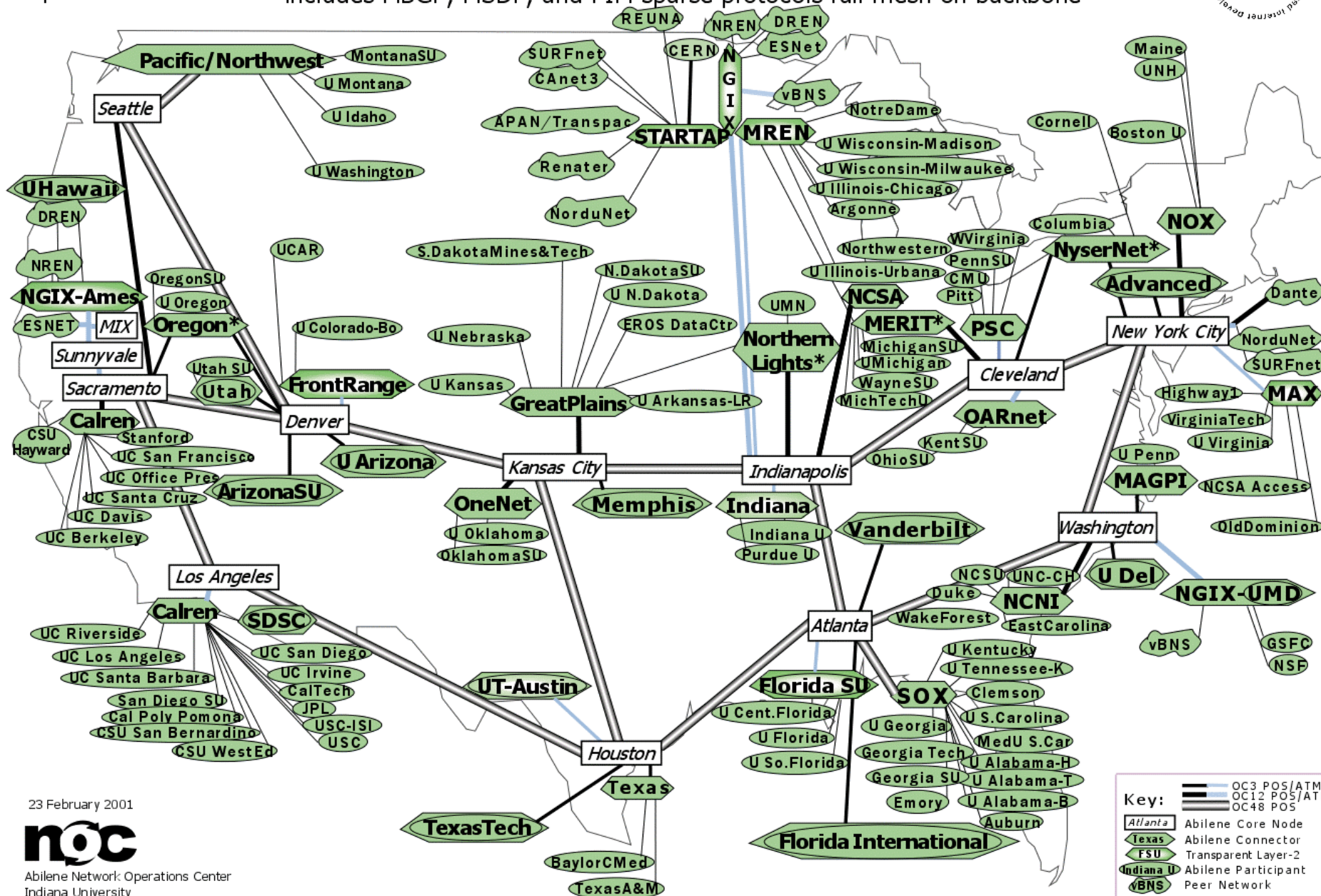
23 February 2001

noc

Abilene Network Operations Center
Indiana University
www.abilene.iu.edu/images/ab-mcast.pdf

includes MBGP, MSDP, and PIM-sparse protocols full-mesh on backbone

includes MBGP, MSDP, and PIM-sparse protocols full-mesh on backbone



- * multihomed connector

The Challenge

- **Achieving deployment in the stubborn networks**
- **How do we do this? Tell a good story**
- **So here's the story:**
 - ? Multicast is already widely deployed
 - ? Multicast is mostly straightforward to deploy
 - ? Multicast content is Mmmm, good

The Goals

- **Raise awareness among the masses (instead of in the choir)**
 - ? dispel the myths
 - ? create demand
 - ? create a minimally resistive path
- **So, let's get started...**

Multicast Myths

- **Multicast is only good for streaming audio/video**
 - ? Research to develop other applications
- **Multicast is UDP and UDP is dangerous**
 - ? Research to solve the problems
- **Multicast is not widely deployed**
 - ? It is in Internet2

Create Demand

- **Some streaming A/V content:**
 - ? UofO (<http://videolab.uoregon.edu/>)
 - ? GRID (<http://www-fp.mcs.anl.gov/fl/accessgrid/>)
 - ? ICAIR CSPAN (<http://cspan.icair.org/>)
 - ? On-the-I (<http://www.on-the-i.com/>)
 - ? Yahoo (<http://www.broadcast.com/broadband/>)
 - ? NASA (<http://www.nasa.gov/ntv/ntvweb.html>)
 - ? UCSB (<http://imj.gatech.edu/>)
 - ? All the commodity traffic (sdr)

So Why is Deployment Only at 50%?

- **Infrastructure**

- ? Some networks need help
- ? Some organizations need help

- **Fear**

- ? Too many myths...

**Multicast is a boat leaving the dock...
not something to put only one foot into**

Creating a Minimally Resistive Path: Getting Started

- **I2 Multicast WWW page**

- ? <http://www.internet2.edu/multicast/>

- **I2 Multicast mailing list**

- ? send email to listproc@internet2.edu w/
“subscribe wg-multicast John Doe” in the body

- **Abilene NOC WWW pages**

- ? <http://www.abilene.iu.edu/index.cgi?page=multicast>

- **Attend the Joint Techs Meetings**

Creating a Minimally Resistive Path: Deployment Help

- **Abilene NOC**
- **WG mailing list**
- **Joint Techs**
- **Debugging Site**
? <http://imj.ucsb.edu/mdh/> & <http://imj.ucsb.edu/mantra/>
- **NCNE**
? http://www.ncne.nlanr.net/faq/mcast_eng_faq.html
- **WG WWW site**



Internet2 Engineering Update

Lincoln

Guy Almes <almes@internet2.edu>

15 May 2001

Short- and Long-term Issues

- **Short-term Issues**

- ? Encouraging deployment and applications
- ? Pressing router/software vendors for specific needed improvements
- ? Improving the set of tools for network management

- **Long(er)-term Issues**

- ? Scalability (what happens if it *does* catch on?)
- ? Exploring the role of Source-Specific Multicast

Could SSM be Enough?

- **'Classic' Multicast**

- ? Group $\langle g \rangle$ has global significance
- ? A user creates, joins, sends to g
- ? Others can join, then send to and/or listen to g
- ? MBGP, PIM-SM, MSDP triad

- **Source Specific Multicast**

- ? Group $\langle g \rangle$ has local significance
- ? A user s creates, sends to $\langle s, g \rangle$
- ? Others can subscribe to, then list to $\langle s, g \rangle$
- ? No need for MSDP (or allocation of $\langle g \rangle$ values)