



EACUBO  
OCTOBER 2014

*...Get off their cloud  
and on to ours...*

The Internet2 NET+ Program as a Catalyst  
for Campus Change –  
*A Business Officer Perspective.*

Jack Suess, UMBC  
Khalil Yazdi, Internet2

Updated September 2014

# What We Will Cover

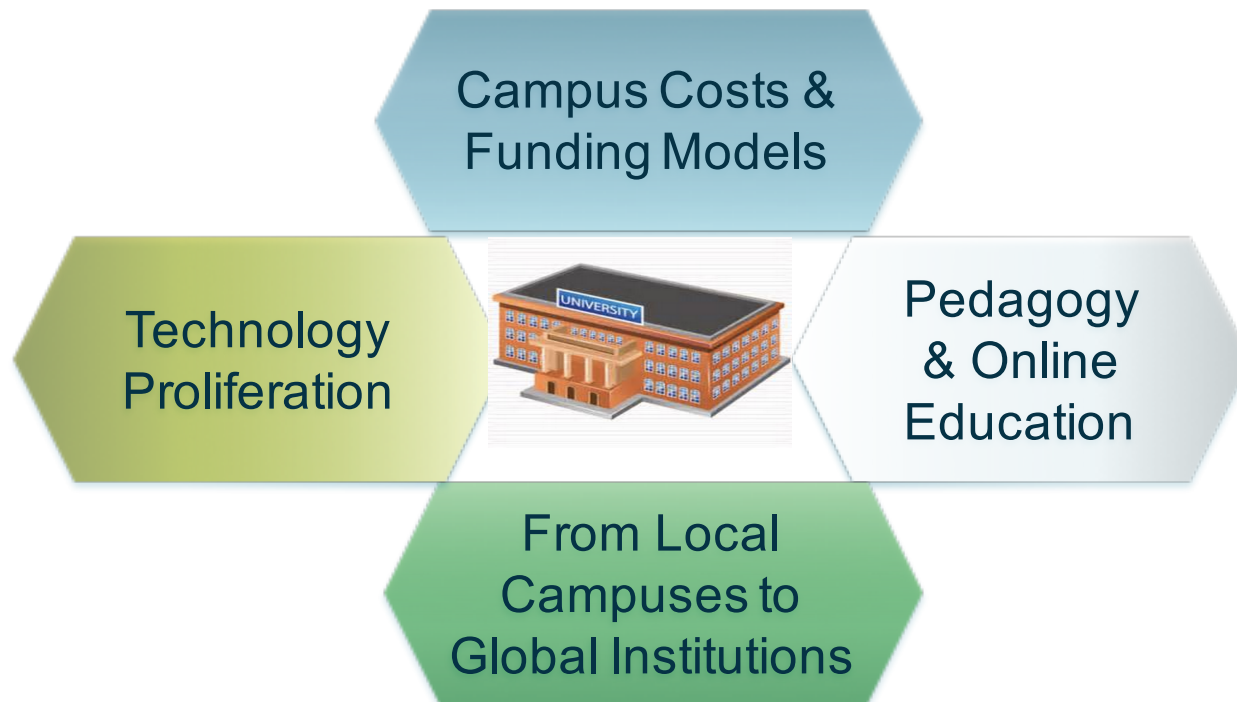
- The business issues driving the need for NET+
- What NET+ is and isn't
- Why NET+ is as important to CFO's as CIO's.
- UMBC's experience and lessons learned
- Where we expect to go next

# Why Cloud?

## Business Drivers – What's Different?

Student Expectations  
Faculty Roles and Requirements  
Higher Education Business Needs  
IT Services and Delivery  
IT Procurement Strategies

# Leading Change – In Every Direction



*"This is a tsunami...  
The potential upside  
for this experiment  
is so big that it's  
hard for me to  
imagine any large  
research university  
that wouldn't want to  
be involved."*

*—Richard DeMillo,  
Director, Center for 21<sup>st</sup>  
Century Universities*

# EDUCAUSE Top Issues: Four Strategic Priorities

1. Contain and reduce operational costs. *... Efficiency*
2. Achieve demonstrable improvements in student outcomes. *... Effectiveness*
3. Keep pace with innovations in eLearning, and use eLearning as a competitive advantage. *... Relevance*
4. Meet students and faculty members' expectations of contemporary consumer technologies and and communications. *... Value*

# Cloud Promise and Challenges

Customized Solutions? compliance with HIPAA/FERPA  
Reduced administrative overhead: CAPEX to OPEX  
“automated provisioning” Restructuring administrative processes  
Scale, Volume of acquisition innovative approaches?  
Elastic “Green” benefits Individual/institution has minimal impact  
Speed vendor “lock in” commodity services Use what you need  
‘hybrid’ environments Focus on local specialization not plumbing  
IT acquisition approaches

Who supports students, faculty and staff?  
security, data privacy and accessibility

# Multi-Tenancy + Cloud Scale

## Shared Services at Global Scales



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# Why Internet2?



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# INTERNET2...

*Powered by Community*



Accelerating  
Research &  
Education  
through  
Innovation

## Founded

In **1996** by research universities *to take self- responsibility for providing a data networking environment* that would not otherwise exist, or exist as and when the community of scholars needed it

## Mission

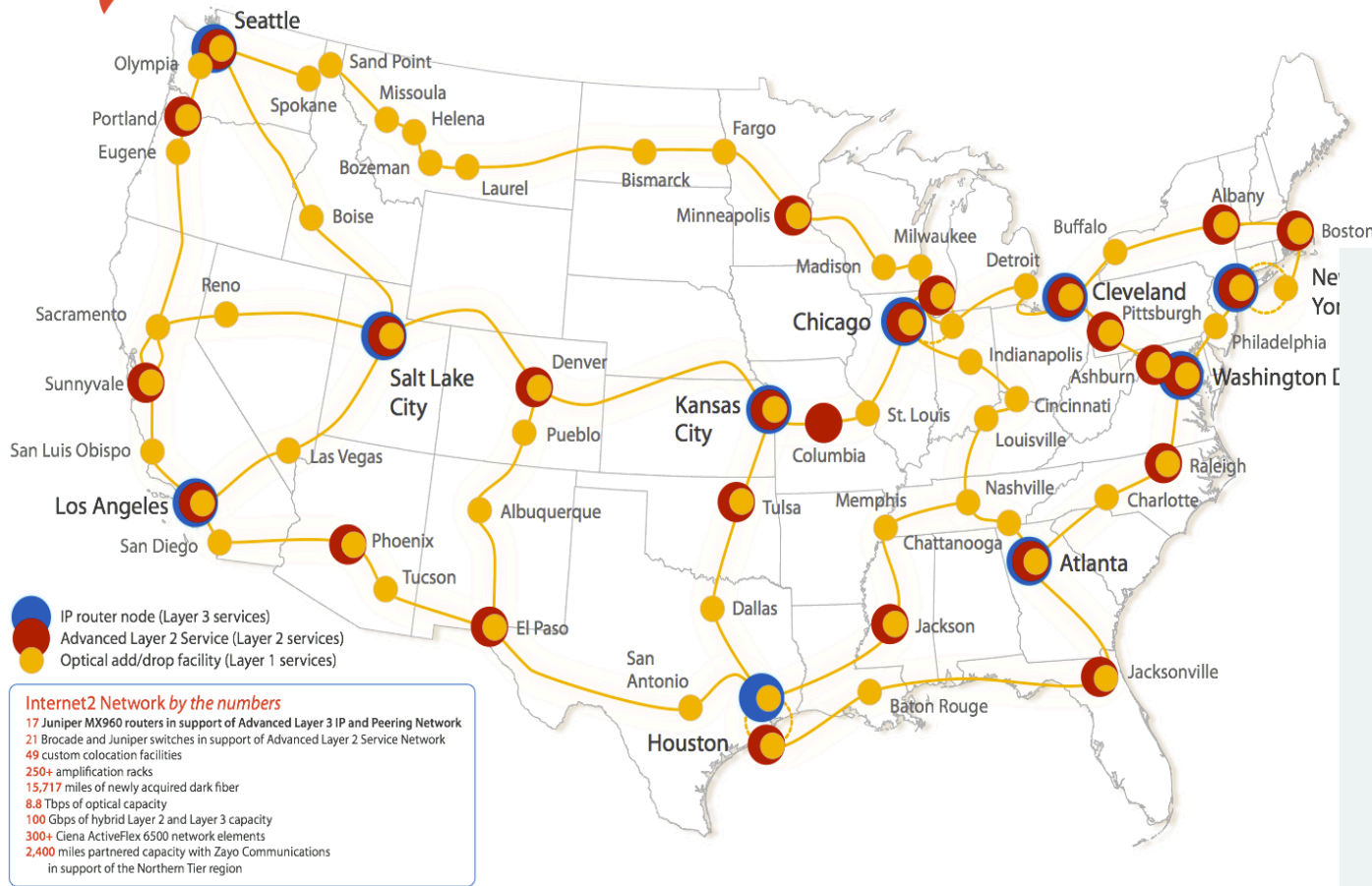
*Develop and deploy advanced network applications and technologies*, accelerating the creation of tomorrow's Internet

## Goals

- *Enable new* generation of *applications*
- Re-create *leading edge R&E network capability*
- *Transfer technology and experience* to the global production Internet



# The R&E Network



**262+** Universities  
**80+** Corporations  
**70+** Government agencies  
**38+** Regional & state networks  
**65+** International R&E networks



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- 15 → 425+ Academic Participants
- 2 → 160+ Sponsored Partners
- 0 → 2000+ Registered Service Providers
- 7.8 million Individuals served by federated IdM

# Building a “Brokered Community Cloud” where the R&E Community can act on its own behalf

**COMPLETE CLOUD DEPLOYMENT  
PLATFORM FOR THE ACADEMY**

**INTERNET2  
NET+**

**SCALABLE AND AGILE  
TO MEET BROAD USER  
MOBILITY NEEDS**



**TRUSTED STANDARDS,  
INTEGRATED IDENTITY  
AND  
ADVANCED NETWORK  
DELIVERY**



# Why Internet2 NET+ Cloud?

**Over \$200,000,000**

In **estimated operating benefit** for Research and Education across institutions adopting NET+ services **to date**



**3,500+**

Research and Education **Institutions** across the US that can utilize most NET+ cloud services

**300+**

Member institutions **participating** in building business models, ensuring federated access, security, accessibility, performance & delivery

**8**

Average **number of campuses collaborating** on a service validation effort before it is generally available

**50**

**Services proposed** for validation by Internet2 member campuses for inclusion in generally available Internet2 NET+ portfolio



# The Genesis of NET+

## 2010 NACUBO / EDUCAUSE Cloud Summit

### Shaping the Higher Education Cloud

An EDUCAUSE and NACUBO White Paper

May 2010

<http://www.nacubo.org/Documents/BusinessPolicyAreas/ShapingTheHECloudWhitePaper.pdf>



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# Major Recommendations from 2010

Thirteen overall recommendations (Pg 21-22), which include:

- Create a **cloud computing roadmap**.
- Develop a **risk-assessment framework** and guide.
- Develop **audit guidelines** for cloud-based offerings.
- **Identify needed skills and training** for cloud-based services.
- Develop and publish **model service level agreements**.
- Encourage **identity management**.
- Create a **higher education demand aggregator**.

**COMMUNITY  
-DRIVEN  
CLOUD SINCE  
2010**

NET+ Designed to leverage community engagement and community assets- InCommon and the Internet2 R&E Network

13 founding campuses

2 services launched in General Availability

8 In Early Adoption

6 In Service Validation

4 Services in General Availability

6 In Early Adoption

14 In Service Validation

7.8m User Identities via InCommon

50+ services launched

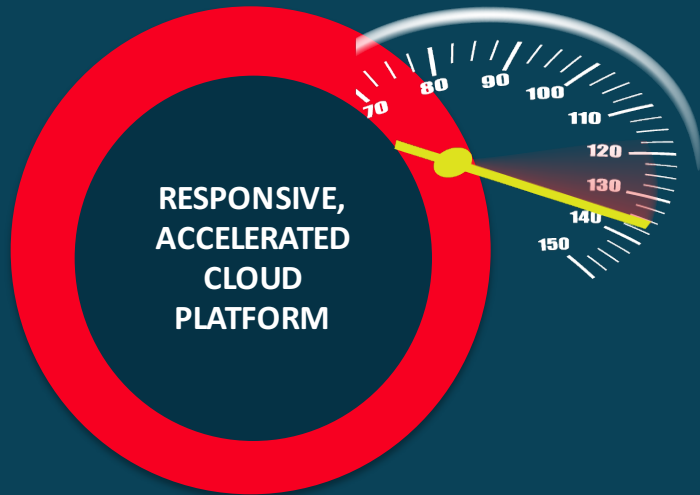
300+ campuses participating

650+ Cloud Service subscriptions





## Cloud Service Portfolios for Higher Ed



- 1 Trust & Identity
- 2 Software As A Service
- 3 Infrastructure, Platform, Security
- 4 Video, Voice & Collaboration
- 5 Digital Content For Research & Education



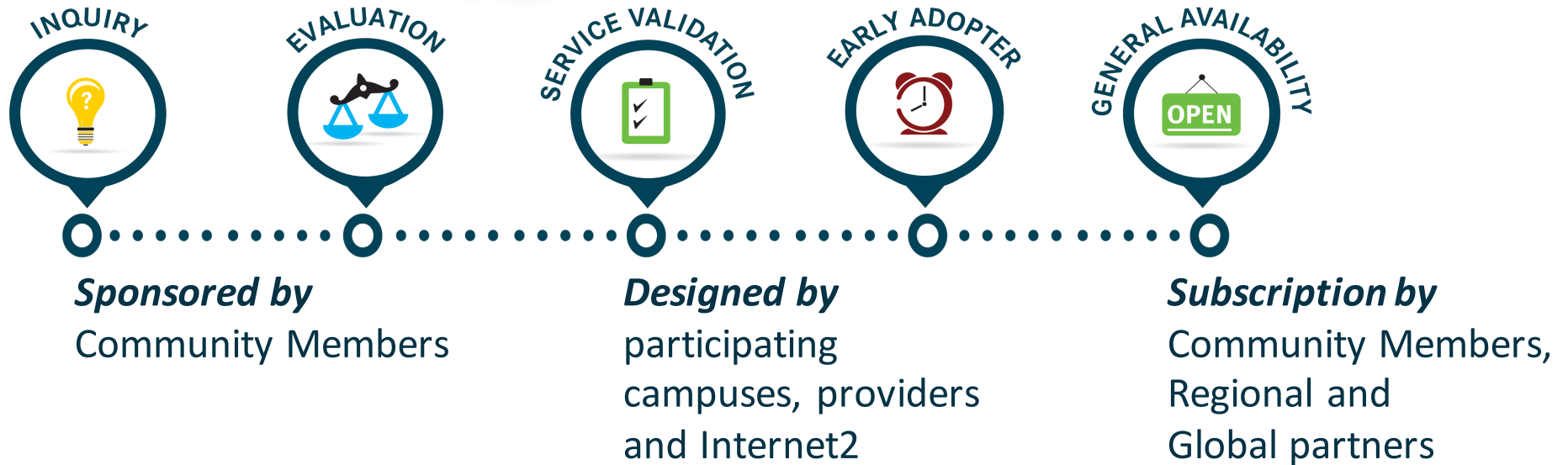
- Peer Validated Security
- Performance and Accessibility Standards from over 260 CIOs
- General Counsel and Procurement Officers



GET INVOLVED  
IN THE



## NET+ SERVICE LIFECYCLE



*All delivered at global scale, tailored to R&E needs, and  
benefitting all participating institutions*

# Getting Started: Inquiry and Evaluation

## Inquiry Phase

- **Discovery**  
Understanding the opportunity (what are the possibilities? Market scope?)
- **Alignment**  
Are the provider and community goals strategically aligned (are we headed in the same direction?)
- **Feasibility**  
Are the investments and mutual accommodations required likely to materialize?
- **Community engagement**  
Membership and strategic engagement with the community

## Evaluation Phase

- **Identifying a Sponsor**  
A CIO or executive from a member institution
- **Developing a Proposal**  
With support of the Sponsor
- **Identifying additional SV participants**
- **Review of Requirements**  
Networking, Identity, Security, Business model and terms  
*Membership in Internet2*

# NET+ Service Validation Components

- **Functional Assessment**
  - Review features and functionality
  - Tune service for research and education community
- **Technical Integration**
  - Network: determine optimal connection and optimize service to use the Internet2 R&E network
  - Identity: InCommon integration
- **Security and Compliance**
  - Security assessment: Cloud Controls Matrix
  - FERPA, HIPAA, privacy, data handling
  - Accessibility
- **Business**
  - Legal: customized agreement using NET+ community contract templates
  - Business model
  - Define pricing and value proposition
- **Deployment**
  - Documentation
  - Use cases
  - Support model



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# Internet2 NET+ Services: Current Phases

# Examples of Cloud Services Deployed at Scale

*Leveraging community developed offerings, preferred pricing and business terms*

**100+** universities cloud storage and collaboration campus-wide (18 months)



**40+** universities leveraging the NET+ Splunk offering (6 months)



**20+** universities moved their LMS to Instructure's Canvas (6 months)



**15+** universities leveraging Code42's CrashPlan offering (12 months)



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# Cloud Success takes more than technology



## LEADERSHIP MATTERS

# Key Ways NET+ Contracting Supports Procurement Officers

- Community based **due diligence**
- Improves **risk management** by vetting service providers, standard and beneficial contract terms
- Ensures **fair treatment** in the market (no hidden clauses for “other” universities)
- Reduces **costs of administration**
- Leverages **purchasing power** of the entire community
- Provides **competitive options** as the number of providers in each portfolio services category increases



# Internet2 NET+

## CLOUD SERVICES & APPLICATIONS

ADVANCED NETWORKING

**CLOUD SERVICES & APPLICATIONS**

TRUST, IDENTITY & MIDDLEWARE

SUPPORT

Each Internet2 NET+ service passes through its own lifecycle—marked by a series of phases.

With sponsorship by members, subscription by members and through regional partners, designed with participating NRENs, Internet2 cloud services are designed for global scale and maximum R&E benefit.



FILTER: All Service Types | All Phases | All Subscribers

SEARCH: Enter Text... **SEARCH**

Displaying results for: All Page 1 of 2 | Next page | All

NAME	SERVICE TYPE	PHASE	SUBSCRIBERS
Aastra/Level 3 SIP Services	Video, Voice and Collaboration	Early Adopter	InCommon Participant , Internet2 Member

<http://www.internet2.edu/cloud-services/>



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# Internet2 NET+

Home > Vision & Initiatives > Initiatives > Internet2 NET+ > Internet2 NET+ Frequently Asked Questions

## INTERNET2 NET+ FREQUENTLY ASKED QUESTIONS

**EXECUTIVE INSIGHTS**

**GOVERNANCE**

**PARTNERSHIPS**

**INITIATIVES**

- Innovation Platform
- Internet2 NET+
- Trusted Identity in Education
- Performance
- U.S. UCAN

**POLICY ISSUES**

1. GENERAL INFORMATION
2. WHO IS ELIGIBLE TO USE NET+ SERVICES?
3. HOW DO SERVICES BECOME A PART OF NET+?
4. NET+ SERVICE FEES
5. NET+ SERVICE VALIDATION AND CONTRACT TERMS
6. WHAT IS THE REGIONAL AND GLOBAL NET+ PARTNER PROGRAM?
7. PARTNER SERVICE PRICING

SHOW ALL HIDE ALL

1. GENERAL INFORMATION
  - 1.1 What are Internet2 NET+ Services?
  - 1.2 What types of services are currently in the Internet2 NET+ portfolio?
  - 1.3 What types of cloud services will be offered in the future?
  - 1.4 How will NET+ routing work on Internet2 Network?

Back to top
2. WHO IS ELIGIBLE TO USE NET+ SERVICES?
  - 2.1 Who is eligible to use NET+ services?
  - 2.2 Are all NET+ services available to all participants?

<http://www.internet2.edu/netplus/faq>



ADVANCING  
HIGHER EDUCATION

IN  
THE  
*Cloud*

AND BEYOND

EACUBO  
OCTOBER 2014

# The Campus Perspective

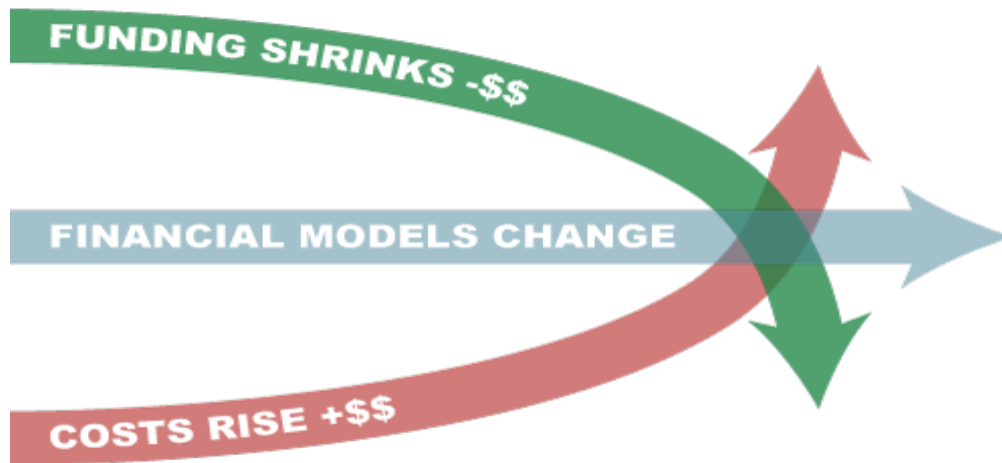


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## Campus Costs & Funding Models

### Work across campuses, institutions, nations to align with peer institutions

- Secure best-in-class pricing
- Obtain *customized*, not just *commodity* services
- Eliminate redundant admin/legal costs and efforts
- Mobilize our considerable ingenuity and clout to create our own solutions



*“The cloud computing market will top \$241 Billion in 2020.”*

*—Forrester Research 2012, “Sizing the Cloud”*



## Prepare your campuses community for cloud services by:

- Share experiences, learn from others!
- Take part in exploring and validating solutions.
- Learn methodologies, best practices and get help with training and development.
- Leverage trusted identity solutions.



**Globalization  
Is a Reality in  
Education &  
Research**

**The Cloud (and campuses and learners) will think and act Global. Local matters – when connected globally.**

- Leveraging National Research and Education Networks and international exchange facilities for global connections
- Offering courses and services to broader national and international markets
- Extending services throughout global R&E community with minimal investment but significant increase in benefit
- Leveraging connections throughout community for more efficient, effective solutions



## Making Ideas Happen

The Hrabowski Fund for Innovation supports new approaches to teaching at UMBC.

[Read story »](#)





**UMBC is proud to be recognized again as a national leader in innovation and undergraduate teaching in *U.S. News & World Report's Best Colleges* guide.**

For the fourth year in a row, [UMBC tops the U.S. News ranking](#) of “Up-and-Coming” national universities — a designation recognizing universities that consistently find innovative ways to improve students’ educational experiences. We share the top spot with George Mason University.

*U.S. News* also ranks UMBC eighth on a list of the top national universities “where the faculty has an unusual commitment to undergraduate teaching.” UMBC is tied with Duke University, the University of California-Berkeley, the University of Chicago, and the University of Notre Dame.



# IT in Support of Innovation & Change

- Encouraging the consumerization of IT by supporting anytime, anywhere, any device access is critical to our success.
- IT should be a catalyst for helping the institution to leverage technology to improve teaching & learning, scholarship, efficiency & effectiveness, and build community through online collaborations.
- This requires IT organizations to be much more agile and deliver results faster.

# NET+ Advantages

- The pricing is good to very good.
- The contracts are very solid so legal review has been lessened.
- The security of services is being addressed through the NET+ security reviews and the community input on the process.
- Integration challenges have been lessened by requiring InCommon and the willingness of the community to share information.

# NET+ Disadvantages

- The NET+ process is still evolving so flexibility is key.
- The vendors in NET+ are still figuring out what it means to be a NET+ vendor.
- Participation in the service validation efforts has taken a lot of time but allowed us to influence the process.

# Summarizing What NET+ Is

- Community driven - all NET+ vendors have to be sponsored by a CIO to participate.
- Higher ed focused - the contracts are designed for higher ed.
- More than technology
  - Provides better contractual terms, especially termination agreements!
  - Working to improve SaaS security requirements
  - Working on simplifying the on-boarding and exit process through InCommon.
- The community driving change!

# UMBC NET+ Initiatives

## Formal Pilots

- Aastra
- Adobe
- Box
- Duo
- Eduroam
- Solutions Design Group
- Seevogh

## Informal Discussions

- AWS
- Azure
- Dell

# Aastra

**INTERNET2** Membership Communities Network **NET+** Research Events News About

Cloud Services Video Services Middleware InCommon

## NET+ SIP Services

*Your Voice in the Cloud*

Universities don't need to be their own phone companies any longer—and don't need to spend millions of capital dollars—when we can work together and deliver phone service across the Internet2 community, using a common model at a low price point per line.

Internet2, along with Tulane University and Texas A&M University, is partnering with two voice services industry leaders, **Aastra** and **Level 3 Communications**, to offer a cost-effective alternative to traditional voice services.

**Early Adopter**

**LEARN MORE**

**Presentations, etc.**  
"VoIP Meets the Cloud," by Walt Magnussen (PDF)  
Webinar (May 2012) • PDF • Recording (Adobe Connect)

**Press**  
Texas A&M, Tulane announced as early adopters (2 May 2012)  
Internet2, Aastra, Level 3 release

The Aastra offering will deliver a cloud-based hosted PBX service that includes unified communications, call center and other services. Level 3 will provide SIP-based services such as local trunks, long-distance trunks, toll-free, conferencing and other services. Industry-standard SIP protocols provide flexibility, local control and local survivability, and empower institutions to customize the solution to meet their unique campus needs.

Visit the [Hosted PBX](#), [SIP Trunking](#) and [FAQ](#) pages to learn more about this offering.

**Am I an Internet2 Member?**  
Unsure if your institution is an Internet2 member? Visit [members.internet2.edu/university/universities.cfm](http://members.internet2.edu/university/universities.cfm) to find out. Not an Internet2 member? Visit [internet2.edu/membership](http://internet2.edu/membership) to learn more about membership and the unique, advanced technologies Internet2 provides to the U.S. Research and Education communities or contact [membership@internet2.edu](mailto:membership@internet2.edu) for more information about becoming a member.

SEARCH

Print Email RSS Twitter Facebook

## SIP Services

powered by

**Aastra**  
**Level 3**

Service Home

Hosted PBX

SIP Trunking

FAQ

Questions? Email us at [SIP@internet2.edu](mailto:SIP@internet2.edu).

# BLACKBOARD

ADVANCED NETWORKING

**CLOUD SERVICES & APPLICATIONS**

TRUST, IDENTITY & MIDDLEWARE

PERFORMANCE & ANALYTICS

SUPPORT



**OVERVIEW**

**FEATURES**

**PARTICIPATE**

**Service Type(s):** Software as a Service



**Subscribers:** Internet2 Member

**Sponsors:** University of Maryland Baltimore County, University of Texas Arlington, Cornell University, Virginia Commonwealth University, University of Nebraska Lincoln

**Email:** [netplus@internet2.edu](mailto:netplus@internet2.edu)

**Contact(s):** [Dana Voss](#)

The LMS is moving – quickly – beyond its traditional acronym. Today's learners are expecting more from their learning platforms; more flexibility, more personalization, more content, and of course, ease of use.

As the world's largest global education technology company, we take the broadest view of any company in the industry to solve the issues that our customers are dealing with, and to help them meet ever-increasing student and faculty expectations.

## Blackboard®

Blackboard empowers learners everywhere by making education immediate, direct, and personalized, with a wide array of integrated services to impact the whole education experience.

**Service Type(s):** Software as a Service

**Phase:** General Availability

**Subscribers:** Internet2 Member

**Email:** [netplus@internet2.edu](mailto:netplus@internet2.edu)

## learn more

### Webinar

- ▶ On August 20th, Internet2 and Blackboard hosted a webinar explaining the NET+ offering. To view the webinar, visit [here](#).

# Box

The screenshot shows the Internet2 website with a navigation bar at the top containing links for Membership, Communities, Network, NET+, Research, Events, News, and About. Below the navigation bar, the main content area features a large red '2' logo and the heading 'NET+ Box'. The text describes the service as a collaboration tool for accessing and sharing personal content. A sidebar on the right includes a search bar, social media icons, the Box logo, and a menu with links to Service Home, Features, Pricing, FAQ, and How To Participate. A video player at the bottom left shows Salman Khan, a Box Strategic Account Executive, speaking. A 'General Availability' badge is also present.

**INTERNET2**

Membership Communities Network **NET+** Research Events News About

Cloud Services Video Services Middleware InCommon

SEARCH

PRINT EMAIL RSS TWITTER FACEBOOK

**box**

Service Home

Features

Pricing

FAQ

How To Participate

Questions? Email us at [netplus-box@internet2.edu](mailto:netplus-box@internet2.edu)

## NET+ Box

One of the most commonly voiced collaboration needs today is the ability to easily access and share your personal content with anyone, from anywhere. Since 2005, **Box** has been helping more than 10 million individuals, small businesses and Fortune 1000 companies do just that.

And now, Internet2 members who are also InCommon participants can add this valuable **Internet2 NET+ Box storage and collaboration service** to their membership for an additional fee. Other InCommon institutions of higher education (.edu) headquartered in the United States are also eligible to participate at a higher fee.

Box is a leading enterprise Cloud Content Management (CCM) platform that embraces what's best about the cloud, serving the pressing content management needs of the next-generation workplace, workforce and IT. Eighty-two percent of the Fortune 500 currently use Box. Browse our [Features](#), [Pricing](#) and [Frequently Asked Questions \(FAQ\)](#) pages for more information. Then visit [How To Participate](#) for detailed information on how to sign up.

**New!** The Internet2 NET+ Box service is **now generally available** to all U.S. higher education institutions for production deployment. For details, read the [press release](#).

**General Availability**

LEARN MORE

**Press Releases**

Announcement of General Availability for U.S. Universities  
Internet2 and Box Bring Cloud Services To Universities Nationwide

Salman Khan, Box Strategic Account Executive, describes the service.



# Duo


Live chat Contact sales Log in Search:

**DUO:SECURITY** Product Solutions Pricing Documentation Company **Free trial**

## Two-factor authentication made easy

Duo Security's two-factor authentication lets your users use their mobile phones to secure their logins, protecting your company from account takeover and data theft. [Learn more »](#)

**Free 30-day trial**

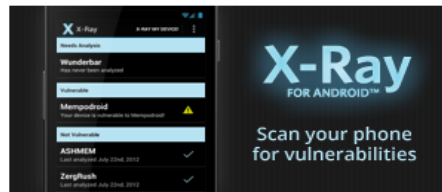


**Frustrate the bad guys, not your users.**

aid.com Hit by Cyber Attack / Web Site Hacked / SEGA Hacked  
wleges Security Lapse / EA Confirms Security Breach / EA Confirms Security Breach  
as Actively Exploited / Hacker Claims to Have Stolen Data from EA  
approximately \$2.7 Million / CIA.gov Website Down / Lawsuit Accuses Disney  
Hit Spanish Police Web Site / Hit Spanish Police Web Site  
Theft / Eucalyptus Security Flaw Found



**One-Tap Authentication**  
[Learn about Duo Push](#)



**Mobile Security**  
[X-Ray for Android](#)



**Are Your Remotely Accessible Servers Secure?**  
[Try VPN Hunter](#)

# Seevogh

Home My SeeVogh How it Works Ways to SeeVogh About Us

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 **SeeVogh** Create Your Meeting Room

[Attend](#) an existing Meeting

[Learn](#) how to use SeeVogh

[Free Evaluation](#) to test SeeVogh

[Login](#) to manage your Meetings

# SPLUNK

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**CLOUD SERVICES & APPLICATIONS**

TRUST, IDENTITY & MIDDLEWARE

PERFORMANCE & ANALYTICS

SUPPORT



## Internet2 NET+

**OVERVIEW**

FEATURES

FEES

FAQ

PARTICIPATE

**Service Type(s):** Software as a Service



**Subscribers:** InCommon Participant, Internet2 Member

**Sponsors:** Baylor University, University of Illinois, Indiana University, California Polytechnic State University San Luis Obispo, University of Washington

**Email:** [netplus@internet2.edu](mailto:netplus@internet2.edu)

**Contact(s):** **Andrew Keating**

The NET+ Splunk offering provides Internet2 member schools with the opportunity to buy on-premise Splunk Enterprise software on a discounted, 3-year term basis.

Today's educational institutions face challenges that place ever-increasing demands on their technology infrastructure. The network, infrastructure and applications that form the backbone of educational enterprises have become

Splunk Enterprise is a platform for machine data that allows easy, fast, and resilient ways to collect, analyze and secure the massive streams of machine data generated by all of an institution's IT systems and technology infrastructure.

**Service Type(s):** Software as a Service

**Phase:** General Availability

**Subscribers:** InCommon Participant, Internet2 Member

**Email:** [netplus@internet2.edu](mailto:netplus@internet2.edu)

## groups

▶ **NET+ Program Advisory Group**

# Amazon Web Services



Sign Up

My Account / Console

English

AWS Products & Solutions

AWS Product Information



Developers

Support

## Government & Education

- GovCloud (US) Region
- Public Sector
- Federal
- Education**
- Educational Grants
- State and Local
- Contract Center

## Education

The AWS cloud is uniquely positioned to provide scalable cost-efficient solutions for the education community, while delivering industry-shaping technology and high-performance computing necessary to facilitate the most demanding research projects and course objectives at public and private universities, community colleges & vocational schools and K-12 schools and districts.

With AWS you can requisition compute, storage, and other services on demand, gaining access to a suite of secure, scalable, and flexible IT infrastructure services as your organization needs them. With AWS, you pay only for what you use, making AWS not only the most agile but also the most cost-effective way to deliver your applications.

Have a question?

Contact Us

Sign up for Amazon Web Services

Start Free Trial

## TCO white paper for Public Sector

This whitepaper, developed for public sector customers, will help you understand the different cost factors involved when you deploy and manage a scalable web application in an on-premises environment and compare the total cost to a variety of different AWS purchasing options.

Download PDF

## Customer Case Studies



UNIVERSITY OF SAN FRANCISCO

### University of San Francisco

AWS gives students access to resources that would otherwise be difficult to fund  
[Learn more](#)



### University of California at Berkeley

AWS for Web 2.0 Application Development courses is a phenomenal resource  
[Learn more](#)



Harvard Medical School

### Harvard Medical School

Uses AWS to develop innovative whole genome analysis testing models in record time.  
[Learn more](#)



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# Microsoft Azure

The screenshot shows the Microsoft Azure website homepage. At the top, there is a dark navigation bar with the Windows Azure logo, a search icon, a phone icon, and the word "PORTAL". Below this is a secondary navigation bar with links for HOME, PRICING, DEVELOP, MANAGE, STORE, COMMUNITY, SUPPORT, and ACCOUNT. A "welcome" message is followed by "features" and "case studies" links. A prominent "Free trial" button with a right-pointing arrow is located in the top right corner. The main content area features a large blue background with the headline "A rock-solid cloud platform for blue-sky thinking". Below the headline is a green "try it free" button with a right-pointing arrow. Underneath are three colored boxes: an orange "Features" box with the text "See what you can do with Windows Azure.", a purple "Tools & Resources" box with the text "Everything you need to get started.", and a dark purple "Pricing" box with the text "Estimate your costs and find the best plan." Each of these three boxes has a white right-pointing arrow icon at the bottom right.

Building a Windows Store app? Get hands-on guidance at an [App Lab](#).

# Early Adopter - Lessons Learned

- NET+ is a **great** opportunity for **small or midsize schools** to offer services that wouldn't have been possible before.
- Having the **support of legal and procurement is critical** to success.
- **Marketing and change management** are as time consuming as technical integration.
- **Not all services will be right for each campus**, getting in and evaluating them quickly is important.
- The NET+ benefits in **contracts and security** may be the most **beneficial aspects** for campuses.

# Dimensions of Realized Benefit

- Cost Avoidance
  - Lower pricing
  - Lower procurement cost/effort
- Enhanced Value
  - Favorable terms
  - Better alignment with local IT architecture
- Future Proofing (lower risk)
  - Strategic engagement with provider at community scale

# Estimated Benefits

- Aastra – VoIP – 2 FTE in staffing and \$500K in one-time capital costs.
- Blackboard - \$100,000/year in licensing, .5 FTE, and more features.
- Box - \$300K in capital, 1 FTE
- Splunk - \$50k in licensing, .5 FTE
- Duo – impossible without InCommon integration.

Savings to date: 4 FTE in staff, \$800K Capital, \$150K Opex



INTERNET<sup>2</sup>  
ADVANCING  
HIGHER EDUCATION  
IN  
THE  
*Cloud*  
AND BEYOND

EACUBO  
OCTOBER 2014

Questions??

[Jack@umbc.edu](mailto:Jack@umbc.edu)

[kyazdi@internet2.edu](mailto:kyazdi@internet2.edu)

Updated September 2014

# For more information...

- Email: [netplus@internet2.edu](mailto:netplus@internet2.edu)
- Internet2: NET+ service catalogue <http://internet2.edu/cloud-services> and reach us with questions, comments, suggestions, requests, etc. at [netplus@internet2.edu](mailto:netplus@internet2.edu)
- Regional Networks (NET+ Regional Partner Program)
- EDUCAUSE: Cloud Services Working Group, Constituent and Discussion Groups
- Membership inquiries: [membership@internet2.edu](mailto:membership@internet2.edu)