



Juniper In Education

Name

Title

Date

THE WORLD'S LARGEST SERVICE PROVIDERS CHOOSE JUNIPER

facebook

Google

amazon.com

Comcast

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Bell

Deutsche Telekom

NTT Communications

BT

TELUS

Telstra

China unicom 中国联通

Telefonica

kt

中国移动通信
CHINA MOBILE

cox

TELECOM
ITALIA

at&t

中国电信
CHINA TELECOM

RELIANCE
Communications
Anil Dhirubhai Ambani Group

PCCW
電訊盈科

france telecom

BrasilTelecom

SK telecom

AND SO DOES EDUCATION



Juniper In Education

Juniper's Higher Education Business

Juniper Networks is in the business of network innovation. Our mission is to connect everything and empower everyone. We believe the network is the single greatest vehicle for knowledge, understanding and human achievement the world has ever known.

Juniper believes that learning settings must apply prudent use of digital curriculum and interconnected technologies to enable students and educators to analyze, communicate and collaborate globally to improve student outcomes that will impact our global economy.



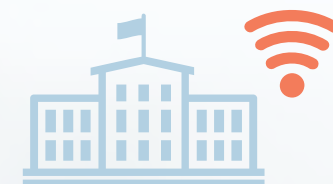
Adapting to New
Business Models



Enabling
User Mobility



Delivering Secure,
Authenticated
Connectivity

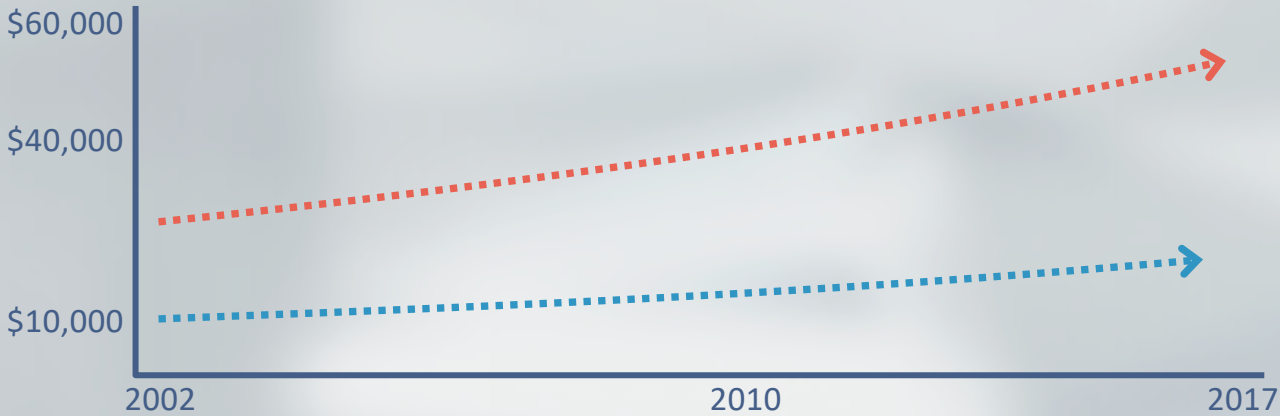


Providing an Exceptional
Learning
Experience

Issue in Education – The Cost of Learning

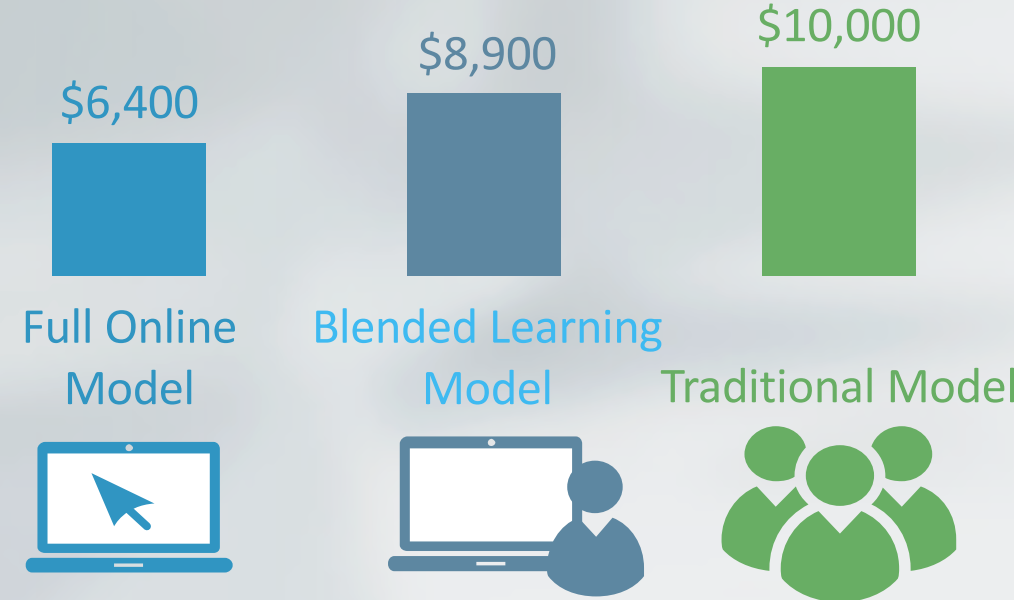
SEEMINGLY UNSTOPPABLE GROWTH IN COSTS ASSOCIATED WITH HIGHER EDUCATION

..... Total annual cost - **private** college
..... Total annual cost - **public** college



*National Center for Public Policy & Higher Education

New Models vs. Traditional Per Pupil Expenditures



*2012 GSV Revolution 2.0



Each dropout costs the nation **\$260,000** in lost earnings, taxes and productivity.



of people who graduated in 2007-8 with student loans borrowed **\$40,000 or more**



*National Center for Education Statistics

Issue In Education – Improve Relevancy

WHERE DOES HIGHER EDUCATION NEED TO IMPROVE?

Shifting Role of Community College

Provide More Effective Remediation

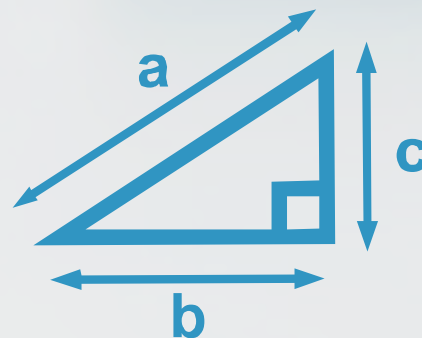
- About **60%** of students require remedial classes
- Only **25%** of remedial students eventually earn a degree from either a community college or a four-year college

**GSV education sector factbook*



Address Diverse Academic Programs

- **63%** of teens have never considered engineering careers, but **44%** say they would consider it if they had more info



**CDE11 Report*

Higher Education Must Stay Relevant

Justify Student Investment

- Each dropout costs the nation \$260,000 in lost earnings, taxes and productivity.
- 600,000 college freshmen take calculus: 250,000 fail. Assuming a cost of \$2,000 per course, this amounts to \$500 million spent with zero return
- Today, 30% of American adults have a college degree, but 80% of jobs require a college education



Provide More Relevant Learning Opportunities

- Over the next 15 years, retirement and resignation in STEM industries will exceed the current head count
- Today, about 42% of all doctorate-level science and engineering workers are foreign-born
- In the US, 15% of all undergraduates received a degree in the natural sciences or engineering



**GSV American Revolution Report*

Issue In Education –Changing Business Models

How Are Changing Expectations Effecting Higher Education?

“There are 1,300 universities in America today serving 18 million students. In 5 years there will be 500 serving a vastly increased number of students — and the majority of the students will be served online.”

—John Katzman,
founder of The Princeton Review

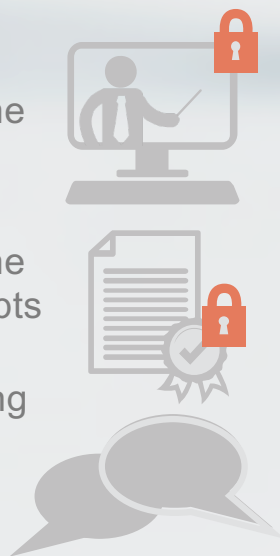
Setting a New Standard

90% of community colleges have a classroom standard for integrated technology

79% provide secure online lecture capture

80% provide secure online access to official transcripts

96% use social networking sites such as facebook and twitter



*CDE12 Yearbook

Higher Education Is Increasing Access By Expanding Online Courses

Total and Online Enrollments in Degree-Granting
Postsecondary Institutions



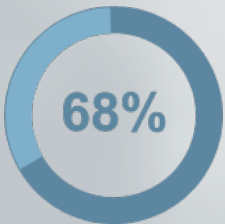
*American Revolution GSV Advisors

Higher Education Industry: Learning Trends

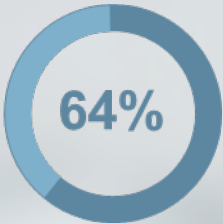
What is the Current Scene In Higher Education?

Online Learning Is Gaining Popularity With Adult Students

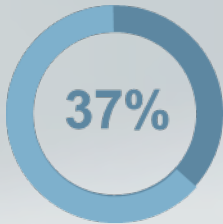
Why do people choose to learn online? Participants could cite multiple reasons.



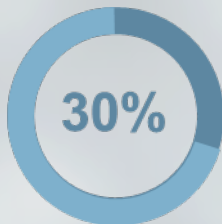
To better juggle family and work responsibilities with school



To be able to do school work anywhere at any time



Availability of accelerated courses

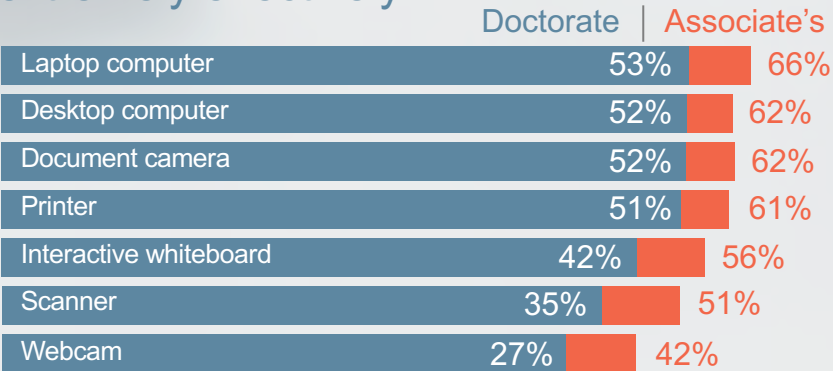


Lower cost overall

* <http://www.onlinelearningsurvey.com/reports/goingthedistance.pdf>

Instructors Are Using Technology More Effectively

Percentage of students who say their instructors use technology extremely effectively:

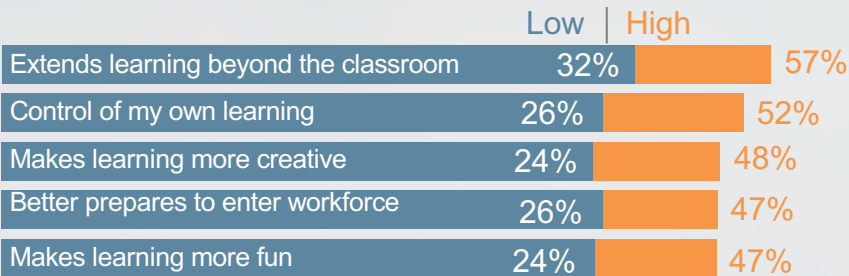


*ECAR National Study of Undergraduate Students and Information Technology



Expansion of Engaging and Relevant Learning for Students

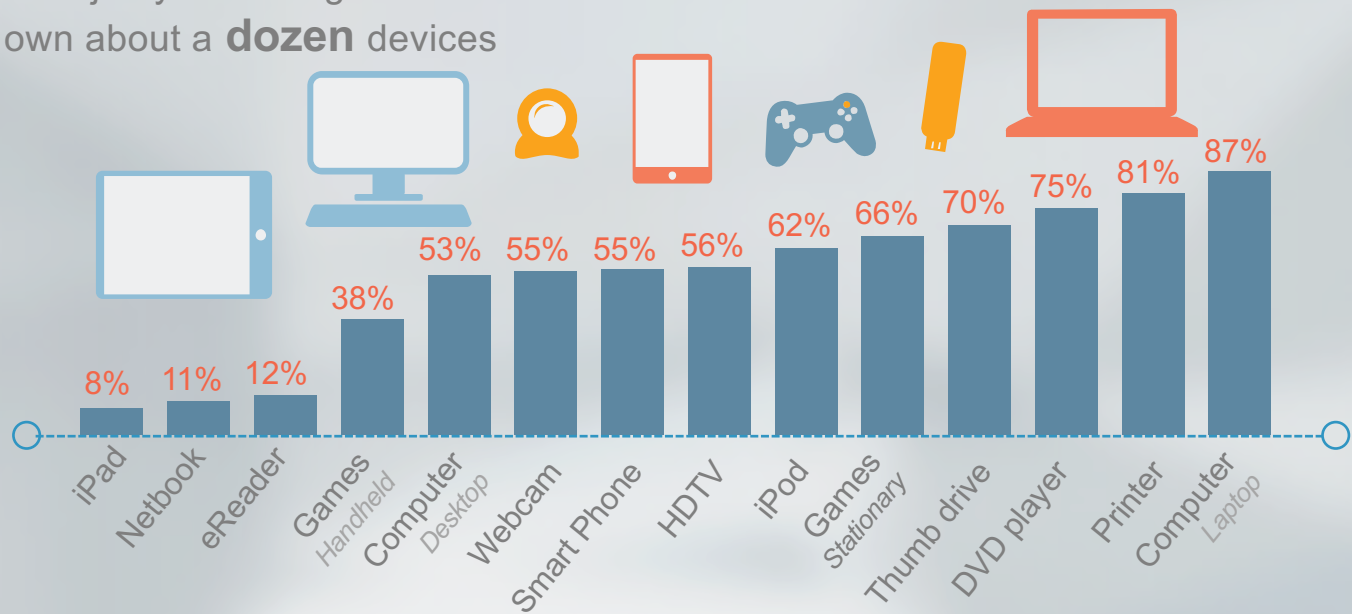
Percentage of students who strongly agree that their instructors deliver these benefits:



Higher Education Industry: Mobility Trends

Undergraduates Are Equipped With Technology

A majority of undergraduates own about a **dozen** devices



**ECAR National Study of Undergraduate Students and Information Technology*

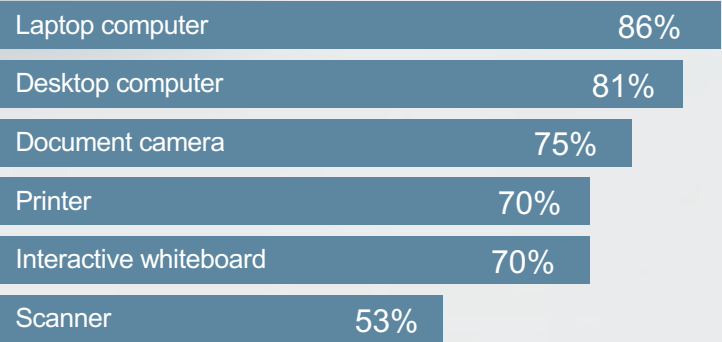
Providing 24/7 connectivity and secure access for students

- **21%** of community colleges have plans to implement unified communications, voice, data or video in 2012-2013
- **40%** of community colleges note infrastructure initiatives
- **87%** of higher education IT professionals report they need to upgrade infrastructure in order to incorporate more technology and digital content
- **38%** of higher education IT professionals report that IT security is a required area of modernization

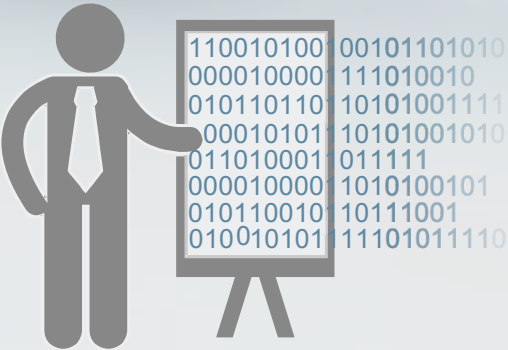
**CDE12 Yearbook*

Students Expect Basic Online Services

Percentage of students who say their institution does an excellent or good job at these online services:



**ECAR National Study of Undergraduate Students and Information Technology*



Digital Content & Curriculum is now the norm

- **80%** of higher education faculty use digital content in the classroom
- **48%** of students would like faculty to incorporate more digital content
- **Instructors report** the most commonly used technology resources are websites (**56%**), online images (**44%**), online games (**43%**), online video content (**33%**), online lesson plans (**30%**)

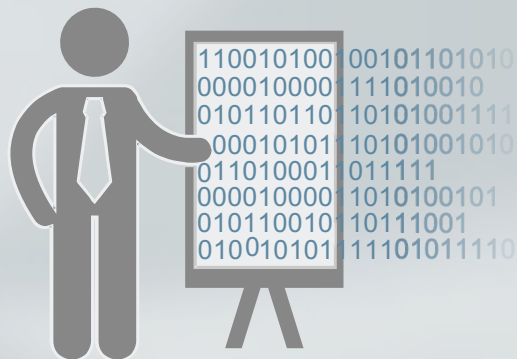
**CDE12 Yearbook*

Higher Education Industry: Business Needs

WHAT IS THE DESIRED SCENE IN HIGHER EDUCATION?

More Effective Instruction

Improve the delivery of instruction using digital content and new classroom technologies



Recruiting and Retaining Professors

Recruit and retain instructors that can deliver digital content effectively

Increasing Engagement with Students

Curriculum that is engaging and interesting to students



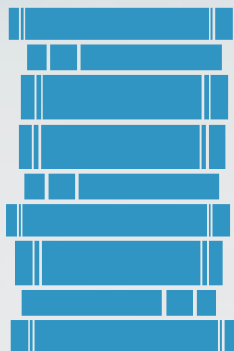
Personalized Learning

A learning environment that maximizes the potential of each student



Reducing Costs

Utilization of new technologies and digital content to reduce costs



Higher Education Industry: Community Stakeholders

Students:

- **74%** of higher education students are now using digital content
- **47%** of students want their teachers to incorporate more digital content



Administrators:

- Student records and administrative functions will continue to increase
- This creates more demand for storage and management of digital content



Technologists:

- Digital content and curriculum is growing exponentially
- **47%** of higher education IT professionals say they need to upgrade server and storage environments to compensate.



Faculty:

Faculty is using technology assets for instructional course design.

- **53%** of higher education instructors requested training on specific technologies in the classroom
- **41%** requested training on instructional software
- **32%** requested guidance to integrate technology into the classroom.



Alumni:

- Alumni continue to connect with their alma-mater in multiple ways to retain an identity and to support the institution with giving and/or program participation
- Increasing use of social media outlets have become a great communication tool between colleges/universities and their alumni



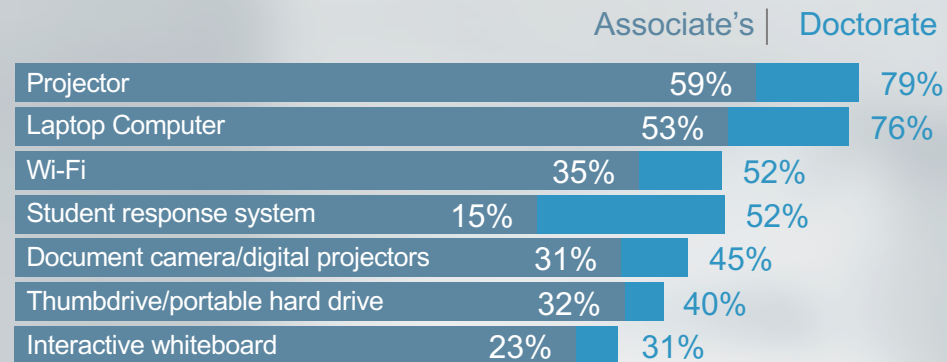
**CDE11 Report*

Higher Education Industry: Digitization of Content

INSTRUCTIONAL COURSE DESIGN USING TECHNOLOGY ASSETS TO MEET INSTITUTIONAL GOALS

Meet Learning Objectives Through the Use of Technology

Percentage of students who say their instructors use technology:



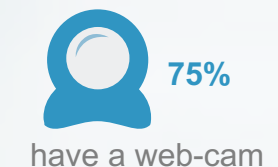
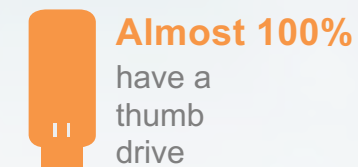
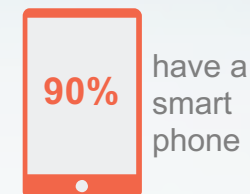
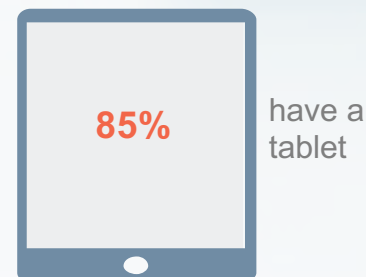
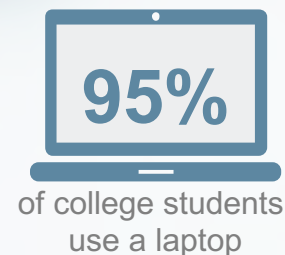
**ECAR National Study of Undergraduate Students and Information Technology*

Lowering Costs Using Digital Content

- Reduce costs associated with printing and paper
- Textbook prices increase each year
- Free online content is available
- Average price of a newly printed textbook is **\$175.48** vs. **\$107.59** for an e-reader

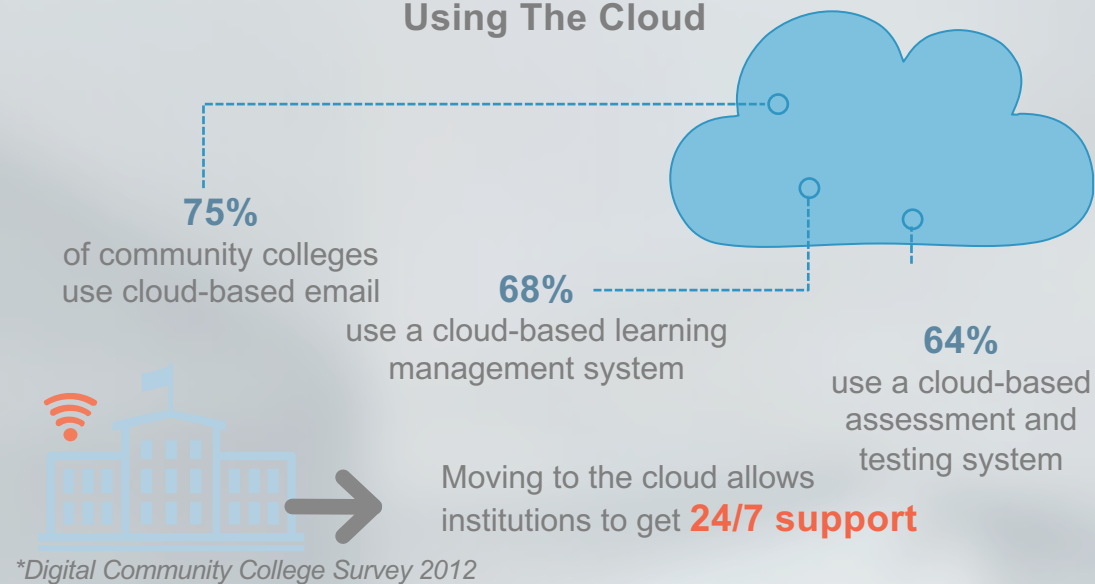


Teaching To a New Demographic



Consumerization of IT

Using The Cloud



24/7 Support For Virtualized Environments

37% of higher education instructors report an increase in the use of virtual learning environments over the past two years

47 percent of higher education IT professionals say that they need to make improvements to their server and storage environments in order to accommodate and incorporate more classroom technologies

24/7 learning environments will also require **24/7 support** in order to work effectively



**CDE12 Yearbook*

Institutions Must Support Multiple Device Platforms:

- RIM's Blackberry
- Apple's iOS
- Android
- Windows Phone



**Gartner Report: Critical Capabilities for Mobile Device Management*

Proliferation Of Devices

47% of higher education students **want their instructors to incorporate more tablets** in the classroom

75% use a laptop or tablet

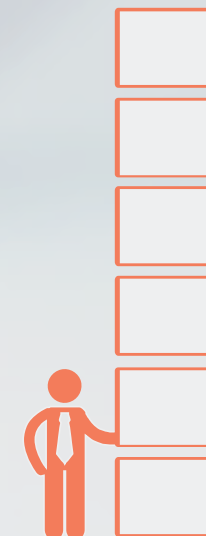
50% use a smart phone

26% use a tablet

90% of higher education institutions have a classroom standard for integrated technology that supports 1:1



**CDE12 Yearbook*



Gameification Could Play A Role In HED Instruction

- **Gaming popularity** has grown exponentially since 2000
- **28 million** people harvest their crops on FarmVille every day
- **Over 5 million** adults play an average of 45 hours a week of games

“Game players regularly exhibit persistence, risk-taking, attention to detail, and problem-solving, all behaviors that ideally would be regularly demonstrated at school.”

—The Education Arcade at MIT



**Gamification.org “Moving Learning Games Forward” by MIT Education Arcade*

Security and Big Data in Education

Compliance Is An Issue

Family Educational Rights and Privacy Act (FERPA)

Health Insurance Portability & Accountability Act (HIPAA)



Status Of Data Security And Authentication

44% of HED IT professionals say network security is the biggest challenge facing campus networking

38% of HED IT professionals say IT security must be modernized

38% of HED IT professionals agree that managing and authenticating devices is their biggest challenge



*CDE12 Yearbook

What Will Be The Impact Of Big Data?

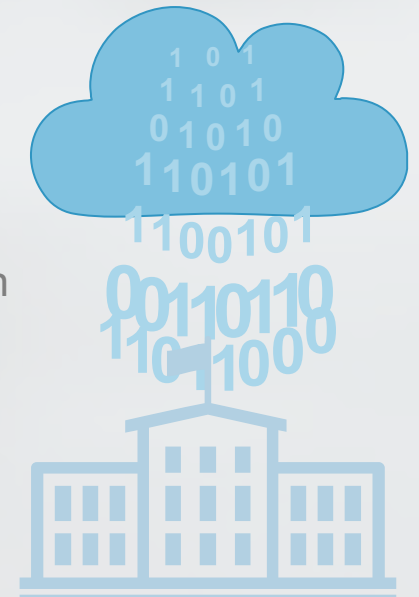
- **LMS:** Post-secondary LMS market expected to reach \$3.2 billion by 2017
- **SIS:** IT respondents rated their current system a 6.7 out of 10
- **ERP:** Only 30% of institutions use capital budget appropriations for enterprise infrastructure



*GSV American revolution 2012 report

Role Of The Cloud, Data Center & Mixed Environments

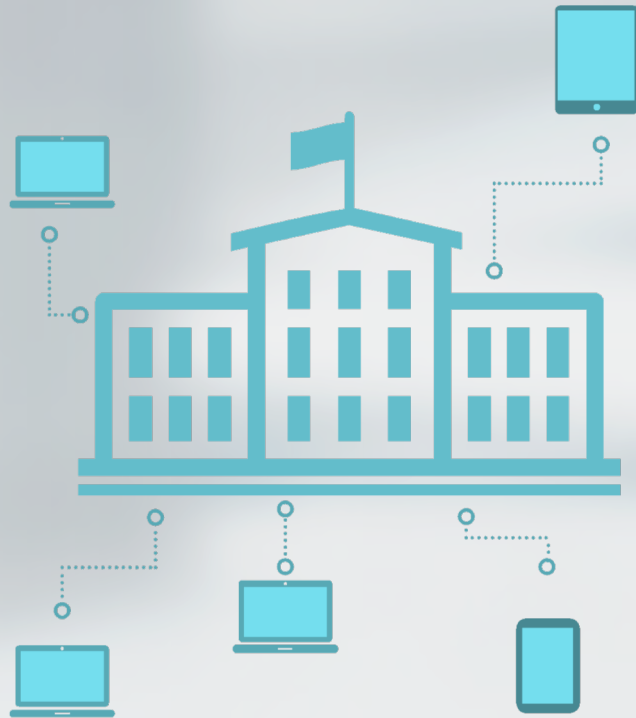
- **65%** of community colleges report data consolidation is under way
- **81%** of community colleges have some level of data center virtualization
- **40%** of HED IT professionals say that cloud computing is a major area of modernization



*CDE12 Yearbook

Critical Role of the Network

Robust: Higher Education networks must be robust so that students and staff can access digital content from anywhere on campus.



Flexible: Networks need to be flexible and scalable in order to cope with an influx of devices and run smoothly during peak usage hours.

Reliable: Reliability of the network is crucial to meet common core state testing requirements and to support new instruction models like blended learning.



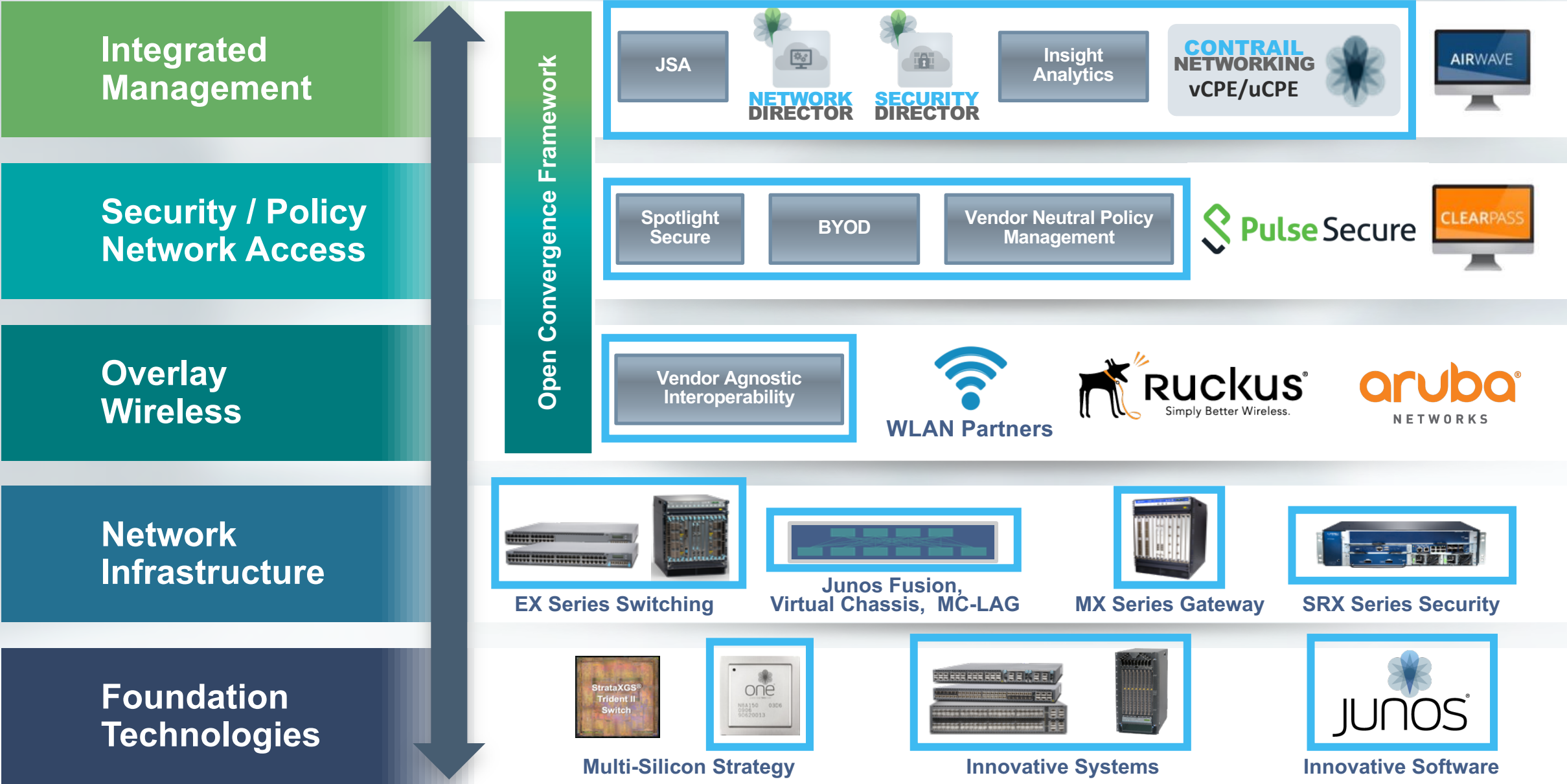
Juniper in Education

HIGHER EDUCATION VALUE PROPOSITION

Juniper understands the pressure on Higher Education today to provide relevant learning opportunities and robust research capabilities delivered in a manner that will draw the best and brightest students and faculty to the institution. That requires institutions have a networking infrastructure that is **simple**, **flexible**, **robust**, **resilient** and **adaptable** to address evolving demands on IT resources including virtual environments while keeping costs as low as possible.



Juniper in Education



Juniper-provided Components

 Lower Costs

 Enhancing Security

 Open



Carrier Class
Digital Learning

Juniper in Education

SIMPLY CONNECTED PORTFOLIO FOR MOBILE NETWORKS

Top Five Reasons to have a simply connected campus and branch network



Coordinated Security
(Better Together Portfolio)



Scalable Architecture



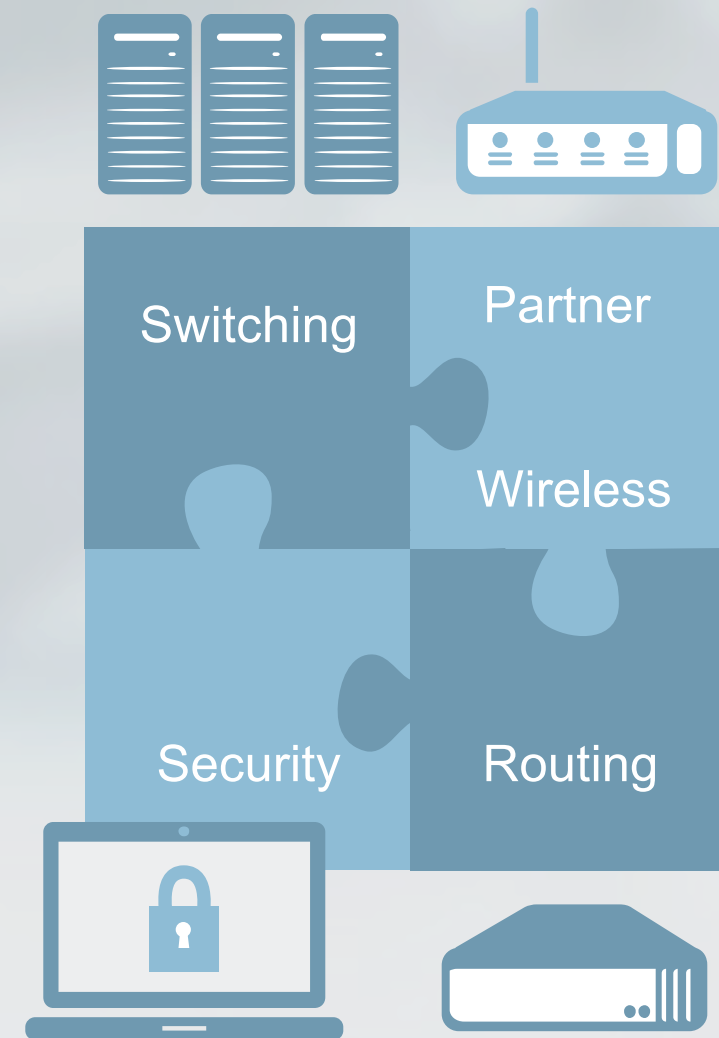
Highest Reliability



Simplicity and Automation



Lowest TCO



Challenges in the Enterprise Campus Network Today

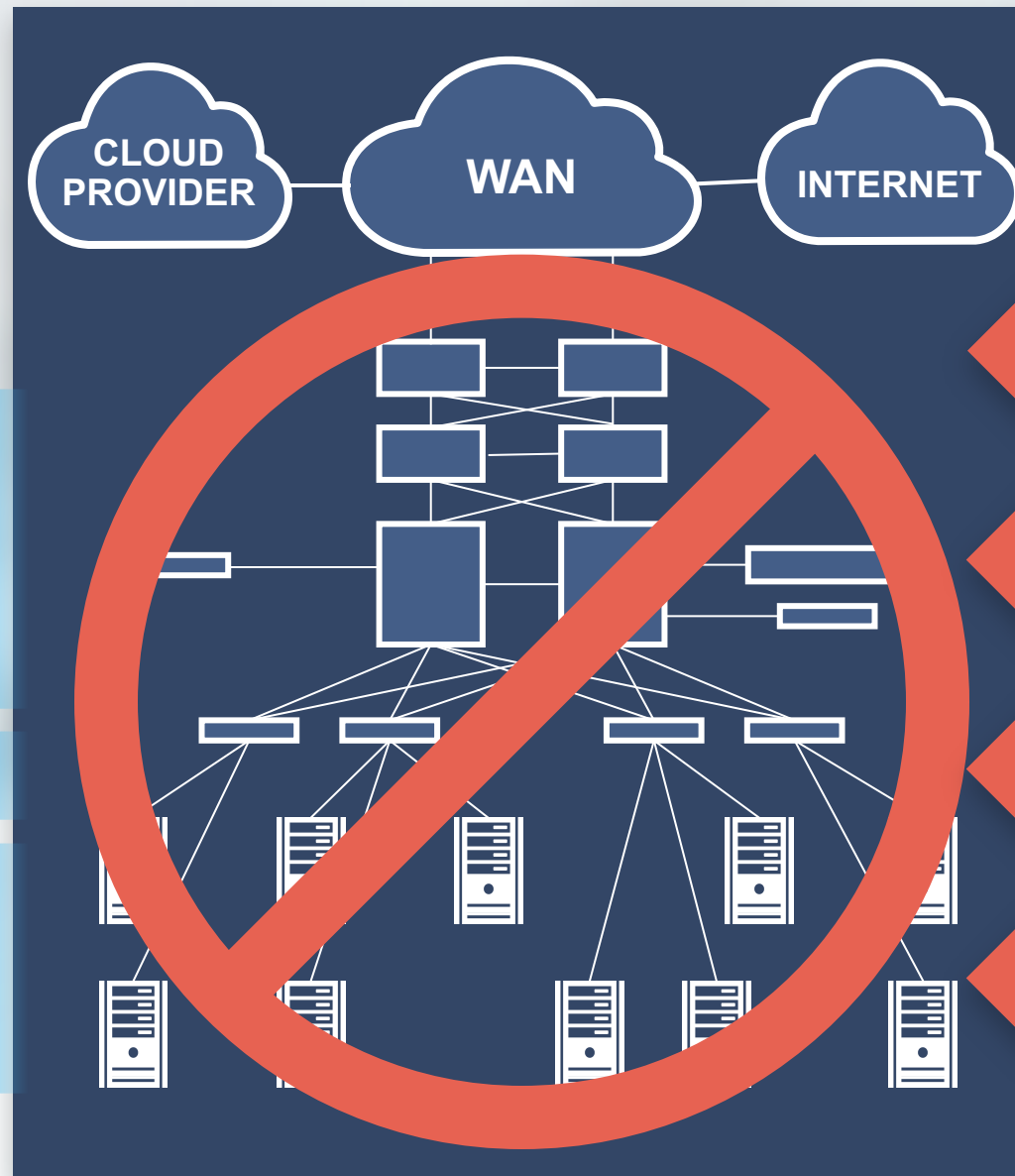
Today's campus:
Changes can break something or open a security gap!

Today's
Campus

Core

Distribution

Wiring Closet



Lacks scale, reliability and visibility

Too complex: layers of switching and VLANs

Brittle and manual, difficult to keep secure

Multiple management points, multiple tools

Transform Your Enterprise Campus

Your Entire Network



Tomorrow's campus: **Simplified architecture**

Virtually collapse core,
distribution and access

Single, simple to manage platform

Centralized configuration,
provisioning, management,
and policy

Automation, Orchestration and SDN

Automation, Orchestration....path to SDN



Deployment

ZTP

Ansible

Junos Scripts

etc...



Maintenance

Junos Space

Puppet

Chef

Python

Junos SDK

Service Now

etc...



Orchestration

OpenStack

CloudStack

JunosV Contrail

Open DayLight

etc...

WHY JUNIPER IN EDUCATION

CONNECT EVERYTHING. EMPOWER EVERYONE.



Adapting to New
Business Models



Enabling
The Digital Student



Delivering Secure,
Authenticated
Connectivity



Scalable, Open Campus
Networks



<http://forums.juniper.net/>



<http://www.facebook.com/JuniperNetworks>



<http://www.juniper.net/youtube>



<http://twitter.com/#!/junipernetworks>



<http://www.linkedin.com/company/juniper-networks>



<https://github.com/Juniper>

