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## Networking News

### ***Leadership of GPN Technical Networking Committee Changes Hands***

*Brad Fleming* of *KanREN* is assuming the chair of the *GPN Technical Committee*. He is replacing *Kent Christensen* of *University of Nebraska, Lincoln*. Brad is a network engineer. *The GPN Executive Council would like to thank Kent for his past two years of service and for his leadership during a critical juncture for GPN!* Thank you, Kent, and welcome, Brad.

*Kate Adams*

### ***News Briefs from Networking***

There have been several recent updates to the GPN network.

- A PerfSonar server was installed on 9/28/2010.
- A new web server was installed on 10/12/10.
- The 10G connection to Internet2 for CPS was moved from the Chicago I2 router to a Kansas City I2 router for the new combined Transit Rail/CPS peering.
- A new 10G circuit from the University of Missouri – Columbia to the GPN was installed for the University of Missouri research.
- An agreement was signed with Indiana University for the GRNOC to provide network monitoring reports for the GPN. An initial kick-off meeting has occurred between the GRNOC and the GPN NOC to clarify expectations. The GRNOC has obtained the server that will be used.

*Rex Peterson*

## News from SC10: The 2010 Supercomputing Meeting

### ***K-State Students Place Third in SC10 Programming Competition***

*Supercomputing 2010* (SC10) was held in New Orleans November 13-19. On November 15<sup>th</sup> there was a programming contest for students. A total of nine teams entered the contest. The five person teams were given a set of problems at 8:30 am and had until 5:00 pm to finish and hand in their solutions. The *Kansas State University* team took 3<sup>rd</sup> Place, behind the University of Illinois (1<sup>st</sup> Place) and University of New Orleans (2<sup>nd</sup> Place & home town favorite). **Dan Andresen**, Professor of Computer and Information Systems (CIS), was the KSU coach. Team members were **Michael Marlen** (Ph.D, student, CIS), **Cory Hardman** (Senior, CIS & Mathematics), **Paul Hodson** (Senior, CIS), **Chris Ramsey** (senior, CIS), **Clint Caywood** (senior, CIS). Congratulations!

*Kate Adams*

### ***Disruptive Innovation: SC10 Keynote by Clayton Christensen***

Harvard Business Professor Clayton Christensen presented his keynote address on the impact of new, innovative technologies on established ones. According to Christensen, “Disruption is the mechanism by which great companies continue to succeed and new entrants displace the market leaders. Disruptive innovations either create new markets or reshape existing markets by delivering relatively simple, convenient, low cost innovations to a set of customers who are ignored by industry leaders.” Often, these disruptions appear to blindsides more established businesses and success may seem unpredictable.

Drawing from examples in the steel, automotive, fast food and computer industries, Christensen elaborated on the following principles that encourage innovation and drive success.

1. Many of today's markets that appear to have little growth remaining, actually have great growth potential through disruptive innovations that transform complicated, expensive products into simple, affordable ones.
2. Successful innovation seems unpredictable because we rely excessively on data, which is only available about the past. In fact, new techniques make successful innovation more predictable.
3. Understanding the customer is the wrong unit of analysis for successful innovation. Understanding the job that the customer is trying to do is the key.
4. Many innovations that have extraordinary growth potential fail, not because of the product or service itself, but because the company forced it into an inappropriate business model instead of creating a new optimal one.
5. Companies with disruptive products and business models are the ones whose share prices increase faster than the market over sustained periods.

You can learn more at [http://www.claytonchristensen.com/disruptive\\_innovation.html](http://www.claytonchristensen.com/disruptive_innovation.html). You can also find Youtube videos of Christensen's presentations.

*Greg Monaco*

## ***Toward Exascale Computing: An SC10 Point of View***

In last month's issue of *GPN News*, Kate Adams discussed the push toward reaching *exascale* performance speeds in computing and the challenges facing developers as they attempt to reach those speeds. Traditional CPUs (central processing units) that power our laptops and desktops have increased dramatically in speed. But, as Bill Dally discussed in his plenary address at SC10, there is an upper limit to the speed on traditional CPU chips, since as speed increases, heat increases and the chips may melt. Dally, professor of engineering at Stanford University and chief scientist at NVIDIA, pointed out that effective power management will be a key to breaking the exascale speed barrier.

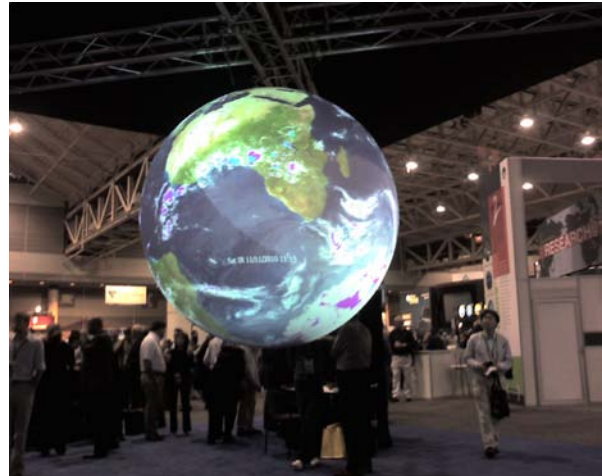
**Graphics Processing Units** or GPUs have powered graphic and motion displays on some computers for years. (*Note:* I discovered that my Windows laptop has a GPU by going to the Device Manager and looking under Display Adapters. Then, I googled my display adapter type, coincidentally made by NVIDIA, to discover that it has a GPU). GPU chips are faster and, according to Dally, run cooler than CPU chips. His conclusion: That if reaching exascale speed is, indeed, dependent on reduced power consumption and improved energy management, GPU computing may play an important role in reaching that milestone sometime this decade.

**Greg Monaco**

## ***Notes from the SC10 Exhibit Floor***

The Supercomputing conference exhibit floor provides a glimpse of new technology and the research that uses that technology. In the realm of research, the *University of Nebraska* was featured at the Fermilab exhibit. GPN affiliate members that exhibited included *Fujitsu*, *Adva* and *Ciena*. Playing a key role in many of the exhibits at SC is a high speed network that brings massive amounts of data, on demand, to the exhibit booths.

On one of my tours of the exhibit floor, I accompanied a colleague who was particularly interested in visualization. One of the first visual eye-catchers was the NOAA exhibit. At the center was a huge globe with recent satellite shots of the earth streaming onto it. It looked as though the earth were revolving as the images rotated and changed over time.



At the Argonne booth I got a chance to catch up on the latest touch screen developments for very large-scale monitors. As I watched individuals interacting with data via touch, wondered whether the opportunity to interact with data using touch might produce new insights into the data.

Folks at the Argonne booth were excited about Microsoft's new Kinect gaming accessory. It has a camera that senses user movements and eliminates the need for a game controller. (I recently ran into trouble trying to use a game controller at a big box store.) I was able to play a video game and manipulate objects on the screen by motioning toward them. The excitement over this

technology is in its potential to replace the touch screen, allowing us to interact with programs and other applications by merely motioning towards the monitor and in its potential for low-cost 3-D imaging (check out a youtube at <http://vodpod.com/watch/4909583-3d-video-capture-with-kinect>).



In between exhibits, I stopped to organize my conference materials and was startled by lumps of coal hurtling in my direction. It turned out to be a 3-D video by MillieModels that does not require special glasses to see the 3-D effect. I was standing about 10 feet from the display and could move from side to side without losing the effect. I asked to see something more lifelike and the exhibitor brought up a 3-D MRI reconstruction of a spinal cord. It was particularly impressive when he reached in as though to grasp and take hold of it!

*Greg Monaco*

## Upcoming Meetings

### *January, 2010*

- **Joint Techs:** [Winter Meeting, January 30 – February 3, 2011 in Clemson, South Carolina](#)

### *March, 2011*

- Educause [Midwest Regional Conference](#), March 14-16, 2011 in Chicago, IL.

### *April, 2011*

- Educause [Security Professionals Conference](#), April 4 – 6, 2011 in San Antonio, TX.
- KanREN [Annual meeting](#), April 7 – 8, 2011 in Kansas City, KS.
- Internet2 [Spring Member Meeting](#), April 18 – 20, 2011 in Arlington, VA

### *June, 2011*

- **GPN Annual Meeting: June 1-3, 2011**

### To Contribute to the Newsletter

To contribute a story or to announce an upcoming meeting or event, send your contribution to Bill Mitchell ([bill@greatplains.net](mailto:bill@greatplains.net)), Greg Monaco ([greg@greatplains.net](mailto:greg@greatplains.net)) or Kate Adams ([kate@greatplains.net](mailto:kate@greatplains.net))

### About the Great Plains Network

The Great Plains Network membership includes research and education institutions in nine states. GPN supports high-performance networking and cyberinfrastructure on behalf of this membership. GPN also supports multi-institutional, multi-disciplinary research and education initiatives that require advanced cyberinfrastructure.

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