

CHEP 2010 Overview

Tony Johnson

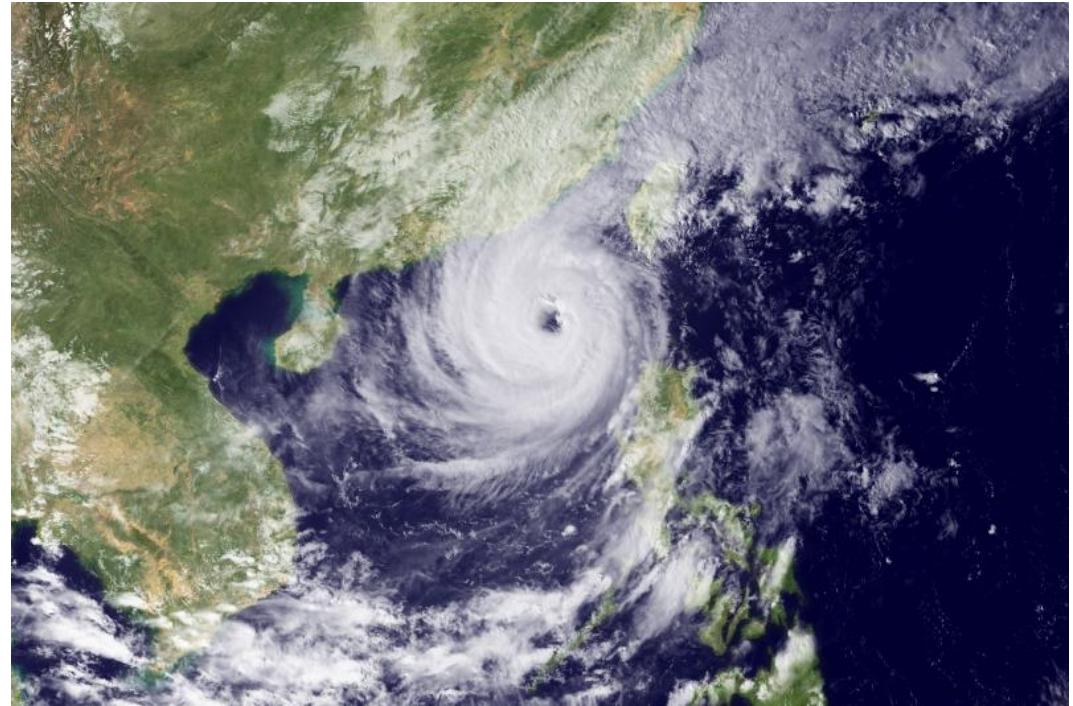
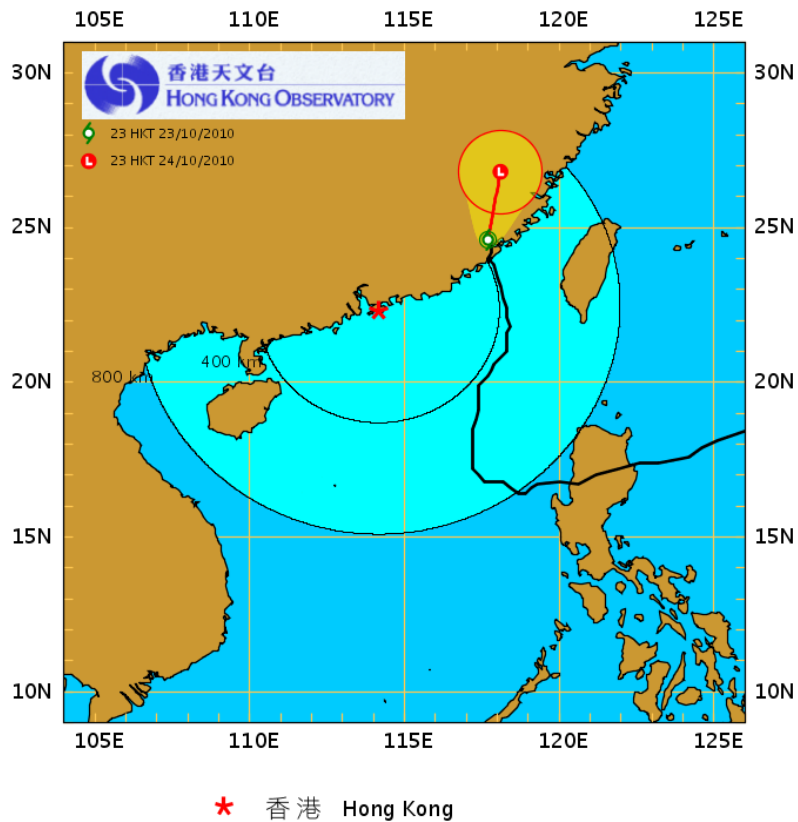
What is CHEP

- **C**omputing in
- **H**igh-
- **E**nergy (and Nuclear) (but not Astro)
- **P**hysics
 - or maybe more appropriately
- **C**omputing for
- **H**uge
- **E**xperiments with
- **P**rotons

CHEP History

- Held at 18 month intervals
 - alternating between Europe, Americas, Asia and other parts of the world
 - **Taipei, Taiwan (2010)**
 - Prague, Czech Republic (2009)
 - Victoria, Canada (2007)
 - Mumbai, India (2006)
 - Interlaken, Switzerland (2004)
 - San Diego, California(2003)
 - Beijing, China (2001)
 - Padova, Italy (2000)
 - Chicago, Illinois (1998)
 - Berlin, Germany(1997)
 - Rio de Janeiro, Brazil (1995)
 - San Francisco, California (1994)
 - Annecy, France (1992)
 - Tsukuba, Japan (1991)
 - Santa Fe, New Mexico (1990)
 - Oxford, England (1989)
 - **Asilomar, California (1987)**
 - Amsterdam, Netherlands (1985)
 - Next conference in New York (2012)

Typhoon Magi



- Rain for the entire week
 - Made it difficult to tell difference between a concrete path and a water fountain

Taipei Highlights

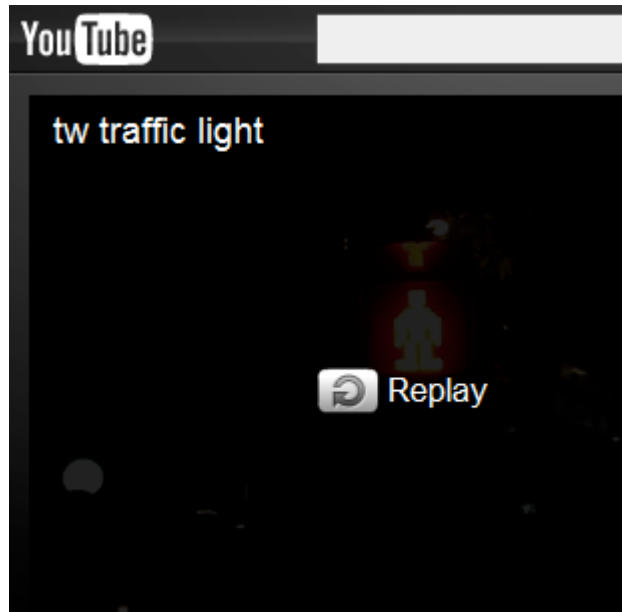


世界最大風阻尼器區
Super Big Wind Damper

- World fastest elevator, 1010 meters/min.
Only 37 seconds to reach the 89th Floor



Taipei Highlights



CHEP 2010

- Many Parallel Tracks
 - Distributed Processing and Analysis
 - Event Processing
 - Grid and Cloud Middleware
 - Online Computing
 - Computing Fabrics and Network Technologies
 - Software Engineering, Data Stores, and Databases
 - Collaborative Tools
 - 2 Poster Sessions (hundreds of posters)
 - Impossible to attend more than a small fraction of talks
 - Sometimes similar talks in two sessions at same time
- I will give are some random personal observations

CHEP 2010 Opening Ceremony



CHEP 2010 – LHC summary

- LHC data taking running perfectly*
 - Online/DAQ running fine
 - Heavy ion starting now – maybe more challenging
 - Offline running fine
 - “In 2011 majority of the currently accessed data could be disk resident”
 - Networks more reliable than expected**
 - No need to be smart about where jobs run, just read data over network
 - “Data available over the network from a disk at a remote site may be closer than data on the local tape installation”
 - Some concerns for future (many cores, software obsolescence, etc)
 - Grid running fine
 - Grid based analysis “easier than expected”
 - Extensive use of “Pilot Jobs” obviates need for some advanced Grid features
 - Advanced features didn’t work so users found workarounds

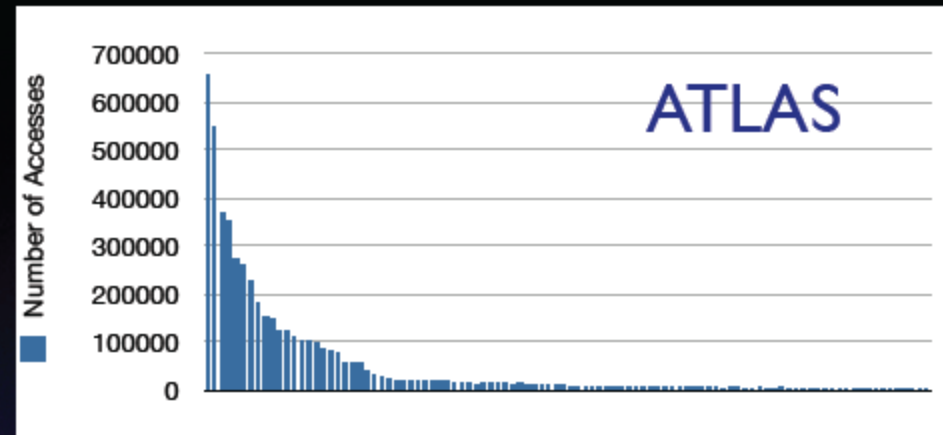
*LHC speakers report negatives excised during practice talks

** Harvey Newman expected them to be reliable

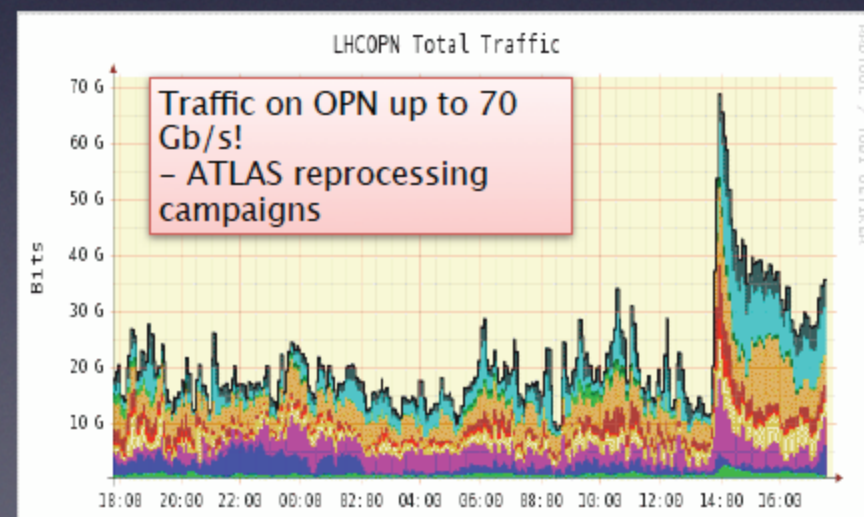
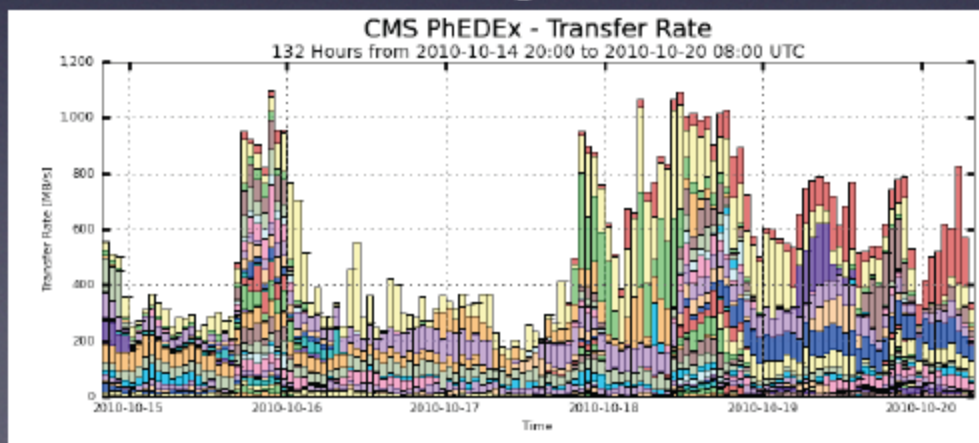
Access

Ian Fisk

- ➔ For a system intended to protect against weak networking, we're using a lot of network
- LHC Experiments reprocessed a lot of data in 2010
- Refreshing large disk caches requires a lot of networking



CMS is not much better
 - 30 % of samples subscribed by physicists not used for 3 months

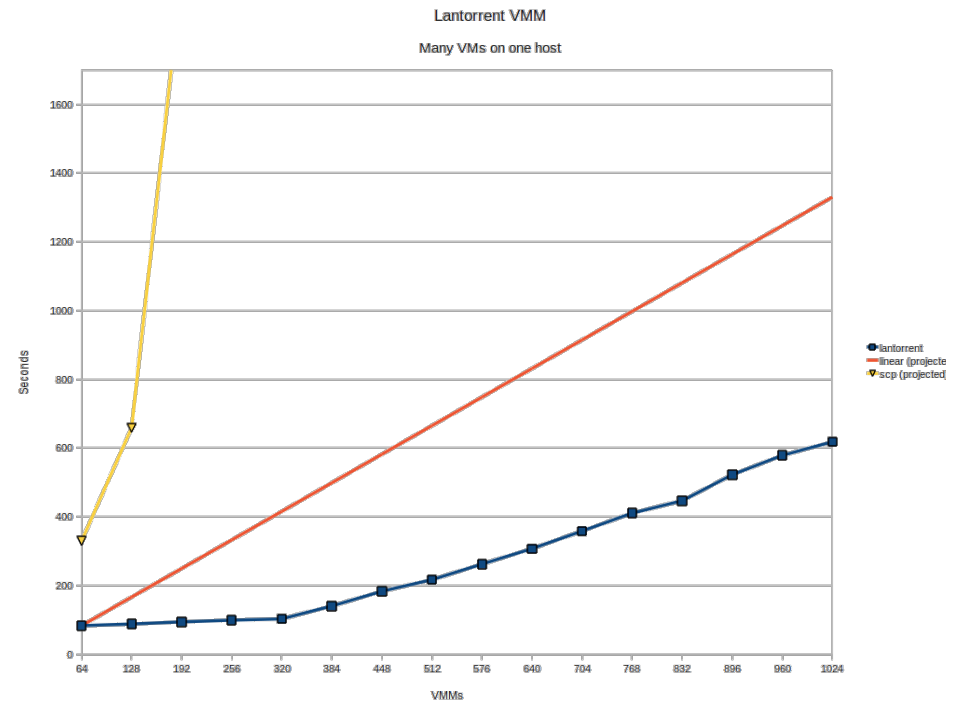


Cloud computing

- Many talks/posters on cloud computing
 - Many people pointed out grid/cloud symbiosis
 - Many people using cloud computing as part of batch
 - Sometimes cloud on top of batch
 - I liked poster by Ian Gable (previously with Fermi)
 - Sometimes batch on top of cloud
 - Concerns about security
 - Hepix moving to support “signed” virtual servers
 - Many talks mentioned CERNVM virtual file system
 - Separates OS from experiment specific files
 - Many people reported reliability problems with Eucalyptus (open-source EC2) implementation
 - Many people seemed impressed with Open Nebula (NASA), Nimbus
 - Strange talk for “Open Grid Alliance” about standardizing cloud
 - Seemed like he had missed the TGC

Deployment Performance

- Moving images is the main component of VM deployment
- LANTorrent: the BitTorrent principle on a LAN
- Streaming
- Minimizes congestion at the switch
- Detecting and eliminating duplicate transfers
- Benefit: a thousand VMs in 10 minutes
- Nimbus release 2.6

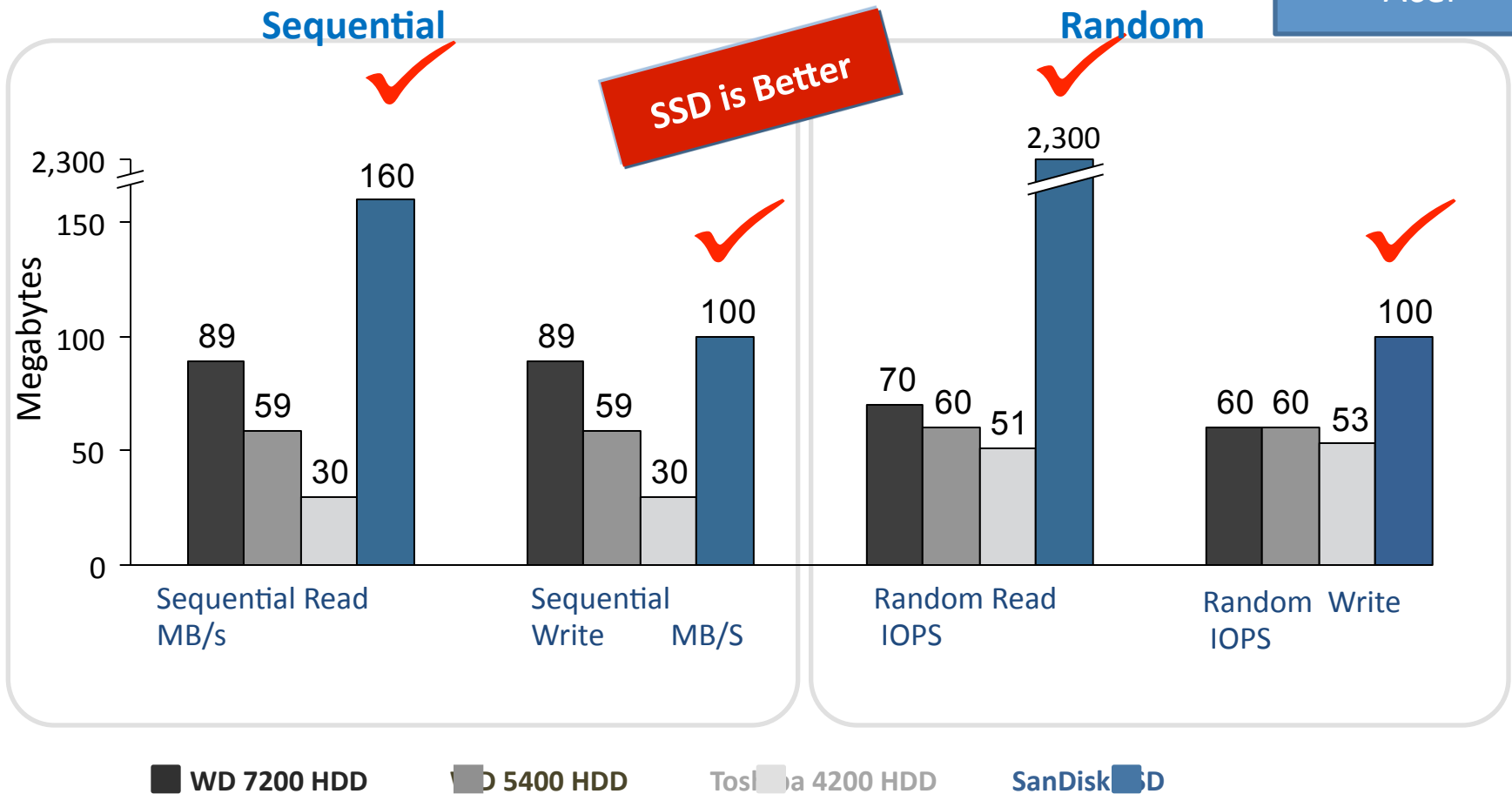


Data obtained using the Magellan resource
At Argonne National Laboratory

HDD vs. SSD Read/Write Performance



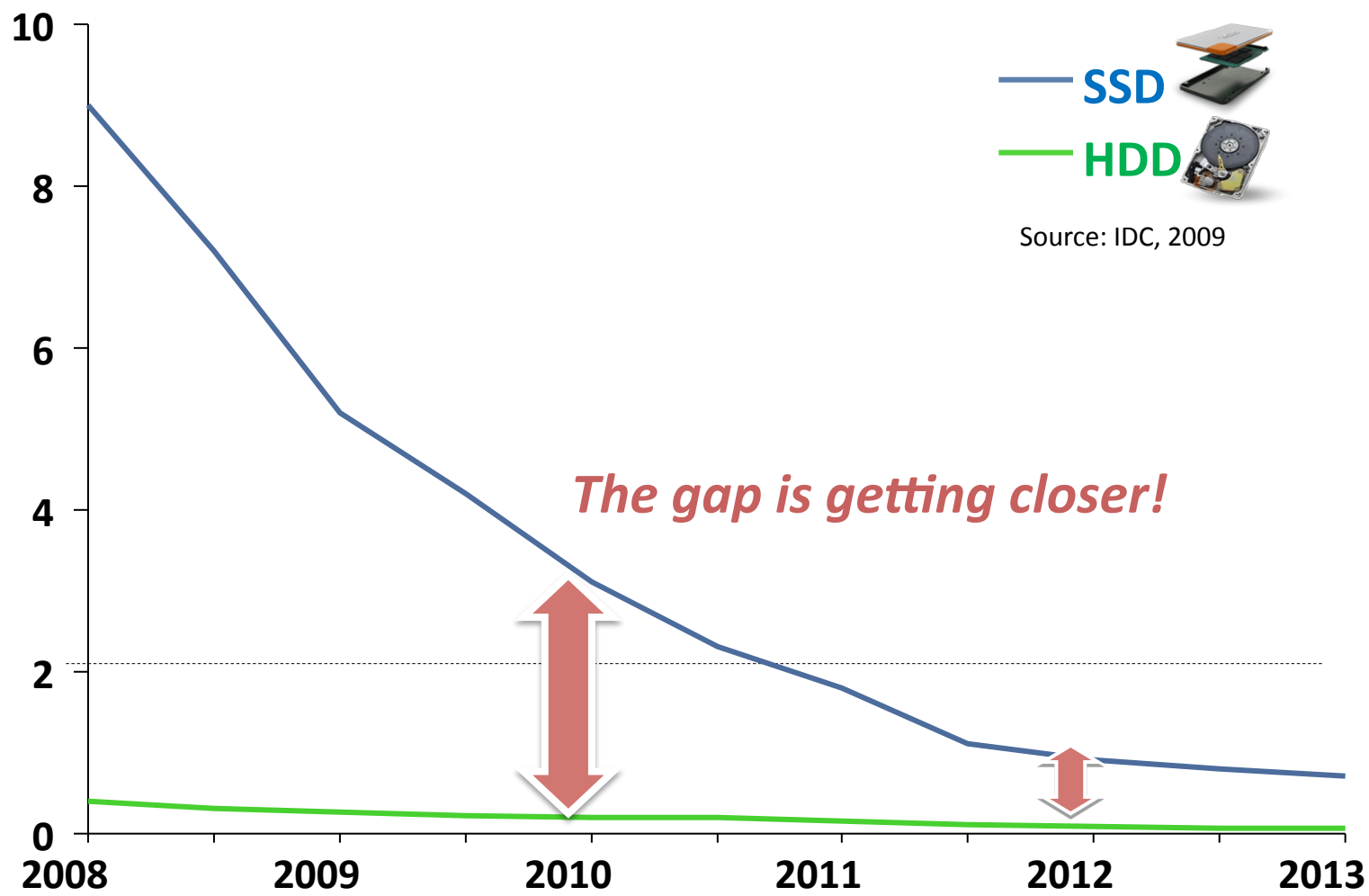
Acer



- Hardware: Intel® Core™2 Duo processor E8400 (3 GHz, 6 MB L2 cache, 1333 MHz FSB), 2 GB DDR2 Non-ECC SDRAM, 800 MHz
- Software: IOMeter, measured as a secondary drive

Trends in Selling Prices

\$USD / per GB



7 TeV Media Event, 30 Mar 2010

- (4am) Phone call: “next fill is for collisions”
- (5am) Control Rooms packed with experts
- (6am) Journalists arriving (total 110 from 69 media organizations)

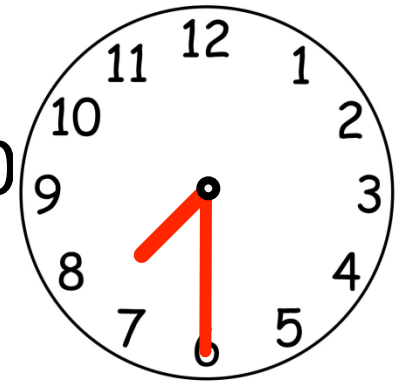


7 TeV Media Event, 30 Mar 2010

- (8am) Major electrical trip, beams dumped
- (8:30am) Re-fill and start ramp to 3.5 TeV
- (11:30am) Fill again lost, media getting itchy



7 TeV Media Event, 30 Mar 2010



- Press conference, then press, radio, and TV interviews all day



The morning after ...

FT .COM
FINANCIAL TIMES

Global Economy

FT Home > World > Global Economy

Scientists hail 'Big Bang'

By Andrew ...
Published: M...

СПЕЦПРИЛОЖЕНИЯ: ТЕХЗОНА ЖИЛПЛОЩАДЬ ОТДЫХ ДЕНЬГИ ОБРАЗОВАНИЕ СТИЛЬ ПОГОДА В ...
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ПЕРВАЯ НОВОСТИ ПОЛИТИКА БИЗНЕС ФИНАНСЫ ОБЩЕСТВО КОММЕНТАРИИ КУЛЬТУРА АФИША НАУК
ТЕРАКТЫ В МЕТРО РЕФОРМА МВД АКЦИИ ПРОТЕСТА КРИЗИС ФУТБОЛ РОССИИ ЛИГА ЧЕМПИОНОВ ЛИГА ЕЕ

2010年04月01日 星期四
中国新闻网 中新网

The New York Times

Tuesday, March 30, 2010 Last Update: 10:34 AM ET

CHLOE NOW PLAYING

佛语言专家

el mundo.es Multimedia

DEPORTES SALUD COMUNICACIÓN TELEVISIÓN MADRID BCN



Fabrice Coffini/AFP — Getty Image

The Large Hadron Collider began to collide subatomic particles.

Finally Smashing Particles Properly

The CHRISTIAN SCIENCE MONITOR

enjoy free shipping and free ... on spring's new arrivals. Sho

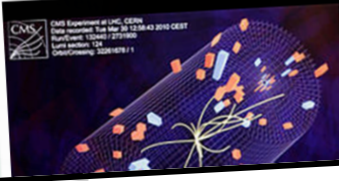
WORLD USA COMMENTARY MONEY ENVIRONMENT INNOVATION

World / Global News Blog All World Topics

Global News Blog

What is Higgs boson – and will CERN scientists find the 'God particle'?

CERN scientists are today successfully crashing particles together at nearly the speed of light. With such high-speed collisions, they hope to finally detect the elusive Higgs boson.

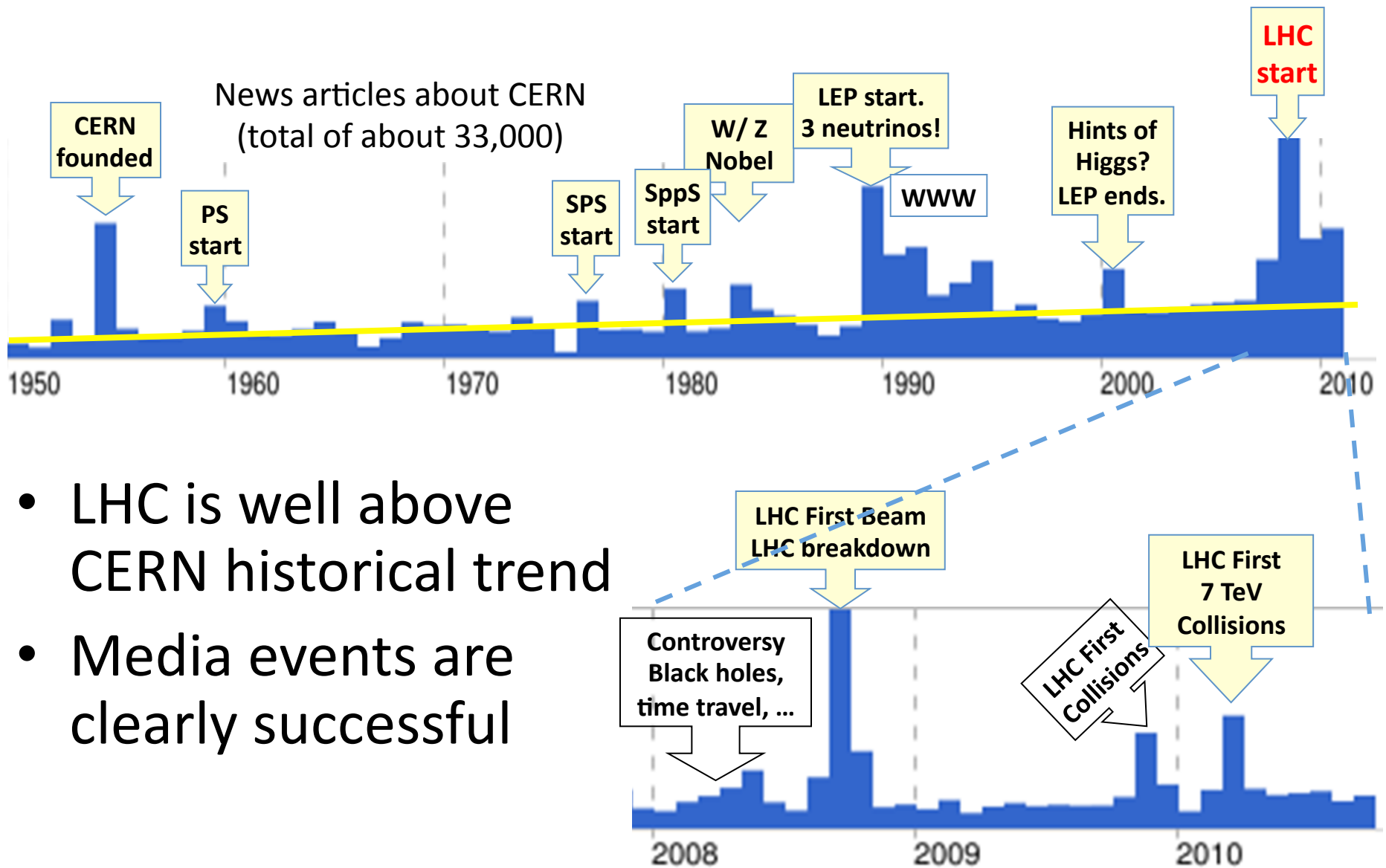


CMX Experiment at LHC, CERN
First recorded: Tue Mar 30 12:58:43 2010 CEET
Hardware: 1200
Link address: 1200
Client: 1200

An event display shows the activity during a high-energy collision at the CMS control room of the European Organization for Nuclear Research (CERN) at their headquarters outside Geneva, Switzerland, Tuesday. The \$10 billion Large Hadron Collider directed two proton beams into each other at ...



How well are we doing?



- LHC is well above CERN historical trend
- Media events are clearly successful

How well are we doing?

Language monitoring of online and print media

<http://www.languagemonitor.com/news/top-words-of-2009/>

Top Phrases of 2009

1. King of Pop
2. Obama-mania
3. Climate Change
4. Swine
5. Too Large to Fail
- 6. Cloud Computing**
7. Public
8. Jai Ho!
9. Mayan Calendar
- 10. God Particle**

Top Words of 2009

- 1. Twitter**
2. Obama
3. H1N1
4. Stimulus
5. Vampire
- 6. 2.0 (next gen.)**
7. Deficit
- 8. Hadron**
9. Healthcare
10. Transparency

Top Names of 2009

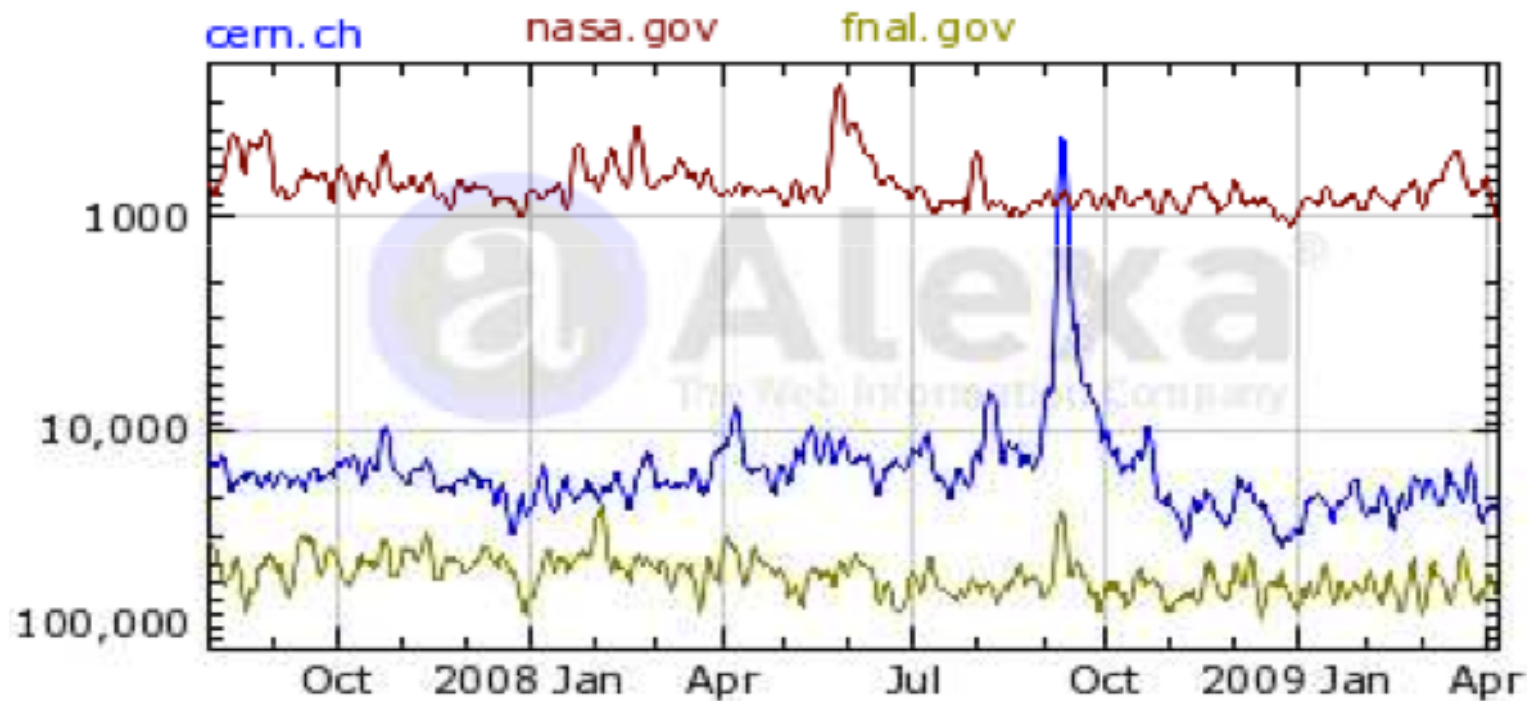
1. Barack Obama
2. Michael Jackson
3. Mobama
- 4. Large Hadron Collider**
5. Neda Agha Sultan
6. Nancy Pelosi
7. M. Ahmadinejad
8. Hamid Karzai
9. Rahm Emmanuel
10. Sonia Sotomayor

with nothing at all LHC-related in 2008

How well are we doing?

One media person said “CERN is the new NASA!”

World ranking of Web sites



... true, well, for one day at least

Want more?

- Over all
 - Conference lacked any real excitement
- All talks are online at:
 - <http://indico2.twgrid.org/conferenceTimeTable.py?confId=3>