

Hot Topics: Networking, Security, and Energy Share Session Boston



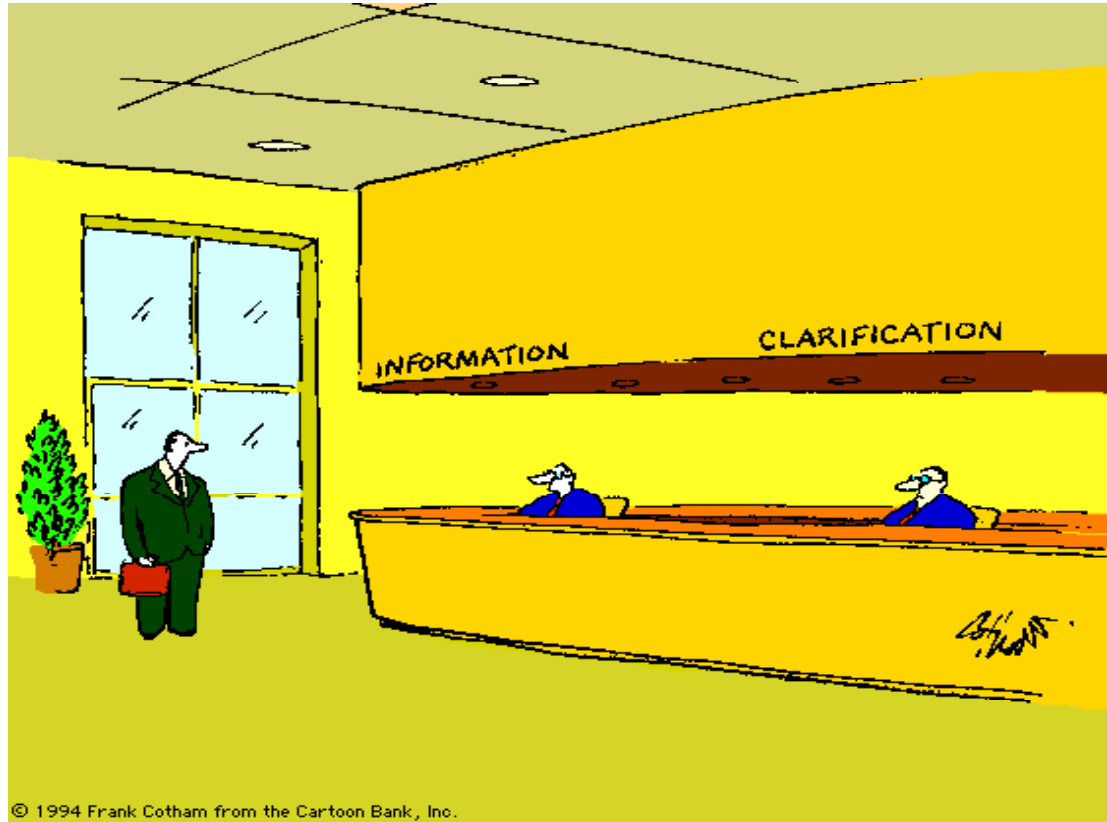
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Laurak@aesclever.com

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Network

Security

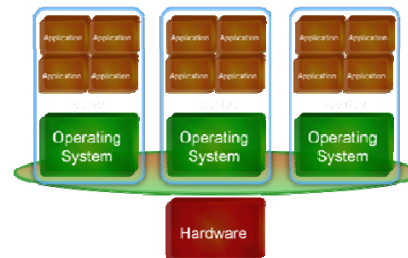
Energy



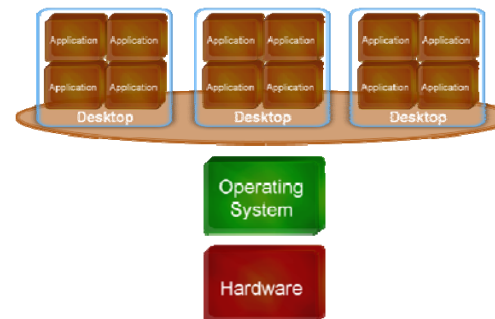
New Era of Mainframe Computing

Types of Virtualization

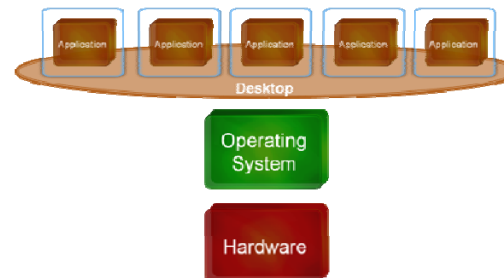
Server/machine



Desktop/Session



Application



New Era of Mainframe Computing?

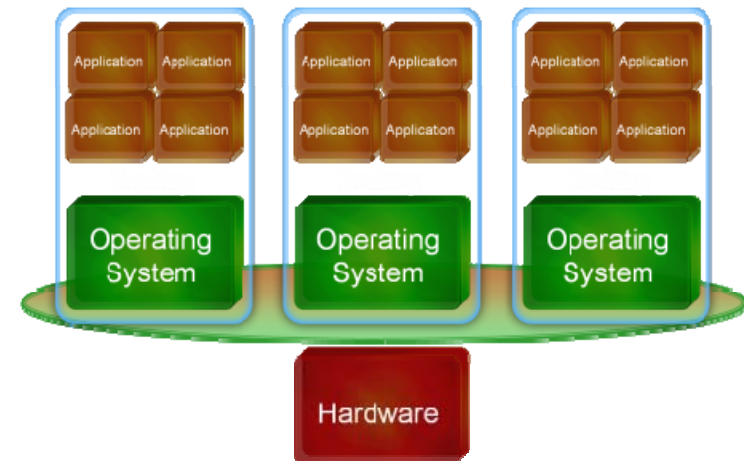
Server/machine

Masking of server resources from server users

Consolidation of multiple physical servers onto a single physical base

AKA virtual private servers, guests, instances, containers

Three popular approaches:
virtual machine (VM) – host guest
paravirtual machine – variation on VM where the guest OS is modified
Operating system layer – all guests use same OS as the host – single OS kernel



New Era of Mainframe Computing?

Desktop/Session

(Aka server side virtualization - virtual desktop – client virtualization)

Separates a personal computing desktop from a physical machine

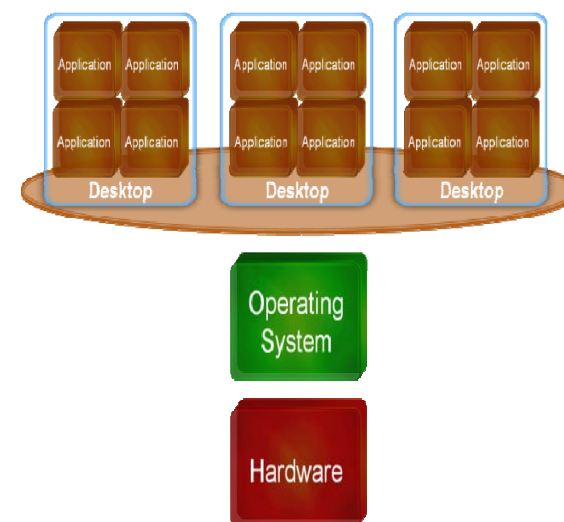
Uses client-serve computing and virtual desktop interface (VDI)

The desktop is stored on a remote central server

Programs, applications, processes and data are run centrally'

Access from PC, notebook, smartphone, thin client

Security and other items controlled at central location



Providers
[Cendio ThinLinc](#) , [Citrix XenDesktop](#) , [Ericom WebConnect](#) ,
[Iland Workforce Cloud](#) , [Leostream](#) , [Microsoft Remote Desktop Services](#) , [MokaFive Suite](#) , [NComputing](#) ,
[NX technology](#) , [Pano Logic](#) , [Parallels Virtual Desktop Infrastructure](#) , [Red Hat](#) , [RingCube vDesk](#) , [Sun Virtual Desktop Infrastructure](#) , [Systancia](#) , [ThinDesk](#) ,
[Userful](#) , [VMware View](#) , [Wyse](#)

New Era of Mainframe Computing?

Application

Application

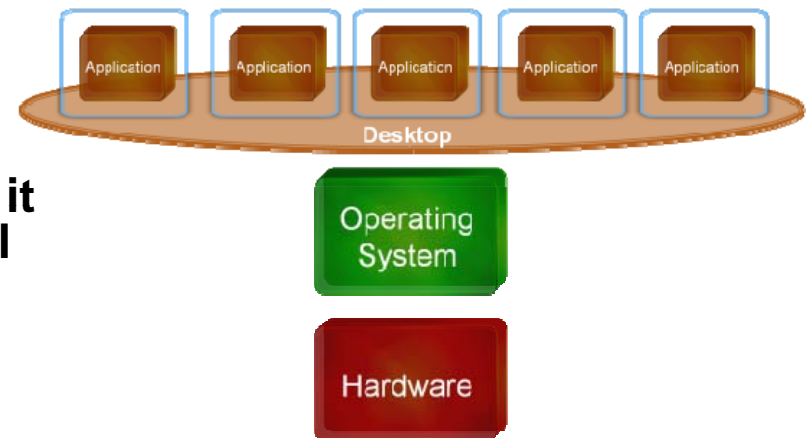
Encapsulating application from underlying operating system

Application is fooled into believing it is directly interfacing to the original OS

Application streaming

Application code is delivered when first needed

Normally a lightweight client is used



Products:

[Ceedo](#), [InstallFree](#), [Citrix XenApp](#), [Microsoft Application Virtualization](#), [Software Virtualization Solution](#), [Vmware](#).

And you thought the FEP was Dead!

**In the days of old the FEP
offloaded the Communication
protocols and let the mainframe
process transactions**

**Today the new FEP will be an
application delivery controller
offloading computationally
intensive tasks**



General network optimization

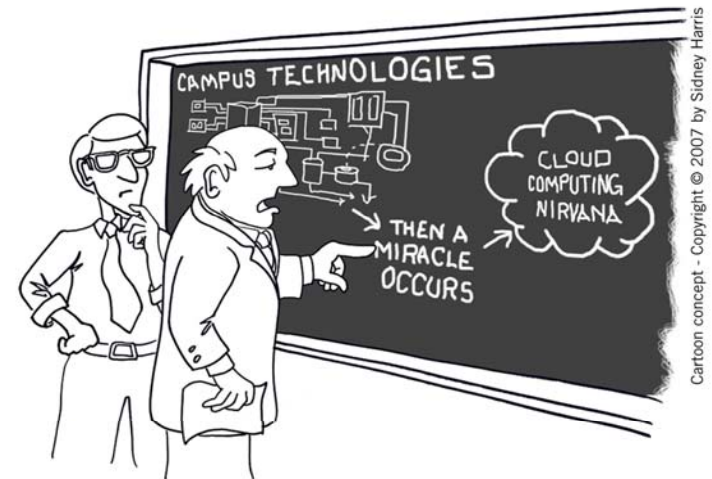
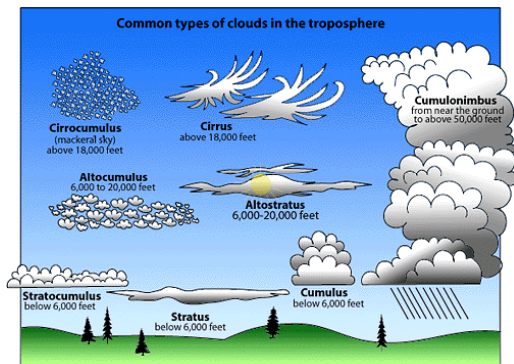
- Layer 4 through Layer 7 redirection, and load balancing and failover
- TCP connection multiplexing
- Server off-load (for example, SSL termination and TCP connection management)
- Data compression
- Network-address translation
- Network-level security functions, distributed denial-of-service protection and server cloaking
- Compression
- Caching

Application/framework optimization

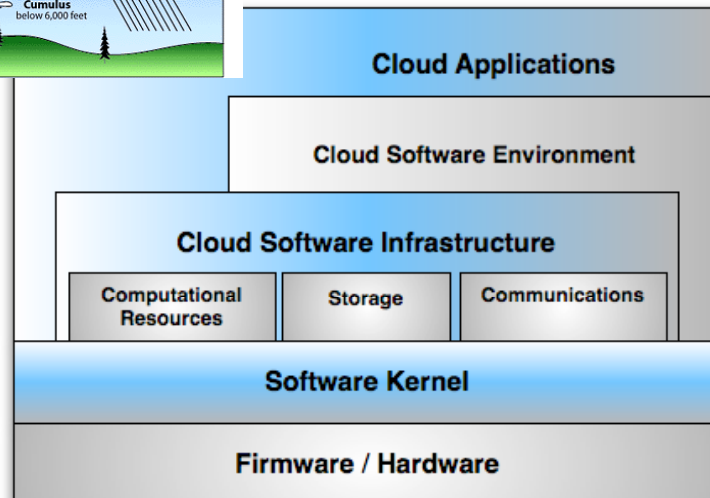
- Application layer proxy, which is often bidirectional and stateful
- Content transformation
- Adaptive compression
- Selective caching of dynamic content
- Dynamic use of browser cache
- HTML or other application protocol optimizations
- Web application firewall
- XML validation and transformation

Data Center

Private, Public, Hybrid Clouds



"I think you should be more explicit here in step two."



Disaster Recovery

Volcanoes, Outside Smoke and Oil Spills



LEGISLATURE

Lawmakers pass ban on field burning

Democrats muster just enough votes to send the bill to the governor expected to sign it. The ban takes full effect next year

BY DAVID STEVES
The Register-Guard

Appeared in print: Tuesday, Jun 30, 2009



PAUL CARTER/THE REGISTER-GUARD
The Oregon Legislature Monday passed a ban on open field burning on the Willamette Valley floor.



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News

Add volcanoes to your disaster recovery plan, Gartner says

By Mitch Betts
May 10, 2010 06:00 AM ET

[Comments \(2\)](#) [Recommended \(8\)](#) [f](#) [t](#) [Share](#)

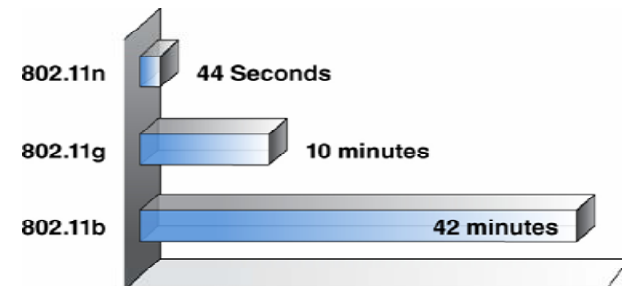
Computerworld - Your [business continuity](#) plan covers fires, earthquakes, hurricanes and maybe pandemics. But how about volcanoes?

It's time to update your crisis management plan, according to a [report by Gartner Inc.](#), since the ash cloud from the eruption of Iceland's Eyjafjallajokull volcano caused an epic disruption in air travel and stranded thousands of people last month.

"Take advantage of the publicity surrounding this event ... to raise internal awareness of your organization's vulnerability to transportation outages," the Gartner report said, noting that for the past 2,000 years, the larger Katla volcano has always erupted after Eyjafjallajokull.

Network

802.11n reached standard specification
Does this mean the end of Ethernet?



Time to download 30-minute HD television show

Droid, iPhone 4, iPad, Androiod, Windows CE

Femtocel

Smart Grid

What will HP do with Palm?

Higher capacity wireless – 4G/LTE

Home entertainment/gaming



Carrier	Application	Band	Bandwidth
Verizon	LTE	Band 13	20 MHz
AT&T	LTE	Band 17	24 MHz
Clear	WiMAX	Band 7	120 MHz

Home of the Future

Microsoft Surface technology

- Camera-based detection and tracking
- Geometric world modeling for context
- Multimodal sensing
- Biometric authentication
- Distributed systems
- Ubiquitous computing



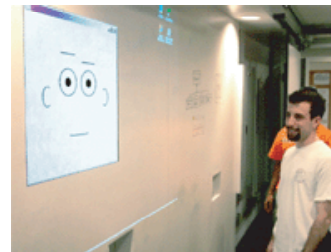
Georgia Tech aware home

- Perceive and assist occupants
- Aging in Place (crisis support)
- Ubiquitous sensing



MIT Intelligent Room

- Natural interaction with room
- Speech-based information access
- Gesture recognition
- Movement tracking
- Context-aware automation



- Optimize inhabitant productivity
- Minimize operating costs
- Improve comfort
- Simplify use of technologies
- Ensure security
- Enhance accessibility
- Optimized climate and light controls
- Item tracking and automated ordering for food and general use items
- Automated alarm schedules to match inhabitants' preferences
- Control of media systems

IPv6

Facebook added IPv6 support (experimental)

IPv6 vs Carrier-grade NAT

D-Day coming for ISP's who have not upgraded – 18 months per John Curran CEO of ARIN

Comcast and Netflix report rise in IPv6 activity

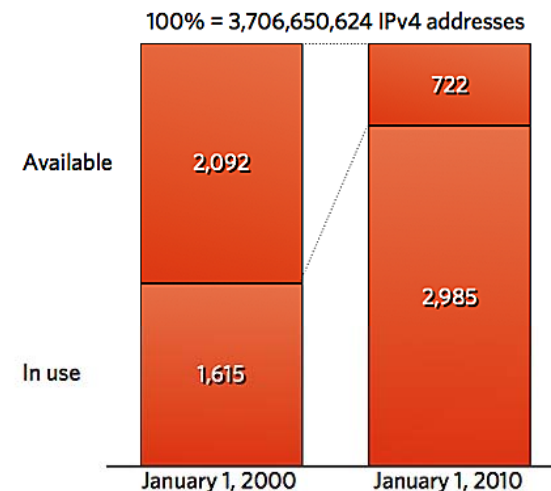
5550 signed up for Comcast in a matter of days (and some switched ISPs to participate)

Comcast IPv6 traffic grew 500% in 45 days

Of the top 100 web sites 18 now are IPv6 accessible (Google/Yahoo/



IPv4 address utilization: 2000 vs. 2010
Millions



WAN

Server based desktop virtualization needs between 20K and 30Kbps per simultaneous user

VDI user can require at a minimum 200Kbps

VDI needs enhanced compression techniques including bitmap image screen refresh, and data compression....no one wants a jerk mouse...WAN needs improved compression techniques to overcome WAN latency issues

What about 3D apps, graphic intensive apps and audio/visual? PC-over-IP protocol (teradici)



The screenshot shows a Computerworld article from July 6, 2010, by Jim Metzler and Steve Taylor. The article title is "Thin client requires a brawny, agile WAN". The text discusses the challenges of WAN for thin client computing and introduces a series of newsletters. Below the article is a diagram titled "PCoIP" showing a "TERA Host" connected to an "Enterprise IP Network" and then to "PC-over-IP system" components. A sidebar on the left lists features of PCoIP technology: Features summary, Display processing, Networking, Security, and Transparent USB.

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News

Thin client requires a brawny, agile WAN

The WAN that supports the emerging era of mainframe computing is totally different from the WAN that supported the previous era.

By Jim Metzler and Steve Taylor
July 6, 2010 10:10 AM ET Comments (0) Recommended (2) Share

Network World - This is the fourth in a [series](#) of newsletters that is exploring our premise that we are returning to a new era of mainframe computing. Previous newsletters showed how today's thin client approach to computing is analogous to the dumb terminals and 3270 terminals of the previous mainframe era. This newsletter will describe how the WAN that supports the emerging era of mainframe computing is totally different than the WAN that supported the previous era.

Where to buy | Become a partner | Partner login | Contact

PCoIP PCoIP Teradici

PCoIP > PCoIP technology

TERA Host Enterprise IP Network

PCoIP technology

- Features summary
- Display processing
- Networking
- Security
- Transparent USB

The PC-over-IP protocol compresses, encrypts and encodes the entire computing experience at the data center and transmits it 'pixels only' across a standard IP network to stateless PCoIP-enabled desktop devices.

PC-over-IP system

Government

US

\$795M in Broadband Subsidies

The U.S. National Telecommunications and Information Administration (NTIA) and the U.S. Rural Utilities Service (RUS) will officially announce awards for 66 new broadband projects that will touch all 50 states

DARPA – quintillion computers
((1,000,000,000,000,000,000) calculations per second.)



Finland

1Mbps broadband becomes a legal right... in Finland

UK

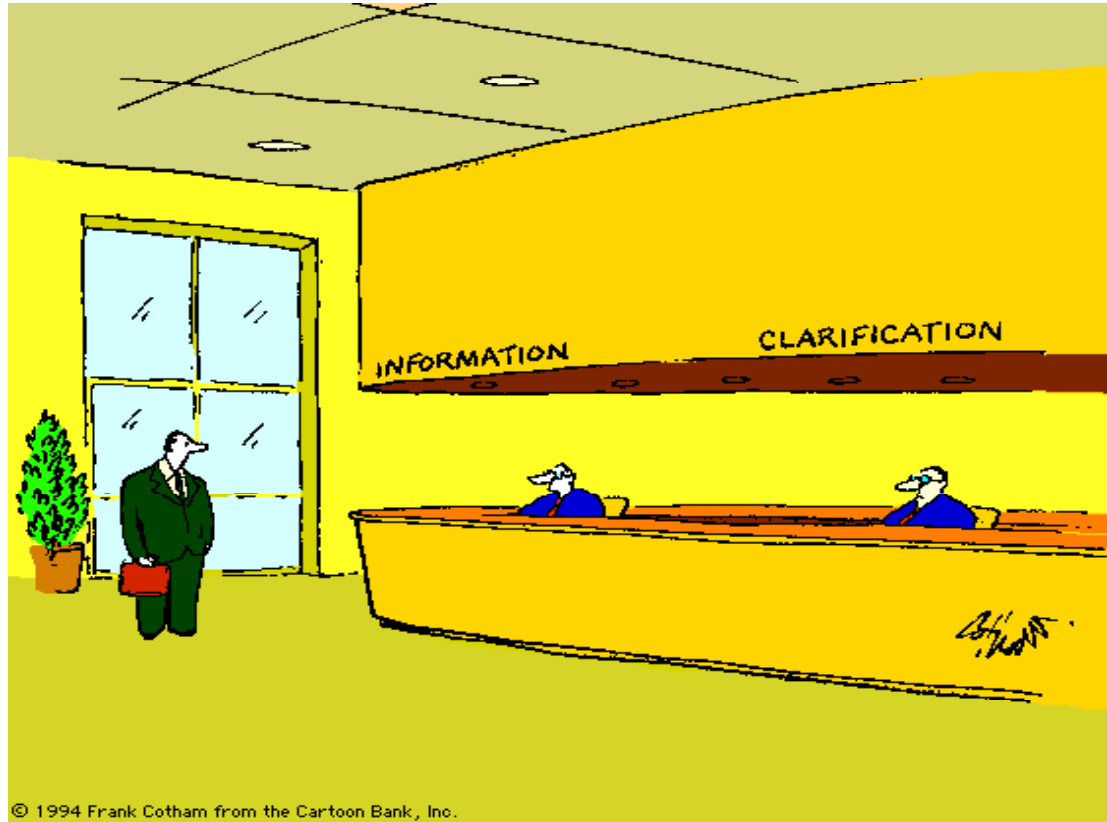
77% Brits unhappy with broadband speeds



Network

Security

Energy



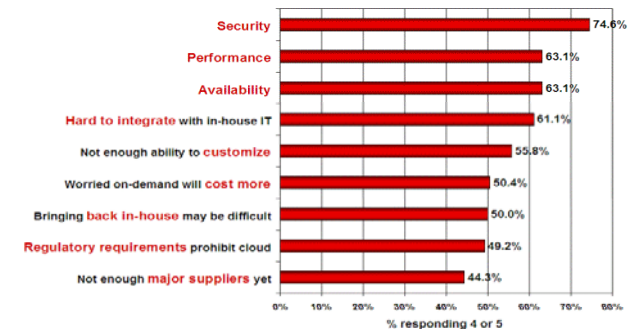
Cloud Computing

Secrecy of providers raises concerns

“Businesses and industry analysts are getting fed up with this cloud computing version of "don't ask, don't tell," where non-disclosure agreements (NDA) dominate, questions aren't answered, and data center locations and practices are treated like national security secrets”

Read more: <http://www.sfgate.com/cgi-bin/article.cgi?f=/g/a/2010/07/06/urnidgns852573C40069388000257758003E5DC7.DTL#ixzz0tUq3MfkB>

Q: Rate the **challenges/issues** ascribed to the 'cloud'/on-demand model
(1=not significant, 5=very significant)



Security as a SAAS

Strong authentication is available only through delegation

Federated identity generally not available

Delegated authorization generally not available

Generally weak credential management – of weak credentials

No audit standards specific to the 'cloud'

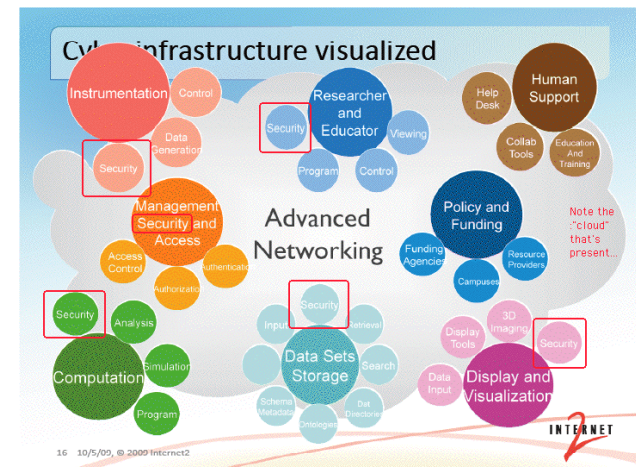
Not operational, procurement (e.g., FAR), or security

SAS-70 Type 2 is an audit format – not specific audit criteria

Compliance: so-called Patriot Act Problem

Location, location, location

Issue is assurance of compliance (e.g., data lineage – let alone data providence)



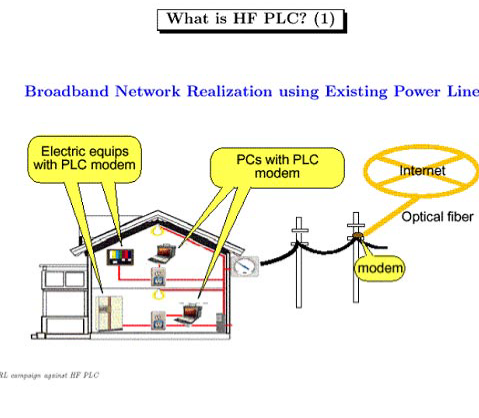
Data over Power Lines

PLC (also known as BPL) is a technique for sending high speed data through the medium voltage power distribution network. The idea of sending data through the power distribution network is not new.

Utilities use LF for network control and telemetry (typically < 0.200 MHz).

Schools have used carrier current system for “campus radio” systems that operate in the AM band (0.530 – 1.700 MHz).

What makes BPL different is that it uses frequencies between 2 and 80 MHz.



Not sure the electric companies understand the potential

Social Networking

Suspicious Facebook app attracts newly 300,000 fans

DefCon contest

Malware flames use natural disasters

Natural Disasters and Global Warming Fuel the Malware Flames

PCWorld

Buzz up! 2 votes | Share 6 | Retweet 4 | Email | Print

Tony Bradley - Mon Jul 5, 10:03 am ET

RELATED QUOTES

^DJUSS	445.55	+8.02
^DGC	2,225.47	+27.11
^IXK	1,130.95	+7.16

Malware and spam developers understand that the easiest way to lure a user into clicking on a link, opening a file attachment, or reading a message is to target hot topics that those users are already interested in and discussing around the proverbial water cooler. AppRiver, a provider of e-mail and Web security solutions, has compiled a report

based on the first half of 2010 analyzing the current threat from malware and spam, and highlighting the opportunistic nature of the attacks.

In general, people are good. They want to contribute, and offer support in a crisis to help their fellow man. Sadly--and ironically--nobody understands the altruism and caring of the

population better than the minority that would rather exploit it and capitalize on events for a quick profit.

One of the easiest targets for spam and malware is

natural disasters. When events like the earthquakes in Haiti and Chile, or the massive volcano eruption in Iceland capture the headlines, people are curious about the details and anxious to offer support in any way they can. In the wake of such disasters, users are very likely to click on and respond to invitations that seem even remotely legitimate.



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News

DefCon contest to spotlight social engineering

Idea of social engineering capture-the-flag contest is to raise awareness of techniques without leaving targets feeling violated

By Joan Goodchild
July 6, 2010 12:42 PM ET

Comments (0) Recommended (0) [f](#) [t](#) [g+](#) [Share](#)

CSO - How strong is your schmooze? That is the question participants in an upcoming contest at this year's DefCon event will attempt to answer at the end of July. The Social Engineering CTF (capture-the-flag contest) is sponsored by the group that runs the website [social-engineer.org](#) and will ask contestants to gather information and then plan a realistic and appropriate attack vector, according to Chris Hadnagy, one of the site's founders.



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Suspicious Facebook app may be spam launch pad

App attracts 300,000 Facebook fans by promising a video

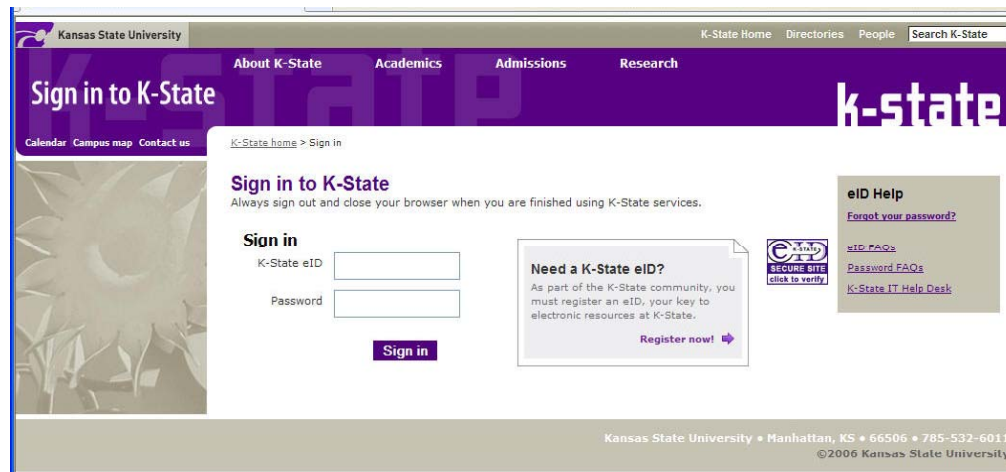
By Jeremy Kirk
July 6, 2010 10:19 AM ET

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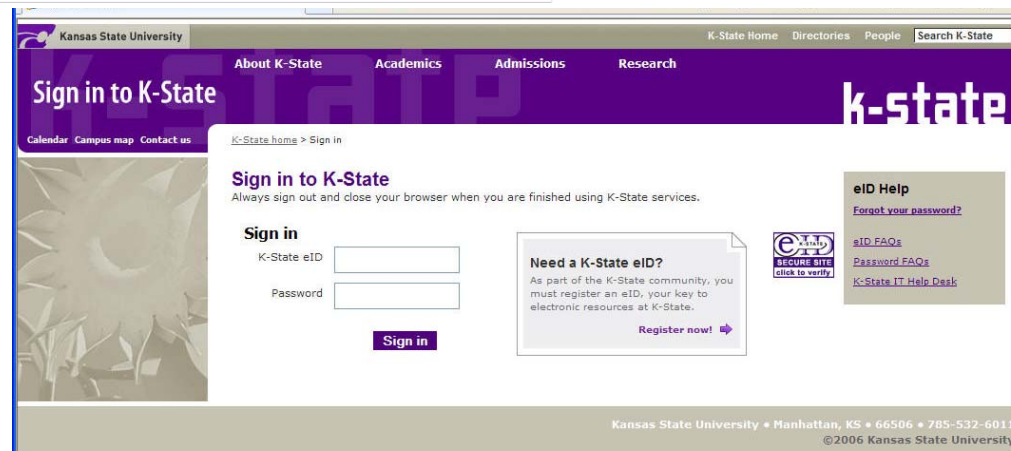
IDG News Service - A suspicious application circulating on Facebook has attracted nearly 300,000 fans whose profiles could be used as launching pads for spam, according to a security analyst.

The application, called "I will NEVER text again," lures Facebook users by offering a video, said Graham Cluley, senior technology consultant for security vendor Sophos. When someone clicks on a link advertising the application, the application asks for permission to access their basic information and post to their Wall.

Social Networking – Fake Pages



Fake
SSO
web
page



Real
SSO
web
page

Social Networking – Tiny URL

Welcome to TinyURL!™

Are you sick of posting URLs in emails only to have it break when sent causing the recipient to have to cut and paste it back together? Then you've come to the right place. By entering in a URL in the text field below, we will create a tiny URL that ***will not break in email postings*** and ***never expires***.

Enter a long URL to make tiny:

Custom alias (optional):

<http://tinyurl.com/>

May contain letters, numbers, and dashes.

An example

Turn this URL:

`http://rover.ebay.com/rover/1/711-53200-19255-0/1?type=3&campid=5336224516&toolid=10001&customid=tiny-hp&ext=unicycle&satitle=unicycle`

into this tinyURL:

<http://tinyurl.com/unicycles>

What is the TINYURL really hiding?

Social Networking – Who Can you Trust?

Major *ad networks* (aka “ad aggregators”) affiliated with Google (e.g. Doubleclick.com), Yahoo (yieldmanager.com), Fox and others, covering more than 50% of online ads, have been infiltrated with “poisoned ads” containing malicious code (Source: [Avast!](#))

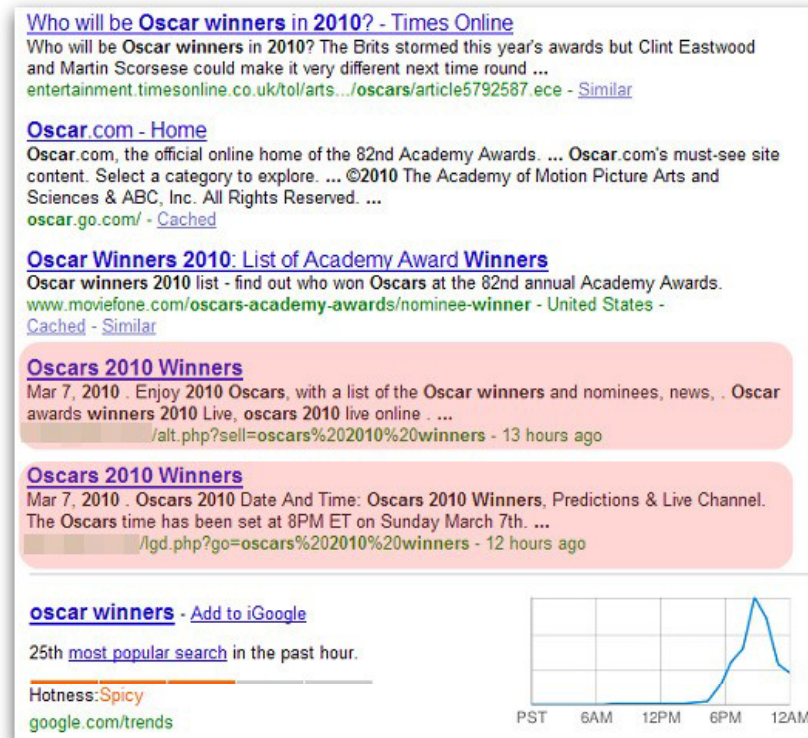


The screenshot shows a Wired website article. The header includes the Wired logo and navigation links: SUBSCRIBE, SECTIONS, BLOGS, REVIEWS, VIDEO, and HOW-TO. Below the header is a large red and black graphic with the text "THREAT LEVEL" and a gauge. The article title is "New York Times Reforms Online Ad Sales After Malware Scam" by David Kravets, dated September 14, 2009. The article text states: "A security breach forced The New York Times on Monday to suspend online ads that are served directly from an advertiser's website. The move comes after a security loophole allowed scammers over the weekend to swap an". To the right of the text is a screenshot of the Avast! Personal Antivirus interface, showing a "Scanning for threats" window with options for "Full computer scan" and "Remove threats".

Social Networking – Blackhat SEO

Search for
“Oscars 2010 winners”

Malicious pages
that infect with
FakeAV scareware



13% of Google searches for popular or
trendy topics yield malicious links

Source: [Sophos security blog March 8, 2010](#)

Data Center/Corporate

Honeypots for hacker

Apple App Store hacker

YouTube hack

Trojan targets UK bank

Cyber liability insurance

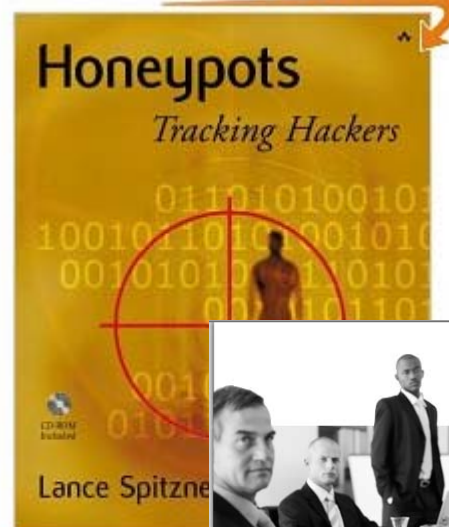
Tabnapping on the increase

iPhone and iPad in the enterprise

Apple says iTunes Store hack damage minimal

Hacked accounts were 0.0003 percent of 150 million-plus store accounts

Click to LOOK INSIDE!



50 iTunes accounts were hacked and used by a Vietnamese developer, Thuat Nguyen, to become the best seller status over the weekend. But here is the zinger: Apple is saying it was no more than 0.0003 percent of the over 150 million iTunes account holders, Apple



The banner for Insuretrust features a photograph of four business professionals in a meeting. The text includes the company name 'insuretrust' with a globe icon, the tagline 'Simplifying Insurance for Emerging Risks', and navigation links: 'about us', 'our advantage', 'our specialty', and 'cyber risk management'. A prominent blue button says 'I'm ready for a Quote'. Below this is a login section with fields for 'USERNAME:' and 'PASSWORD:', an 'OK' button, and a 'Forgot / REGISTER' link. At the bottom, a paragraph discusses the transformation of businesses by technology and the need for risk management professionals. A small inset image shows a stack of papers with the text 'Insuretrust has partnered with the knowledge resource site, Emerging Risk...'.

Legal Issues

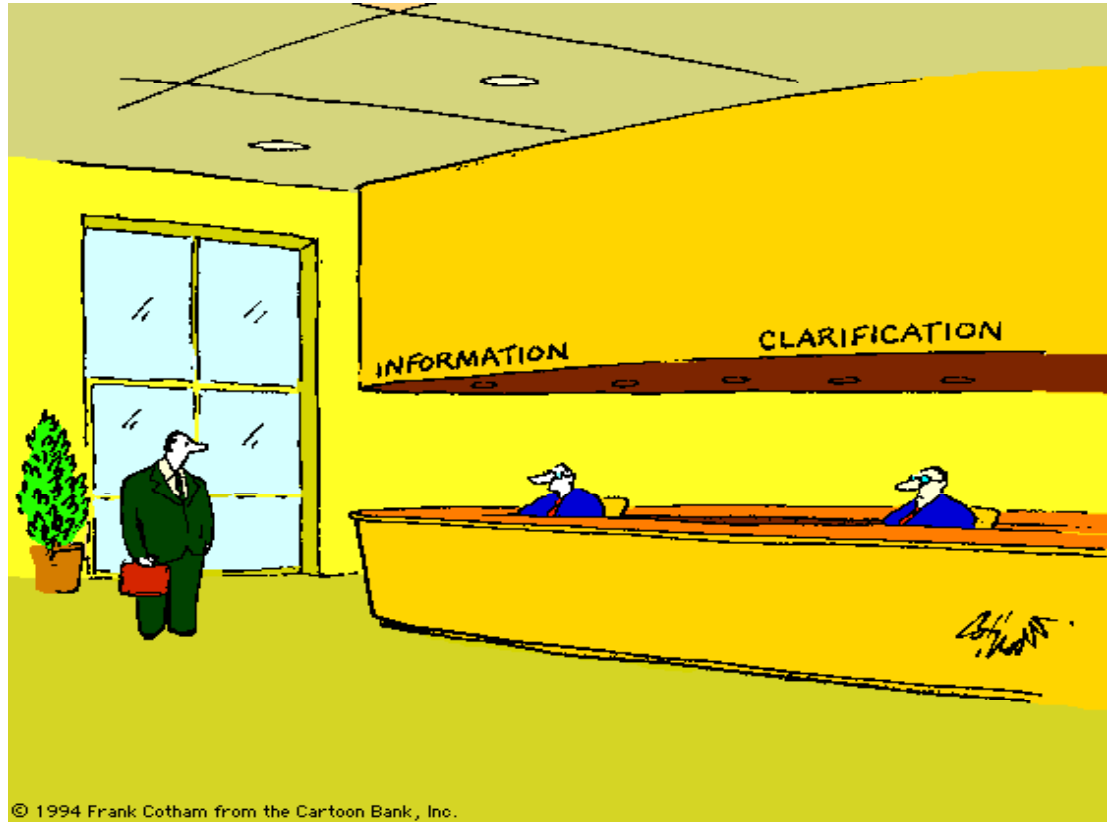
Anonymity Online and Unwanted Content
Privacy
Social Media
Eavesdropping and Unauthorized Access
Global Internet Censorship
Hardware Hacking
Location Tracking
Social Networking Privacy
Cybersecurity and Patriot Acts
Web Browser Privacy
Fair Use of Trademarks



Network

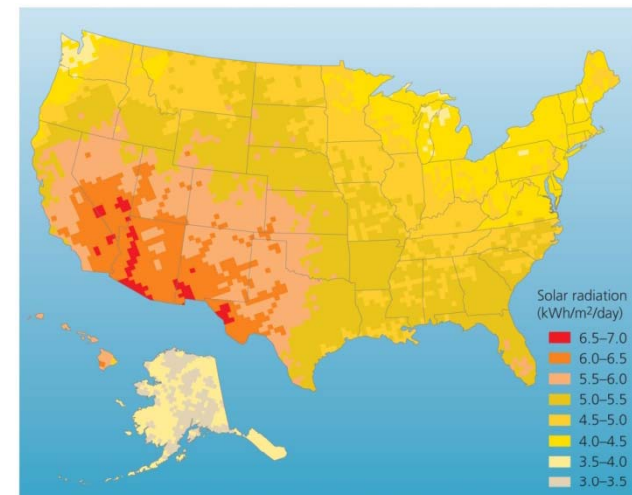
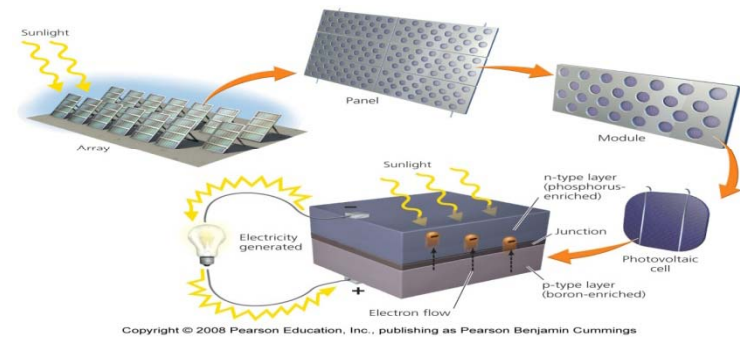
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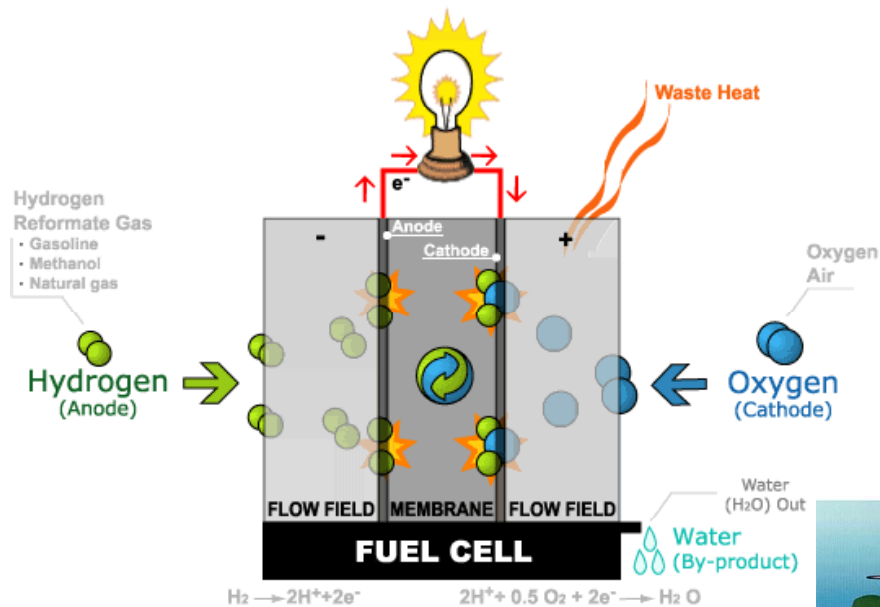
Solar Cells

- The Sun will burn for 4 - 5 billion more years
- Solar technologies are quiet, safe, use no fuels, contain no moving parts, and require little maintenance
- They allow local, decentralized control over power
- Developing nations can use solar cookers, instead of gathering firewood
- Net metering** = PV owners can sell excess electricity to their local power utility
- Solar power does not emit greenhouse gases and air pollution



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Fuel Cells

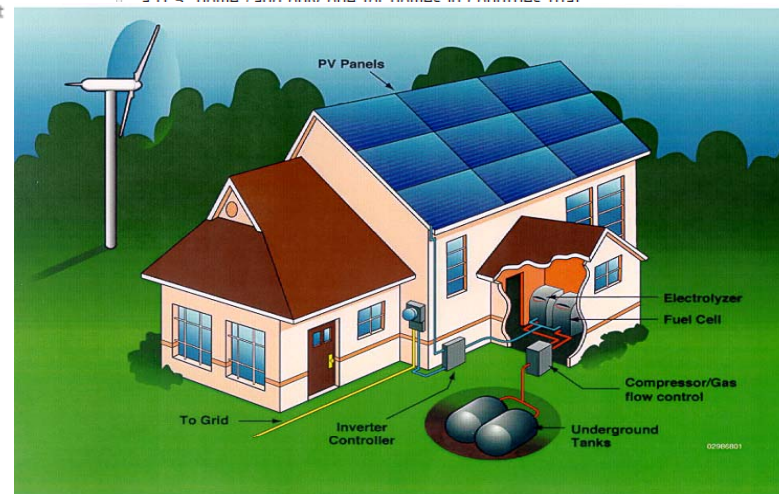


Bloom box in the media

Clients include :

Google, FedEx, eBay, Walmart,
Bank of America, Coca Cola

Electricity costs 8-10 cents/kWh



Ocean Renewable

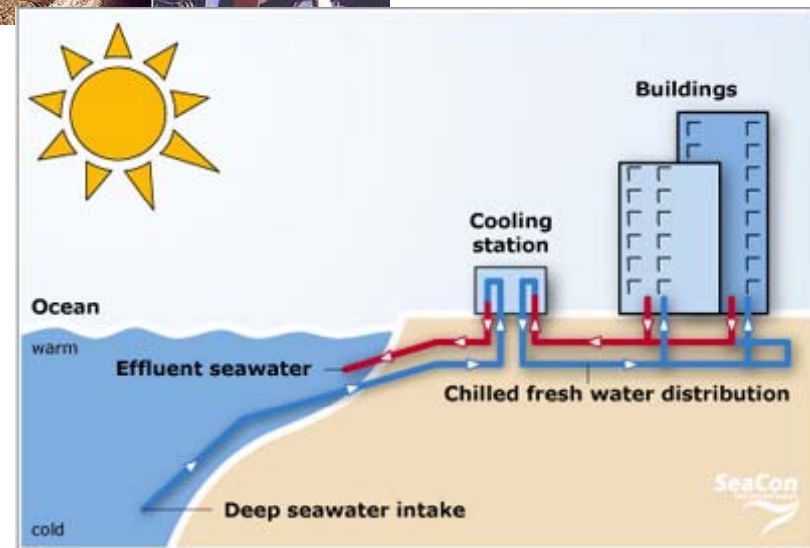
Tide , wave, and currents

**Absorb energy equivalent to
250 barrels of oil each day**

**Ocean current turbines under
development (think the size
of the oil platforms)**

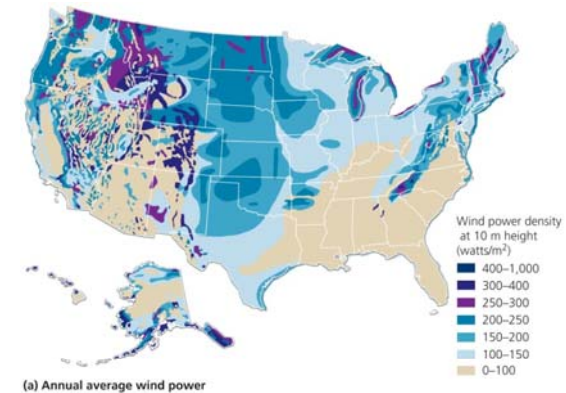
**Bora Bora uses cold sea water
based air conditioning**

**No lubricants and emit nothing
into the water**

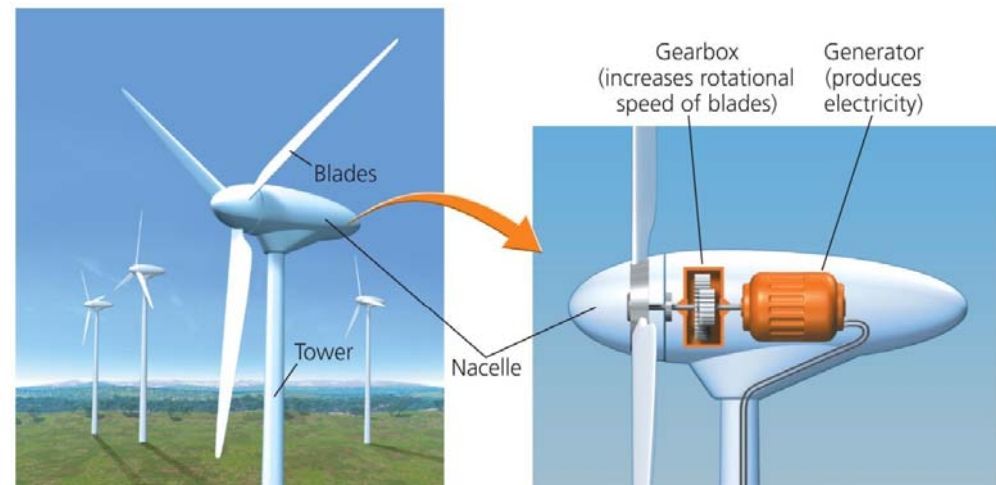


Wind Power

- Wind blowing into a turbine turns the blades of the rotor, which rotate machinery inside a compartment (**nacelle**) on top of a tall tower
- Towers are 40 - 100 m (131 - 328 ft) tall
 - Higher is better to minimize turbulence and maximize wind speed
- New quiet turbines in test for homes
- Very small turbines in test for residential use



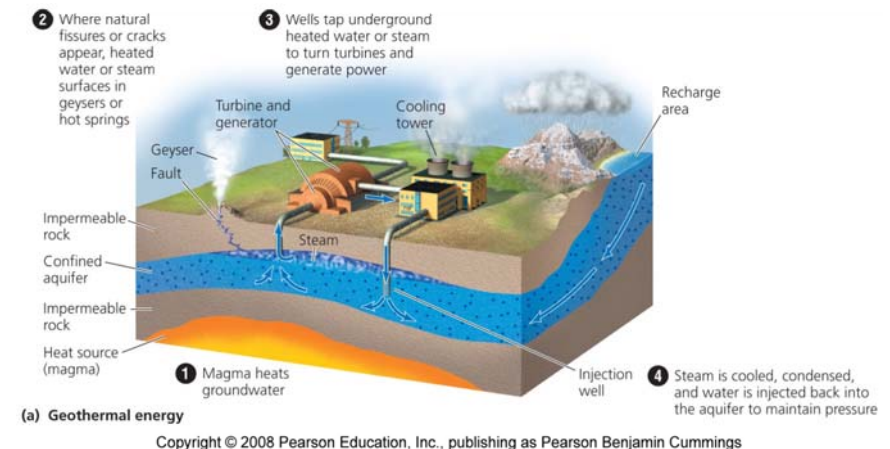
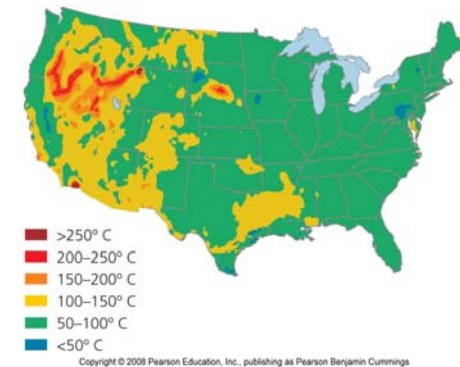
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GEOHERMAL Energy

- Currently, geothermal energy provides less than 0.5% of the total energy used worldwide
 - It provides more power than solar and wind combined
 - But, much less than hydropower and biomass
- Geothermal energy in the U.S. provides enough power to supply electricity to more than 4 million people
- The U.S., Japan, and China lead the world in geothermal power use
- May not be sustainable
- Corrosion from salts and minerals remains a problem

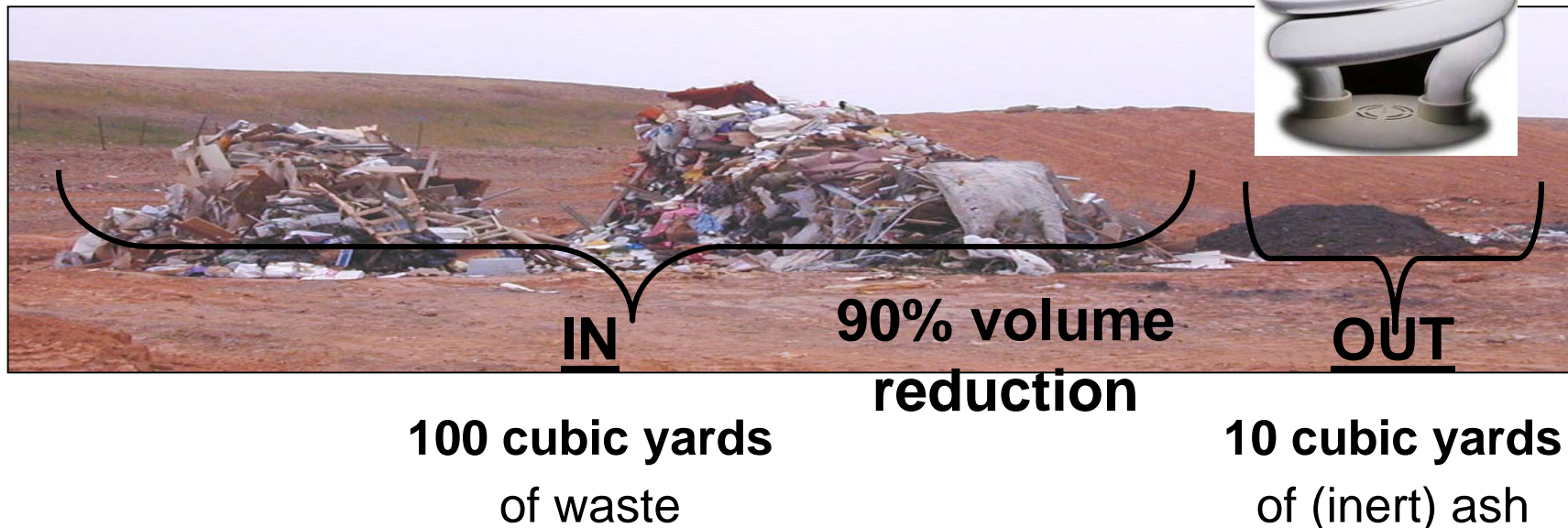
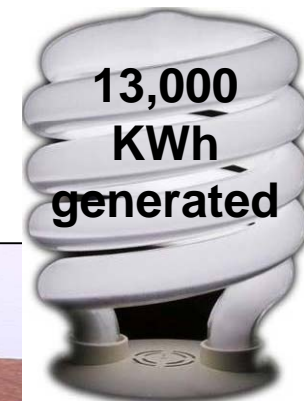


Waste

Factors that are making local governments look at WTE:

Energy Prices, Metal Recovery,
Renewable incentives, Net-GHG
reducer, Long-term price stability,
Control over waste stream

Denmark Vestforbraending plant in
Glostrup uses district heating for
residential and commercial buildings



Biofuels

- Biodiesel from vegetable oils
- BioGas from starch and sugars from plants like sugar cane, corn, etc
- Algae “green gold” with 30 times more oil per acre than current crops
- Convert methane wastes from farms, landfills, sewage treatment plants
- NC Zoo uses Biodiesel with restaurants providing about 1500 gallons of used oil.....meeting 40% of Zoo fuel demand
- Hawaii
 - Biofuel production from leftover sugar cane crop
 - 50 cent per gallon tax on gasoline move to electric cars
 - As of 2010 any new HW heaters must be solar



HAWAII'S ENERGY FUTURE ... Moving Towards a Clean Energy Future

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Renewable Energy Sources

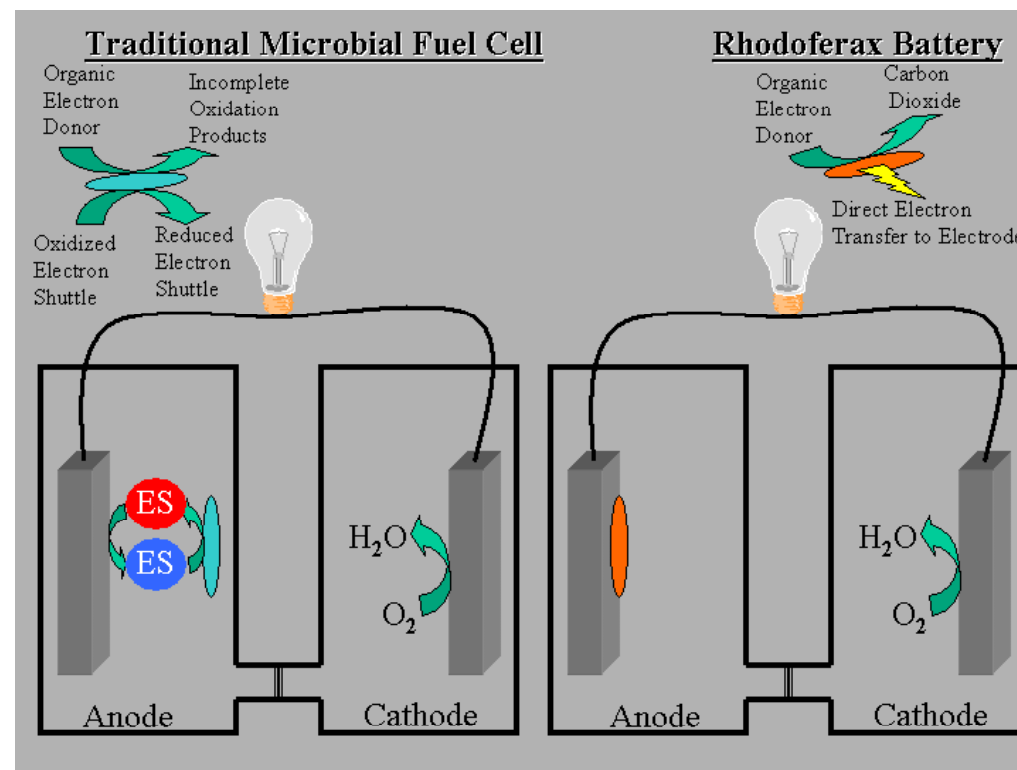
Biofuels

LATEST DEVELOPMENTS:

- > Hawaii Public Utilities Commission approves:
 - [Kahe 3 Biofuel Demonstration Project](#), 6/15/10
 - [Biodiesel for the new Campbell Industrial Park Generating Station & Ma'alaea Biodiesel Demonstration Project](#), 6/8/10
- > [Hawaiian Electric is seeking local biofuels for long-term contracts](#), 4/1/10
- > [Maui's Hawaiian Commercial & Sugar Company to be center for federal biofuels study](#). In April 2010, the [Office of Naval Research](#) and the [U.S. Department of Energy](#) announced the contribution of \$4 million, the first part of a \$12 million effort, to develop fuel from crops through research by the University of Hawaii, U.S. Department of Agriculture and Maui's [Hawaiian Commercial & Sugar Co.](#)

Enzymatic Biofuel (E. coli) cell

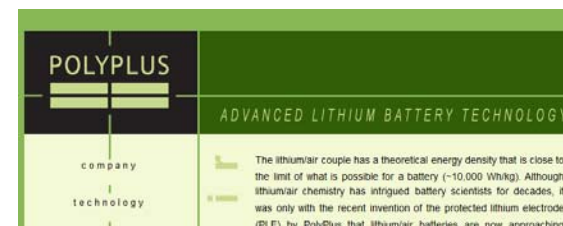
- DARPA gave \$6M to Ginkgo BIOworks to develop iso-octane from E. coli



Hot Batteries

PolyPlus Batteries Co got \$5M to develop Lithium-air batteries

- **Hot batteries:** Lithium air batteries capable of powering a car for 500 miles on a single charge - a five-fold increase over current plug-in batteries are a hot research topic. Recently the [PolyPlus Battery Co.](#) got nearly \$5 million from the U.S. to develop lithium-air batteries based on proprietary protected lithium electrodes and Corning glass and ceramics. The U.S. Department of Energy and IBM this year teamed up to let Big Blue and a team of researchers use the Department of Energy's supercomputers to develop new materials required for a lithium air battery. [IBM](#) is a big proponent of the oft-controversial lithium-air battery. The controversy surrounds the fact that they tend to be expensive and use an energy-dense, highly flammable metal to react with the readily available oxygen in the air.



Vielen
Dank

Obrigado!

Gracias

धन्यवाद

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Eυχαριστώ

QUESTIONS?

Köszönettel

Bedankt

Díky

Merci

Hvala

Teşekkürler

شكراً



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Our other presentations:

Monday, 3:00 am - 4:00 am: Introduction to TCP/IP

Tuesday, 11:00 am – 12:00 pm: What every network manager needs to know about security

Tuesday 1:30 pm – 2:30 pm: Diagnosing Mainframe Network Problems with Packet Trace

Wednesday 11:00 am – 12:00 pm: Cloud Computing Environment

Wednesday 1:30 pm – 2:30 pm: Hot Topics in Networking and Security

Wednesday 4:30 pm – 5:30 pm: Wireless Security Challenges

Thursday 11:00 am – 12:00 pm: Virtualization – The Evolution of the Data Center