DatacenterDynamics

The Business of Data Centers

9 772058 494001 >
ISSN 2058-4946

Scan the Code
and Give Nature a Hand

# INTELLIGENT DC, GREENER & EASIER

Intelligence is about managing the future with clever solutions for complex problems. Huawei's Intelligent Data Center uses plug-and-play micro modules to meet the growing demand for cloud computing, virtualization, and other advanced technologies. By using green energy technology to reduce both CAPEX and Power Usage Effectiveness (PUE), and slash operating costs with proactive Operations and Management (O&M) techniques, Huawei Intelligent Data Center solutions are advancing the world and saving the environment.

For more information, please visit e.huawei.com

**Innovative ICT Building a Better Connected World**



Huawei Intelligent DC

HUAWEI

# Contents

Dec 2015 / Jan 2016 VOL 04 ISSUE 10

Our tracks guide your path through DCD magazines and events

**IT + Networks**
Understand the implications of IT and network transformation on data center design and architecture.

**App > Cloud**
Managing blended infrastructures and delivering critical ICT applications through the cloud.

**Design + Strategy**
The big picture: organisational strategy and design issues for on-premise data centers.

**Security**
Ensuring reliability and protecting online data and services from the data center.

**Critical Environment**
Issues faced by professionals who manage the performance, efficiency and resilience of the critical environment.

**Cover Story**
Everything must go!

All of a sudden, telecoms firms have decided they no longer want data centers

**20**

**43**

4
**Meet the team**
Who's who and how to contact us with that big story

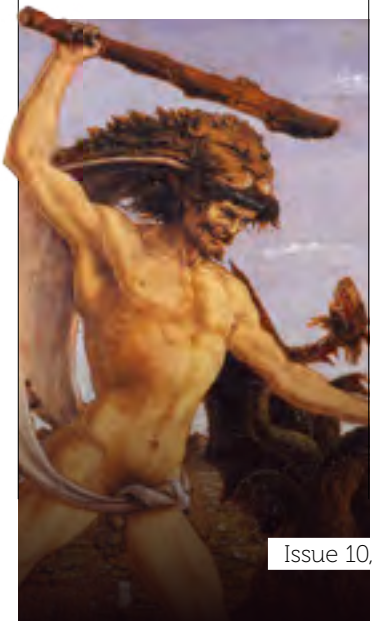
6
**Global Editor**
Did you enjoy 2015? Peter Judge says we have plenty to look forward to in 2016

9
**News**
Switch wants the Steelcase Pyramid; a fire cuts off a country and Equinix ties the knot

16
**Asia Pacific**
What enticements is Amazon Web Services using to seduce Asian customers into its cloud?

18
**LATAM**
Chile improves tax collection with a facilities upgrade that takes in hardware and software

**25**
**The Federal hydra**
For every government facility that closes, another appears



21
**The telco sale**
Why are telecoms firms selling their data centers?

29
**Opinion**
As we celebrate the holidays, it's time for data centers to invite the neighbors in

32
**On message**
You won't sell your data center services unless you understand your customers' needs

35
**Death to 19 inches**
After 80 years some say that it's time to say goodbye to the universal rack standard

38
**Nordic contest**
Which is best: Sweden's Node Pole, Norway's fjords, Finland's forests, or Iceland's geysers?

40
**Too many chefs?**
OpenStack could become a victim of its own success, thanks to over-eager vendors

42
**Awards**
The brightest and best compete for the Oscars of the data center world

43
**Robert Neave**
The cloud is a challenge for in-house IT to get its house in order

44
**DCD Community**
Awards, conferences and webinars. Where we've been, and where we'll be next

46
**Event Horizon**
In 2016, we have to secure the IoT data tsunami, says Bill Boyle

# Meet the team

**Bill Boyle**
Global Managing Editor
*@BillBoyleDCD*

Power Man (Design & Strategy). Covers power, finance, mergers, corporate & telco data centers.

**Peter Judge**
Global Editor
*@PeterJudgeDCD*

Green Guru (Critical Environment). Also, open source, networks, telecoms, international news.

**Max Smolaks**
Reporter
*@MaxSmolaksDCD*

Captain Storage (IT & Networks). Also, international incidents, data sovereignty.

**David Chernicoff**
US Correspondent
*@DavidChernicoff*

Former CIO, test lab leader and developer. Our man in Philadelphia gets his hands dirty.

**Virginia Toledo**
Editor LATAM
*@DCDNoticias*

Editor LATAM edition DatacenterDynamics. Breaking the molds. Based in Madrid, Spain.

**Celia Villarrubia**
Assistant Editor LATAM
*@DCDNoticias*

Assistant editor LATAM DatacenterDynamics. News and pithy opinions in international edition.

**Michael Kassner**
US Contributor
*@MichaelKassner*

Our man in Minnesota. Fifteen years' enterprise and IT writing on technology, science and business.

**Paul Mah**
SEA Correspondent
*@paulmah*

IT writer, also teaches tech in Singapore. Deep interest in how technology can make a difference.

**Tatiane Aquim**
Brazil Correspondent
*@dcdfocuspt*

Our Portuguese-speaking correspondent with an in-depth knowledge of Brazilian public sector IT.


**UNITED KINGDOM**
102–108
Clifton Street
London
EC2A 4HW
+44 (0) 207 377 1907

**USA**
28, West 44th Street,
16th floor
New York,
NY 10036
+1 (212) 404 2378

**SPAIN**
C/Bravo Murillo
178 – 2ª Planta
28020 Madrid
España
+34 911331762

**SHANGHAI**
Crystal Century
Tower, 5/F, Suite 5B
567 Weihai Road
Shanghai, 200041
+86 21 6170 3777

**SINGAPORE**
7 Temasek Blvd
#09-02A, Suntec
Tower One
Singapore 038987
+65 3157 1395



**Subscriptions:**
www.datacenterdynamics.com/magazine
**To email one of our team:**
firstname.surname
@datacenterdynamics.com

**ADVERTISING**
**APAC**
Dedric Lam
Vincent Liew
**EMEA**
Yash Puwar
Vanessa Smith
**LATAM**
Daniel Clavero
Santiago Franco
**USA**
Kurtis Friesen

**DESIGN**
**Designer**
Jess Parker

**CIRCULATION**
**Manager**
Laura Akinsanmi

**Find us online**
*datacenterdynamics.com*
*datacenterdynamics.es*
*datacenterdynamics.com.br*
*twitter.com/DCDnews*
Join DatacenterDynamics Global Discussion group at ***linkedin.com***

© 2015 Data Centre Dynamics Limited All rights reserved. No part of this publication may be reproduced or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, or be stored in any retrieval system of any nature, without prior written permission of Data Centre Dynamics Limited. Applications for written permission should be directed to Jon McGowan, jon.mcgowan@datacenterdynamics.com. Any views or opinions expressed do not necessarily represent the views or opinions of Data Centre Dynamics Limited or its affiliates. Disclaimer of liability: Whilst every effort has been made to ensure the quality and accuracy of the information contained in this publication at the time of going to press, Data Centre Dynamics Limited and its affiliates assume no responsibility as to the accuracy or completeness of and, to the extent permitted by law, shall not be liable for any errors or omissions or any loss, damage or expense incurred by reliance on information or any statement contained in this publication. Advertisers are solely responsible for the content of the advertising material which they submit to us and for ensuring that the material complies with applicable laws. Data Centre Dynamics Limited and its affiliates are not responsible for any error, omission or material. Inclusion of any advertisement is not intended to endorse any views expressed, nor products or services offered, nor the organisations sponsoring the advertisement.


DCD MEDIA

GEIST

Future Thinking • Solutions Today

# Upgradeable Rack PDU Intelligence:

## Designed for tomorrow's data center, today.

Independently tested to 60° C operating temperatures, Geist Upgradeable PDU consists of a robust chassis featuring hot swappable intelligence; currently offering remote power and environmental monitoring options, and upgradeable as technology evolves.

Fit Geist Upgradeable PDUs once and the future will come to you.

GEIST POWER | Upgradeable

geistglobal.com/upgradeablePDU

# Enjoy the festive sales

It's the holiday season, and all around the world, promotional adverts are being unfurled. I know there's always a lot of selling at this time, but this year, even the data center industry seems to be getting into the spirit of the season, and putting up For Sale notices.

A whole bunch of telcos, including Tata, Centurylink and possibly Verizon, are putting their data centers on the block (p21), saying they are no longer a core part of the business. Fair enough, but it's only a couple of years since they painstakingly built up those portfolios, gleefully chortling about synergy.

London is hit with sales fever. At the DCD Europe event in November, there was a crescendo of rumors about Virtus buying Infinity's Slough flagship, with the final announcement coming at the end of the month.

But that's just the start. In order to buy Telecity, Equinix was ordered to sell five data centers in London (p14), with some estimating their total value at $1bn. At the time of writing, we haven't heard who's buying them.

**Unfortunately**, while data center operators are great at buying and selling facilities, they're not always so hot when it comes to selling their services. This issue we highlight some marketing errors, and give you some pointers on satisfying customers (p32).

Too many people selling can actually hinder a technology that is still maturing. Maxwell Cooter went to the OpenStack Summit for us, and came back wondering if that problem is facing the open-source data center platform (p40).

And whole countries sell themselves as data center locations, so we examine the competing claims of the Nordic nations (p38). It might help if you feel like a fjord or a forest, or fancy a frosty festive flurry.

Governments are trying to buy fewer data centers, but they keep sprouting new ones like a hydra's heads (p25). And if you have racks are on your wishlist, we consider whether you should go with the Open Rack fashion, or stick to a venerable tradition with 19-inch enclosures (p35).

**Puzzles are a tradition** at this time of year, and we have one for you. Check the whole issue, and see if you can spot a Santa hidden somewhere. It's not me, by the way. That would be far too easy!

Compliments of the season from all of us at DCD.

•

Peter Judge - Global Editor
@PeterJudgeDCD

*Governments are trying to buy fewer data centers, but new ones sprout like the heads of a hydra*

**120 km**

**The kilometers St Nicholas travels on Christmas Eve**

Source: Linda Harden, The Human Neutrino

GEIST
Future Thinking • Solutions Today

# Simply Intelligent Air Flow Management

## Eliminate hot-spots while collecting critical information

Why settle for passive containment when there is an intelligent, cost effective option available to address heat issues, now and into the future.

Maximise rack and room density to achieve best-in-class PUE by stabilising intake air temperature, staying within a few degrees of the supply air, all while collecting intelligent feedback.

GEIST COOL | ActiveAir™

geistglobal.com/products/cool

# Metropolitan Hub Cities

AVERAGE AGES OF DATA CENTER SHELL OR BUILDING (YEARS)
AND CLOUD AND OUTSOURCING SERVICES INVESTMENT (US$)

**NEW YORK**

**TORONTO**

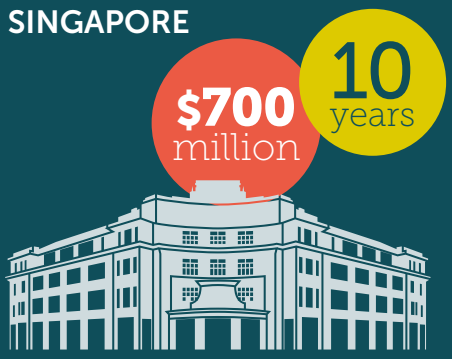
**AMSTERDAM**

**LONDON**

**PARIS**

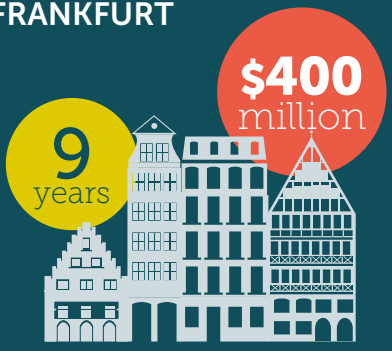
**HONG KONG**

**SINGAPORE**




**BAY AREA**

**FRANKFURT**




**SHANGHAI**

Source: DCDi Census

## Virtus buys Infinity Slough

Virtus Data Centres has bought Infinity's Slough data center, backed by recent financing from Singapore's ST Telemedia. Infinity will use the proceeds to develop its new flagship, the Here East data center in Central London. The long-rumored deal doubles the size of Virtus; the two vow to continue their rivalry in London colocation.

## Taiwan woos Facebook

Facebook's first Asian data center could be a $300m facility in Taiwan, following Google to the island. "We've made all-out efforts to ensure sufficient supply of water and electricity," said Magistrate Wei Ming-ku. "We hope they will come."

## LinkedIn plants roots in Oregon

LinkedIn's third data center will be an 8MW custom design in Hillsboro. The new site will allow LinkedIn to close its last retail colocation deployments, and will take advantage of the tax incentives that lured other companies.

# Tax deal needed for Switch to spend $5bn at Steelcase

Switch is planning to put data centers on the site of an iconic pyramid building in West Michigan, originally built by furniture firm Steelcase, but the company has demanded tax incentives before a final commitment.

The potential $5bn investment would place two data centers on the campus surrounding the Steelcase building. The pyramid itself will not become a data center, as Switch has its own architecture and builds new rather than repurposing buildings.

Michigan has been fast-tracking new tax laws demanded by Switch as a condition of the project going ahead. As well as the monetary investment, Switch is promising 1,000 jobs over the 10 years that the full build-out would encompass.

To get the project moving forward, legislators have introduced three bills that address Switch's demand. The bills ask for sales tax, property tax and use tax exemptions for the project.

Arguments over the bills have been heated as the proposals come shortly after Michigan offered tax incentives to the movie industry which failed to impress Hollywood.

The State Legislators have been debating the bills to respond to Switch's request that the issues be resolved by the end of the year so construction can start in early 2016.

The incentives are expected to be approved, despite Governer Rick Snyder's view that they are the "heroin drip" of government.

Meanwhile, a lawsuit has been filed by Education Company Investors (ECI), which hoped to make the site into an education hub, before it was sold to Switch.

The case is based on email negotiations that had not been settled prior to the property sale, according to Steelcase. But ECI believes it had a deal in place.

The seven-story design center was built for $111m and opened in 1989, but Steelcase moved out in 2010 as its profits were hit by the global recession. The building was then sold to a property developer for an estimated $7.5m in 2014.

http://bit.ly/1jlCxqz


Infrastructure as a Platform by Anixter

BUILDING BLOCKS OF DATA CENTER INTEROPERABILITY.

ANIXTER

RISK MANAGEMENT · NETWORK MIGRATION · POWER OPTIMIZATION · THERMAL EFFICIENCY · DCIM ENABLEMENT

SPONSORED BY OUR TECHNOLOGY ALLIANCE PARTNERS

APC · AXIS COMMUNICATIONS · AUSTIN HUGHES · BELDEN · Berk-Tek · Canon · CHATSWORTH PRODUCTS · COMMSCOPE · CORNING · EATON · EMERSON Network Power · Extreme networks · FLUKE networks · GEIST · JDSU · legrand · LEVITON · milestone · ORTRONICS · PANDUIT · Raritan · STULZ · SUPERIOR ESSEX · TE connectivity

Learn how you can benefit on page 30

# Plans are afoot to build a London data center at the birthplace of fiber optics

Management firm Goldacre Ventures is developing a data center as part of a 35-acre business park on the site where fiber optic cables were invented. With more than £25m raised, the company expects to have office and data center space in use by the end of 2016.

Kao Data is the data center part of Kao Park, a development in the Harlow Enterprise Zone 30 miles from London, on the corridor to Stansted Airport and Cambridge. The project is regenerating a site formerly owned by Nortel Networks, where single-mode fiber was developed by Sir Charles Kao in the 1960s. Two office tenants, Raytheon and Arrow Electronics, have already booked places.

In the 1960s, Shanghai-born Charles Kao showed that fibers made of very pure glass could transmit light with very low loss, enabling modern telecommunications, a discovery that won him the Nobel Prize for Physics in 2009. Kao did that work at Standard Telecommunication Laboratories in Harlow, England. The site later became part of Nortel and has been vacant since Nortel's closure in 2009. The company plans to get its first-phase data center, known as DC1, up and running by the third quarter of 2016, which will include 36,000 sq ft (3300 sq m) of data center space with a power capacity of 6.6MW and 1,620 racks.

Goldacre chief executive David Bloom says "Kao Park is a great example of a public-private partnership that unlocks investment, leading to economic growth and job creation. We've turned an underutilized site into a business and technology center that will preserve the site's rich telecommunications, media and technology heritage."

http://bit.ly/1Nw9Ntb

## TALKBACK

*"[Many] providers, when asked who they are targeting, still say 'everyone.' Finding a group of customers that matches your offering [cuts out] wasted effort."*

*– Nicola Hayes*
*Andrasta Consulting (p32)*

FNT
// when transparency matters.

Software for
Data Center Infrastructure Management

We bring transparency and efficiency to your data center

Are your data centers operating at maximum efficiency? Do you need greater precision in your capacity, expansion, and modification planning? Do you need total transparency – in your buildings and power supplies, your IT systems, and across all your services and processes? In real time, in detail, fully integrated, and with push-button visualization?

Our DCIM software solution delivers all that and more – thanks to the unique, end-to-end FNT data model.

Learn more at: www.fntsoftware.com

# Russia to build mega data center that feeds on nuclear

Russian nuclear power specialist Rosenergoatom has started construction of a data center that will serve an existing nuclear power station in the north of the country. The facility, in the town of Udomlya, could become Russia's largest data center, consuming up to 80MW to power up to 10,000 racks.

According to Russian news sources, around 10 percent of the data center capacity has been reserved for the state-owned company, while the rest will be available to commercial customers.

Rosenergoatom has previously offered space on the campus to Facebook and Google in order to help the American companies comply with new data residency laws that require all foreign firms to store Russian citizens' data on Russian soil.

Rosenergoatom currently operates 10 nuclear power plants with 33 reactors, and plans to increase the number of reactors to 59 by 2030. To support this expansion, the company has started building a large data center next to the Kalinin nuclear power station in Udomlya – a facility that produces a total of 4GW across four power blocks. Naturally, the new data center will feed on nuclear energy.

The management of Rosenergoatom has had to negotiate changes to the rules governing power prices in order to directly connect the upcoming server farm and the power plant, enabling the utility company to offer preferential electricity rates on the site.

The first phase of the data center is expected to open in March 2017, and the cost of the project is estimated at 6.4bn rubles ($975m).

http://bit.ly/1OuFZtT

# Vapor Chamber makes its debut

Silicon Valley start-up Vapor IO has showed its unusual rack arrangement – the Vapor Chamber – for the first time at the DCD Europe event in London.

Vapor Chambers are self-cooling, circular hardware racks that ingest cool air from the outside and exhaust warm air through the center, creating multiple 'hot columns' as opposed to a traditional hot aisle. By default, the current version accepts Open U racks built according to the Open Compute specifications, and requires a conversion kit to host standard hardware. Future versions will be designed to support both traditional and Open U racks out of the box.

Multicolored LEDs above the racks simplify diagnostics and component replacement by indicating which chamber and which rack contain a faulty hard drive with a light visible from the other end of the data hall. Another LED will light up next to the drive itself. The circular structure leaves plenty of space for cabling and batteries, so Vapor Racks will not require a separate UPS; it reduces the need to convert between AC and DC, thus cutting power losses.

Vapor IO has already found several manufacturing partners, and is currently gearing towards mass production of the chamber. The company also officially launched Open Data Center Runtime Environment (OpenDCRE) – its open-source platform for data center telemetry and cloud monitoring.

OpenDCRE enables users to create simple and inexpensive monitoring sensors that expose underlying operating environments all the way up to the operating system. The software itself can run on pretty much any computer – the version shown at DCD Europe was built around a Raspberry Pi, but Vapor IO is also designing its own embedded modules that conveniently fit inside an Open Compute server sled.

http://bit.ly/1Ok1ZJN

# Three sites win CEEDA Gold award

Data centers on three continents have won recognition from CEEDA (the Certified Energy Efficient Datacenter Awards) for having highly efficient data centers. Tata Communications, Eumetsat and Cemex – in India, Germany and Mexico, respectively – all were matched against a global standard for efficiency through an impartial assessment process.

The European organisation for the exploitation of meteorological satellites (Eumetsat), an intergovernmental body that co-ordinates meteorological satellites, has a data center in a purpose-built building at its HQ in Darmstadt, Germany. Thanks to the cool climate, the data center can use efficient cooling technology; the adjacent premises also make use of the data center's waste heat, minimizing its total energy usage.

India-based telecoms company Tata Communications' BKC data center in Mumbai is the first colocation facility in Asia to be awarded the CEEDA Colo Gold Level Certification and only the third in the world to attain it.

More than 24 percent of the world's internet runs over Tata's networks and it has built a strong presence in India's challenging colocation sector. Together with facilities abroad, it has more than a million square feet of colo space in 44 locations around the world.

Mexican cement supplier Cemex, the second-largest building materials company in the world, has a global data center in Monterrey, which is now the first CEEDA Enterprise Gold certified facility in the Americas, and the fifth in the world.

http://bit.ly/1SppXSX

# Critical Power Monitoring for Data Centre Success.

**Introducing the new StarLine® Critical Power Monitor (CPM).** You want the best for your data centre. When it comes to power distribution, STARLINE gives you the best in efficiency, reliability, and customisation. Now the STARLINE CPM offers an enhanced monitoring package that will allow you to monitor, integrate and display more data centre power information easily and reliably. To learn more about how our CPM can help your data centre or other mission critical installation, please visit www.StarlinePower.com.

STARLINE®
CRITICAL POWER MONITOR

# Data center barge set for Bay Area float

Nautilus Data Technologies has begun construction of a commercial data center on a barge, designed to deliver high-efficiency hosting from moorings in the San Francisco Bay Area.

The company is repurposing a barge at the Mare Island Shipyard, where a proof of concept test achieved a very impressive efficiency. The final product will contain up to 800 server racks and consume up to 8MW of power, while saving up to 30 percent of its energy consumption by using water cooling. It will be deployed in the Bay Area, although Nautilus says future data centers can be deployed "anywhere in the world" in less than six months.

Google first dabbled with the idea of a floating data center, with a plan to power offshore facilities with wave energy, according to a 2008 patent, but this created problems in providing connectivity.

Nautilus plans to save energy and water by cooling the barge with the natural temperature of the water in which it floats. This should reduce its water consumption to zero – vital in drought-stricken California.

The company is using reconditioned military and construction barges. They are ocean-worthy and good for a 50-year lifespan as data centers. IT equipment is in a superstructure on deck, while power distribution and cooling equipment is below deck.

The trial used five IT racks rated at 32kW, and achieved a measured PUE of 1.045.

Nautilus founder Arnold Magcale is a US Navy veteran who previously worked with International Data Security, a company that proposed using old naval ships as data centers.

http://bit.ly/1N1Brhk

# Drones and beds latest amenities at FL center

HostDime is planning a new $25m, 88,000 sq ft (8200 sq m) head office and data center in Orlando, Florida, kitted out with overnight beds and facilities, and patrolled by security drones.

Construction of the 110ft-tall, seven-story building is expected to start in early 2016. It will accommodate all of HostDime's 130 US employees, as well as three floors of international-class data center space, most of which will be available to HostDime's client base.

Clients will be able to stay overnight in on-site executive suites, including full bathrooms, showers and beds. Clients will have access to private cage space, a private mini data center room, on-demand client offices and ultra-fast 10Gbps internet access.

Overnight rooms will save clients the time and expense of finding hotels in town, and give them immediate access to their equipment during their stay, even in the small hours of the night. The facility will also feature a 36-foot-high temporary storage warehouse that clients can use as they wish.

The site will feature a hybrid indoor/outdoor conference room, and approximately 3,500 sq ft of outside terrace, designed to host hi-tech conferences for up to 200 people. Staff amenities will include a games room, break room, cafeteria, quiet room, small fitness gym and a two-story sports court. It will have more than 100Gbps of network connectivity, as well as dark fiber options to all the major facilities in Miami, and will be rated Category 5 hurricane resistant, so it can operate as a business continuity site for South Florida businesses.

The facility will have more than 10MW of electric power capacity from Duke Energy, and backup generators will contain enough reserve fuel to run one week at 80 percent load. Solar panels on the roof mean that up to 25 percent of the facility will be powered by the sun.

http://bit.ly/1LDewlh

**$25m**

The expected cost of HostDime's data center in Orlando

# Deutsche Telekom to guard Azure data

Microsoft has announced new data centers in Germany, where customers can keep their data safe from US government snooping, thanks to a deal that puts access control in the hands of Deutsche Telekom's T-Systems subsidiary. The service is available to customers across Europe.

T-Systems will act as a "trustee" for German data, and customers can choose to have it oversee their information. The deal is a radical answer raised by the end of the Safe Harbor agreement, which covered international data storage. Microsoft itself will not be able to access any customer data held under this arrangement without the permission of T-Systems. Thus, any attempt to use US law to gain access would hit a roadblock.

The two new data centers, in Frankfurt and Magdeburg, will offer services across the European region from the second half of 2016, and are particularly pitching at security-conscious sectors such as finance, health and the public sector.

The new arrangement is designed to put European data beyond the claimed jurisdiction of US courts and the National Security Agency, both of which have been making increasing demands for access to private data. "Our new data center regions in Germany, operated in partnership with Deutsche Telekom, will not only spur local innovation and growth, but offer customers choice and trust in how their data is handled and where it is stored," said Satya Nadella, chief executive officer, Microsoft, announcing the services in Berlin yesterday.

It's the first time a global webscale player has offered such a service. Few details of the new data centers were available, but they will be linked by a private network providing business continuity and guaranteeing that data will remain in Germany.

http://bit.ly/1Pg3hHc

145
Number of data centers Equinix and Telecity will operate

# All systems go for TelecityGroup buy

Equinix, the global interconnection and data center colocation operator, has obtained clearance from the European Commission to acquire TelecityGroup, on condition that it sells eight data centers in London, Amsterdam and Frankfurt.

Equinix made a surprise bid for Telecity in May, putting an end to Telecity's intended merger with Interxion to create a European colocation giant. Equinix wants TelecityGroup so it can expand in European markets. Once it complies with the European Commission and sells the data centers, Equinix expects the transaction to close early in the first half of 2016.

Equinix has agreed to sell more data centers than was expected, said Tim Anker of Colo-X: "It seems to have taken some negotiation, but Equinix was keen to get it through without another review period, which would have delayed the deal by another 90 days."

Equinix and TelecityGroup have agreed to get rid of five facilities in London: Telecity's Bonnington House, Sovereign House, Meridian Gate and Oliver's Yard, and Equinix's West Drayton data center.

Along with these, the companies are selling Telecity's Science Park and Amstel Business Park I in Amsterdam, and Telecity's Lyonerstrasse data center in Frankfurt.

In London, Equinix has "kept the Crown Jewels" of Telecity, said Anker, holding on to sites such as Harbour Exchange in Docklands, while the facility in West Drayton is one that Equinix acquired when it bought IXEurope in 2007.

When this deal is closed, and presuming no other data centers are purchased in the meantime, the combined company will operate a total of 145 data centers around the world.

Steve Smith, president and CEO of Equinix, said: "We are pleased to have received clearance from the European Commission for the acquisition of Telecity. The combination of Telecity and Equinix is a milestone in the ongoing development of our platform and will bring the benefits of greater cloud and network density to our customers in Europe and beyond."

TelecityGroup shareholders are expected to receive the final documents before a meeting to approve the transaction. The documents will include details of the offer and the expected timetable of completion.

http://bit.ly/1l9y8rY

## VOX BOX / DCD VIDEO

Matthias Haendly
Vice president
*SAP AG*

**Why is SAP betting on in-memory apps?**
In-memory means pretty close to the hardware. Betting on this, we can simplify whole classes of applications, reducing the complexity of the data footprint that is required for running applications, where there had been a lot of duplication of data in the past. There are a lot of innovative changes brought in by this new technology. The world we see emerging will take advantage of hybrid solutions.

http://bit.ly/1jAiDbk

Cyrille Brisson
EMEA Power Quality VP
*Eaton Electrical*

**How is PUE changing?**
PUE has driven a lot of self improvement, forcing people to focus on something that is only waste. PUE measures that waste, and helps people reduce that waste, which is why it has been great. New regulations will define more clearly how it should be measured. The equipment you install today bears little resemblance to the equipment used 15 years ago.

http://bit.ly/1RaR6L6

# Fire at Delta Telecom Baku shuts down internet in Azerbaijan

Almost the entire population of Azerbaijan lost internet connectivity for hours after a fire broke out at a telecommunications facility owned by Delta Telecom. At about 16:10 on Monday 16 November, consumers, businesses and government agencies across Azerbaijan lost their connectivity.

According to network performance specialist Dyn, the outage affected services provided by NTT, Telecom Italia, Telia, Level 3, Rostelecom and Transtelecom, as well as mobile network operator Azercell. The only way to access internet services for nearly eight hours was through local mobile operators Backcell and Azerfon.

Delta Telecom is the primary network provider in Azerbaijan, responsible for around 90 percent of internet traffic, and a major player in the Caucasus region. The outage was caused by a fire at its data center in the capital Baku. According to a statement from Delta, some cables in an old data center caught fire. Firefighters and emergency services had to be involved, and the service was only restored by 23:30, after traffic was rerouted to another facility. However, the internet was still reported to be unreliable in some parts of the country during the following days.

Interestingly, no international traffic flowing though Azerbaijan was affected. "Transmission channels to Georgia, Iran and the Middle East were working at full capacity," Iltimas Mammadov, the minister of communications, told AzerNews.

Azerbaijan is a former Soviet Republic that has seen rapid development thanks to its rich oil and gas reserves. The country has been running several projects aimed at modernizing its communications infrastructure, including participation in Trans-Eurasian Information Highway (TASIM).

http://bit.ly/1lk1Jii

## Virginia overtakes NY as data center hub in US

**The number one area for data center building in the US is northern Virginia, taking 20 percent of the US data center market. The area around a major fiber node at Ashburn is the largest data center market in the US, according to a report from 451 Research and real estate company Jones Lang LaSalle.**

**Twenty years ago, the area hosted the MAE-East exchange and controlled access to a large part of the internet; now it is poised to be the number one area for data center growth in the US. Space in the region is expensive and attracts a premium over other parts of the country.**

http://bit.ly/1OjawLe

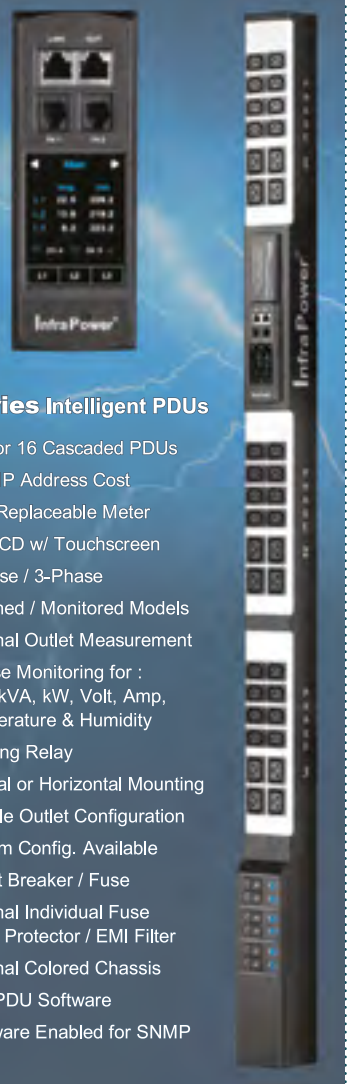
## Amazon offers users new Dedicated Host

**After years of offering virtual, anonymous cloud resources, Amazon is now offering users the ability to run their software on specific servers. The new Dedicated Hosts feature in Amazon's EC2 elastic cloud service lets users bring their own software licenses and access specific servers.**

**Announced by Jeff Barr in the AWS official blog, the EC2 Dedicated Hosts feature allows customers to bring their own server licenses for Windows Server, SQL Server, SUSE Linux Enterprise Server, as well as other enterprise systems and products, to the cloud.**

http://bit.ly/1Xl9PbU


InfraPower®
Inspired by Your Data Center



W Series Intelligent PDUs

- 1 IP for 16 Cascaded PDUs
- Save IP Address Cost
- Field Replaceable Meter
- 2.8" LCD w/ Touchscreen
- 1-Phase / 3-Phase
- Switched / Monitored Models
- Optional Outlet Measurement
- Precise Monitoring for : kWh, kVA, kW, Volt, Amp, Temperature & Humidity
- Latching Relay
- Vertical or Horizontal Mounting
- Multiple Outlet Configuration
- Custom Config. Available
- Circuit Breaker / Fuse
- Optional Individual Fuse Surge Protector / EMI Filter
- Optional Colored Chassis
- Free PDU Software
- Hardware Enabled for SNMP

APAC — Austin Hughes Electronics Ltd.
Unit 3608-12, Cable TV Tower, 9 Hoi Shing Rd, Tsuen Wan, HK
Tel : +852 2415 2121 Fax : +852 2110 9010
Email : inquiry@austin-hughes.com

Americas — Austin Hughes Solutions Inc.
8668 Thornton Ave, Newark, CA 94560, USA
Tel : +1 510 794 2888 Fax : +1 510 792 3888
Email : inquiry@austin-hughes.com

EMEA — Austin Hughes Europe Ltd.
Unit 1, Chancery Gate Business Centre, Manor House Avenue, Southampton, SO15 0AE, UK
Tel : +44 (0) 2380 529303 Fax : +44 (0) 2380 770523
Email : info@austin-hughes.eu

AUSTIN® HUGHES
www.austin-hughes.com

## Fast facts

**AWS Data Centers**

Operational
- Singapore
- Japan (Tokyo)
- Australia (Sydney)

Limited preview
- China (Beijing)

Planned for 2016
- India
- South Korea

# AWS seduces Asian firms with its cloud charms

Even data sovereignty isn't holding up Amazon, as it opens an increasing number of data centers in Asia, says *Paul Mah*

**Paul Mah**
*South East Asia Correspondent*
*@PaulMah*

Those unfamiliar with the inner workings of Amazon Web Services (AWS) may wonder just what makes it so compelling. Those who know how it works may wonder how well its attractions translate to the Asian markets.

Part of the allure is the self-service automation of the AWS cloud, which lets small businesses and large enterprises deploy the virtual infrastructure they need with just a credit card and an internet connection.

The cloud lets IT departments dispense with the hassle of acquiring, deploying, operating and maintaining traditional IT infrastructure, taking away mundane and repetitive tasks, so IT staff can work on projects that contribute to the company's bottom line.

**As Amazon** senior vice president of web services, Andy Jassy, told the annual AWS re:Invent conference in October, the cloud helps to "remove undifferentiated heavy lifting, increase agility" and allow businesses to "go global in minutes".

The cloud giant announced a plethora of services and tools at the recent

conference. AWS executives said the new services were created in response to customer requests, but a closer look reveals that a number of the new services are aimed at helping larger organizations and the enterprise make the switch to AWS cloud.

For example, AWS Snowball promises to migrate data seamlessly and securely from an on-premises data center to the AWS cloud, in armored boxes that hold 50TB each, and AWS Database Migration Service can migrate Oracle and Microsoft SQL Server data to an AWS-based cloud equivalent.

AWS QuickSight offers cloud-based business intelligence (BI), designed to entice users away from traditional on-premises BI. And Amazon WorkDocs and WorkMail, launched in early 2015, are designed to take a slice of enterprise storage, sharing, managed email and calendaring.

These services are impressive, but the sheer number of options and capabilities that are available can result in a steep learning curve.

Though AWS is certainly doing its part to keep its cloud console accessible and well documented, newcomers can expect to roll up their sleeves and invest some time to gain a proper appreciation of its cloud platform. In Asia, plenty of users are doing just that.

**Take iflix**, an online subscription video-on-demand service based in Malaysia. Currently available in Malaysia, the Philippines and Thailand, the service launched in May and managed to amass 450,000 user accounts by October, according to iflix CTO and chief innovation officer, Ash Crick, who caught up with *DCD* at AWS re:Invent.

An external observer looking at the scale of its operations and the sophistication of its platform might be forgiven for doubting that it only started in September last year. But the company managed to launch a fully fledged offering barely nine months after its incorporation.

"We couldn't have launched by May without AWS," said Crick. He said that iflix uses a large number of AWS services, and said he developed a deep knowledge of the AWS platform by getting in early and gradually learning about features as they were launched.

**AWS has a strong** and growing footprint in Asia, and an undeniable interest in the Asia Pacific region. At the moment, AWS operates infrastructure in Singapore, Japan (Tokyo), Australia (Sydney), as well as a limited preview deployment in China (Beijing). Data centers are also planned for India next year, while the announcement of a new cluster of data centers in South Korea, with a similar deployment timeframe, was made just weeks ago.

And there is good reason for its strong push here, too. According to recent research by Gartner, the public cloud services market in the mature Asia Pacific and Japan (APJ) region will grow to a total of (US) $7.4bn in 2015. This is expected to eventually rise to $11.5bn in 2018, which represents a huge opportunity, even for the cloud behemoth. An expected revenue of $6.2bn this year is well worth aiming for.

> *Asia Pacific as a whole has a terrific adoption rate. For South East Asia, it's been quite rapid*

"Asia Pacific as a whole has a terrific adoption rate. For South East Asia, it has been quite rapid," said head of Asean, Richard Harshman, when he spoke with *DCD* about the region at AWS re:Invent.

But what of data sovereignty considerations, which could be a potentially thorny problem considering the numerous countries involved, their disparate legislations and various approaches to data security?

In order to keep data safe from a perceived danger of international snooping, or fear of greater vulnerability abroad, many customers are now demanding that data be held in local, or domestic, data centers.

While not dismissive of it, some executives told *DCD* that the concerns on this front only relate to certain local companies and financial institutions, while others suggested that regulations are still unclear right now.

Ultimately, data sovereignty considerations may well be a moot point for AWS. After all, Jassy had publicly shared a long-term vision in which Amazon may well operate from every country "in the fullness of time."

Considering its rate of expansion in Asia Pacific, that looks set to happen sooner rather than later.

# Chile upgrades its tax systems

The General Treasury of Chile has updated a data center that's vital to the government's collection of tax revenues. *Patricia Mármol* reports

**Patricia Mármol**
*Assistant Editor LATAM*
*@DCDNoticias*

Chile continues to make progress in technology. According to a recent study by DCD Intelligence, the country has invested (US) $875m this year in advances in technology – an increase of 11.5 percent on its 2014 spend. Like its Latin American neighbors – Brazil and Colombia – Chile has been building infrastructure at a rapid rate, as well as carrying out projects to expand its existing infrastructure.

The General Treasury of the Republic of Chile is renewing the software technology platform of its secondary data center, a facility that processes judicial data for tax collection. It aims to modernize its technology, address regulatory changes, and improve the quality of its internal processes.

"The renewal is considered a technological change associated with the digitization of records," said José Luis Bravo, head of IT management at the General Treasury. The update had to address new requirements for document management, and handle the corresponding impact on software and hardware. Specifically, we are updating the core IT technology platform in the data layer," said Bravo. This includes the database server, high-end and midrange storage, robotic and virtual bookstores, SAN switch and air-conditioning equipment.

**The origins** of the General Treasury of the Republic date back to the conquest, after the arrival of Christopher Columbus to America in 1492. Now its website describes it as "the public service responsible for collecting, distributing and managing investments and accounts for the General Treasury."

The General Treasury aims to take an international lead in managing resources, but its main job is to collect taxes fairly, and to distribute the funds to various public

Rittal – The System.
Faster – better – everywhere.
nextlevel
for data centre
Click on this link to select your individual IT infrastructure:
www.rittal.com/it-configurator
or scan the QR code.
ENCLOSURES
POWER DISTRIBUTION
CLIMATE CONTROL
FRIEDHELM LOH GROUP

agencies. With this update, it intends to provide a tool that can strengthen the tax collection process, so that taxpayers get more benefit and fewer tax surcharges.

**The whole project**, valued at $20m, is being carried out to support tax reform in Chile. It aims to address the obsolescence of technology and trim the cost of maintenance, while adjusting to the ever-growing demand for the services of the General Treasury.

The project is part of a normal renewal cycle of around five years, and will include the database server, both high-end and midrange storage, robotic and virtual libraries, SAN switch and air-conditioning equipment.

At the same time, the General Treasury is migrating certain critical applications – from Oracle Web Logic 8.1 to 11g – and updating the number of licenses it holds. The country's budget office (DIPRES) is ensuring that resources are available for the project from 2017 to 2018. "We are renewing the equipment at the data layer, because it becomes more expensive, with the maintenance cost going up from the fourth year," said Bravo. The software is being updated to ensure that support is available from the manufacturers, and the capacity is being increased, as demands have tripled in four years, he said.

*This update will help strengthen Chile's tax collection process*

Thanks to the configuration of the connections within the site and the use of links to other sites, the General Treasury expects to carry out the renovation without any interruption of its services. If any downtime is necessary, it can be programed into non-working hours to minimize impact.

In its main data center, the General Treasury has already renewed air-conditioning equipment that was more than a decade old. In December 2014, it renewed the IT equipment of its primary data center, which is already in operation. The main data center has about 80 sq m, with a raised floor and busbar power. As Bravo describes it, data is channeled through "ladders" circulating on the racks.

The data center also has a system of early fire-detection and suppression, using the waterless FM-200 system. There is closed-circuit TV, and access control using proximity cards and keys. As for power, the data center has a generator and uninterruptible power supply (UPS). The cooling system has four modules, of which only two normally operate, said Bravo, although in summer the facility can use up to three of them.

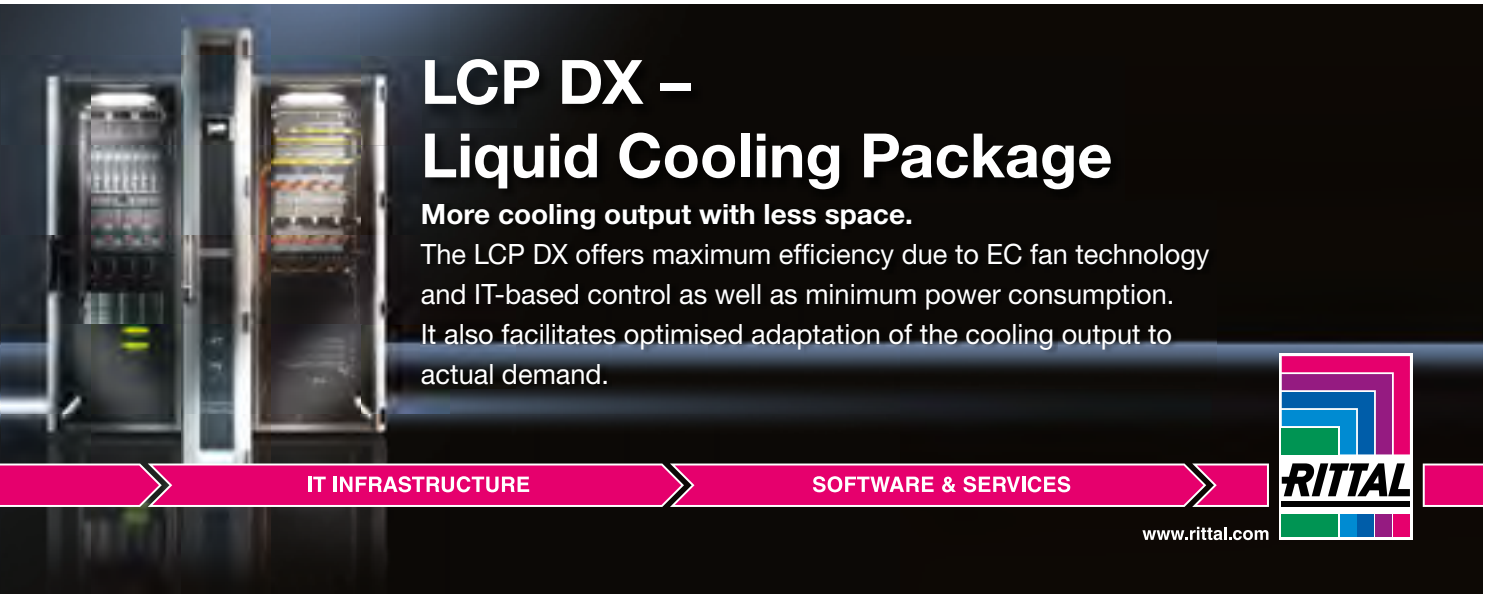
This cooling system is designed for energy efficiency. "The cold air is injected below the racks through the false floor and removed by the high zones of air-conditioning equipment," said Bravo. Also, the General Treasury is using virtualization and consolidation to reduce costs and energy. By contrast, the secondary data center has only two air-conditioning units, because the external environmental conditions are more favorable.

**Both data centers** can address 70 percent of the projected end of the cycle before the next renewal, said Bravo. This means that at the beginning of the cycle, each center can absorb 100 percent of the demand. ●

## Fast facts

**Chile is one of South America's most stable and prosperous nations, with the highest degree of economic freedom in the region. It was the first South American country to join the OECD.**

- **Currency – peso**
- **GDP (in US dollar figures) – $410bn**
- **Per capita GDP – $23,000**
- **Population – 18m**

Telco Clearance!
EVERY THING
Must GO!

Communications companies are selling data centers. *Michael Kassner* asks if it's because of the cloud – or something else?

**Michael Kassner**
*US Correspondent*
*@MichaelKassner*

Isn't it a bit curious that major telecom service providers, which only a few years ago invested heavily in data center holdings, are now signaling their desire to sell those very same assets?

During the course of 2015, we have heard a series of leaks and announcements that add up to a picture of telecoms firms reconsidering whether it makes sense for them to own data centers (see box). In February, we heard that AT&T is selling some $2bn worth of data centers, and in July we heard that Tata Communications is selling 44 facilities in India. More recently, in October, Windstream Communications sold its data centers to TierPoint. In November, CenturyLink announced it is considering a sale, and Verizon denied rumors that it is doing the same.

**The announcements** had several interesting common factors. A majority of the businesses divesting data center assets are telecom service providers. By contrast, of the companies buying or expressing interest in the assets very few, if any, are telecom service providers. The companies selling data centers still want to be a part of the industry, providing data center services through third parties, offering both managed ICT and cloud services. Windstream Communications, for example, obtained the right to lease back the assets it just sold.

It's also interesting to note that the telcos are investing in networks while selling off data centers. AT&T and Verizon both sold major chunks of their tower infrastructure, yet spent huge sums of money in the FCC's recent AWS-3 auction. This sold off 65MHz of spectrum, for $45bn, with the majority going to AT&T, Verizon and Dish. The auction reserve was around $10bn.

The Motley Fool's Adam Levy offers a possible reason why AT&T and Verizon are divesting assets. "Both companies spent heavily in the FCC's AWS-3 spectrum auction, acquiring valuable airwave licenses for their wireless businesses," writes Levy. "With both companies heavily burdened with debt, they're looking to raise funds without increasing their liabilities."

**Some insight as to why** CenturyLink might be selling can be gleaned from how CenturyLink chief executive Glenn Post responded to Barclays Capital's Amir Rozwadowski during the announcement. Rozwadowski asked Post about divesting data center assets, and the CenturyLink chief executive responded: "First of all, as to why now is an opportune time… valuations are obviously good right now. They can always change, but we know the market's good." ▶

Cover Illustration: ILOVEDUST at Debut Art

Post continued: "We think our cashflow could be used for investments that can drive higher returns, and better shareholder value. So that's why we're looking at divesting data center assets."

Fundamentally, the trouble with owning data centers is the expenditure they require, according to Zahl Limbuwala, chief executive of data center operational efficiency and capacity analytics company Romonet. In his 2014 blog – An Open Letter to Data Center Investors – he pointed out that data centers incur electrical and mechanical equipment costs, operational costs for staffing, maintenance and power, and an ongoing requirement for investment in equipment updates to meet changing market demands, especially in power and cooling capacity.

"If your data centers are approaching 10 years old and have not had a major reinvestment, you are in for a nasty surprise," says Limbuwala.

The surprise that Limbuwala refers to is the difference in the expected time between reinvestment in the data center world compared with conventional property. Reinvestment times in real estate are around 20 years, while in data centers mean time between failure rates and capacity obsolescence for the equipment bring this closer to 10 years.

**$45bn**
The amount spent by US telcos in the AWS-3 spectrum auction

**Equipment reinvestment** can be an issue, but there is another factor. Commercial data centers offering colocation services are losing market share to cloud services providers, according to numerous reports. This is the most likely reason why telcos are getting out of the data center real estate business. "Cloud providers can threaten to steal business away by offering the same services for the lowest possible price," explains Limbuwala. "In doing so, they will reveal any inefficiencies and expose margins to potential customers, who will be weighing their options."

Cloud services providers grabbing market share gain validity when we look at the rapid expansion of firms catering to cloud services providers. For example, Switch has announced its intention to build a $5bn data center in Michigan, on the site of the Steelcase Pyramid. And in Florida, TierPoint – having bought the data centers that Windstream found uneconomic – is pressing ahead and investing $20m in improvements to its data center in Jacksonville, Florida.

On the surface, the above explanations seem reason enough to divest data center assets. However, forward-looking people in the data center industry see a different future. "Whether you are considering the Internet of Things, streaming content, or any type of network-delivered service, you must be aware of latency, connectivity and network bandwidth availability," *DatacenterDynamics'* David Chernicoff wrote in *Data Centers 2020* (*DCD*, November 2015). "By moving these capabilities to the edge, you address the plethora of issues that these technologies bring up. But you also have to reimagine what you think of as a data center."

**How will things change?** "Imagine an economy without friction – a new world in which labor, information and money move easily, cheaply and almost instantly. Psst – it's here. Is your company ready?" writes *Fortune* senior editor Geoff Colvin in his column, 'Why Every Aspect of Your Business is About to Change.'

Colvin considers how Tesla Motors handled its fire-prone Model S, without an expensive recall, by rapidly pushing corrective software to the affected cars over mobile phone networks, using the edge network to reduce its friction. Colvin says this "lack of friction" gives Tesla considerable advantages over established car makers.

"Combine those factors and here's what happens: General Motors creates about $1.85 of market value per dollar of physical assets, while Tesla creates about $11. GM creates $240,000 of market value per employee, while Tesla creates $2.9m. You don't get differences like that just by being more efficient. Tesla – though in the same business as GM – is a fundamentally different idea."

Tesla is a progressive, innovative company in a traditional market, and it may have shown data center operators and telecom service providers – businesses that enable Tesla's nimbleness – the way of the future.

It is possible that telecom service providers are responding to market conditions by divesting data center assets, thus decreasing their friction, and investing in technology that the data center environment will need as it moves towards the edge and becomes increasingly network-focused. ●

## Telco timeline

**February 2015: Anonymous sources told Reuters: "AT&T is selling some data centers worth $2bn as it continues its streak of asset sales." AT&T started selling its data centers in 2013.**

**October 2015: Windstream Communications announced the sale of its data center assets to TierPoint, a St Louis-based cloud and managed service provider, for $575m.**

**July 2015: India's Tata Communications reportedly put its 44 data centers up for sale, after years spent building its holdings.**

**November 2015: Reuters reports: "Verizon Communications is exploring a sale of its enterprise assets that could be worth as much as $10bn, according to people familiar with the matter." Verizon has denied this.**

**November 2015: Glenn Post, CEO of CenturyLink, said: "We expect colocation will continue to be a service our customers will look to us for, but we do not necessarily believe we have to own the data center assets to be effective in the delivery of those services."**

الاتصالات المتكاملة
INTEGRATED TELECOM

Business

# ITC Colocation

- Business continuity
- Flexibility and maximized space utilization
- Constant availability
- Optimized IT resources
- Privacy and maximized security
- Available in Riyadh, Jeddah & Al Khobar

Talk to us now and let your business experience the power of next generation solutions.

**www.itc.sa** | **+966 920 000 788**

ISO QSCert 9001 Quality Management

ISO/IEC QSCert 27001 Information Security

ISO/IEC QSCert 20000-1 IT Service Management

TIER III DESIGN
Integrated Telecom Company (ITC)
ITC Riyadh Data Center (RDC1)
Expires 24 August 2017
UPTIME INSTITUTE CERTIFIED

# DatacenterDynamics ENTERPRISE

**THE BUSINESS OF DATA CENTERS.**

NOW FREE
APPLY FOR END-USER PASSES

**April 19-20, 2016** | New York Marriott Marquis

For more information visit **www.dcdconverged.com**

## 2016 TRACK FOCUS:

COLO+CLOUD | DESIGN + BUILD | CRITICAL ENVIRONMENT | SECURITY + RISK

CORE >EDGE | SERVERS + STORAGE | SOFTWARE -DEFINED | OPEN-SOURCE

## THE ENTERPRISE DATA CENTER **TRANSFORMATION EVENT**

LAURI SAFT, IBM

ROBERT SCOBLE, RACKSPACE

**2** DAYS | **75+** SESSIONS | **125+** SPEAKERS | **100+** EXHIBITORS | **2000+** ATTENDEES

Headline Sponsor: Schneider Electric

Lead Sponsor: RagingWire Data Centers — An NTT Communications Company

Industry Partners: the green grid — get connected to efficient IT; Open Compute Project; OpenPOWER; OPEN-IX

#DCD2016

# Slaying the federal data center hydra

The more data centers the US government closes, the more it finds. *David Chernicoff* asks if it all adds up

**David Chernicoff**
*US Correspondent*
*@DavidChernicoff*

It has been almost six years since President Obama handed down an order to close and consolidate government data centers. That proclamation spawned the Federal Data Center Consolidation Initiative (FDCCI), initially intended to shut down 1,200 facilities and save the government between $5bn and $8bn annually.

As we approach the end of 2015, that initiative has grown by leaps and bounds. The number of data centers now slated to be shut down could be as many as four times the number of data centers that were originally thought to exist throughout the areas of the federal government that are affected by the mandate.

**As agencies have** struggled to meet the demands of the mandate, the very definition of a data center has changed, while the understanding of the workloads that could potentially be consolidated has also been a moving target.

When asked to put hard numbers into play in 2011, Vivek Kundra, the first chief information officer of the United States, said that by 2015 the federal government needed to reduce its total number of federal data centers by 40 percent. At the time, this represented a target of 800 data centers.

In 2014, the Government Accounting Office report on the ▶

success of FDCCI as part of the Federal Information Technology Acquisition Reform Act (FITARA) announced that more than 3,300 data centers had been closed, but there were now 11,7000 left that fit the requirements for consolidation or shutdown.

The FDCCI has encountered a wide range of reactions among the government agencies that it affects – from rapid acceptance to a litany of reasons why it can't be done. So let's try to understand the successes and failures so far.

**By the end of 2011**, almost 30 major federal agencies – from the Department of Agriculture to Nasa to the Social Security Administration – had filed their first set of plans for programs they would be initiating to meet the demands of the FDCCI. Much of the effort defined by these initial plans was focused on identifying core data centers and their processes, and looking at virtualization and cloud computing as the primary agents of change in meeting the goals of the program.

*The program has now closed or consolidated more data centers than were believed to exist five years ago*

Due to the somewhat nebulous nature of the definition of a data center, simply closing facilities was unlikely to achieve significant savings to help the government reach its $5bn to $8bn goal.

A clear example of this issue is found in the early successes of the Census Bureau. By mid-2012, the bureau had closed seven of its data centers and virtualized the rest. It saved only $1m, but the results were a clear indicator that consolidations could find and eliminate significant unused capacity in the data centers of federal agencies.

By contrast, at the Defense Information Systems Agency, there were wider benefits. The agency closed data centers but also implemented additional projects that delivered savings across the entire Department of Defense (DoD). For instance, the cloud-based DoD Enterprise Email (DEE) system provides secure, cloud-based email across the DoD, giving a common platform that allows 4.5 million geographically and organizationally dispersed users to share information.

With a single entity hosting the cloud service for the various organizations involved, savings are achieved by preventing duplication of effort and providing economies of scale.

The DoD has been able to save tens of millions of dollars via closure and consolidation. Meanwhile, programs such as DEE represent the most visible and effective agency efforts to meet the goals of the FDCCI.

The DoD efforts, most notably in the Department of the Navy, have become the poster child for the program.

In 2012, Rob Wolborsky, then chief technology officer at the Space and Naval Warfare Systems Command, told *Federal Computer Week* magazine about the Navy's plans to consolidate 58 data centers in five years. "We have tremendous support from Navy leadership to get this done," said Wolborsky. "However, this is a major change in the way data centers are doing business, and it will require a huge cultural shift."

Two years later, the Navy announced the first of its contracts for the consolidation of its data centers. In the Data Center and Application Optimization Program, the Navy planned to make serious inroads into moving all but 25 percent of its data into private facilities, primarily moving unclassified information. At the time, the Navy had also identified 226 data centers within the US that it planned to consolidate down to just 20, making use of private business, DoD consolidation and Navy-run entities.

A year later, the Navy once again reorganized its consolidation program with John Zangardi, the Navy's deputy assistant secretary for command, control, computers, intelligence, information operations and space, pointing out that while there had been some success in consolidating systems and applications (fewer than 300 of the 7,000 identified two years previously), there was a significant cultural issue with the type of consolidation that faced the Navy's information technology and data center commands. This was despite this cultural issue being identified as a primary one two years previously.

In the six months since the last reorganization, the Navy has been quiet about any success or failure it has achieved in meeting its FDCCI goals. However, even a major success would likely have been overshadowed by this year's General Accounting Office report, which found an additional 2,000 data centers that needed to be addressed under the government's FDCCI program.

FITARA requires high visibility and public accountability for actions being taken to meet the goals of the FDCCI, and it seems that the deeper the government dives into finding financial waste related to data centers, the broader the effort becomes.

**We now find** that the plans address an original population of more than 15,000 identified data center facilities and the program as having already closed or consolidated more data centers than were believed to have existed five years ago.

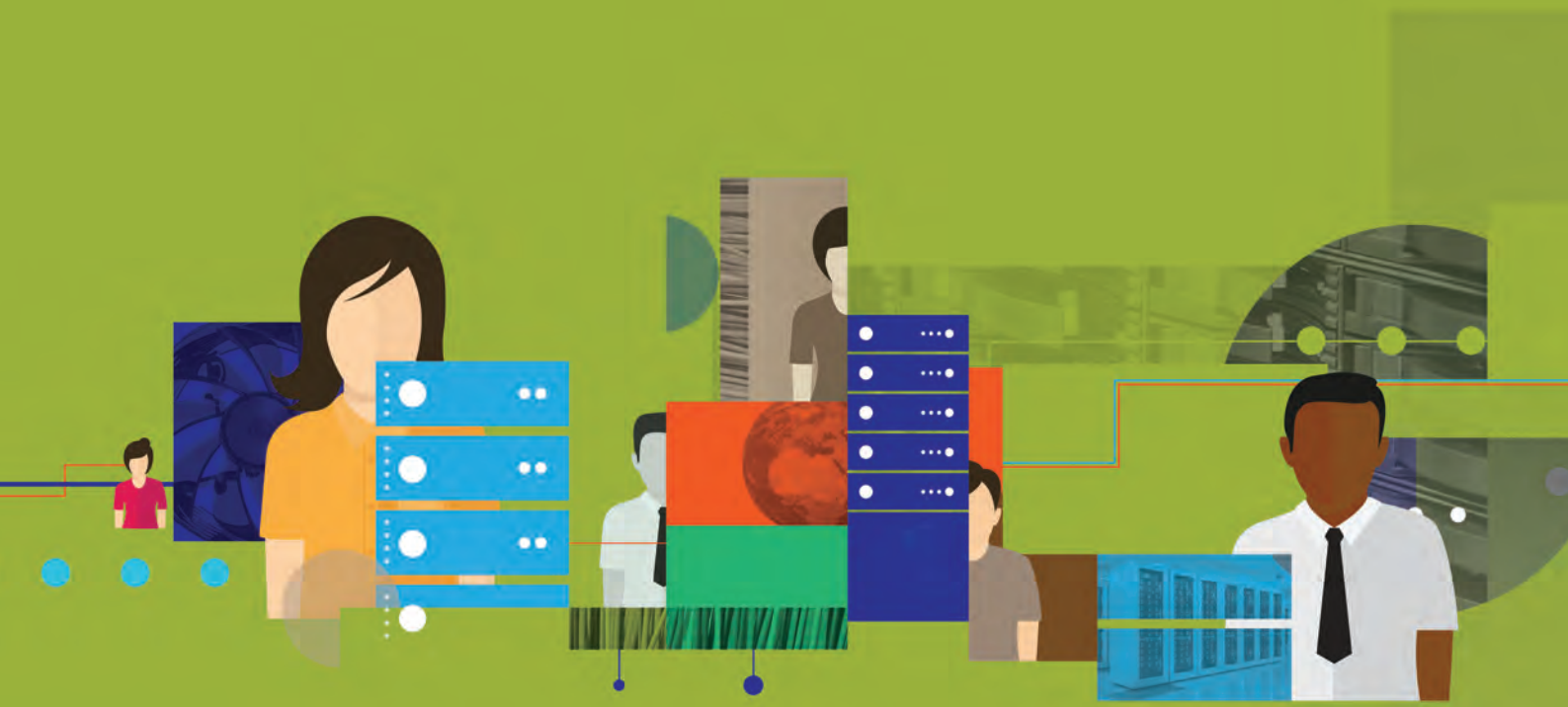
And while the potential savings already achieved may soon reach the numbers proposed in 2010, the elephant in the room continues to be ignored: those savings were proposed when it was believed that only one fifth of the total number of data centers found so far existed.

That being the case, shouldn't the target for savings be multiplied by five?

## In brief

- **Federal Data Center Consolidation Initiative – President Obama's instruction to consolidate data centers and save $5bn to $8bn a year.**
- **Federal CIO – oversees federal IT spending; appointed by president.**
- **Federal Information Technology Acquisition Reform Act (FITARA) – a draft bill to reform procurement. It did not become law, but some parts were included in other acts.**
- **Data Center and Application Optimization Program – a Navy consolidation program.**

# More applican than applicant



Datacenter People

Head Office –

Allen House
The Maltings, Station Road
Sawbridgeworth, Hertfordshire
CM21 9JX

Tel – +44 (0) 8448 005 553
info@datacenterpeople.org

www.datacenterpeople.org

High
Efficiency
Solutions.

CAREL

90%
Energy savings*

* compared to steam humidifiers

# humiSonic, efficiency and evolution

## The new range of ultrasonic humidifiers for datacenters

ADUHSQ1A00

Thanks to its very low energy consumption, **humiSonic** is the ideal solution for humidity control in datacenters and all applications in which saving energy is crucial.
**humiSonic** is a single solution comprising both the control panel/power supply and the air humidity probe.

*The meeting point of performance and energy savings.*

**CAREL INDUSTRIES S.p.A.** via dell'industria 11 - 35020 Brugine (PD) Italy
Tel. (+39) 049.9716611 - Fax (+39) 049.9716600 - e-mail: carel@carel.com

**carel.com**

# Data centers need to get friendlier

The edge will bring data centers into conflict with people. *Peter Judge* wants to start the charm offensive

Data centers are forbidding places – their security features are designed to put off unwanted visitors. But I think they will have to become more friendly as they take a greater role in human society.

The whole concept of a data center is a facility that can be accessed remotely, via the cloud or other methods, but there are several drivers pushing people and data centers closer together.

**First, people need** these resources at the "edge", where they can get a quick response time for streaming media. And the edge is also a vital location for aggregating data for the Internet of Things. "People are the edge," Brandon Butterworth, chief scientist at the BBC, told the DCD Europe show in London in November. He was talking about the corporation's job of delivering media to people, but others at the show echoed the importance of distributed systems.

Coca-Cola, for example, has been connecting its vending machines to the internet since 1982, according to Jane Gilmour, the company's CTO.

Last month saw an example of people and facilities colliding at the edge: Interxion was told to close a data center in Paris because of alleged noise pollution. The decision was quickly reversed, and the company's French boss, Fabrice Coquio, told us the original accusation must have been a mistake. Local laws require generators to be inside the building, and the actual measured noise was well within regulated limits.

But Coquio wasn't complacent: "We have learned a valuable lesson," he said. "In future, we will need to provide far more education and information to local residents in advance of, and during, any new data center build."

A lot of firms already do this by funding education programs and inviting in local people to visit the facility. In Dublin, Ohio, Expedient had 900 people sign up for tours of a new facility.

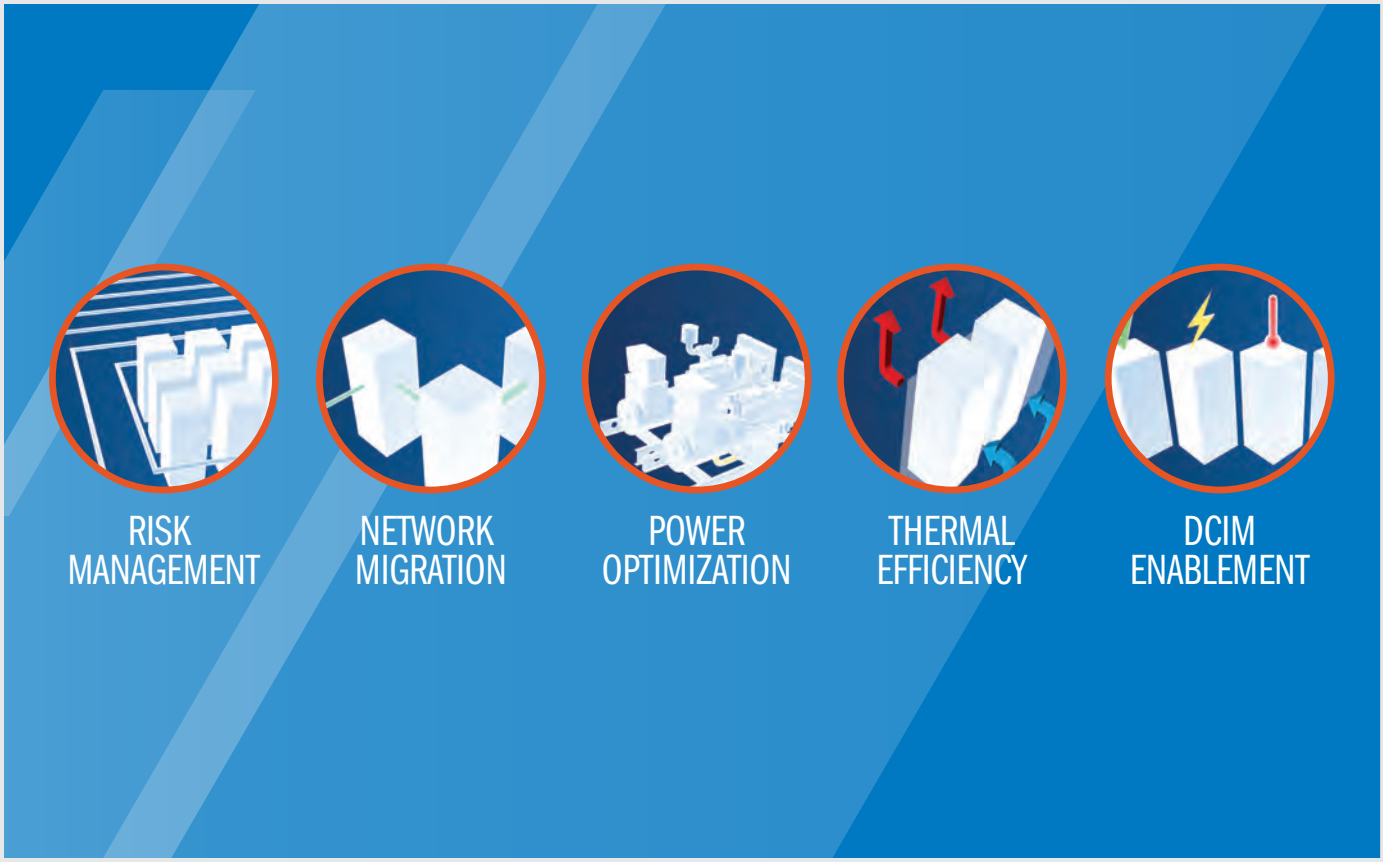
At DCD Europe, Zahl Limbuwala of Romonet took it further, proposing that data centers should all host school trips. His idea was to encourage the next generation to take up tech jobs and supply the skills we need. But children visiting data centers would also go a long way to dispelling their forbidding image. It might be something that Coquio could think of for future sites.

Data centers could become better places to visit, with modern architectures that do away with raised floors. Liquid cooling could take away the noise and clutter of air cooling. An urban data center might be seen as a better neighbor if it shares its waste heat to usefully warm surrounding buildings.

Some ideas might go so far that there really isn't a data center to visit any more. Germany's Cloud&Heat, and others, want to break edge data centers down into small cabinets located in office and residential blocks, providing local data processing and heating.

**There are plenty** of ways for data centers to become more friendly. They often fall under the auspices of the corporate social responsibility (CSR) office and are seen as ways to generate good PR. But as edge computing grows, this is not just about PR any more. The very existence of data centers could ultimately depend on their acceptance by the local community. ●

*School visits to data centers could dispel their forbidding image, and might help avert conflicts with residents*




Building Blocks for Data Center Interoperability

# Five Best Practices for the Responsive Data Center

Infrastructure as a Platform model meets the growing needs for capacity, performance and uptime

During the past year, we've introduced readers to the benefits of Anixter's Infrastructure as a Platform philosophy, which addresses five key challenges faced by many different types of data centers. The common theme that runs through each of these five challenges is that the solutions addressing them need to be scalable, interoperable and easily managed. These solution qualities are what enable today's data centers to maximize their available capacity, performance and uptime with limited resources.

Anixter's Infrastructure as a Platform model can provide flexibility for budgets and offer more choice in selecting the technologies to meet your key data center challenges. The model is separated into five distinct areas which help to create a platform for an agile data center with technologies that can evolve as required.

## RISK MANAGEMENT: Protecting Assets Inside and Out

From government to industry mandates to costs and penalties from theft, managing data center risk is as important as managing data center uptime. A solid physical security plan can limit exposure, boost reputation and lead to more efficient operations.

Implementing a risk management plan can help protect a company's image, achieve regulatory compliance, stay one step ahead of adversaries, and minimize disruptions to business operations.

The best risk management plan requires a layered physical security approach. For most facilities, Anixter defines a total of six layers which include: perimeter defense, clear zone, reception area, service corridor, data room and cabinet. Through a strategic series of obstacles and systems from the perimeter to the cabinet, it becomes possible to make a potential physical incursion increasingly difficult.

Download Risk Management Best Practices Technology Report
*www.anixter.com/whitepapers/riskmanagement*

## NETWORK MIGRATION: Planning for Future Demand

In the data center, server-to-server communications account for 76 percent of all traffic. This growing volume is due to new technologies and the explosion in data that are driving the needs for scalability, flexibility and redundancy to support increasing bandwidth demands. Meeting these demands can be accomplished by migrating to a high-performance structured cabling system that addresses the amortization of the cabling, infrastructure complexity, pace of innovation and adoption, speed of deployment and restrictions of legacy systems. Considerations:

- **Cabling topologies:** the most popular are centralized, end of row, middle of row and top of rack.
- **Media selection:** twisted-pair technologies feature low initial costs, the ability to deliver higher data rate LAN services and the flexibility to use one medium for all services.
- **Density demands:** preterminated cable assemblies and modules should be considered when trying to manage dense port counts.
- **Network flexibility:** Cat 6A construction is needed to provide bandwidth in the 500 MHz range. OM3/OM4 laser-optimized 50-micron fiber is the fiber of choice.

Download Network Migration Best Practices Technology Report
*www.anixter.com/whitepapers/networkmigration*

## POWER OPTIMIZATION: Better Management through Intelligent Design and Analytics

Businesses are under pressure today to find ways to reduce operational costs, resulting in more pressure on facilities and IT to run a more efficient data center. According to DCD Intelligence, over 27 percent of the total costs of operating a data center are spent on facility power. How can a data center consume less power, when IT capacity needs continue to grow? This conundrum has forced a shift in thinking on how power is being generated, designed and managed throughout the data center. Better management requires insight that can only be provided through measurement and analytics to fully understand how energy is being consumed throughout entire power chain.

An intelligent power chain requires careful selection of the right hardware coupled with measurement and analytics collected from multiple points. Anixter examines five areas where the application of an intelligent power chain most significantly enhances the dependability and efficiency of the entire system. These areas are: the entrance feed, UPS systems, room distribution, cabinet distribution and IT equipment.

Download Power Optimization Best Practices Technology Report
*www.anixter.com/whitepapers/poweroptimization*

## THERMAL EFFICIENCY: Keeping Cool by Moving Air Smartly

The goal of any data center thermal management strategy is to make sure the room that the IT equipment resides in is at a temperature that is within range of the required operating temperatures specified by the IT manufacturer. Historically, this was achieved by utilizing all cooling units to flood the room with cold air. This has lead to a surplus of available cooling capacity and unbalanced temperatures throughout the facility which increase costs and the likelihood of an outage.

Cooling system efficiency and reliability can be increased by adopting Anixter's approach to conditional environmental control which focuses on four main areas:supply temperature, supply pressure, airflow segregation and airflow control.

Following this approach will help improve uptime through the reduction in hot spots, regain stranded cooling capacity which minimizes capital expenses and reduce operational expenses through a more efficient thermal management system.

Download Thermal Efficiency Best Practices Technology Report
*www.anixter.com/whitepapers/thermalefficiency*

## DCIM ENABLEMENT: Insight into Capacity

One of the main drivers of the need for a system like DCIM is better visibility into a data center's capacity for power, cooling, network connectivity and space. This often requires traversing the traditional IT and facilities boarders in order to combine data from multiple systems into one centralized tool. Anixter's five senses of DCIM help IT and facilities to address common areas in order to evaluate and implement a solution:

1. **Asset management** – managing hardware and software assets under one centralized database
2. **Power monitoring** – using an intelligent power chain to gain real-time data that allows for better power management
3. **Thermal management** – achieving a state of conditional environmental control by using data from chillers, cooling units and various environmental sensors
4. **Change management** – assessing and planning for changes before they happen with change management solutions
5. **Capacity planning** – aggregating all power, cooling and physical asset data to predict when these resources will run out and to make adjustments that could lead to significant cost savings

Download DCIM Enablement Best Practices Technology Report
*www.anixter.com/whitepapers/dcimenablement*

## Using Infrastructure as a Platform

Infrastructure as a Platform by Anixter not only addresses these five key challenges, but it also integrates innovative solutions to meet your assessment and deployment needs. Anixter's site-specific deployment solutions allow you to more accurately plan projects and improve scheduling, reducing nonproductive labor and on-site assembly challenges. Through facilities assessments and project deployments, Anixter can evaluate your data center and recommend best practices and solutions to achieve your desired state.

To learn more, visit *anixter.com/datacenterdynamics*.

**Contact Details**
**Phone:** 1-800-ANIXTER
anixter.com/datacenterdynamics

# The space merchants

Data centers – it's a business. But we don't always know how to sell it, reports *Peter Judge*

**Peter Judge**
*Global Editor*
*@peterjudgeDCD*

Marketing may not be the first thing on a data center operator's mind, but it could be make or break for the business. Yet surprisingly, the sector is rife with errors and poorly conceived tactics.

Consider one service provider that decided to target the financial sector. All the research stated that banks had a great need for data center services, so the operator set up a team for the sector, hired specialist sales people, and waited for the sales to roll in. In such a demanding sector, it realized that sales cycles would be long, but after six months, there was no business being signed, so the company decided to see if there was a problem.

Calling in a third party, the operator got feedback on some of the contracts it had failed to win, and found a shocking truth: the potential customers liked the data center, but they were simply unable to use it because it did not have the certifications required by the financial services industry. Six months of sales work had been completely wasted, as the operator was selling to a market it was not qualified to serve.

**That story is** not unusual, says Nicola Hayes of Andrasta Consulting. But it's not the only problem. As well as focusing on the wrong market, she also sees a complete lack of focus. "A huge number of providers, when asked who they are targeting, still say 'everyone,'" she told the recent

DECISION-MAKING MINDSET

| | *Large enterprises (international)* | *Mid-size enterprises* | *SMBs* |
|---|---|---|---|
| **Purchasing chain** | Large (5+) | Depends on the type of business (2-5) | Small (1-3) |
| **Access** | Difficult | Depends on the type of business | Easy |
| **Final decision** | Will eventually end up with dedicated purchasing department, often generalists | The final decision is usually taken by the CFO | This is taken by a senior member of the company |
| **Culture** | Only use providers with strong financial background | Decision driven by price versus benefits | More price sensitive (but depends on the type of business) |
| **Priority** | Brand is increasingly important | Network access a high priority | Interested in providers with a managed colocation offering |

DCD As-a-Service conference in Chicago. This results in sales teams firing off responses to requests for proposals (RFPs) they would never have a chance of winning, and having nothing distinctive to offer those they might be eligible to win.

Success boils down to finding a group of customers whose needs match what you can provide, she says, and then communicating well with that prospective customer base.

That may sound obvious, but it needs saying. Companies in the data center space tend to focus on the technology, create what they see is a market-leading facility, and then rely on the "if you build it, they will come" mantra.

"The companies I deal with had nothing to direct them when it came to strategic business planning," she said. "Decisions taken were based on what had worked in the past – but the industry is changing."

**A big part** of that change is a shift in power, from the vendor to the customer, she says. Colocation firms used to have sales teams that were little more than "order takers", whose main job was to convince customers that colocation offered an improvement over in-house facilities. "That challenge has been dramatically reduced, with outsourcing an accepted option now," she said.

The challenge now is to stand out among the many providers addressing the increased market, and this is a tough prospect when the web now provides a well-developed channel for information. Vendors used to be in touch with customers who were just finding out about what was on offer. Now customers are well educated before they make any contact with the vendor.

"This increased competition means it is vital that you understand exactly which buttons to press," she said, "and the approach will depend on what type of customer you are addressing." Once you know your customer, you need to have an understanding of how many people are actually involved in the decision-making, and how the decisions are made at each stage."

Perhaps surprisingly, the big outfits such as Google and Amazon can be the most personal: "They have dedicated specialist purchasing departments for IT infrastructure, and vendors have access to these people," she said. "They aren't faceless people sitting in the Far East; they understand what it is they're buying."

The size of the customer makes a difference. The larger the company, the more people will be involved in the decision chain. In a multinational, the chain ends up at the purchasing department, while a single senior staff member will make the decision at SMBs. Smaller companies are more price conscious, while the larger operations will want to know that you have a solid financial record and are not likely to go bust any time soon.

**And, finally**, an obvious part of marketing is to make sure your offer matches what customers want. Customers aren't happy to sign long static leases, and some vertical markets want more than just managed networks. "Customers have different needs," said Hayes. "Many want more visibility into their operations beyond basic monitoring. Media companies want low latency and edge network capacity, while highly regulated industries such as finance and pharma want increased security measures."

DCPRO
DEVELOPMENT

# OPEN COMPUTE-
# TURNING THE
# DATA CENTER
# ON IT'S HEAD



How do we get from where we are now, and transform to Open Compute, Open Hardware Technologies...

?

Learn the fundamentals of Open Compute and its transformational and future disruptive impacts on traditional enterprise data centres. Come away with a holistic perspective of Open Compute.

**DCProfessional Development's Open Compute Project Awareness Courses "the only one of its kind"**

JOHN LABAN,
Trainer

## ENSURE YOUR SPOT –
## REGISTER YOUR INTEREST NOW

email **info@dc-professional.com**
or call **+44(0) 20 7377 1907**

**Find out more about...**
DCProfessional Development | Globally Accredited Training | Classroom Learning | eLearning | Career Progression Framework | Training Academy Tailored Training Plans
**T:** +44(0) 20 7377 1907
**E:** info@dc-professional.com
**W:** www.dc-professional.com

DESIGN IT OPERATIONS NETWORK

DCD GROUP

# Why would you drop the 19in rack?

The 19in rack has 80 years of tradition. *David Chernicoff* asks if it's time for a change

**David Chernicoff**
*US Correspondent*
*@DavidChernicoff*

The 19in rack mount might well be the single most ubiquitous item in the data center universe. The current EIA standard was established in 1988, but the dimensions have not changed much since the original mount was standardized in 1934.

The standard rack takes equipment with a 19in-wide front plate, and has vertically spaced mounting points located 44.5mm (roughly 1.75 inches) apart – a distance referred to as the "rack unit" or U. Racks are normally 42U tall, but the standard only defines the width and the size of the rack unit, not the depth, or external width of the enclosure, although 23.6in is typical.

**Naked racks** are not often used in modern data centers, and racks and enclosures can vary in many ways, including having either two or four posts to support the installed equipment. The rack mount enclosure – the entire ensemble supplied – is a significant differentiator in equipment selection.

Properly designed enclosures do everything from improving airflow to adding security to the equipment on the rack; some even go so far as to add features such as power and cooling as components of the vendor-supplied rack mount structure. But few changes have been made to the 19in rack, which is used in many other industries, including the data center.

In the IT world, options include rack depth, with some enclosures built deeper than the normal 36in, in order to include cable management. Others have different types of mounting holes, or include sliding rails for server mounts. Some are wider than the normal 23.6in outside dimension, and can be taller or shorter to fit specific measurements in the data center.

Nothing, however, changed the 19in width and individual U height, which has made it possible for customers to choose from a plethora of vendors and fit their standard-size equipment into any rack they selected.

If there is one task that has motivated major optimizations within the standard data center rack design it is the need to deliver cooling to hardware in the data center. Minor changes, such as the proper use of blocking panels in open spaces in racks, can result in noticeable changes to the cooling requirements of data centers.

**Rack manufacturers** have realized that by providing optimized methodologies to deliver cooling at the rack level they can help to enable data centers that are more efficient and more flexible, and which can be modified to meet changing business needs without requiring significant data center redesign.

Besides blocking panels, enclosures have been designed to optimize cooling using strictly architectural methods. In this approach, everything within the ▶

enclosure has a place where it belongs, and if cables, power cords, etc, are placed properly in the spaces provided, there is a standard, guaranteed path for air to flow through the cabinet, so cooling can be optimized and the rack will be compatible with an overall architecture such as a raised floor, hot-aisle or cold-aisle containment system. Is that a lot of water?

**Some designs add** rack-mounted fan units to a standard enclosure, often in the form of four to eight fans mounted in a 1U case. This simple addition gives IT the ability to deliver enhanced cooling within a rack enclosure without having to change the overall data center design. Vendors offer everything from individual fans, designed to be keep air moving near a specific heat source, to full-blown air-management systems, in which rack-mounted computer-controlled fans are tied into system management tools monitoring enclosure temperatures.

Vendors have also taken advantage of the variable external size of enclosures. Asetek has designed an entire liquid-coolant management system, sold as the RackCDU system, that is built into the sides of an otherwise standard 19in equipment rack. This cooling system manages the liquid used in a direct-to-chip cooling system, a closed-loop cooling system that delivers cool liquid directly to the hottest areas of operation in a rack-mounted server: CPUs, GPUs and memory.

Even the refrigerator-size horizontal immersion cooling bath enclosures used by Green Revolution Cooling actually contain a standard 19in rack mount, laid horizontally, so that standard servers can be mounted vertically in the immersion environment.

*From small enclosures to immersion tanks, the 19in rack has done yeoman duty*

From small secure enclosures, the size of an office safe, to the huge immersion cooling tanks from GRC, the standard 19in rack mount has done yeoman duty for more than 80 years. Entire generations of compute, storage and networking hardware has been designed to take best advantage of this standard, and while some industries have opted for slightly larger standards for rack mounts, the 19in standard has been far and away the most successful and widely used. So why might we want to change it?

The first challenge to the standard 19in rack design emerged in the form of the Open Rack standard promulgated by the Open Compute Foundation. While the Open Rack retains the external dimensions of a standard 19in rack enclosure, it specifies a 21in-wide rack mount for equipment, significantly increasing the usable space for hardware within the enclosure.

The Open Compute Project points out that the Open Rack standard is the first rack mount standard designed explicitly for data centers, and the features of the Open Rack take into account the holistic design philosophy of OCP, where all the varied components that go into a data center are designed with their interdependence in mind. How does that compare?

**The standard** allows for the installation of the OCP-size servers, network devices and storage, but it also differs from the previous standard in that it specifies support for a wide range of dependent devices – from dual-power buses to optical interconnects as a standard part of the reference design (currently Open Rack V2).

The goal of this standardization is to allow any equipment built to the OCP standards to be plugged directly into any vendor's Open Rack implementation. A fully enabled Open Rack will contain power, power backup, and connectivity for the equipment plugged into the rack. This will theoretically simplify the deployment, updating and management of a data center built using the OCP model.

**Rittal TS IT Server Cabinet**
Image courtesy of Facebook

The difference between the basic 19in rack mount standard and the Open Rack standard is quite clear. In the former, the only commonality needs to be the ability for the equipment to be mounted in a 19in-wide rack of any number of Us in height.

To use the Open Rack model, you have to accept not just the Open Rack design but also the OCP model for data center design and implementation.

## Open Rack Documents

**Facebook V2 Implementation of Open Rack**

**Open Rack V2 277V AC PDU Specification**

**Open Rack V2 DC PDU Specification**

**Open Rack V2 Battery Backup Module 3600W Specification**

**Open Rack V2 EU 230V AC PDU Specification**

**Facebook Open Rack V2 Power Shelf Specification**

**Facebook Open Rack V2**

**Cubby Sub-Chassis Specification**

**Fidelity Open Bridge Rack**

**Fidelity Open Bridge Power Kit**

**Optical Interconnect for Open Rack**

**Facebook Open Rack V1 CAD files**

**Facebook Open Rack V1 Specification**

**Facebook V1 gPDU Specification 0.3**

**Facebook V1 Open Rack Hardware Specification**

**Facebook V1 Power Shelf Specification**

***All available at bit.ly/1XxOTPb***

DatacenterDynamics CONVERGED
THE BUSINESS OF DATA CENTERS.

CeBIT

SWITZERLAND
CeBIT Partner Country 2016

# THE FUTURE OF THE DATA CENTER
# 14. – 18. March 2016
# Hall 12 at CeBIT in Hannover

## DCD at CeBIT 2016 brings Open-Source, Hyperconvergence, Storage and the Network Edge to the stage

CeBIT in collaboration with DatacenterDynamics is back for the 2nd annual DCD at CeBIT – delivering the world's largest full-stack data center event onto CeBIT's international stage in 2016.

SPEAKERS TO INCLUDE:

- **Armin Graefe,** *Adidas Group*
- **Cole Crawford**, *Vapor IO*
- **Stefan Lindblom**, *Spotify*
- **Jan Löffler**, *Zalando*
- **Justin Arbuckle**, *Chef*
- **Lance Smith**, *Primary Data*
- **Rene Buest**, *Crisp Research*
- **Ulrich Terrahe**, *dc-ce RZ-Beratung*
- **Dr. Sebastian Broecker**, *Deutsche Flugsicherung*

For sponsorship and exhibition opportunities contact
**sales@datacenterdynamics.com**

For more detailed requests contact
**merima.dzanic@datacenterdynamics.com**

Deutsche Messe

**www.dcdconverged.com/conferences/cebit-2016**

As the data center industry keeps growing, the competition between Nordic countries as the perfect places to host servers is intensifying. The region is an infrastructure builder's dream come true, with its cold climate, abundant renewable energy sources, political stability and a highly educated workforce. But even if you decide to build or host in the Nordics, there are still four options to choose from – and the choice isn't simple.

Google has chosen Finland – a country that currently enjoys some of the cheapest electricity in Europe. Its only Nordic data center is located in an old paper mill in Hamina, with servers cooled by seawater.

In Norway, they are digging down and using fjords for cooling. Lefdal is building Europe's biggest colocation campus in a disused mine, close to a Green Mountain facility that's set inside a former NATO ammunitions store.

Iceland is colder than its neighbors and has unrivalled access to geothermal energy. The country is home to companies such as Verne Global, which runs a data center on a 45-acre campus on a former naval air base just west of Reykjavik.

And, finally, Sweden uses district heating systems to turn hot data center air into cold, hard cash and hosts Facebook's famous Luleå campus. Servers that power the social network are actually located outside the city of Luleå, in an area known as the Node Pole, which is shaping up into a model for successful data center development in Sweden.

Today, the Node Pole is spread across eight different locations, all of which have ample space, connectivity and power supply for domestic and, more importantly, foreign data center developers.

"We have sites that are big enough to host six or seven buildings the size of Facebook's Luleå 1," says Anne Graf, development director for the Node Pole project. "Infrastructure is really important, but so are people. We're moving away from physical infrastructure towards intellectual infrastructure."

**The Nordics have** everything to play for: according to the latest *Global Cloud Index* published by Cisco, overall data center traffic will triple between 2014 and 2019. And guess what? The Nordic data center market is expected to triple the amount of power sold to data centers, but much sooner – as early as 2017, according to BroadGroup.

A whopping 8.5 percent of Sweden's GDP already comes from the 'internet economy,' and the country aims to hit 10 percent soon – on a par with Britain, where, according to the Boston Consulting Group, economic contributions of digital businesses have surpassed the manufacturing and retail sectors.

"To have a strong service sector you need a very strong digital infrastructure; you need digital services," says Tomas Sokolnicki, senior investment advisor for ICT at the Swedish Trade and Investment Council.

"Therefore data centers, connectivity and fiber are extremely important. We think it's going to be a new base industry for Sweden."

And if data centers are the flesh of the digital economy, electricity is its lifeblood. A recent report commissioned by the Swedish government has recommended lowering taxes on electricity consumed by data centers by a further 40 percent.

Data centers in Finland currently enjoy lower energy costs due to lower taxes, but the situation could change dramatically, since the underlying pre-tax cost of electricity is lower in Sweden than any of its neighbors – thanks to countless hydroelectric dams.

**Electricity in Sweden** is heavily taxed, but a campaign is urging the government to recognize data centers as an industry on a par with manufacturing – and eligible for a virtual exemption from the power tax. The issue will go before the Swedish parliament, and if the lobbying efforts are successful, electricity costs for data centers in Sweden could go down by a quarter by 2017.

Sokolnicki thinks this 'race to the bottom' cannot go on indefinitely – sooner or later, all of the Nordic countries will arrive at the same energy price level, and will go on competing for data center projects based on policies and regulation.

8.5% of Sweden's GDP is online

And Sweden offers plenty of benefits beyond low cost. Skills are one. Another is the unique properties of its power grid, which are not easy to replicate anywhere else. "We have this long, long tradition of energy-intensive industries. The whole grid and the infrastructure was built for those guys," Sokolnicki explains.

If a steel-smelting facility loses power for a short while, it can be a major disaster as the solidifying metal can cause serious damage. A power grid designed for metal processing and other heavy industries is more than capable of ensuring the 'five nines' availability prized by data center designers everywhere. The Node Pole hasn't had a blackout since 1979.

Some of the benefits are more unusual: Hydro66, a British company that recently opened its first data center in the Node Pole, has built the facility using traditional Swedish architecture and local materials, with a net negative carbon footprint.

The availability of hydroelectric power – there are 18 dams on the Lule River alone – has enabled the company to eliminate the need for gensets or UPS. "The backup for our main hydro station is the next hydro station up the river," says Andy Long, CEO of Hydro66. He explains that even when you buy 'green' electricity in one of Europe's

*The backup for our main hydro station is the next hydro station up the river*

**Andy Long, Hydro66**

# Due North

The competition for data center projects in the Nordics is evolving beyond cheap power. *Max Smolaks* goes exploring

capital cities, some of it will be lost as it travels down the wire. By locating its data center close to the power source, Hydro66 is using electricity that would otherwise be lost in power transmission. It's not lowering the total cost of ownership (TCO), but it's good for the environment – and for the utility companies.

"We couldn't have done this five or 10 years ago, because the cost of bandwidth would have been too high," Long says.

"Now you can get 10G across Europe, just about anywhere, for a couple of thousand euros a month. So it's time to ship data to the power instead of the other way around. We say 'ship photons, not electrons.'"

Taking all of the above into account, Long says that hosting servers in the Hydro66 facility would cost about a third of what a customer might pay for the same service in London, and the latency would still satisfy 90 percent of applications.

"There are lots of cold places, there are lots of places with cheap power, although a lot of it is not renewable," he says.

"But it was in the Node Pole region where we really found that ideal combination of expandable infrastructure, of renewable energy, but also the support network. We wanted something more than 'here's your plot of land and a cable, off you go.' Especially when the planning permission forms are in Swedish.

The Swedish approach could indicate that the industry is evolving beyond its obsession with numbers – beyond the holy trinity of power, network and space.

# OpenStack: too many cooks

Could the open-source cloud platform be a victim of its own success? *Max Cooter* hears why enterprise users are reluctant to jump on board

For a technology that's only five years old, OpenStack has had a big impact on the data center industry. From its early days as a research project between Nasa and Rackspace, it has emerged as the leading open cloud platform, with many of the major vendors contributing to its code.

More than 5,000 people attended the most recent OpenStack summit in Japan in October, and an OpenStack Foundation survey found that 60 percent of OpenStack projects are now in full production. Despite this, there are still some doubts about the future direction of the technology.

For a start, there's little evidence that the platform is being widely adopted in enterprises. There are also concerns, reflected in OpenStack Foundation's survey, that the technology is highly complex and that businesses don't have the staff to implement the platform. An even more pressing concern is OpenStack's very openness itself.

**In theory, openness** means that organizations are not compelled to adopt a proprietary approach to cloud, but in practice the multiplicity of systems out there has created a bit of a headache for CIOs.

OpenStack's six-monthly release cycle also has a problem, says Al Sadowski, research director at 451 Research: "Companies aren't used to software that upgrades every six months. With most software purchases, companies buy it, upgrade it, and you get support. Then every two or three years they roll out an upgrade. But that's not the way with OpenStack."

Even the number of vendors signed up for the platform can produce uncertainty, according to Boris Renski, CEO of OpenStack service provider Mirantis. "There are something like 50 companies supporting OpenStack," he says. "Forty-five of them aren't going to make it."

He doesn't mean that companies are going to go bust; rather, that there will be some sort of shake-up in the market. "We're seeing a first wave of consolidation – some of the niche ones have gone," he says. "There are a handful left, like Mirantis and Red Hat."

Renski says Mirantis and Red Hat are the only serious players in OpenStack, and while he might be expected to talk up his own company, it should be pointed out that Mirantis hitched itself to OpenStack from the outset and is the nearest thing to a pure-play provider of the platform.

Sadowski says that the number of vendor releases can be a headache for potential customers. "Everyone seems to have their own version. OpenStack is like one big set of Lego bricks. There are a lot of pieces, and there's a lack of customisation, so users have to prepare the implementation themselves: not every enterprise needs that."

And, he adds, there is a danger that too much choice is too much to handle. "Some enterprises are worried they won't pick the right one." They're worried that if they choose OpenStack it might not work as expected. This worry is a hangover from the days of proprietary systems, when vendors' offerings didn't work with other providers' products.

But John Engates, CTO of Rackspace, one of the progenitors of OpenStack, says that diversity was part of the plan from the outset. OpenStack was the most open of the open-source projects, while other projects were too closely tied to individual companies. "There are ups and downs of having so many different versions: people in different companies had different ideas. But that's a good thing, otherwise the companies start to drift and risk becoming alien."

Jonathan Bryce, executive director of the OpenStack Foundation, says that flexibility is really important. "The fact that you can customize it so much is one of the most powerful pieces of OpenStack." He acknowledges that so many different versions can cause uncertainty, where users

*In the next year or two, OpenStack will become more developer-centric*

**Boris Renski, Mirantis**

are concerned whether one implementation of OpenStack will work with another. "The interoperability efforts that we're doing are to make sure we have core functionality."

Engates draws a parallel with another aspect of the open-source world. "Multiple distributions of Linux didn't hold Linux back," he says. And Renski accepts this. "Compare OpenStack with how Linux emerged in the 1990s, when there were large numbers of vendors. In 2004, it started to take off when the main vendor was Red Hat. We'll see a similar thing happen with OpenStack."

**The trouble with this** view of the world is that enterprises on the whole do not build their corporate infrastructures on smaller companies. In certain instances, they will use open source and applications, but the main players in corporate infrastructures will be the likes of HP, IBM, Dell and Cisco. All of these players are adopting elements of OpenStack, and all make much of their contributions to OpenStack code – HP in particular.

What remains to be seen, however, is what effect the major vendors' adoption of OpenStack will have on the market. While Renski believes the market will consolidate to a couple of providers, he acknowledges that other companies won't disappear. "People adopt OpenStack in departmental clusters. They'll do something if it's easy – if they have a five-node HP system, then they'll go with HP."

And Sadowski agrees that companies will go for vendors with whom they have a relationship. "If they're an IBM customer, then they'll opt for IBM. Based on our research, we can say enterprises do prefer to go down the OpenStack path with vendors they know."

So, with all these concerns, does OpenStack have a future in the enterprise? Renski is optimistic. "I disagree with the notion that there has been a hold-up: a hold-up compared with what? Amazon?"

Sadowski says that OpenStack will not have the impact that AWS has had, but some of its use is hidden: "A department within an enterprise can download OpenStack and play around it, but they're not telling people that. There are plenty of enterprises that don't want their competitors to know they're OpenStack users."

Plenty of big-name organizations that have opted for OpenStack, including eBay, PayPal and CERN, are operating heavy-duty OpenStack deployments. But Sadowski admits that these aren't typical enterprise customers: "They're all sizeable – they have a lot of engineering resources. These are not repeatable cookie-cutting deployments." For OpenStack to flourish outside these settings, mid-size enterprises need to see the benefits.

**60%** of OpenStack projects are in full deployment

**There are two** types of user, according to Renski. "One is where – for one reason or another – in regulated environments like finance, for example, it can't go with Amazon. Or because they need a data center in a particular geographic location – such as China – a place where Amazon does not have a presence." The other organizations that will turn to OpenStack, he says, are companies where the infrastructure is part of the value-added proposition; in other words, where there's tight integration between infrastructure and product.

"People often draw parallels between cloud and electricity," he says. "But it's not like electricity – infrastructure is very innovative, unlike electricity. Users want to have control."

**So, what will the future** look like? Will there be pockets of OpenStack within enterprise environments? Or will we see more organizations yearning for the flexibility that OpenStack offers them?

For Renski, there's only one way forward: OpenStack is set to change its focus – to some extent, it's already doing this and appealing to a new audience, but Renski says this is being accelerated. "In the next year or two, we'll see more and more about OpenStack becoming more developer-centric."

To date, OpenStack has been all about building a platform for sysadmins, he says, but now there's a whole movement to support developers: "It's something you see with the emergence of containers." OpenStack has to reflect this change, or it's going to wither and die. As Renski says, "Unless it develops a story for developers, it's going to perish."

DatacenterDynamics

# AWARDS

US & Canada 2015

# HIGHLIGHT YOUR COMPANY'S ACHIEVEMENTS

What better way to align your brand with excellence?
**Call us NOW to discuss sponsorship opportunities!**

| ENTRIES CLOSE | FINALISTS ANNOUNCED | AWARDS CEREMONY |
|---|---|---|
| January 31st 2016 | February 25th 2016 | April 20th 2016<br>New York |

For more information contact:

Paul Mangles at **+44 (0)20 7426 7838** or **email namerica.awards@datacenterdynamics.com**

HEADLINE SPONSOR

Life Is On | Schneider Electric

CATEGORY SPONSORS

CBRE | EQUINIX | GEIST | MITSUBISHI ELECTRIC UNINTERRUPTIBLE POWER SUPPLIES | RITTAL

www.datacenterdynamics.com/us-and-canada-awards

# Cloud makes IT up its game

The clear pricing structure of public cloud makes enterprises look at the costs of their own data centers, says *Robert Neave*

Illustration: Studio Nippoldt

The advent of data center service management (DCSM) solutions is giving enterprises the information they need, and driving greater transparency into the costs associated with the time and activities of personnel, which is one of the most expensive operational costs in the data center.

Recently, I was talking to the data center director of a large financial services organization. When I asked him what motivated his organization to implement DCSM, his answer was surprising: "The public cloud."

Because his company knows exactly how much it costs to run applications on an Amazon AWS instance, his upper management is now asking what it costs to run applications in the company's own data center.

This particular data center director said he was confident that after evaluating internal operations, he would find he was able deliver compute capacity to the business more cost effectively than AWS – even if he ignored the potential data privacy/ compliance issues that might be raised by running his company's apps in the public cloud.

> *Comparing internal costs with AWS prompted the company to use DCSM*

But assessing all the costs of the internal option was a challenge. His team had rolled out a data center infrastructure management (DCIM) solution 18 months prior to our conversation. But, since then, he realized there was a huge hole in determining the true cost of operating the data center because they were not measuring the time and activities of personnel.

The DCIM solution gave them a very good handle on capacity planning, energy costs and how much space was being used by assets in the data center. But it did not give a clear understanding of the cost of people – one of the most expensive data center operational costs.

When the CIO asked how internal costs compared with Amazon AWS, it prompted the company to expand its DCIM implementation to perform what is being described as data center service management – DCSM.

The company started using workflow to track changes that data center personnel were making. This not only ensured there was consistency in how people were performing adds, moves and changes, but it gave them granular insight into what work was being done, and on what assets. From there they could easily determine the costs to be attributed to specific applications.

**The moral** of this story is that whether or not organizations choose to use public clouds from any of myriad vendors on the market, these public clouds have changed the way in which data centers operate, and how we now evaluate and understand the granular costs. We are seeing a shift from a time where managing infrastructure efficiently was good enough, to a new world where the data center is delivering a service that is being compared with those offered by third-party vendors.

Traditional DCIM solutions simply don't go far enough to help businesses gain a clear understanding of all the costs in the data center, which is why we now see many progressive organizations moving to DCSM to ensure they have full transparency of their operations. ●

*Robert Neave is co-founder, CTO and vice president of product management at Nlyte Software*

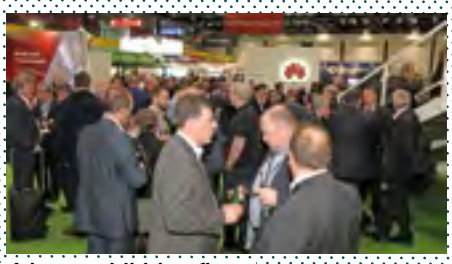
# DCD Com

## Converged Europe Snaps

Panelists Left to right: Cole Crawford, Tanuja Randery, Brandon Butterworth, Kushagra Vaid

Jane Gilmour, Coca-Cola Company

John Gromala
*Hewlett Packard Enterprise*
**DCD Converged Europe is a great opportunity for us to address an end-to-end set of data center customers with our traditional infrastructure products, servers, networking products and other services.**



A busy exhibition floor

Networking

## DCD Converged upcoming events

**Hanover**
March 14-18, 2016

**New York**
April 19-20, 2016

**Madrid**
April 07, 2016

**Bangkok**
January 28, 2016

**Jakarta**
April 07, 2016

**Bogota**
June 02, 2016

# munity

DCD Converged Europe took place in London last month, with other events in Chile, Brazil, Canada and Japan. We've had awards ceremonies in Brazil, and London in December.

## Research

**OUT NOW**
**REPORTS**

Metropolitan Hub Series: Beijing

Metropolitan Hub Series: Singapore

The Growth Strategies of Baidu Alibaba and Tencent: Implications for Data Centers

Colocation Provider Investment: Co-opting the Cloud for Future Growth

**COMING SOON**

- Digital Realty Trust (DRT) Case Study (December 2015)
- Metropolitan Hub Series: London
- Case Study: Google – Strategy and Prospects
- 2016 Global Data Center Predictions

*To order, visit www.datacenterdynamics.com/research*

## Training

**Data Center Design Awareness**
London, New York, Singapore, Madrid, Istanbul, Jakarta, Hong Kong, Sydney

**Energy Efficiency Best Practice**
London, New York, Singapore, Istanbul, Hong Kong, Sydney

**Data Center Cooling Professional**
London, New York, Singapore, Madrid

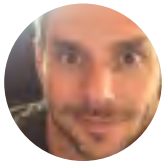
**Open Compute Project**
London, Istanbul

*To reserve your place, visit www.dc-professional.com*

## New Webinars From The Leaders In Data Center Technology

**SDN/NFV: THE REVOLUTION IS HERE. ARE YOU READY?**

Wednesday, January 20, 2016
9am (PST), 12pm (EST), 5pm (GMT)
**Speaker: Jeremy Rossbach, Senior Principal Product Marketing Manager at CA Technology**
**Speaker: Brad Casemoor, Research Director (Datacenter Networks), IDC**



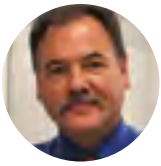
By 2019, video will make up 90% of all internet traffic and there will be 26 billion internet-connected devices.

Join market-leading solutions provider CA Technologies and global market intelligence firm IDC as they examine the pros and cons of the SDN/NFV debate, and explore the impact of tomorrow's demands on today's networks.

*www.datacenterdynamics.com/ca-tech-webinar*

**OVERHEAD POWER DISTRIBUTION BEST PRACTICE IN MODULAR DESIGN**

Wednesday, February 03, 2016
8am (PST), 11am (EST), 4pm (GMT)
**Speaker: Mark Swift, Director of Marketing, UE Corporation**
**Speaker: Steve Bornfield, Senior Data Center Consultant, Chatsworth Products Inc**



Overhead power distribution in your data center offers many attractive possibilities, but it is not without its challenges.

Join UE Corporation's Director of Marketing, Mark Swift, and CPI's Senior Data Center Consultant, Steve Bornfield, for an exploration of the options and some of the pitfalls, supported by real-life examples from the field.

*www.datacenterdynamics.com/uec-webinar*

# New year, new locks

DCD Converged Europe in London was dominated by the same themes as our website and magazine over the past year, including how to calculate power use effectiveness (PUE), the emerging nature of the disaggregated data center, what software defined will mean for the data center of the future, and how hyperconvergence will affect us in the coming few years.

This year there was not as much debate on the future of colocation as in previous years, which prompted me to do a little research after the event. An examination of the present state of colocation brings me to the conclusion that advances in technology and connectivity originally pioneered by the founders of Equinix – Al Avery and Jay Adelson – have led to a late renaissance in the prospects of both data center colocation and the cloud.

**Without Adelson and Avery's** insight into what the internet of the future would need, we would not have the sophisticated infrastructure that can support the speed, connectivity, and the need for regional and local marketplace connections that has been emulated by all other colocation providers.

The tsunami that is the Internet of Things (IoT) is taking us by surprise with its sheer size and unpredictability. But how do we handle the safe storage of the huge amounts of personal data that is being created? Some players, such as Digital Realty, Interxion and Telehouse, have evolved methods of safe storage. Future discussions at DCD Converged will have to address the security implications of all this.

I once met Al and Jay. I was introduced to them by their boss at the time – Digital Equipment Corporation's Ken Olson. They were in the late stages of planning Equinix. He said they would go far because they cared about the detail – not just about what was needed, "but what will be needed in the future."

Let's hope their successors care about enough detail to solve what I think will become 2016's biggest problem – data security. How this industry handles it will determine our reputation for a long, long time.

*How do we handle the safe storage of huge amounts of personal data?*

**Bill Boyle** - *Global Managing Editor*
*@billboyleDCD*

STULZ

CLIMATE. CUSTOMIZED.

# Cooling solutions for every scale.

All over the world, our air conditioning solutions keep sensitive data center technology cool, and make sure that information of crucial importance never overheats. Whatever the scope of your requirements, we will plan and deliver your ideal air conditioning solution.

**www.stulz.de/en**

©2015 Sanford, L.P.

The new DYMO XTL 300 features a revolutionary life-like colour preview, app-based interface, and pre-loaded templates to make printing complicated labels a remarkably simple task.

DYMO®

XTL™

XTL.DYMO.COM