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What's the future of the data center? The big list of thought leadership

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As detailed in a recent [article](#) on Wikibon, “Data centers are at the center of modern software technology, serving a critical role in the expanding capabilities for enterprises.” Data centers have enabled the enterprise to do much more with much less, both in terms of physical space and the time required to create and maintain mission-critical information.



But the technology surrounding the data center is positioned to evolve even more dramatically, in terms of conception, configuration, and utilization. More importantly, the technologies surrounding the data center will both have an impact and be impacted over time. Towards the end of last year, Gartner [identified](#) eight areas to consider when developing a data center strategy that balances cost, risk and agility.

We wanted to take that analysis further, reaching out to thought leaders across the enterprise technology space, for their perspectives on the future of data center technology.

Here are their responses:

Aaron Rallo, CEO, TSO Logic



Now that power costs exceed 33% of the total datacenter spend, executives will begin to demand a better understanding of where power dollars are being spent and how to reduce them without impacting the business.

Alternative power sources and driving down power usage efficiency (PUE) are a few pieces of the puzzle but they don't address the underlying problem of IT workload and excess capacity. The future lies in something more fundamental to the data center and the application ecosystem itself: automatically transforming today's hardware-centric data centers into software-driven environments where applications and service delivery can be seen, measured and controlled based on workload.

Aaron Rallo is founder & CEO of TSO Logic. Aaron has spent the last 15 years building and managing large-scale transactional solutions for online retailers, in datacenters around the world.

Adam Leventhal, CTO, Delphix



Today's software defined datacenter builds on and completes the vision of hardware virtualization that VMware popularized in the early 2000s. Progressive layers of software abstraction have made those environments simpler to create. Automation and the devops trend has made it easier to instantiate complex containers, but it's still a challenge to populate those containers with data and applications. I think the next step in that trend will be toward data virtualization, quickly filling those containers with content, code, and configuration. As it currently stands, the volume of data is growing faster than big data environments can manage efficiently; data virtualization will alleviate that pain.

*Adam is CTO at **Delphix**, as well as a co-inventor of DTrace and the winner of several industry awards, including the top prize for the 2005 WSJ Technology Innovation Awards program.*

Aftab Jamil, Partner and Leader of the Technology and Life Sciences Practice, BDO



As data storage needs increase, data centers will push the boundaries of tangible capacity and more companies are likely to branch out into the use of cloud computing as well as more innovative ways of storing and using data. This shift could also drive pace of innovation and M&A activity in the tech industry as more hardware companies engage with software/cloud computing companies to meet data storage demands that incorporate both cloud and physical storage capabilities. According to BDO USA's 2014 Technology Outlook Survey, 60 percent of tech CFOs expect the software/cloud computing sector to see the most M&A activity in 2014, which could be attributed to the increasingly critical need to better manage the exponential growth of data and resulting data storage needs

*Aftab Jamil, Partner and Leader of the Technology and Life Sciences Practice, **BDO** has over 17 years of experience in public accounting and has substantial experience in serving medical device, life sciences and technology sectors.*

Andrew Mullen, SVP, Talon Storage



File acceleration and sharing technologies are changing the technology landscape making it easier for businesses' remote offices and road warriors to be able to connect and communicate with the corporate datacenters and in a meaningful way. These technologies allow IT organizations to secure and accelerate the delivery of business applications across the distributed. Solutions need to enable full-scale branch office

consolidation, eliminating performance bottlenecks, but maintaining data integrity through collaboration.

Andrew Mullen, SVP, Talon Storage, has more than 16 years of global sales and management experience in IT infrastructure, enterprise software, and cloud-based delivery of software and services.

Arsalan Farooq, CEO, Convirture



Control of computing resources will be entirely automated by software and we actually realize the end goal of computing delivered in the form of "IT as a service".

Centralized management and unified orchestration will handle server provisioning, performance monitoring, and resource management across multiple converged systems technologies and across multiple data centers and cloud computing resources. The software defined data center (SDDC) is another layer of abstraction meaning that now it is possible to magically create data centers with keystrokes and mouse clicks (no lifting servers and messing with cables required).

Arsalan Farooq is CEO and co-founder of Convirture, which he started in 2006, with more than 15 years of systems management experience.

Atchison Frazer, CMO, KEMP Technologies



A trend for 2014 will be an increased market demand for an automated approach to load balancing in the cloud. So instead of the traditional approach of a bridge from the physical hardware, resource scaling from a static pool and

on-demand auto-provisionings of cloud resources, an automated approach to load balancing or application delivery in the cloud will be based on a flexible, dynamic Cloud Control Point (CCP). The CCP will provide discreet graphical logic blocks that can be interconnected by users to create their own service routing logic, or flexible service logic, similar to what Microsoft delivers in its System Center platform.

Atchison Frazer, CMO of application-centric load-balancer solutions provider, KEMP Technologies, has over 20 years' experience in technology marketing for both global IT leaders like Cisco and HP.

Ben Coughlin, CFO / Founder, Colovore



The trend towards the deployment of virtualized and converged IT infrastructures by companies has a significant impact on data center requirements. Blade servers and virtualized gear require meaningfully more

power and cooling per rack unit given the dense characteristics of the infrastructure. As 1U servers can now draw 500 watts – 1 kW of power per rack unit, legacy data centers built to support 4-5 kW of maximum power density per rack will face major limitations. Power density has

emerged as the critical variable in data center infrastructure, and it is the key to lowering total cost of ownership for customers.

Ben Coughlin, Founder of Colovore, has a long history as a communications-focused private equity investor, providing advisory services to and serving on the Boards of Directors of numerous growing technology companies.

Bill Mazzetti, Senior Vice President & Chief Engineer, Rosendin Electric



Software-defined network and commodity-defined hardware, similar to the Open Compute Initiative, will pose a huge challenge to the current set of hardware manufacturers in the data center. While data facilities will still expand to address growth, the newer storage systems or the adaptation of older technology such as Blu-Ray, will allow many users to level their facility, energy and platform needs.

Bill Mazzetti, PE, is Senior Vice President and Chief Engineer at Rosendin Electric in San Jose, California. Bill has expertise in mission critical design and consulting, including data center design.

Brian Zabroski, Director of Channel Management, VXSuite



As businesses drive their technology towards cloud applications and hosted solutions, data centers and VARs need to align themselves with delivering effective technology strategies. These plans need to encompass all parts of a business' technology needs, not just storage or disaster recovery. Data centers can capitalize on higher renewal and adoption rates when a business understands how moving one piece of their infrastructure to the cloud can affect the rest of their eco-system.

Brian has focused on helping technology companies grow their businesses for nearly twenty years. He currently serves as the Director of Channel Management for VXSuite. You can follow him @Brianzab.

Colin Lacey, VP Data Center Transformation Services & Solutions, Unisys Corporation



To avoid resource contention and application performance degradation, IT organizations will increasingly seek alternatives to virtualization, such as the containerization offered by the secure partitioning architecture on the Forward! by Unisys platform. This approach enables creation of a secure "container" of dedicated resources for each application workload and simplifies data center consolidation. It enables users to migrate enterprise Unix applications to a Linux environment knowing that the platform will combine the flexibility and cost benefits of virtualization

with the security and predictable performance they demand from proprietary Unix systems.

Lacey is Vice President, Data Center Transformation Services and Solutions at Unisys. He leads solution management for services including cloud, virtualization, data management, automation and planning.

Craig Wright, Principal, Pace Harmon



Demand for skilled data center staff is increasing. As virtualization in data centers evolves, there is an increasing reliance on technology expertise. This also means that there is a shift from quantity to quality of resources as those on staff must be equipped to deliver optimal performance. We're expecting more organizations to migrate to PaaS or SaaS in a hosted environment to offset this need.

Craig Wright is a principal of outsourcing advisory firm Pace Harmon. A former CIO, Craig has 30+ years of experience in technology-focused strategy development, IT portfolio management, strategic sourcing and IT operational experience.

Derek Granath, Senior Director, Product Management, Extreme Networks



Enterprises, large and small, continue to adopt cloud services, such as SaaS, IaaS, PaaS, to either augment their existing data center towards a hybrid cloud model or replace their on premise data center and its applications.

While many enterprises will continue to operate their own data centers for critical business services, enterprise data center growth will slow down as the adoption of cloud services increase. That said, cloud providers are growing fast and investing in servers, storage and connectivity to build out their offerings. A new category of regional cloud service provider is emerging who will provide differentiated services to the enterprises who want to fully migrate to the cloud

Derek Granath, Senior Director, Product Management, Extreme Networks, has over 20 years of technology product management, marketing, and business development experience.

Dhritiman Dasgupta, Senior Director of Product Marketing, Juniper Networks



As industry trends like mobility, cloud, social business and big data/analytics initiatives continue to stretch IT budgets, SDN will drive toward the mainstream in 2014 with its ability to reduce operation expenses and scale network resources. It will become essential for companies to adopt solutions that bridge the physical and virtual, encouraging SDN to

flourish while protecting existing hardware investments.

Dhritiman Dasgupta (DD), Senior Director, Product Marketing for Enterprise Systems at Juniper Networks. DD has over 12 years of experience in the networking industry.

Ditlev Bredahl, CEO, OnApp



In the year ahead, we're going to move away from the silos of infrastructure we have today, where your application stack uses different types of IT, whether that's in-house, delivered as a service, or on traditional dedicated hardware with no integration. The future of the data center will show movement towards a more fluid environment where everything is delivered as-a-service, allowing you to run your workloads wherever they work best, managing and provisioning them through a single pane of glass.

Ditlev Bredahl, OnApp CEO and co-founder, is an Internet and hosting industry veteran, with more than 15 years' experience leading hosting and technology companies.

Doron Kempel, CEO, SimpliVity



Convergence 3.0 is the big trend for data centers and features a new data architecture. This architecture includes full convergence of all infrastructure functionality running in a single shared resource pool with deduplication, optimization and compression of data at inception once and forever, and delivering centralized global management. This is the future of the software defined data center.

Chairman & CEO, SimpliVity. Before starting SimpliVity, Doron was the Founder and CEO of Diligent Technologies, acquired by IBM in April 2008.

Edward Henigin, CTO, Data Foundry



In the past, data center space was bought and sold like real estate, which made customization, implementation, coordination, and support services a secondary concern. In the future, customers will recognize the value of data center partners who collaboratively design hosting solutions, take responsibility for design and delivery, and offer a large menu of additional network and IT services. With colocation providers acting as service providers, customers will get the most value for their investment.

Edward Henigin is the CTO at Data Foundry. In his role, Henigin a 19 year veteran of the company, develops the overall technology vision for the company and its three data centers.

George Teixeira, President, DataCore Software



The traditional storage model is broken. Behavior has shifted and disrupted how businesses buy storage as they can no longer afford to rip out the old and throw more costly new hardware at their problems. Instead they are seeking smart automated software that runs on lower cost

hardware and optimizes their existing investments and provides the agility to easily add new technologies non-disruptively. Bottom-line, the path to a software-defined data center where users gain freedom of hardware choice and control of their resources is inevitable and that means storage must also be software-defined.

Mr. Teixeira creates and executes the overall strategic direction and vision for DataCore Software. Mr. Teixeira co-founded the company and has served as CEO and President of DataCore Software since 1998.

Gillis Cashman, Managing Partner, M/C Partners



As more applications move to the cloud the underlying architecture and traffic of the data center will undergo significant change. To date the majority of data center architectures have been designed to maximize power

efficiencies. But as more applications move to the cloud there will be a greater focus on maximizing application performance which requires a far more distributed architecture where the proximity of the data center and latency of the underlying network are increasingly more critical.

Servers and applications will need to be pushed closer to the end user which in turn will drive increased demand for data center infrastructure in Tier II and smaller markets.

Gillis S. Cashman Managing Partner of M/C Partners. Mr. Cashman is focused on the wireline broadband infrastructure and services portion of the firm's portfolio.

Greg Scherer, Vice President of Server and Storage Strategy, Broadcom



With new mega data centers emerging to handle extreme bandwidth and workloads, traditional server vendors that provide a high level of service at a premium are bound to face serious competition from 'Open Platform' vendors

that present a potentially less expensive and more flexible infrastructure. This change in the scale of users, volume of traffic and data delivery mechanisms represent a massive inflection point in the data center ecosystem that will forever change how compute, storage and networking are deployed. Broadcom believes that instead of a trend to be feared, these changes bring with it tremendous opportunities in years to come for savvy end-users and savvy vendors.

Greg is the Vice President of Server and Storage Strategy for Broadcom Corporation and the former Chief Technology Officer for Emulex and

Neterion.

Hubert Yoshida, CTO, Hitachi Data Systems



The data center and its supporting technologies are constantly evolving and adapting. 2014 will be no exception. I see Big Data propelling data center innovation

forward. Not only will we see scalable file efficiencies appear to address the sheer amount of Big Data resulting from ongoing web engagements and the continued growth of machine data, but we'll also see object storage cast light on hidden value within dark data. This will allow companies to better take advantage of the information they have on hand. We'll also see data managed better with the reduction of storage backup through archive, copies and snaps, balancing out costs with business objectives. From a product-specific perspective, we can expect to see the continued adoption of enterprise flash over commodity SSD, to help better address the velocity of Big Data.

As Vice President and Chief Technology Officer of Hitachi Data Systems, Hubert Yoshida is responsible for defining the technical direction, leading the company's effort to help customers address data life cycle requirements and resolve compliance, governance and operational risk issues.

James White, Director of ITO/Oracle Solution Architecture, Secure-24



The business will increasingly demand that IT organizations develop service level agreements that meet or exceed the requirements of their customers. It is critical that there is a focus on continual process improvements and that there is visibility in to that improvement.

James White is the Director of Solution Architecture at Secure-24. In his role, he leads a team to help design innovative solutions that meet clients' technical, compliance and business requirements.

Jarrett Potts, Data Backup Leader, StorServer



Within the next few years, the trickle down technology of virtualization will finally hit production in the mid-market.

The big companies have been doing it for a few years, and now that it is becoming easier, smaller companies that

may not have the staff of the enterprise model will increasingly start to use virtualization in production. Along those same lines, you will start to see the utility or appliance model continue to grow as those large companies and mid-market companies look to off-load the day to day tasks to less skilled and offsite workers. Within the next 3-5 years, we will even see a more advanced set of features that stretch across multi-vendor environments, such as 3rd party mirroring and snapping, which

allows for all the different vendors' disk sub-systems to play nice in an IT environment.

Jarrett Potts is director of marketing for STORServer®, a leading provider of proven data backup solutions. Potts plays a key role in providing pre- and post-sale marketing and technical support.

Jason Starr, Senior Director, Analyst Relations, Equinix



It's an exciting time in the networking world given the innovations occurring such as high density Ethernet switches, software-defined networking, application-level QOS, etc. – all of which have the power to increase companies' productivity while offering cost savings and driving new revenue. To act on this trend, network engineers should look carefully at their WAN/connectivity and traffic growth driven by video, cloud, big data, social and mobile, and determine a scalable strategy to ensure an improved end-user experience and continued rewards.

Jason Starr joined Equinix in early 2000 and has served in a variety of roles including product development product management and channel marketing, he is now Senior Director of Investor Relations.

Joe Arnold, CEO, SwiftStack



The trend towards software-defined infrastructure has been launched by the biggest operators. While most enterprises do not have the same resources to build their own infrastructure software, they do have the same requirements to drive up scale and drive down costs. To help them compete with the biggest operators, new software-defined solutions are being added to the enterprise data center architecture.

Joe founded SwiftStack to deploy high-scale, open cloud storage systems using OpenStack. He managed the first public OpenStack launch of Swift independent of Rackspace, and has deployed multiple large-scale cloud storage systems.

John Boyd, Principal, The Boyd Company



The most critical site selection factor that is driving data center site selection decisions today is access to low cost and reliable green-friendly power. Access to wind, solar, and hydroelectric power is critical for cities wanting to attract these highly coveted data center projects. The best example of this is Quincy, Washington – where low cost hydro electric power from the Columbia River (2 cents a kilowatt) has helped this Central Washington State town attract major data center operations from Microsoft, Yahoo, Dell, Intuit, Sabey, and others.

John Boyd, Jr. is a principal of The Boyd Company, Inc, a nationally known corporate site selection firm that helps major corporations

where to invest and locate facilities.

John Consoli, EVP, AssetVue



At AssetVue, we believe the concept of the physical data center is changing. Cloud Services, Virtualization and the redundancy of applications have given us cause to re-visit the “rules”. As the walls of the enterprise data center

disappear, physical inventory and management of assets becomes more of a challenge. We believe this is why there is a growing interest in RFID asset management solutions.

John Consoli EVP at AssetVue, has more than 25 years of experience in the data center industry.

John Gentry, VP of Marketing, Virtual Instruments



2014 will see more organizations aligning around cross-domain teams to drive improved infrastructure performance and thus business agility. Throughout 2014 and beyond, businesses will begin to take a more thorough

look at data center activity in order to optimize business operations. Lastly, companies will implement vendor agnostic tools that aggregate and correlate information to provide an accurate view of the real-time performance of systems across the hypervisor, server, network and storage layers.

John Gentry is Vice President of Marketing at Virtual Instruments and brings 18 years of experience in open systems and storage ecosystems.

John Humphreys, VP Sales & Marketing, Egenera



Software defined everything, including the data center, has become a hot topic. The next chapter in this story is in harnessing this abstraction to meet service level and agility goals. When this is achieved, the result is the

programmable data center. In 2014, the conversation around the SDDC will shift to the programmable data center as organization look to layer policy management, service level management and orchestration capabilities on top of resources that have been abstracted, pooled and delivered as software.

John Humphreys brings more than a decade of technology experience to Egenera and has global responsibility for brand awareness, lead generation, sales enablement, product marketing, and channel development.

John McDonald, CEO, CloudOne



Everyone's talking about big data, but my view is that if you're going to do "big data", you'd better have "big" supporting you. As the wild west analytics market starts to pick winners and losers, the small and incapable will start to be shown for what they are: small and incapable. Think first of flagship partners with solid, proven technology to make the most of these tricky technologies.

Prior to founding CloudOne in 2009, McDonald was the Business Unit Executive for Product Introduction + Exploration, part of the Americas Software Technical Sales team for IBM.

John Scaramuzzo, GM and SVP of SanDisk's Enterprise Group, SanDisk



As we move through 2014 and beyond, multiple advances in data center and storage technology will emerge to place the possibility of a 'flash-transformed data center' within reach. We have seen SSDs increase reliability and affordability, as well as include more enterprise features to ensure data security, improve IOPS performance, lower power consumption and heat emission, and lower, more consistent latency. Data center managers should start evaluating what their business applications—both today and tomorrow—will require in terms of performance, so they can position their business to take advantage of the 'flash-transformed data center'.

John Scaramuzzo is senior vice president and general manager of SanDisk's Enterprise Storage Solutions team and brings more than 25 years of storage industry experience.

Julie Lockner, VP Product Marketing, Informatica



As technology surrounding the data center continues to evolve, one trend we are seeing become more and more important is data center consolidation. There are a variety of different approaches companies can take during consolidation initiatives, but one common theme we've seen among CIOs is that any time a new application gets rolled out, it is best practice to retire the application that is getting replaced as soon as possible. This will speed up new application adoption because users are forced to stop using old applications, accelerate ROI by not paying for duplicate applications, and provide more career development opportunities for employees who will learn new technologies.

Julie is responsible for business development and product marketing strategies ensuring Informatica data privacy and data archive solutions are aligned with the market needs and direction.

Karthi Subramaniam, Chief Architect, ADARA Networks



In the next couple of years, performance concerns, insider security threats, mobile devices (including wearable devices), and the Internet of Things will dictate technology trends in the data center. As a result, we will see hardware manufacturers take the lead on the next wave of virtualization, developing newer, hardware centric, ways to alleviate the hypervisor related performance overhead; an increased need for Virtualized Network Functions on mobile and home gateways; and a strong demand for better security than VLAN-based isolation, with Layer 2 encryption becoming the standard configuration in data center and campus network environments.

Mr. Subramaniam serves as ADARA Chief Software Architect. Mr. Subramaniam leads the design and development of Software Defined Networking Applications, Systems, and Architectures.

Kevin Dalton, VP of Design, Digital Realty



Emerging trends such as the Internet of Things, wearable computing and big data analytics all require well connected, secure data center infrastructure, and are further consolidating significant amounts of value, in the form of data, within data centers. It's unclear exactly how the Internet of things and wearable computing will unfold, but these technologies will surely generate massive amounts of data that companies will likely need to handle differently—this could alter the data center landscape. For example, latency and response time may become an issue for certain types of machine-to-machine or wearable computing.

Kevin Dalton is VP of Design at Digital Realty and leads a team of engineers that works with customers to assess their technical needs and guide them in selecting the appropriate data center solutions and construction design.

Kieran Harty, CTO / Co-Founder, Tintri



This year, more than 70 percent of workloads will be virtualized, largely due to the simplicity of managing virtual machines. End-users are demanding simple storage management for these virtualized environments and improved automation of data management. Application-aware storage will reduce CAPEX and management costs significantly. In the networking world software defined networking (SDN), which is conceptually similar to application-aware storage, will work in parallel to increase efficiency and reduce complexity.

Kieran is the Chief Technology Officer and co-founder of Tintri. Before founding Tintri, he was Executive Vice President of R&D at VMware for seven years, where he was responsible for all products.

Mark Shirman, CEO, RiverMeadow Software



In 2014, it's all about cloud migration. We're living and working in a global society that is rapidly changing on a daily basis, and in order to thrive in today's business environment, we need to quickly, thoroughly and efficiently embrace change. With the cloud, change is always inevitable. The cloud offers enormous opportunities for IT to break the vicious cycle demanded by traditional legacy systems in the physical data center, and by taking the proactive role of moving workloads to the cloud IT can reduce costs, increase management control, and build a strategy for continuing productivity improvements.

Mark Shirman is President and CEO of RiverMeadow Software where he brings nearly 30 years of entrepreneurial experience in the IT arena. Prior to RiverMeadow, Shirman was the founder and CEO of GlassHouse Technologies.

Mark Baker, Ubuntu



Interoperability is crucial to ensuring that the cloud is easy to deploy, use and manage as more and more enterprises adopt cloud strategies. Greater interoperability is achieved by testing and validating the compatibility of different infrastructure components, so companies can quickly deploy cloud environments that meet their needs, without worrying about whether all of the pieces of the puzzle fit. A collective effort around interoperability will ensure organizations gain the benefits of the cloud, while still allowing decision makers to work with the brands they trust.

Mark Baker is currently working at Canonical in Product Strategy for Ubuntu Server and Cloud. He has more than 20 years of experience managing business development and marketing at leading software companies.

Mark Myers, Director of Cloud Service Management, Datalink



It's time for internal IT organizations to reclaim IT. In the quest for quicker delivery of IT services, business units are bypassing internal IT and seeking services from external cloud providers with little to no concern for security, compliance or data recovery. Internal IT organizations need to transform to services-oriented models in short order.

Mark Myers leads Datalink's Advanced Services Cloud Service Management practice. Mark helps Fortune 500 and mid-sized organizations transform for better alignment between IT and business units to drive greater IT efficiency and improved use of technology for IT services.

Mark Zimmerman, Senior Advisor & CIO, MaRS Discovery District



I see two key issues in the data center in 2014. First the lines between the internal data center, the private and public clouds and content distribution networks will continue to blur. Each offers a compelling mix of cost and performance for particular applications and a smart CIO will have all of them in her toolkit. Second as a result of this mix and match approach the network will remain the bottleneck for many if not most systems. CIOs will need to get much more rigorous about the geographic distribution of 'fast' and 'slow' data, computing resources and the networks that connect them if they are to meet the demands of users for quick, seamless and up to date access to applications wherever they are.

Mark is Senior Advisor & CIO at the MaRS Discovery District. Mark is passionate about the use of technology to drive innovation and business performance. He's @markzim on Twitter.

Michael Madden, General Manager, Mainframe, CA Technologies



In order to address the needs of the data center, there will be a renewed focus on automation coupled with a delivery of analytics based solutions. The data center is changing strategically and tactically, and the pace of change cannot be handled though exclusively manual means. Successful management and automation solutions will include smarter sensing agents, analytics and a user experience that decreases workload on operations staff. Particular areas of focus will be the OPS side of DevOps since the hypergrowth of applications is already underway. Better analytics, with an eye on anticipating issues and reducing false-positives in the areas of simulation, application performance management and work load management, will give IT and the business the opportunity to thrive in today's dynamic data center.

Michael Madden is the general manager of the CA Technologies Mainframe Business Unit and is responsible for delivering next-generation Mainframe Strategy focused on driving innovation and growth.

Michael Waclawiczek, VP of Operations and Marketing, NuODB



With real concerns about failures and downtime, IT decision makers need to look for a DBMS with peer-to-peer, on-demand independence. That kind of architecture is what yields high availability, low-latency and a deployment model that is easy to manage. The architecture needs to be dynamic; be able to react to resource availability changes, and also able to bring new resources online on demand to take over for any that have failed.

Michael directs the NuoDB marketing efforts across corporate communications, product marketing, online marketing, and lead generation. He also leads the company's cross-functional initiatives in his role as vice president of operations.

Narayan Venkat, VP of Products, Violin Memory



Gartner notes application acceleration as an area of focus in 2014. I couldn't agree more. Applications are at the heart of every business and decision makers are increasingly demanding real-time performance. By transforming data storage infrastructures from legacy storage to flash-based persistent memory, IT providers can dramatically accelerate applications while reducing the cost to store and retrieve massive volumes of data. I'd urge every business owner to ponder what impact would they have on their business if their applications and data storage infrastructure operated at the speed of memory

Narayan Venkat is vice president of products and marketing at Violin Memory, leading the strategy to build a portfolio of scalable flash storage systems

Neil Levine, VP Product Management, Inktank



The phrases software-defined networking and software-defined storage are most than just buzzwords and reflect the fact that a number of new technologies are emerging which offer the same webscale technology but in a format that's consumable by the average enterprise. Not only are they changing the economics, by allowing customers to use commodity hardware, but when combined with the 'DevOps' influenced tools of configuration management, such as Puppet, Chef etc, allow a level of automation that until recently was only available to the likes of Google and Facebook

Neil is responsible for Inktank's product strategy, company transforming storage through the enterprise-wide adoption of Ceph, the massively scalable, open source, software-defined storage system.

Nick Ilyadis, VP & Chief Technical Officer of Broadcom's Infrastructure and Networking Group (ING), Broadcom



In the case of long-term infrastructure planning, it is essential to consider how network function virtualization (NFV), will impact and enable data centers in the next five to 10 years. NFV is an ideal alternative to traditional networking solutions, as it allows organizations to upgrade infrastructure as their needs evolve instead of taking the ineffective 'guess and check' approach. With NFV, network functions are implemented in software; thus, they can be easily moved to, or

instantiated in, various locations in the network without having to install new equipment. By leveraging NFV, we'll see data centers to take their game to next level.

*Nicholas (Nick) Ilyadis serves as Vice President and Chief Technical Officer of **Broadcom's** Infrastructure and Networking Group (ING), where he is responsible for product strategy and cross portfolio initiatives for a broad portfolio of Ethernet chip products.*

Nishikant Nigam, Vice President of Infrastructure Management Services, Infosys



The co-existence of cloud technologies and traditional data center elements will trigger the emergence of models and standards that bridge the two worlds. Seamless use of hybrid environments will enable enterprises to gain higher efficiency from their infrastructure investments. While large enterprises may go further down the path on their cloud adoption road maps, some may even have blueprints ready; infrastructure services will continue to support hybrid deployment for foreseeable time

*Nishikant Nigam is Vice President of Infrastructure Management Services at **Infosys**. His expertise includes global delivery models, emerging technology trends and implementation as well as IT strategy, management and services.*

Paramesh Gopi, CEO, AppliedMicro



Silicon has to be malleable – ready for the software-defined data center. Data center operators will not compromise performance levels provided by brawny cores, large memories and big I/O pipes. Data centers are looking for the lowest TCO for the highest density solutions

*Dr. Paramesh Gopi, Ph.D. is CEO and president of **AppliedMicro** responsible for the company's business operations and bringing to market the industry's first 64-bit ARM-based server technology, X-Gene.*

Patrick Bourke, Enterprise Architect, Zensar Technologies



I predict that we will see more managed network and security posture in 2014. As companies witness one data breach after another, active security defense and protection are on the rise. We can expect to see more organizations move to fully outsource their security or build a robust security infrastructure to actively monitor ""real time"" data movement while probing and preventing attacks.

*As an Enterprise Architect at **Zensar**, Mr. Bourke is responsible for*

assessing and designing data center solutions to meet the ever evolving requirements of today's enterprise organizations.

Paul Daugherty, CTO, Accenture



In Accenture's Technology Vision 2014, we have seen the future of data centers and it is...hyperscale. The latest innovations in hardware including low-power CPUs, data storage and engineered systems, are converging through hyperscale systems designed to meet the growing demand for the holy grail of data centers — bigger, faster, cheaper. Pioneered by data-dependent companies like Google and Facebook, a hyperscale system is supersized, super-scalable and resilient. The good news is hyperscale systems are becoming accessible to a wide range of companies, and not just limited to Internet titans. In an always-on world, it's what digital businesses need to access unlimited compute power that can be turned on and off as needed.

Paul Daugherty is Accenture's Chief Technology Officer and also serves as managing director of Accenture's Technology Strategy and Innovation group. With these roles, Daugherty is responsible for Accenture's technology innovation and growth agenda.

Paul McClure, Chief Technologist, Cloud Solutions Group, CommVault



Today, the market positions the cloud as a disruptive technology, armed with the capabilities to overtake markets tier by tier. Its evolution will guarantee greater scalability, usage / consumption based pricing, and ubiquity amongst applications and consumers. Soon, many enterprises will start to relieve their private cloud environments from applications, although private cloud growth will continue for the more heavily regulated industries. With the benefits of infrastructure efficiencies and dynamic scaling, pairing cloud adoption with virtualization of mission critical apps will ensure an enterprise's data center is a well-oiled machine.

Paul McClure is CommVault's chief cloud technologist, leading the CommVault Cloud Solutions Group, a dedicated worldwide team that is 100% focused on Cloud and Service Provider opportunities and partners.

Rene Oldenbeuving, GM Cloud Business, Acronis



Like the rest of IT, data center technology is evolving at a rapid rate and new trends are emerging. For one, massive global companies like Google and Amazon are building data centers for specific regions, expending their data center locations to various countries in the EMEA and Asia-Pacific regions. I also anticipate that data centers will become part of the

software-defined everything trend, as more and more components of the data center will be software, not hardware. And with the recent data breaches, security in data centers will become a critical topic, particularly around encrypting them in a way that cannot be hacked.

Rene leads strategic management of Acronis' business unit of cloud solutions for data backup, storage and disaster recovery. He joined Acronis in July 2013 and played a key role in the launch of Acronis Storage.

Rich Ungar, Global Head of R&D, ABB Decathlon



2014 will be the year data center professionals turn to DCIM as a standard part of their toolset. This is being driven by the accelerating shift of IT services from traditional enterprise data centers into the colocation, managed services, and hybrid cloud environments. It's not about cost pressure, it's about a whole new market orientation.

Richard Ungar is global head of R&D for ABB Decathlon for DCIM, where he leads both the business growth and product development of ABB's data center infrastructure management system in North America.

Rick Stevenson, CEO, OpenGear



I think we'll see a marked increase in data centers using nearby natural resources to their advantage – for both economic and environmental reasons. For example, utilizing neighboring rivers or the area's air currents for cooling will prove an increasingly strategic way to improve data center efficiencies. A cheaper and cleaner data center infrastructure is coming, and natural resources will play a part.

Rick Stevenson is the CEO of OpenGear, a company that builds remote infrastructure management solutions for enterprises.

Ritu Jyoti, Vice President of Product Management, Kaminario



In 2014 a software-defined data center will become a reality and all-flash arrays will finally go mainstream. Organizations looking to modernize their data center will look at dynamic and scaled all-flash arrays to help drive more simplicity, agility, and cost efficiencies in their storage architectures. We'll see a lot of changes happening specifically on the infrastructure side, as more data centers embrace virtualization and cloud computing deployments. In fact, we predict that all-flash arrays will make up at least one third of the data center for large enterprises and 35 percent of the total enterprise storage spend this year.

Ritu Jyoti is responsible for Product Management at Kaminario. Ritu has

over twenty years of experience driving big picture corporate growth and strategic direction by identifying high potential new business, market, and partnership opportunities.

Robert Miggins, SVP Business Development, PEER 1



To get the most out of cloud computing today, organizations are using hybrid environments, combining single-tenant private architecture to ensure strong performance and security with a public cloud environment that can deliver instant availability and flexibility. However, moving forward we will begin to see the rise of smart dedicated servers that incorporate many characteristics of a cloud environment into one box. These smarter dedicated servers will be able to deploy in minutes, and because they will be managed by a thin hypervisor layer with the ability to scale up RAM without rebooting, there will be less downtime and a better customer experience for the end users.

Robert Miggins is the senior vice president of business development for PEER 1 Hosting. He has worked for more than 14 years in IT infrastructure, including sales, marketing, product development and operations.

Russ Kennedy, SVP Product Strategy, Cleversafe



According to IDC, the size of the digital universe is more than doubling every two years. As data storage needs increase, traditional storage methods become expensive and the potential for server failure, loss of data and significant downtime for customers increases. This year, a trend in data center storage for companies with large amounts of data will be a shift to object storage technology that reduces costs and bandwidth, streamlines IT management processes, increases security and eliminates redundancies.

Russ Kennedy is Senior Vice President of Product Strategy and Customer Solutions at Cleversafe, the market leader in object storage. Russ has more than 20 years of experience in the storage industry.

Sam Erdheim, Senior Security Strategist, AlgoSec



Virtualization and cloud computing are being used by more organizations to modernize their data center because of the many financial and operational benefits. The challenge is that virtualizing a physical data center and moving it to a private or hybrid cloud requires careful analysis of both security and connectivity needs. Conducting a migration is often a lengthy and costly project that needs to occur without disrupting existing services and without unplanned downtime to critical applications that the business

relies on in order to run.

Sam Erdheim is senior security strategist at security policy management company, AlgoSec, and has more than a decade of product management and marketing experience in the IT software space, from email archiving to information security.

Shawn Mills, CEO, Green House Data



The adoption of low-energy efficient equipment and operations will remain a top priority as innovators continue to improve operations. This is not a PR opportunity, but a legitimate business advantage over competitors operating at a higher cost. From a service standpoint, integrating disaster recovery and backup planning will be vital going forward. For enterprise operations who can push petabytes of data, a solid disaster recovery objective is a technology requirement. As more and more enterprises turn to cloud for their new IT provisioning, this baked-in backup is going to become an attractive selling point.

Shawn Mills is a technology entrepreneur, founder and president of Green House Data, a data center services company focused on sustainability. You can find him on Twitter at @tshawnmills.

Soni Jiandani, SVP Marketing, Cisco



Today's IT model will evolve to meet new business needs and the applications that drive them. Cisco believes the data center will lead this transformation to a more application aware infrastructure putting IT at the heart of increasing business productivity. The benefits for customers will include: faster application deployment driving increased productivity, performance, visibility and security while reducing operational cost and complexity.

Soni Jiandani is currently Senior Vice President of Marketing at Cisco. Previously, Soni was Senior Vice President of Marketing and Business Development for Insieme Networks, Inc. until its acquisition by Cisco in 2013.

Sunil Khandekar, Founder & CEO, Nuage Networks



In 2014, SDN will prove to be an enabler of cloud, allowing the scaling of thousands of applications and servers. More start-ups will emerge to answer the challenges being faced today regarding security, implementation and access, allowing IT administrators the ability to have control and visibility over infrastructure while making it an agile aspect of business. It will also be the year of the hybrid environment, allowing companies to continue with

business and meet their goals without having to completely overhaul existing infrastructure.

Sunil Khandekar is Founder & CEO at Nuage Networks and brings over fifteen years of experience in the communications and networking industry.

Tate Cantrell, CTO, Verne Global



The data center industry is rapidly breaking through the shackles of the past with traditions that add little business value quickly being abandoned. Requirements of scale are moving the industry away from ad hoc, home-brewed solutions and more towards carefully engineered products. As a result, the infrastructure becomes more connected to the application than ever before and presents new opportunities for industry-focused, vertical solutions to emerge.

Tate Cantrell oversees the design & construction of all aspects of Verne Global's 100% renewably powered data center campus. He's responsible for the technical direction of the company and oversight of campus operations & security.

Terry Noonan, VP of Technology, Pure Storage



Flash technologies will continue to be a major catalyst to help customers deploy data centers that are more space and power efficient. Additionally, flash storage's impressive I/O performance will help move people much closer to the in-memory model of computing and thereby increase their agility in delivering new application workloads.

Terry has over 20 years' experience in executive and senior technical positions in the software industry and is VP of Technology at Pure Storage. He joined from Evault, where he was CTO / VP R&D.

Vann Abernethy, Senior Product Manager, NSFOCUS



Data centers are quickly becoming a popular target for botnet infection attempts, given their superior ability over a common personal computer to stream out high-volume traffic. Because data center servers can easily exceed multiple Gbps in bandwidth, server-based botnets used in distributed denial-of-service (DDoS) attacks are capable of causing massive damage to a victim's online infrastructure until it shuts down, making them an attractive tool. Careful preparation and constant vigilance to look for any abnormal behavior will better protect data centers from being used in a botnet, limiting their power as a weapon.

Vann Abernethy is the senior product manager for NSFOCUS. He brings more than 15 years of experience working as both a product developer and information technology/information services director at start-ups and Fortune 500 companies.

Vijay Raghavan, EVP & CTO, LexisNexis Risk Solutions



The biggest trend for data centers is not the various types of commodity hardware, but instead the software technology platform that runs on the servers to manage the data. For example, LexisNexis Risk Solutions benefits from a move to high-density data centers, powered by an open-source Big Data platform it created called HPCC Systems. This platform runs on commodity off the shelf hardware (COTS) technology, which affords LexisNexis the ability to use servers for multiple tasks and increases overall efficiency. HPCC Systems also allows LexisNexis to greatly reduce power usage tied to data storage as its efficiency trumps older technologies and allows us to do more with less. For example, the software was built for small development teams even though it powers a global, multi-billion information company, so we can allocate our people resources much more efficiently.

Vijay Raghavan, a 25-year information technology veteran, is EVP and CTO for LexisNexis® Risk Solutions, responsible for technology development, research and development, information systems, security, and operations.

About Jack Woods

Jack Woods is a regular contributor to SiliconANGLE, covering the cloud market. Please send news and requests to news@siliconangle.com

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