IT for CEOs & CFOs

ISSN 2054-3484

Volume 8 Number 3 & 4 2021

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On Campus, Colocation or in the Cloud? How Universities can determine the IT Strategy for Today and Tomorrow

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IT for CEOs & CFOs (ISSN 2054-3484)

Published and Distributed by

House of Words Media Limited
7 Greding Walk
Hutton
Brentwood, Essex
CM13 2UF, UK

Tel: +44 (0) 1277 201554
E-mail: carol.baker@creditcontrol.co.uk
website: www.creditcontrol.co.uk

IT for CEOs & CFOs is abstracted and indexed in a wide range of academic and professional abstracting journals and on-line systems. A full list is available from the Editor-in-Chief.

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Cover Feature

On Campus, Colocation or in the Cloud? How Universities can determine the IT Strategy for Today and Tomorrow

The explosion in data is putting increasing demands on IT infrastructure that is already over-stretched in many institutions forcing them to face the challenge of determining how to upgrade, replace and/or renew. In parallel, university leaders face physical limitations such as space constraints and energy efficiency commitments – and, of course, the ever-present issue of needing to manage their defined, immediate costs, and future IT infrastructure financial expenditure. As higher education and research organizations face with challenges for urgent digitization of their applications and data platforms they will need to move their IT infrastructure off-campus and into a purpose build data centre to ensure that their IT works harder for less.

In Technology and Innovation ...

Open Banking: Are You Ready to Become a Banking Ecosystem?

Open banking is enabling new ways for people to manage their money. Financial products and services that deliver better outcomes, have the ability for consumers to see on one screen all their accounts, complete with credit scores, to more accurately reflect who they are, and to safeguard any financially vulnerable. With data shared securely, and only ever with their consent, it is now time for traditional financial companies to move to a modern Open Banking ecosystem.

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Digital skills shortage impacts every business

Carol Baker
Editor-in-Chief

As UK cities begin championing the "anywhere office" research by recruitment agencies show that whilst businesses report that they are feeling confident about this year's growth prospects, they remain concerned about the skill shortages and confusion over employee status.

According to the latest quarterly *Special UK Report: Demand for Skilled Talent* report by recruitment specialist Robert Half, 86% of businesses report that their confidence levels have increased by 10% since the start of the year, with 28% of employers now saying they feel 'very confident' and over half (58%) are 'somewhat confident' of growth this year.

Employers cite that the biggest factor standing in the way of growth is finding employees with the right mix of skills, and the need to focus on reskilling and upskilling existing employees to meet evolving business needs and opportunities brought on by the pandemic.

Demand for hybrid skills (a combination of soft and technical), digital and data capabilities, change management and communication is increasing, with almost half (47%) of workers feeling more optimistic about career prospects now than they did 12 months ago – with research into the candidate market mirroring the confidence seen in employers.

In a separate survey, the HR Dept's annual survey of SMEs 37% of respondents say that skills shortages, Brexit and confusion over employee status were having an impact on day-to-day business operations. High on the list of concerns in this survey were issues over staff retention (29%) and the National Living Wage and Minimum Wage (26%).

On a more positive front, 37% of respondents said they were hopeful about UK-driven employment law, with 30% saying a reduction in a regulatory burden would be welcome.

According to the OCED, businesses are struggling with an internal skills gap that prevents managers and workers from identifying the digital technologies they need, and are finding it difficult to adapt business models and processes.

The acute demand for tech skills is leading to salaries in the tech sector growing faster compared to other areas of the economy. In particular, there is demand for IT system architects, machine learning engineers, and other high-end tech roles.

Front-end developers and data scientists have seen the highest increase in salary over the last three years, at 34% and 31%, respectively according to research by Tech Nation. This means the average tech salary is up to 50% higher than the average for all vacancies in the UK.

In the October Budget, the Chancellor outlined several initiatives to help businesses 'level up' and 'build back better' with the announcement of the Scale up Visa to help fast growing businesses to better attract international talent, and the planned launch of the Global Talent Network to help entice talented individuals to the UK in key science and technology sectors.

Recruitment company Hays has warned over 'clear signs' of skills shortages worldwide stating salaries are subsequently rising in IT, technology and life science sectors.

Figures from the Office for National Statistics show that there were 1.1 million job vacancies in the UK during the three months to September. This is the highest level since records began in 2001 and marked an increase of 318,000 vacancies.

Buzzwords and phrases such as 'flexible working options' will no longer cut it for a workforce in constant flux and demanding home working options, and whilst the current skills shortage and recruitment is an area of undeniable importance, the ability to reskill, retain, and recruit top talent will become essential for every business.

With 70% of employees not anticipating a full return to the office according to a BBC survey, it enforces the notion that from everything we have seen, remote working is very much here to stay – and technology is the enabler that will take us all forward.

Open Banking: Are You Ready to Become a Banking Ecosystem?

Zeynep Salman

Zeynep Salman
Principal Consultant,
FICO Advisors Digital Practice, FICO

Biography

Zeynep Salman is a credit risk professional with direct experience managing originations, customer management, credit risk and collections strategies for consumer and small business portfolios. She joined FICO (https://www.fico.com) in 2014 and is currently Principal Consultant in the FICO Advisors Digital Practice.

The FICO Advisors Digital Practice is a business consulting group staffed with seasoned digital practitioners focused on the mobile and digital transformation of financial services providers.

Zeynep is passionate about driving automation, seamless onboarding experiences, convergence of credit and fraud evaluations across the lifecycle, AI driven customer engagement, and working with clients to set near and long-term roadmaps to drive value.

Before joining FICO, Zeynep held many key roles at financial institutions such as Citibank, HSBC, Toyota Finance and Yapi Kredi (UniCredit).

Zeynep blogs at https://www.fico.com/blog

Keywords Customer relationships, Financial ecosystem, Customer lifecycle
Paper type Research

Abstract

Open banking is enabling new ways for people to manage their money. Financial products and services that deliver better outcomes, have the ability for consumers to see on one screen all their accounts, complete with credit scores, to more accurately reflect who they are, and to safeguard any financially vulnerable. With data shared securely, and only ever with their consent, it is now time for traditional financial companies to move to a modern Open Banking ecosystem. So, are you ready to become a banking ecosystem asks the author of this article?

Introduction

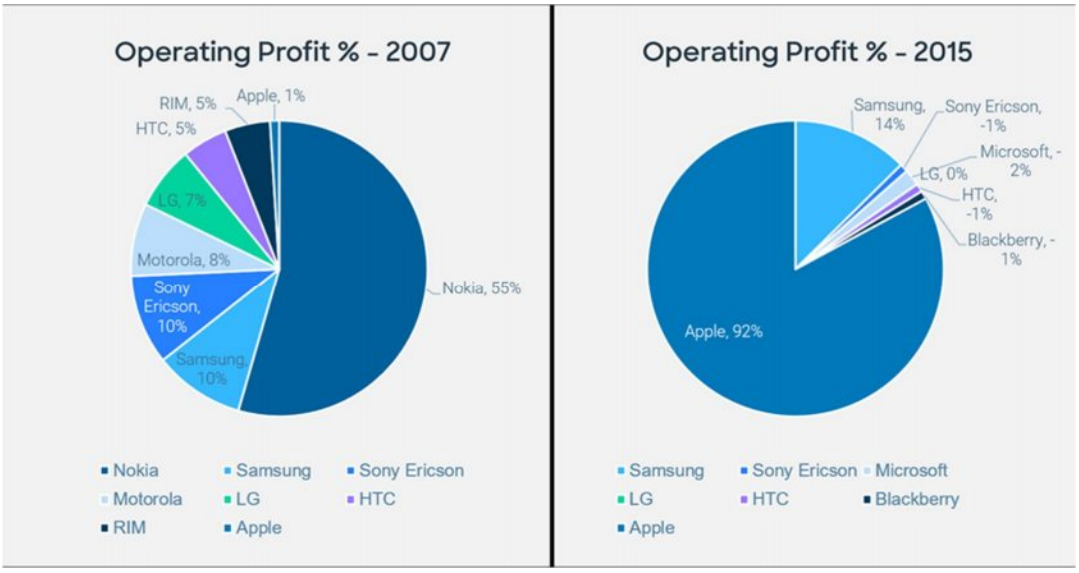
Within the past 20 years, we have witnessed a quantum leap in the evolution of business models – from being product-based to platform-based. With the rise of Open Banking, this trend is now hitting financial services.

Retail typifies the move to platform, most notably by global online giant Amazon, which started out selling books, to becoming a platform championing other

ecommerce outlets, while diversifying into movies, music, its own technology, fresh groceries and healthcare!

Then there was the mobile market. Up until 2007, seven companies shared 99% of global mobile phone profits[1]: Nokia, Samsung, Sony Ericsson, Motorola, LG, RIM and HTC. But 2007 was a tipping point, when Apple launched the iPhone – essentially a smart, user-friendly platform offering a self-contained ecosystem of mobile applications. By 2015, 92% of global profits were being pocketed by Apple[2]. The other seven shared just 8%. Clearly platforms grow profits.

Figure 1: Operating profits



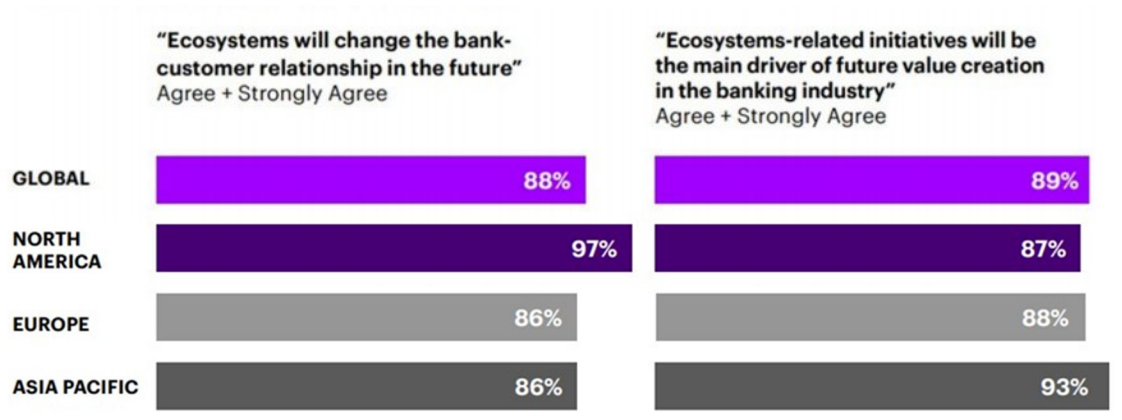
Source: FICO

In financial services, the switch to digital financial marketplaces is being driven by the proliferation of fintechs and customer-centric legislation is enabling Open Banking. While banks are in a race to understand the emerging revenue streams existing customers offer, fintechs are using Open Banking to reach new, younger and digitally savvy demographics.

We are now in the era of Open Banking. The winners will be providers offering a platform showcasing a mix of in-demand products and services that go far beyond customers' traditional financial needs.

In a 2019 Accenture poll[3], the vast majority (88%) of executives from 120 global banks said emerging ecosystems would change the bank-customer relationship forever.

Figure 2: Bank executive ecosystem sentiment



Source: 2019 Accenture Banking Ecosystems Survey

Are you ready?

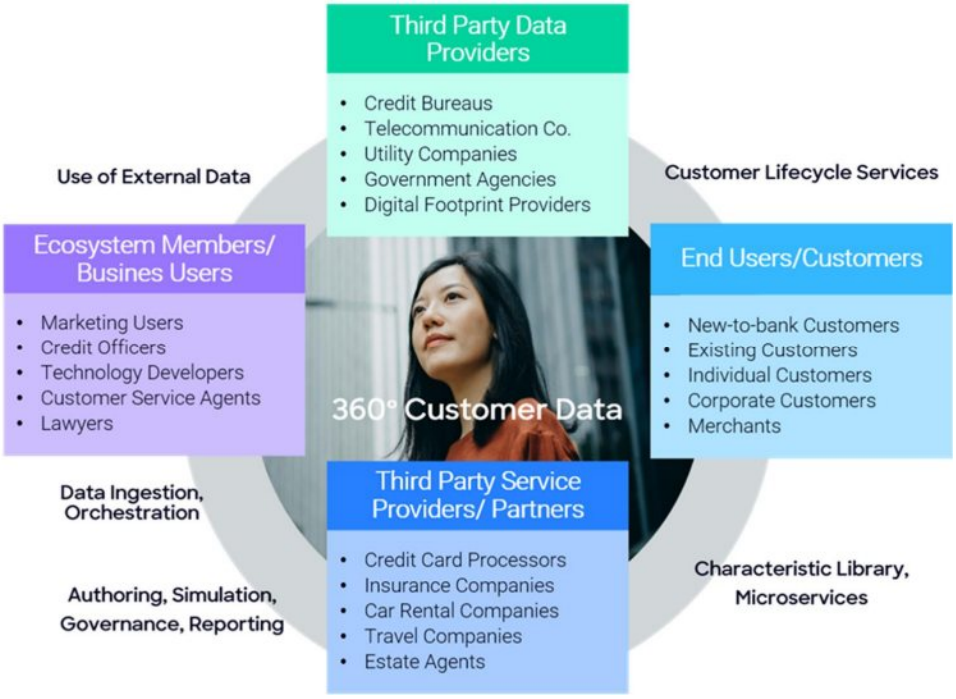
Building a successful ecosystem is no mean feat. Having determined the key customer segments to focus on, identified how to get the maximum value from your platform, and designed a multi-year strategy and operating model, there is also the tricky question of analyzing the technological capabilities your ecosystem needs.

- **Data ingestion** – Data feeding your ecosystem will come from numerous sources and multiple formats. Can you access all internal data regardless of its location or format? Differing customer activities happening right now need to be captured to trigger and inform real-time decisions. Are you able to accurately capture real-time, streamed data?

- **Use of external data** – Several third-party data providers and partners can be plugged into your ecosystem. Are you able to access, gather and transform valuable external data to help drive appropriate real-time customer decisions?

- **Characteristic library** – Success hinges on creating predictive characteristics from the ecosystem's available data and turning them into usable insight to offer the right customer decisions at the right time. How quickly are you able to do this today?

Figure 3: An example – Financial ecosystem of a bank



Source: FICO

- **Microservices** – As business users in your ecosystem gather and enrich data to develop analytical models, models will need to be refined and operationalized to deliver appropriate customer decisions – across credit, risk, fraud and other decisions. For example, is application fraud or suspicious behaviour being flagged up accurately?

- **Data orchestration** – At any given moment, numerous complex decisions between business users and partners will be underway and will need to be understood. Are you able to accurately visualize and understand the complex decision-making processes?

- **Data governance and reporting** – Naturally, there will be high volumes of data transactions constantly underway within the ecosystem. Complex automated decisions are being made in fractions of a second, constantly challenging your ability to leverage and track streamed data. Do you have a robust tracking repository for reporting data across ecosystem users?

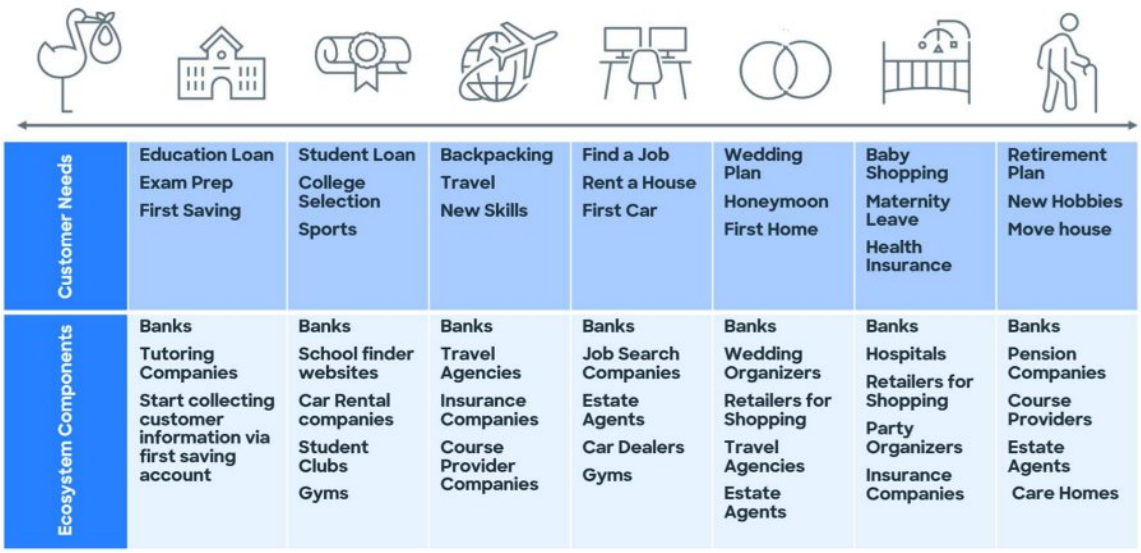
- **Business authoring** – Ecosystems within other sectors often have authoring environments shared with fellow commercial partners. They are kept open to any ecosystem member so that they can add new capabilities and activities to the ecosystem. Are your non-technical users able to create decision services? Are you able to test and verify new business authoring rules before deploying into production?

- **Simulating business outcomes** – Before accepting a new partner or adding a new component, understanding its potential impact on the ecosystem users is vital. Can you create differing scenarios and apply 'what-if' analysis to understand the impact?

- **Customer lifecycle services on a single platform** – Assuming your ecosystem is built to mainly focus on the financial needs of your customers, it's likely to be a marketplace for banking services, insurance, car rental, home ownership, travel money and more. But an equally accurate understanding and 360-degree view of customer data, including demographics, payment behaviour, spending, location, activity, or favoured device, are all vital in providing timely, personalized and precise customer decisions. Offers can underpin the marketing of a new product/service, new financing, expansion of a new credit line, delinquency management, or fraud prevention, right across the customer lifecycle. But can you consistently provide the right collaborative and efficient approach across separate teams? Are they siloed, or can they get access to the same level of data to continually offer the best customer decision?

Using these capabilities and partnering, financial institutions can add an endless series of services and products into their ecosystem in order to further engage with their customers and drive more value. One idea can be to start covering the basic needs of a typical human life cycle:

Figure 4: A typical human life cycle



Source: FICO

For further inspiration for what you may require designing your own ecosystem, I recommend exploring some early trials from different markets at BBVA's Valora[4],

Development Bank of Singapore's Car Marketplace[5], USAA's Residential Real Estate Services[6].

Finally, and most importantly, don't forget to put yourself in shoes of your ecosystem's end-users – your customers. Their role also evolved in other industries as the industry evolved to be platform-based:

Figure 5: Industries and platforms

Industry	Old Role	Platform
Photography	Taking photograph	Sharing experiences (e.g., Instagram)
Retail	Buying goods	Buying and selling goods (e.g., eBay)
Gaming	Playing a game	Developing their own game world (e.g., Roblox)
Accommodation	Staying in a hotel / motel	Renting their own house (e.g., Airbnb)
Banking	Depositing and borrowing money	?

Source: FICO

FICO can provide you with the technology platform (https://www.fico.com/en/platform) you need to transform your company into a modern age financial ecosystem.

Reference

1 Hardawar, D. (29 July 2011), "Apple now world's No.1 smartphone vendor, has more cash than US gov.", VentureBeat. Available at: https://venturebeat.com/2011/07/29/apple-leads-worldwide-smartphone-sales-has-more-cash-than-us-government/

2 Richter, F. (18 November 2015), "Apple Claims 92% of Global Smartphone Profits", Statista. Available at: https://www.statista.com/chart/4029/smartphone-profit-share/

3 *Computing with Banking Ecosystems - Exploring significant growth opportunities in a challenging new environment.* Accenture Consulting. Available at: https://www.accenture.com/_acnmedia/PDF-102/Accenture-Banking-Ecosystem.pdf

4 https://www.bbva.es/en/personas/experiencias/bbva-valora.html

5 https://www.dbs.com.sg/personal/marketplace/car/

6 https://www.usrealco.com/diversified-platform/development/

Breaking Artificial Intelligence's Hidden Glass Ceiling

Amy Hodler

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Director, Graph Analytics and AI Programs
Neo4j

Biography

Amy Hodler is Director, Graph Analytics and AI Programs at Neo4j (https://www.neo4j.com) where she manages the Neo4j graph analytics programs and marketing.

Amy has consistently helped teams break into new markets at startups and large companies including EDS, Microsoft and Hewlett-Packard (HP). She most recently comes from Cray Inc., where she was the analytics and artificial intelligence market manager.

As a network science fan, Amy promotes the use of graph analytics to reveal structures within real-world networks and predict dynamic behavior. She is also co-author of 'Graph Algorithms: Practical Examples in Apache Spark and Neo4j' published by O'Reilly Media.

The book can be downloaded at https://neo4j.com/graph-algorithms-book/

Keywords Artificial Intelligence (AI), Explainable AI, Graph technology, Graph databases, Machine learning (ML) Neo4j
Paper type Research

Abstract

In a world driven by connections, graph algorithms provide one of the most potent approaches to analyzing connected data because they are specifically built to operate on relationships. Graph analytics can uncover the workings of intricate systems and networks at massive scales – for any organization. So could graph technology build our trust in the algorithms being used to shape our future?

Introduction

There are too many examples of Artificial Intelligence (AI) and Machine Learning (ML) providing incorrect answers – answers that can make people really resent your brand[1]. Is there a way to stop this from happening?

Anyone working in the commercial application of AI knows this is a big issue, but it is sometimes a significant challenge to understand what led an AI solution to make a particular decision.

This problem comes down to three aspects of a core new concept, 'explainability':

- **Data** – What data was used to train the model, and why?
- **Predictions** – Which features and weights were used for this particular prediction?

- **Algorithms** – What are the individual layers and the thresholds used for a prediction?

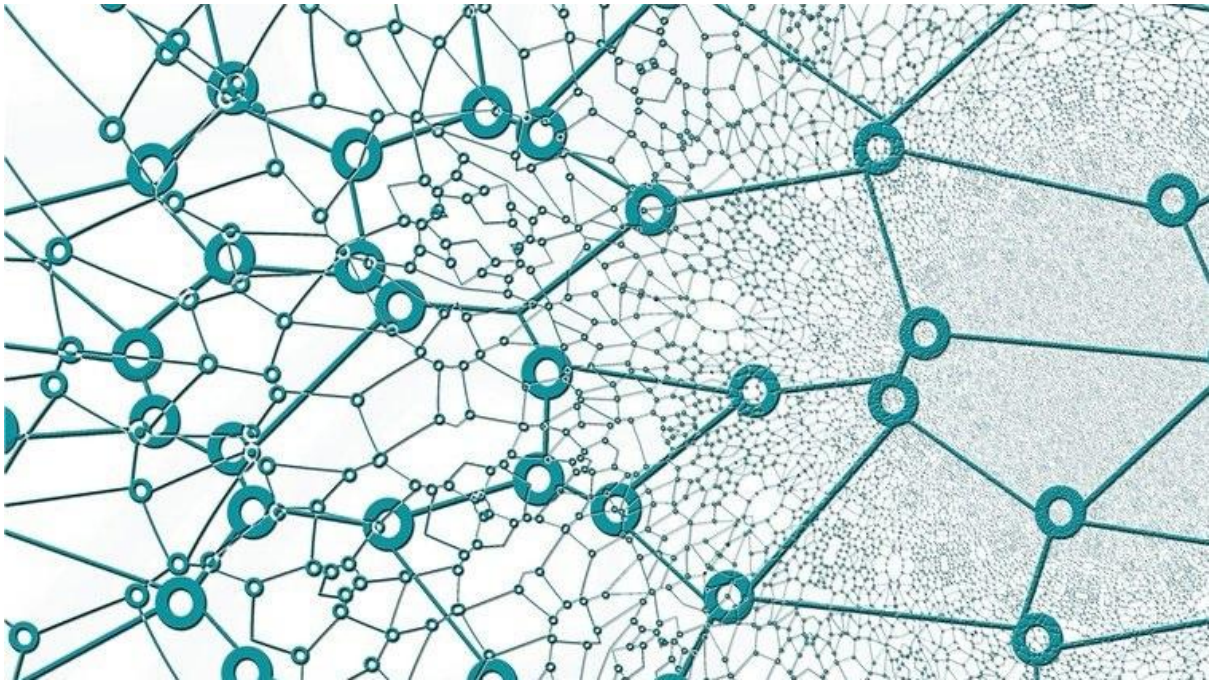
The problem is that I could have the best AI system in the world, but if the data has been manipulated, why would I rely on it? We need to know where the data's been and who's touched it. We need to know exactly when it was changed, what the chain of relationships are, and how that data may be used somewhere else.

Clearly, we need to make AI predictions easier to trace and a lot easier to explain. It's crucial for long-term AI adoption. In many use cases where we would like to employ automation to improve outcomes and the customer experience, such as healthcare, credit risk scoring and even criminal justice, we must be able to defend and justify our proposed smart system's decisions.

Graph tech often used to meet data compliance regulations

Graph database technology could offer immediate help. When we store data as a graph database, it's easier to track how that data is changed, where data is used, and who used what data. For example, graph technology is often used for data lineage to meet data compliance regulations such as Europe's GDPR, or the California Consumer Privacy Act (CCPA). A data lineage approach is also used in NASA's knowledge graph to find past 'lessons learned' that are applicable to new missions.

If we started doing the same for our AI applications, graph technology could tackle the explainable data issue using data lineage methods. That's because graph technology incorporates context and connections that make AI more broadly applicable.



Understanding and monitoring data lineage also guards against the manipulation of input data. For example, corporate fraud research has shown that when the significance of input data is common knowledge, people will manipulate information to avoid detection. Imagine an energy supply system or voting application where we might be confident in our monitoring software, but could not rely on the input data. It wouldn't work as the whole system would become immediately untrustworthy.

Having that explainable data would mean that we know what data was used to train our model and why. This requires storing your data as a graph database. That's a worthwhile step since it provides the ability to track how data is changed, where data is used, and who used what data. Hence, we would always get 'explainable data' on the three axes of data, predictions and algorithms presented above.

Infer an explanation from the surrounding data

Fortunately, graph databases are really good at allowing us to track the chain of data change and subsequent ripple effects. Another area with significant potential is research into explainable predictions. Here we want to know what features and weights were used for a particular prediction. For example, if we associate nodes in a neural network to a labelled knowledge graph, when a neural network uses a node we will have insight into all the node's associated data from the knowledge graph. This would allow us to traverse through the activated nodes and infer an explanation from the surrounding data.

Finally, the use of graph algorithms could enable us to understand which individual layers and thresholds lead to a prediction. I'm the first to put my hands up to say we are years away from solutions in this area. There is promising first wave research, however, that includes constructing a tensor in a graph database with weighted linear relationships. Promising early signs also indicate we may be able to determine explanations and coefficients at each layer, too.

To increase public trust in AI, the predictions and decisions AIs make must be more easily interpretable by experts and explainable to the public. Without this, people will reject recommendations that don't feel right, when they could be useful and interesting.

AI holds great potential, and using graph technology to help unlock that potential makes pragmatic sense. If you are building an AI solution, look at graph technology to give it the contextual power to push it through the 'hidden glass ceiling' of explainability that's holding it back.

Reference

[1] Morrison, S. (27 May 2021), "A disturbing, viral Twitter thread reveals how AI-powered insurance can go wrong', Recode. Available at: https://www.vox.com/recode/22455140/lemonade-insurance-ai-twitter

Enterprise Platform or Point Solution? Separating the Hype from the Reality

Max Kelleher

Max Kelleher
Chief Operating Officer
Generis

Biography

Max Kelleher is Chief Operating Officer of enterprise information management specialist Generis (https://www.generiscorp.com/), whose CARA™ platform is helping to transform business processes in life sciences and other regulated industries.

Established in 1997, Generis began life as a consultancy group. Following the development and release in 2003 of the Company's CARA solution, Generis continued to develop the product and now counts over 500,000 users across industries worldwide, including 8 of the 10 largest Life Science companies.

Generis' mission is to provide industry-defining implementations that are fast and intuitive to bring its customers an enjoyable and efficient experience. Widely regarded by its customers for its responsiveness, it offers unprecedented care and attention to deliver high performing solutions configured to meet their individual and frequently complex requirements.

Keywords Platform, Suite of applications, Enterprise information management, Digital transformation
Paper type Opinion

Abstract

In 2021, the word 'platform' is going to be bandied about more and more often as all kinds of software vendors attempt to reposition their software in order to seem more foundational (and therefore indispensable), comprehensive and cost-efficient. Given the choice of buying a 'tool', a 'solution' or a 'platform', businesses are opting increasingly for a platform, believing that a platform represents something inherently more flexible and all-encompassing. Software providers are responding to this trend by rebranding single-use tools and applications as platforms. In this article, the author separates the hype from the reality, clarifies what companies should be able to expect from a true 'platform' versus a suite of applications, and discusses why this matters.

Introduction

The current trend among software providers seems to involve the repositioning of applications and tools as 'platforms'. This is causing some confusion and potentially creating new risk for customers. It also threatens to devalue genuine software platform – those that companies can use as the basis for building new, connectable applications and features both now and in the future.

Lately, we are seeing everything from simple e-signature tools to project management applications, rendering tools, (for example, Monday.com) to the Microsoft 365 suite being described as 'platforms'. But they are not. If they only do one thing, are a suite of integrated purpose-built apps, or new capabilities cannot be built on top of them, then by the true definition they are not platforms.

Boosting adaptability

The shift in terminology is a puzzling development, but in reality it's software vendors trying to keep pace with the market. Specifically, they are responding to a realization among large enterprises that diverse portfolios of single-purpose applications are an inefficient and restrictive way to deliver business and/or process transformation.

Flexibility, agility and futureproofing is what all businesses are trying to achieve now. The ability to pivot, innovate and scale is critical to remaining competitive in a dynamic market – where customer preferences can change overnight, and disruptors can attack from any angle.

When companies go off in search of a 'platform', then, they are generally looking for something that will boost their adaptability, offer them greater value and competitive protection for the long-term. Something that will provide new scope for creativity in the way they do business or evolve their market proposition.

All of the above pre-supposes that a company can keep reinventing itself, supported by new software capabilities that meet the evolving needs of the business. An e-signature tool, project management solution, or even the wide-ranging applications that make up Microsoft 365, do not provide that.

Providing a core framework

A genuine software platform is something much more foundational. By definition, it plays an underpinning role – providing a core framework ideally to support both specific, defined business processes and adaptable tools that can be used, ad hoc, during daily work.

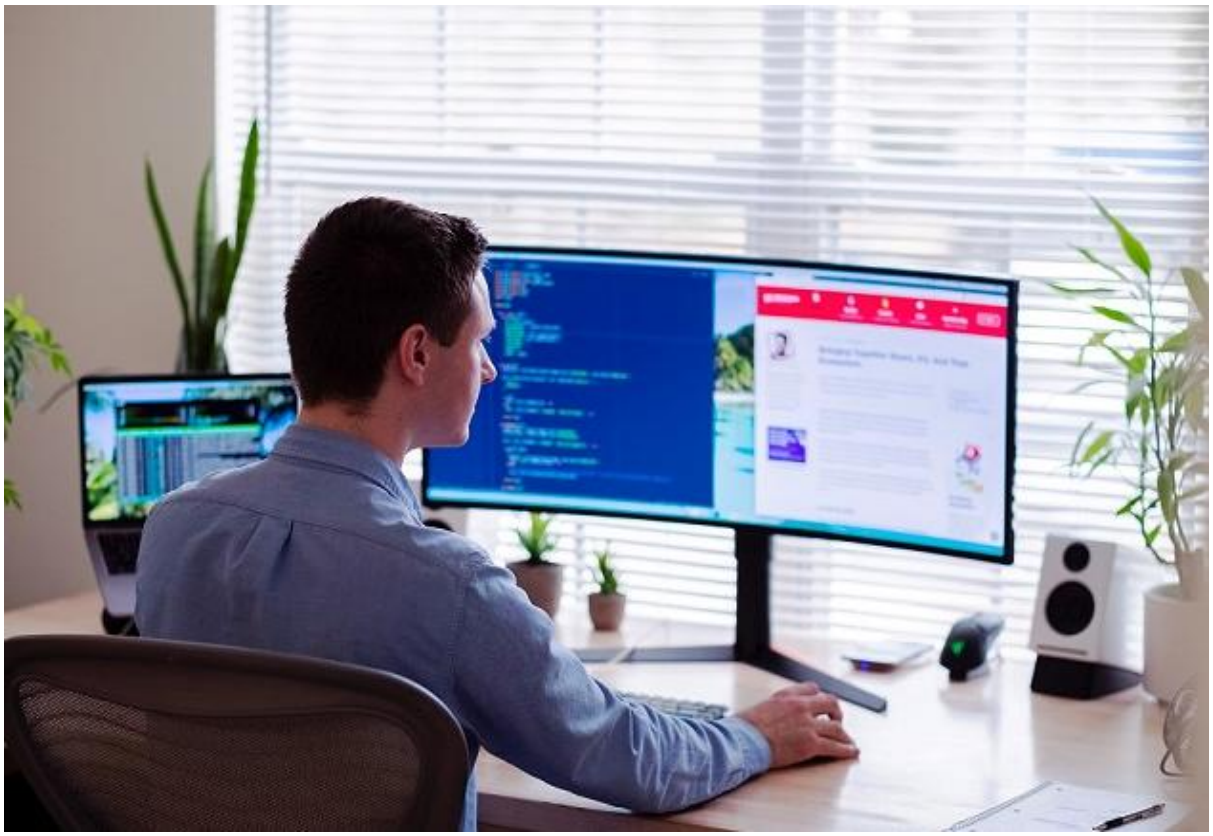
The right platform should be robust in its ability to manage content and data (the building blocks for just about everything a business does) all in one place. It should enable the company to harness those assets in new ways over time – via new or improved business processes, analytics, or means of content management and creation – supported by a solid yet flexible foundational layer.

If a software provider is claiming to offer a platform but does not fulfil these expectations, it is making false promises. It is hooking in customers, offering them flexible scope for new features in the future, when all along these are tied to their own development pipeline.

So what does good look like? What most companies really need from a platform is the ability to create a collection of solutions which seamlessly support a business process and any ancillary tasks.

ClickUp is a good example, in the field of project management. Users can create different areas or workspaces and create project-related lists. They can also create workflows and view these in their choice of many different ways, as well as change all the data fields with any form of logic and connect to or create additional functionality. All of this allows companies to flex and support the way people instinctively want to work, whatever it is they are trying to do.

If a new requirement or opportunity emerges tomorrow, the business can create a new workspace to accommodate that. The options are almost unlimited. Any special parameters (for example, to ensure security or information compliance) can be set by IT, but everything else is open for teams themselves to define and modify.



Time to act

There are a number of strong reasons why all of this matters today. First, companies recognize now that tackling digital transformation on a department-by-department basis limits the potential; and that optimal results will come from establishing an enterprise-wide foundation. If each part of a business does its own thing, or sets its own parameters, situations emerge where customer-facing teams can't collaborate with the legal department, for example, because the latter's strong security settings preclude access to their respective systems, hindering collaboration.

Inter-function or inter-company barriers like these have contributed to the soaring use of mainstream online facilities like Box, driven by users' need to collaborate across boundaries when internal restrictions have otherwise prevented this. C-level decision-makers have ended up having to formalize use of these tools simply to take back control of associated information management and safeguarding.

Winning the race

Putting in place a genuinely foundational software platform, for spinning up new business applications and facilities quickly and efficiently, will give companies the ability to transform and keep ahead of rivals.

Choosing the right platform is about selecting the right shoes for the race to market dominance over the next decade. Companies that are looking to move away from a piecemeal approach to digital process, providing diverse capabilities via a single foundational platform, should get themselves in the starting blocks now. This approach is more economical, at a time when budgets are tight; and it enables companies to be more ambitious about the scale and scope of the operational improvements they want to make in future.

On Campus, Colocation or in the Cloud? How Universities can determine the IT Strategy for Today and Tomorrow

David Watkins

David Watkins
Solutions Director
VIRTUS Data Centres

Biography

David Watkins heads up the Solutions Team at VIRTUS Data Centres, working with customers to provide customized solutions. He has been at VIRTUS since 2009, where he was previously head of operations. Before VIRTUS, David was head of UKMEA data centres at Unisys.

Part of ST Telemedia Global Data Centres Group, VIRTUS Data Centres is London's leading data centre company and owns, designs, builds and operates the country's most efficient and flexible data centres. Located in and around London's metro, VIRTUS Data Centres leads the industry with award winning innovation in hyper efficient, ultra-high density and highly interconnected facilities which are designed specifically to offer the flexibility modern users need.

David blogs at https://virtusdatacentres.com/blog

Keywords Colocation, Cloud, IT strategy, High Performance Computing (HPC), Data centre, Infrastructure
Paper type Opinion, Case study

Abstract

Higher education and research organizations faced with challenges for urgent digitization of their applications and data platforms, are now moving their IT infrastructure off-campus and into a purpose build data centre to ensure that their IT works harder for less. The demand from universities for increased efficiency, lower costs and lower environmental impact has led to High Performance Computing (HPC) forming a crucial element of IT operations, explains the author of this article.

Introduction

Data centres quietly reside at the heart of the modern university. Effective IT planning and wise investment in infrastructure means that institutions can deliver better services to students and staff – from remote learning and Big Data powered progress analysis, to High Performance Computing (HPC) and supercomputing required for research.

The explosion in data is putting increasing demands on IT infrastructure that is already over-stretched in many institutions forcing them to face the challenge of

determining how to upgrade, replace and / or renew. In parallel, university leaders face physical limitations such as space constraints and energy efficiency commitments – and, of course, the ever-present issue of needing to manage their defined, immediate costs, and future IT infrastructure financial expenditure.

Choosing a strategy

How can universities ensure they choose the best IT strategy to make sure they can meet their needs of today, are able to scale for tomorrow and are ready for any unforeseen circumstances that the future may bring?

The fundamental starting point is to decide whether to stick with centralized, on campus IT infrastructure for data and compute functions, or to engage with an outsourced data centre provider or even a cloud solution

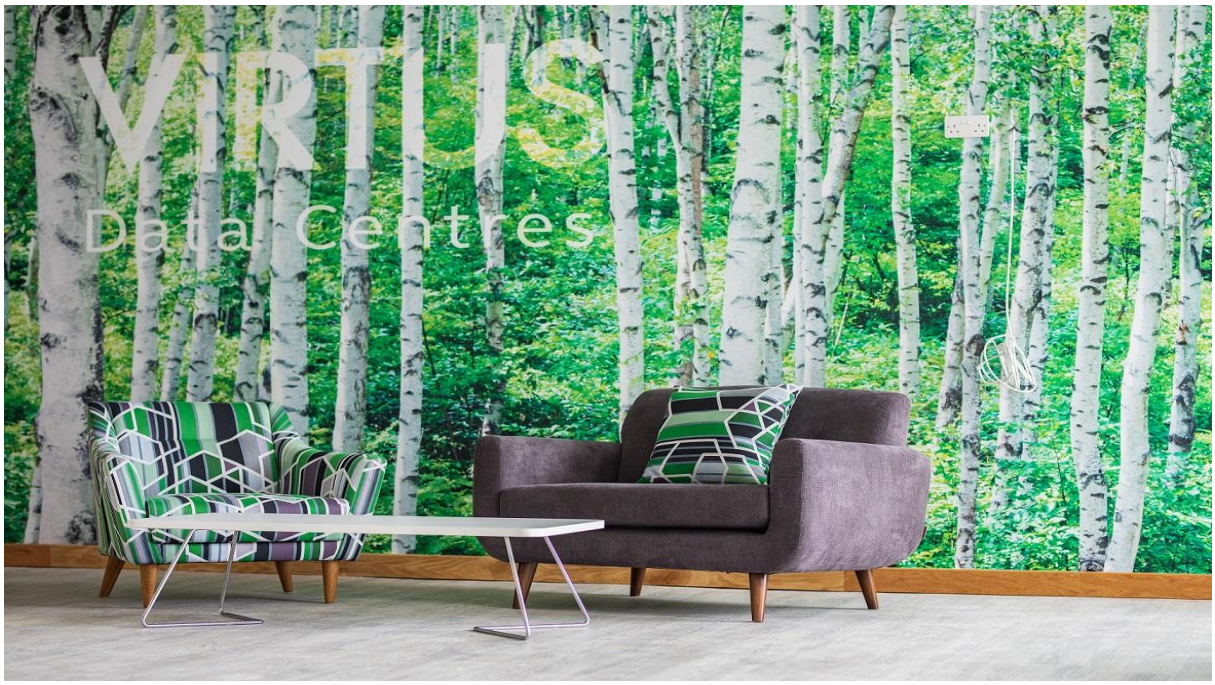
It's likely that the status quo is on campus, and serious investment has already been made into building and managing these facilities. But there are some serious upsides to taking the plunge and outsourcing the IT infrastructure.

Moving IT infrastructure off-campus and into a purpose-built data centre allows you to maximize efficiencies and cut costs. What's more, by moving your IT infrastructure off-campus, you can free up valuable space for other activities such as more teaching or research facilities. It also eradicates the challenge of supporting data centre electrical and cooling infrastructure, while also freeing up IT dedicated staff resources.

Many specialist data centres are purpose built to support High Performance Computing, crucial for today's requirements to manage and process vast data sets. Premium providers like VIRTUS dedicate huge amounts of resource to developing the perfect environment for super computers and have experience of excelling in this field; institutions including Kings College London, Imperial College and the University of Bristol are already harnessing HPC deployments within VIRTUS data centres, to support their complex data processing requirements within a shared environment.

VIRTUS also brings a competitive advantage to research institutions. It offers the opportunity to be part of a wider education ecosystem where all organizations have a common interest – to benefit from shared facilities in which researchers can collaborate, increase energy efficiency and reduce costs. In partnership with Jisc, VIRTUS provides the infrastructure for this ecosystem: a communal data centre environment provided in a framework where members can share data sets under one roof, collaborate and ensure that the UK is at the forefront of academic and global medical research.

The framework ensures that the procurement process is simple and straight forward, and that the quality of the data centre facility meets the key requirements of resilience, scalability and cost efficiencies. This is made possible as the combined infrastructure allows quicker localized connectivity, transforming how universities look at their data centre facilities.



Outsourcing also ensures that these institutions can support their environmental and sustainability goals. At VIRTUS we run on 100% renewable carbon-zero energy across our sites, so our customers can be confident they're choosing the greenest option possible.

There are many reasons why a university might decide to outsource its IT operations: to quickly add new capacity to keep up with the demand for services; substitute an ageing data centre; free up real-estate space for other purposes such as teaching; join an ecosystem to share facilities and data; or simply to cut costs.

There is lots to consider, but you're unlikely to stick with a single data centre strategy. 'Hybrid IT', a combination of in-house facilities, cloud and colocation, is already the dominant model of infrastructure deployment, and will likely remain so for years to come. The most important thing to remember is that you don't have to be tied into one solution – but can mix and match to serve your current, and changing, needs.

Reference

VIRTUS Data Centres is a crucial part Jisc's Janet network, a high capacity network for education and research, which allows Universities to access the shared date centre, both nationally and globally. For more information see https://virtusdatacentres.com/industries/healthcare-education-research

Imperial College London

VIRTUS Data Centres

Imperial College London

IMPERIAL COLLEGE LONDON

Imperial College London delivers world class education and research in the areas of science, engineering, medicine and business. Inter-disciplinary working and external collaboration is a key part of the College's success, helping it to understand, inform and advance industry, commerce and healthcare sectors with the UK, and beyond.

Business Challenge:
In 2014, Imperial College decided to review their Data Centre provision due to a number of technology considerations, as well as the rising real estate costs and a lack of opportunity for growth in line with the College's aspirations. Its site at South Kensington was home to the College's two Data Centres which form the backbone of its technology infrastructure, supporting 8,000 staff and 15,000 + students. Having both Data Centres in one location did not afford them the resilience they needed to safeguard their assets and give staff and students a reliable platform from which to carry out their studies and research.

With the College reliant on technology to help its employees and students function on a daily basis, ensuring the current provision is future proofed to enable them to continue their valuable work and research is vital.

The College also needed to overcome the challenge of unpicking through the intricacies and interdependencies that currently exist within the two on-site Data Centres.

The VIRTUS Solution:
In partnership with Jisc, VIRTUS provides a shared Data Centre under a frameworkagreement that simplifies the procurement process. Jisc's vision is to create a shared environment, where members can share data sets under one roof, collaborate and ensure the UK is at the forefront of academic and global medical research.

To make the transition as smooth as possible, Imperial College took a phased approach and designed a dual-zone network so applications and information can be moved across safely and securely with minimal disruption, the theme of the project being "keeping it safe". It is also important for the College to leverage its existing investment and maximise the efficiency of the project.

After an initial 'Phase I' deployment of 16 racks, in a 160kW enclosure at Cat C level for Core ICT services, Imperial College have since grown their partnership with VIRTUS, with 'Phase II' delivering two enclosures for Research Computing at 919kW in total, quickly migrating their High Performance Compute deployment.

'Phase III' of the deployment is now ongoing, with the caged area ready to receive Hosted Research Services, and a 'Phase IV' deployment is in planning, looking at which services that are left on-premise are cloud candidates and which are suitable for co-located services.

Benefits
Moving to the VIRTUS LONDON4 has given the College an increased level of resilience and protection longer term, through improved availability and disaster recovery capabilities, should one of the Data Centres suffer an outage. Interdependencies that once existed within the on-site Data Centres can be separated, which will eliminate single points of failure, making the new solution more robust and scalable in line with future growth and dependencies placed on the network.

Being part of the Jisc framework benefits the College from not only a financial point of view but will provide a commercial advantage. The College's core team of ICT staff have been fully involved in the project from day one and despite a change in working practices, they have been committed to the transformation and excited about the benefits it will bring for the future.

As part of the transformational project, Imperial College are looking to continue to leverage existing investment in tools and technologies, review the options for cloud services and continue to migrate to a co-lo Data Centre model.

"Students and staff were consuming information in a very different way than even a few years ago. The 'always on' environment meant applications and devices connected to the network needed to be available and working at all times, in order to facilitate this digital transformation. Our current environment was simply not robust enough to cope with this change in working patterns and expectations. The ability to be part of the Jisc framework through the Data Centre and to take advantage of the collaborative environment was a key consideration and would give us a solid platform for future growth."

Paul Jennings, Head of ICT Service Operations at Imperial College London

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VIRTUS Data Centres

Data Storage Consolidation Is Liberating for Enterprises and Service Providers

Catherine Vlaeminck

Catherine Vlaeminck
Vice President of Worldwide Marketing
Infinidat

Biography

Catherine Vlaeminck is Vice President of Worldwide Marketing at storage experts, Infinidat (https://www.infinidat.com). Catherine has led marketing functions for data storage and data management leaders for the past decade, steadily gaining an increasing range of responsibilities in various marketing leadership roles.

Prior to joining Infinidat, Catherine was the Marketing Manager EMEA North at CommVault, and before that, she worked for many years at Fujitsu.

Catherine blogs at https://www.infinidat.com/en/blog

Keywords Storage Consolidation, IT Infrastructure, Reduce costs, Performance, Availability, Flexible consumption models
Paper type Opinion, Research

Abstract

For many years, IT teams have struggled to manage several different data storage systems. Bringing together a range of silo systems into a frictionless ecosystem is often surrounded in complexity, whilst spiralling costs as vendors try to collaborate is frustrating. As the author of this article explains, consolidating data systems within the data infrastructure can be more straight forward than some vendors would like you to believe.

Introduction

The burden of managing several different data storage systems in an enterprise data infrastructure has exceedingly put stress on IT teams, sending costs skyrocketing, fortifying unwanted complexity, and overly taxing companies with vendor sprawl.

IT leaders have had enough. Thus, CIOs and their information technology teams are increasingly rationalizing infrastructure portfolios in enterprise organizations and service providers around the world. The rallying point is to consolidate workloads. Storage consolidation reduces costs, improves agility, and lessens the complexity of dealing with too many vendors. To put it simply, it is liberating.

By consolidating four or five storage arrays into one, for instance, a company realizes the benefits of more efficient data-sharing and the higher productivity of easier, centralized management, as well as lower energy and floor consumption. Unified systems make data sharing across applications easier.

C-level executives simply want storage infrastructure to work, while IT leaders want to reduce risk and cost, make the manageability of the storage infrastructure as automated as possible, and minimize the effects of component failures on the business.

To achieve these objectives, moving to denser workload consolidation is a smart strategy, especially for organizations that want to improve operational efficiency. A single system that can support petabytes of storage workload capacity is more efficient than multiple smaller systems.

Administrative productivity is better when managing the same amount of data in a single system. A single large system includes fewer components to fail. In addition, a “set it and forget it” approach with deep learning-led automation is naturally more desirable.

An increasing number of enterprises that we talk to are considering the consolidation of many storage workloads onto fewer systems, especially as they approach a storage refresh. Understandably, they don’t want the increased risk of rising costs, complexity, and impracticality. Risk leads to compromises.


Herzliya, Israel - The Infindat QA Lab

However, businesses do not need to compromise performance, availability, manageability, agility, or cost while consolidating. Newer multi-tenant management capabilities and a different type of approach to building triple redundancy into the storage architecture make all of this possible.

Industry analysts say that an enterprise should work with a vendor that has a primary focus on dense workload consolidation and a proven track record of doing it at scale.

At Infinidat we help enterprise customers de-risk their infrastructures through storage consolidation at petabyte scale.

Our enterprise-class storage solutions meet the major requirements for consolidation. Our InfiniBox platform is an ideal choice for a non-disruptive storage refresh, bringing the capacity and capabilities of multiple systems into one.

InfiniBox has a triple-redundant architecture that is software-defined, providing 100% availability and intelligent data placement.

Architectural innovations have contributed to the unique capabilities of InfiniBox. It handles a variety of different workloads cost-effectively.

We offer multiple consumption model options for flexibility, which makes consolidation as cost-effective as ever. You can lower your total cost of ownership for storage, while improving your operational efficiency and deep learning capabilities with high performance and resilience.

The value we offer to customers is unique[1] in the data storage market.

Reference

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Credential Phishing Attacks: Themes, Tactics and Targets (Menlo Labs Research)

Krishnan Subramanian

Krishnan Subramanian
Security Engineer
Menlo Security

Biography

Krishnan Subramanian is a Security Engineer with Menlo Security. In this role, he is focused on building solutions in threat intelligence and analysis to aid customer SOC teams in addressing attacks such as phishing and web/email-based malware.

Prior to joining Menlo Security (https://www.menlosecurity.com), Subramanian was with Yahoo where he was part of the Yahoo threat response team. As part of the team, he helped detect and mitigate APTs, targeted attacks and cybercrime on a platform with one billion users. He joined Yahoo from Zscaler where he was a security research engineer.

Subramanian has a Bachelor of Technology in Information Technology from Anna University and a Master of Science in Cyber Forensics and Information Security from George Mason University.

Krishnan blogs at https://www.menlosecurity.com/blog

Keywords Security, Phishing, Credentials, Attacks, Research, Menlo Security
Paper type Research

Abstract

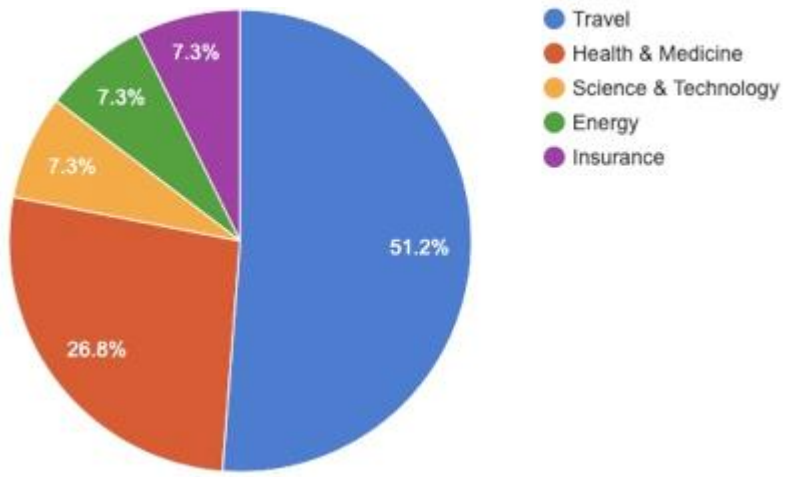
In the last month, the Menlo Labs team has been observing a steady rise in credential phishing attacks, explains the author of this article. Credential phishing is a popular method of attack where attackers make use of fake login pages or forms to steal credentials of commonly used services in a corporate environment. Apart from commonly targeted cloud services like Office 365, Amazon Prime, Adobe etc., Menlo Labs is also observing credential phishing attacks impersonating commonly used software services from other countries like South Korea and cryptocurrency wallets.

Introduction – Office 365 continues to be the top phishing target

In the last month, it may not be surprising to learn that the bulk of the credential phishing attacks were serving fake Outlook and Office 365 login pages. This is primarily due to the ubiquity of Office 365 services across corporate environments.

The chart below shows the distribution of Office 365 credential phishing campaign target industries we observed in the last month. Specifically, we are observing airline duty free shop login credentials targeted, which explains the significant contribution of the travel industry in the pie-chart below (see *Figure 1*).

Figure 1: Office 365 Phishing Campaign Targets



Source: Menlo Labs

Phishing on cloud services

There is an uptick on the number of phishing pages being hosted on popular cloud services. While services like Azure, One Drive, Box, Firebase, and Dropbox[1] continue to be leveraged to host phishing pages, one interesting addition to this list we came across last month was a phishing page hosted on the popular note taking app Evernote (see *Figure 2*).

Figure 2: Evernote phishing page

Phishing tactics

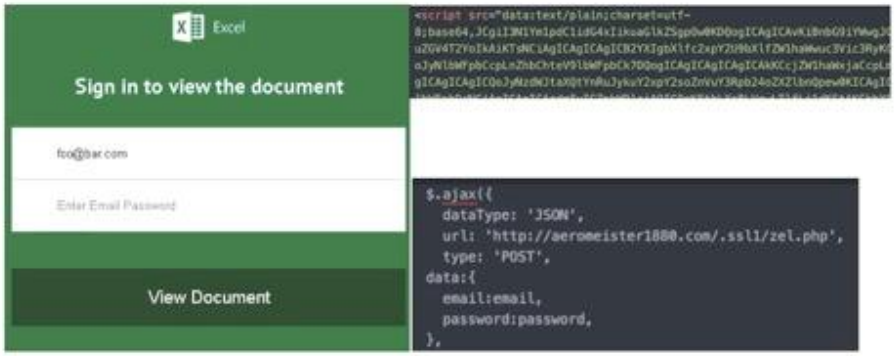
Attackers are always trying to come up with tactics to bypass detection solutions. Below, we describe a few common tactics that are actively being used to serve phishing content.

Usage of Data URLs/Encoding to mask content

In a specific phishing HTML page content, we observed usage of Data-URLs to:

- Hide the actual javascript code that posts credentials to a remote URL.
- Encode and embed all custom CSS/Images on the page itself.

Figure 3: Example of encoding to mask content



The advantages of using this mechanism are as follows:

- Allows the entire phishing page content to be rendered on a browser in a single load within the client.
- Adding the “Content-Encoding: gzip” header allows the server to send the compressed response.
- There would be no additional resource requests (Javascript/CSS/Images etc).
- This is an attempt to evade solutions that rely on the “Content-Type” header to determine resources like Javascript/CSS.

Dynamic content generation

One interesting tactic that was observed with an Office 365 phishing campaign: this campaign seems to be appending the user’s email address on the URL, the phishing page path is dynamically generated, and the user’s email address is automatically filled as seen below (see *Figure 4*).

Given the path for the phishing landing page is dynamically generated, the pathname is fairly long with random characters. As seen, there are two parts separated by the slash(/) character. The first part is a randomly generated folder name, followed by a randomly generated .php file.

Figure 4: Example of dynamic content generation phishing

The advantages of using this mechanism are as follows:

- Individual files in a Phishing Kit are usually bundled together as a ZIP archive and hosted on the Phishing Domain server.
- Phishing Kit signatures look for file patterns inside the ZIP archive (for example, submit2.php).
- This dynamic generation of .php files is a mechanism used by the Phishing Kit to evade signatures that rely on filename/file path patterns.

Downloading local files as a decoy for serving the phishing page

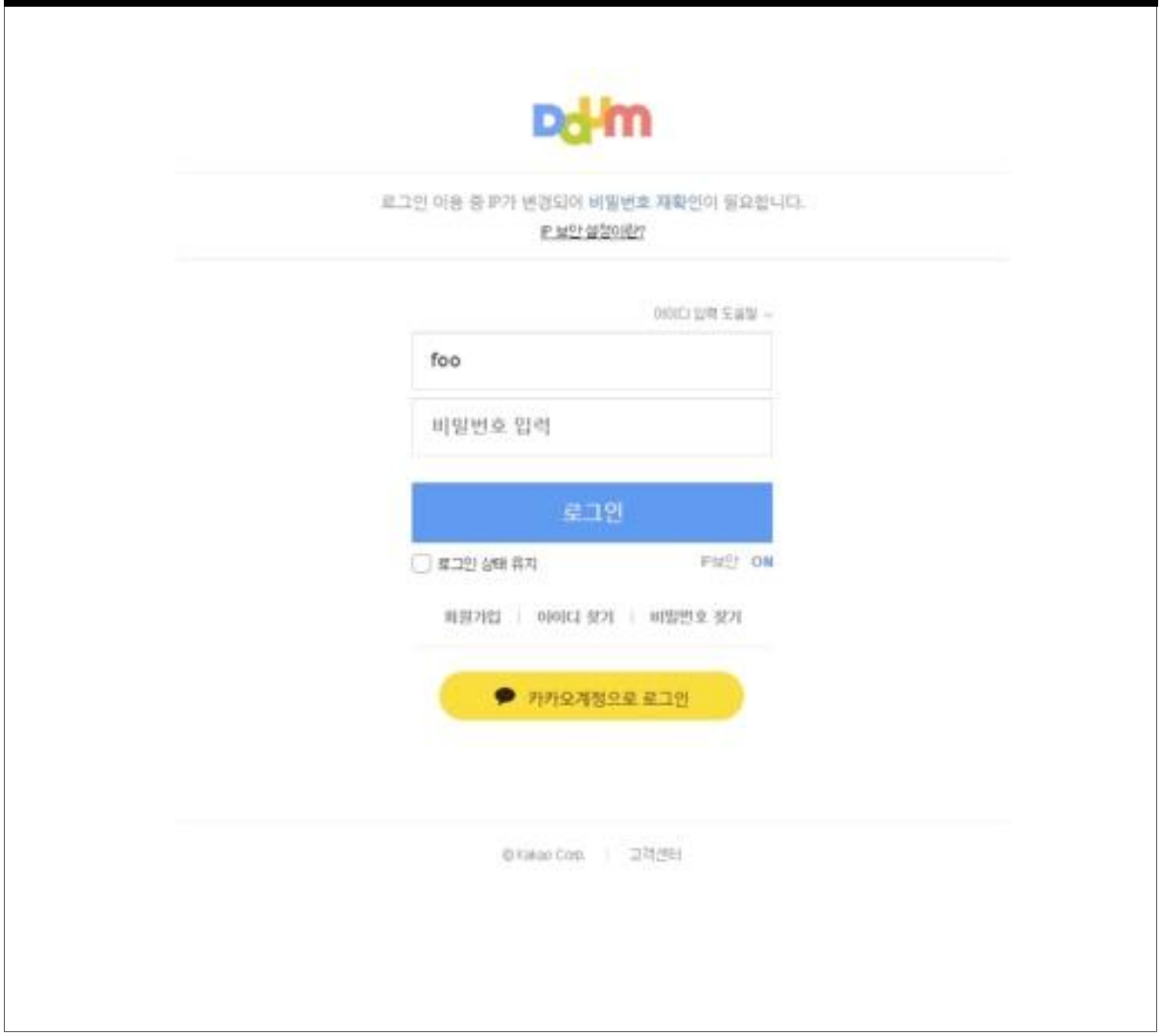
Another commonly used tactic seen was to use local HTML/PDF decoy files to load phishing content. In a specific example targeting Daum, a popular web service provider in South Korea, visiting the phishing landing page first downloads a decoy HTML file to the endpoint. The email is appended to the URL as a parameter, and upon visiting, immediately triggers a download to the endpoint. Once the local HTML file is opened, the actual phishing form is loaded with the filled username. Having a decoy file like this to load the phishing form is an attempt to evade detection solutions that might use machine learning or pattern matching on the HTTP response content.

The advantages of using this mechanism are as follows:

- Decoy files allow loading a content on the client machine, without fetching remote content from a server.
- Content Inspection mechanisms will be bypassed since content is loaded locally.

- Any phishing solution relying on logo detection mechanisms will also be bypassed.

Figure 5: Example of downloading local files as a decoy for serving the phishing page



Dynamic loading of brand logos

Phishing pages often make use of APIs like ClearBit to dynamically load company specific logos instead of generic Microsoft/Outlook logos. In this case, the phishing page tries to search for a company specific logo using the ClearBit Logo API. If not found, regular Microsoft/Office logos are used.

The advantages of using this mechanism are as follows:

- Allows attackers to dynamically impersonate brand logos without making an API call to the original site (For example: microsoft.com/paypal.com).

Figure 6: Example of impersonate brand logos without making an API call to the original site

Conclusion

Cybercriminals are trying to add complexity to carry out phishing campaigns to steal sensitive information. With free services like Let's Encrypt, it is becoming increasingly easier for attackers to host phishing sites behind SSL with a relatively short TTL for maximum hit rate. Increasing cybersecurity awareness through training and education initiatives is often helpful in reducing the impact of credential phishing attacks, but corporate users should be cautious when a site presents a form that asks for personal/sensitive information.

Reference

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The Pervasiveness of Data and Data-Centric Security Strategy

Adam Strange

Adam Strange
Global Marketing Manager
Titus, by HelpSystems

Biography

Adam Strange heads up the global marketing function at Boldon James, and is the Global Marketing Manager for Titus, by HelpSystems (https://www.titus.com), working to define and implement our strategic go-to-market campaigns. He brings a proven and successful record of managing integrated business-to-business marketing activity to both increase brand profile and capture leads and opportunities.

Adam has a widespread understanding of enterprise IT infrastructure across areas such as Cybersecurity, Threat Intelligence, Cloud-based Services, Business Applications, Databases and Hardware.

Prior to Boldon James, Adam ran the marketing and alliances function at Becrypt, and has held former marketing and partnering positions at BAE Systems, Oracle and Computacenter.

Keywords Data security, Data privacy, Data loss prevention, Digital Rights Management (DRM), Human error, Information security, CISOs
Paper type Research

Abstract

In this last year, we have seen an exponential growth in not just the amount of digital data, but also its vulnerability. Data breaches are becoming daily news, and security and risk management spending is set to reach $150 billion this year, as businesses struggle to build a strong perimeter to ensure information security. But what if 'building walls' is the wrong approach? In this article, the author illustrates the pitfalls of information security architecture and explains how shifting to data-centric strategies will protect data at file-level throughout its entire life cycle.

Introduction

Regardless of what business you are in, a data security breach is an increasingly likely scenario that all businesses must mitigate. With escalating cybercrime, the widespread growth in Cloud computing[1], and the explosion in mobile devices and varying tech and app use amongst employees and partners; key aspects of enterprise security are now, and will forever be, beyond our control.

In fact, Gartner has forecasted[2] that security and risk management spending worldwide will grow 12.4% to reach $150.4 billion in 2021. Even with that investment, the number of data breaches is increasing.

The pervasiveness of data and the complexity of the underlying environment continues to increase by orders of magnitude, and increased vulnerability around sensitive data is here to stay for all businesses. But for CISOs, is it merely a question of continually bolstering an organization's core defenses – the systems, applications, devices and networks that enclose data?

The fact is that with more apps, more data, more networks, and more logins than ever before, sensitive data may be at risk out of sight and beyond the reach of security teams. Gaps in security policy and process will always exist and a policy of 'building walls' with strong perimeter-based security, authentication, encryption and more will sometimes fail.

The four key gaps in information security architecture

There are four key gaps[3] in information security architecture that revolve around employee and external partner behaviours, and can only be remedied with data-centric security practice (and by engendering a solid security culture within the business). For CISOs these pain points pose serious risks in terms of maintaining compliance and can create a reactionary environment of playing continual catch-up.

1. **The Behavior Gap:** Usability poses a major challenge to CISOs. People simply want to find the fastest, most convenient way of doing something. In fact, human error is still the number one cause of data breaches in 2021[4]. Sensitive files will be added to USBs or data copied to unsecured documents, secure FTP servers may be bypassed, and people may not always adopt the security processes in place.

2. **The Visibility Gap:** Sensitive data travels. Average employees send emails in their tens of thousands per year and many receive files they were not meant to see. IT Governance lists a staggering number of serious enterprise data breaches[5] in March 2021 alone.

   Who accesses data once it's shared beyond a business's devices, networks, and applications and how it is used is beyond your control and lies outside of your monitoring, auditing, and tracking technologies.

   Where files and data are shared outside your organization, the nature of the information within them cannot be tracked or audited once it leaves your server.

3. **The Control Gap:** Lost files or leaked information can go beyond an organizations control. Identity and Access Management[6], Mobile Device Management and Data Loss Prevention (DLP) systems[7], all help to monitor and control employee access to data. But data that leaves the systems and networks within your sphere of influence is effectively out of your control.

   Lost or leaked information can bear serious consequences with no way to shut down the information once leaked, and potential violations that must be reported with implications around compliance.

4. **The Response Time Gap:** There is a time lag between uptake of a new application or behavior and the ability of CISOs to understand and respond. It's what puts security teams into reactionary mode and can take weeks or months to identify, during which time you don't know what's happening with sensitive information.

Technology changes quickly and in many organizations employees bring their own devices, applications, and expectations of how to work. Departments purchase applications and devices, which in turn generate more sensitive, proprietary information.

In the rush to get business done, security is often left to play catch-up and security breaches may be the unintended consequences of this gap.

Security needs to operate at the speed of business, with flexibility to adapt to the unknown. Your Response Time Gap may be measured in days, weeks, months, or quarters. The longer it is, the greater the risk of people taking measures into their own hands, or of sensitive data going untracked into new applications.

Closing the data security gap with data centric security strategies

Collaboration, innovation, partnerships, and business development are the behaviors that drive business growth and all are dependent on trusted exchanges of vital information.

When these new unforeseen breaches take place, CISOs must respond by evolving from infrastructure-centric security measures with multiple layers of defense, to data-centric approaches[8] that protect what really matters: the data itself.

Data Loss Prevention (DLP) solutions, data encryption solutions and Digital Rights Management (DRM) tools often take a limited view of the data to be protected, for example files on a server or emails leaving the network, and they still depend on the idea of walls – systems, devices or networks that enclose data.

Businesses need to be able to guarantee file-level security – to secure, track and share any kind of data, no matter where it's stored or located, with robust policy enforcement, strong encryption, and strict access controls. Data-centric security solutions also enable employees to collaborate freely while ensuring a high level of security and visibility, and even revoke access to sensitive data that has been shared by email mistakenly. Furthermore, by adding a cloud-based tether, access to data can be managed with access rights and the data decrypted if the person is approved.

Data is the lifeblood of business and, by locking it down too tightly, business slows down and potentially diminishes its value. CISOs should adopt a data-centric security solution that secures sensitive data through its entire life cycle; everywhere it travels, no matter who has it or where it's stored. By adding in this additional layer of security, data is protected in motion, in use, or at rest, inside or outside the organization.

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In Conversation with Jack Williams and Carl-Thomas Schneider

Carol Baker

After the highly successful four day virtual event in June, HxGN LIVE Resiliency Series (https://events.hexagon.com/Resiliency2021/home) hosted by Hexagon's Safety, Infrastructure & Geospatial division (https://www.hexagonsafetyinfrastructure.com/en-gb) brought together experts and leaders from public safety, infrastructure, government, transportation and defence sectors, we talk to two of its speakers to hear more about how companies can adapt to disruption, overcome challenges, and be ready to face the future.

***Jack Williams** is Director of Industry and Portfolio Marketing for Hexagon's Safety, Infrastructure & Geospatial division. Jack is an experienced strategic product manager and R&D leader with a history of success bringing disruptive software products to market in multiple verticals, including public safety, physical security, and utilities and infrastructure. He works with teams worldwide and manages an R&D team in Sao Paulo, Brazil.*

Jack is a highly energetic, passionate product management professional with skills in public speaking, international business development, artificial intelligence, middleware/ interoperability, big data analytics, and more.

He has a Bachelor of Science in information systems from Fairmont State University and is an executive MBA student at The University of Pittsburgh.

***Carl-Thomas Schneider** is the Vice President, Business Development BLK247 for Hexagon's Geosystems division.*

Carl-Thomas was founder and CEO of AICON 3D Systems GmbH, the German-based market leader in high precision optical 3D metrology for applications in automotive and aerospace industry.

After AICON became part of Hexagon's Manufacturing Intelligence division and after leading the integration into Hexagon, he took over the lead of the business unit for 3D Surveillance at Hexagon's Geosystems division.

Jack, can you give our audience some background on yourself?

I work with the Safety, Infrastructure & Geospatial division at Hexagon. We do a lot around public safety and emergency incident management, such as dispatch and communications. Additionally, we work closely with utilities, rail, and transportation organizations where we provide a variety of solutions ranging from incident management, through operational aspects, to geospatial digital twin simulations.

My personal background consists primarily of technical roles in product management where I worked heavily with our emergency services and smart cities side of product development inside of Hexagon. I have a lot of experience with data integration and analytics, and I was the product manager for the first-of-its-kind assistive AI dispatch solution called Smart Advisor.

At the HxGN Live Resiliency Series, we hosted a session with Carl-Thomas and his team from Hexagon's Geosystems division where we discussed a Hexagon security and surveillance portfolio that can serve everything from a small mom-and-pop shop all the way up to an airport, even a city or a region – providing best of breed of technologies in security and surveillance, which we feel is unmatched in the marketplace.

Carl-Thomas, can you tell us a little about yourself?

Yes, of course. I ran my own business with a company of about 150 people before selling that business to Hexagon about six years ago.

About two and half years ago, the CEO of Hexagon's Geosystems division asked me to take over the business development of its new 3D security surveillance products. These are tools where you can scan the world, buildings, or whatever, in three dimensions. We realized early on, that this type of scanning technology could also be interesting for the security industry.

Traditionally, security cameras watch over a street or inside a building, but they only work in a way that if something happens, you review the video and decide what has happened, who was involved, and what they did. But it is challenging to work proactively with a camera.

For instance, the camera will see something (which it assumes is a person) enter an area, but that 'something' could also be an animal close by that has activated the camera. Or there may be bad lighting or a bad weather condition where it is really hard to identify what the 'something' was. This results in lots of false alarms because cameras look on something just in two dimensions, and you don't have any depth information.

We developed our scanner, the Leica BLK 24/7, to get full 3D information of everything around it. It is then very easy to detect whether an intruder is a human, or maybe just an animal. It detects the true size of all these items, so we immediately measure how big the 'intrusion' is, and say, OK, this is not a person. Therefore, the 'something' is not really dangerous.

We then put AI on top of this information, adding additional functionality that allows us to distinguish between a person or again, maybe any other kind of moving object. Having all this information together, gives us a very reliable answer.

So, whether a threat is done by a human or maybe by something completely different, what is really exciting is that it gives us a chance to proactively identify threats – and I am working on how we can leverage this new technology to create a more peaceful and safer world for everyone.

So, is the Leica BLK just a fancy camera?

Jack – Most definitely not. I think Carl-Thomas is underselling how cool the Leica BLK device is. The Leica BLK 24/7 gives you live data so that you get a true 3D aspect, mixed with AI and thermal imaging that gives you the ability to determine what the intrusion is.

For the industry, false alarms are a big problem. There is only so much you can do with video analytics and machine vision. But when combined with the Leica BLK thermal imaging capability and camera data, your false alarm rate goes down dramatically – and the ability to do perimeter and intrusion detection is amazing because you have that depth, that third dimension. It is a marvellous piece of engineering that Carl-Thomas' team are working on.

This technology is also ideal when sending in first responders. Hexagon has a history of providing comprehensive security solutions, and physical security solutions for large public entities and private entities, airports, ports, and borders and the like. Our new 3D technology can be used with our call taking and dispatching software to give call centre staff situational awareness for first responders.

For example, say you want to go to a campus or airport or a large office building, or maybe you have a lot of geographically dispersed buildings, and you want to centrally manage the physical security of those buildings from one command and control centre. You bring in our traditional security solutions which combines physical security, integration of sensors, devices, cameras, access control, badge readers, etc, converging all this siloed sensor and system data, bringing it into a common operating picture.

Taking this further to a city or regional level for major emergencies, let's say a hazardous material spill or a terrorism attack, or even a natural weather event where multiple people need to communicate, that's where our smart cities solution – HxGN Connect – creates a broad ecosystem of collaboration and coordinated action.

Whether it is from the mom-and-pop business, all the way up to the city level – we have software solutions. Add in our amazing 3D scanning and we marry up the best of breed hardware, software and AI combined at the edge, and we add some city-wide and regional-wide collaboration capabilities, then we create something which is revolutionary in the marketplace.

Carl-Thomas – Let me add something to that. There are of course, other LiDAR scanner sensors on the market, but they are not dedicated for security applications, they're usually made for automotive applications such as autonomous driving. It also means that they have a very small field of view, because they only have to look at what's in front on the roads – so just two metres in height, and not very far ahead.

Whilst this is a similar technology, we have made it in a way that we can really observe half sphere with 60 metres in diameter which allows us to observe a very big area.

We also have another software package where we can actually deep deploy every kind of LiDAR sensor. But this 3D technology inside the security industry is really something new and disruptive. It means we can autonomously observe areas and detect threats, and only in the case of a real threat do some actions need to be taken.

False alarms really cost a lot of money in the industry because you have to go out there and look at what's going on. For instance, in smaller units or private homes, if you have two or three false alarms, people always get a big shock because the alarms start, then they get so frustrated that they switch the alarms off because it is more threatening if they have a false alarm. Even in these situations we can help as our system is very reliable and autonomous in the alarming.

Can you give us some examples of its use in real life situations?

Jack – If we look at the rail industry, for example, we have a lot of customers across the Hexagon group at the national railway level handling passengers and freight in Europe, Canada and the US.

Consider intrusion detection for tunnel entry monitoring, where unauthorized persons enter a tunnel, commit vandalism or leave things on the tracks. These all pose a threat, requiring parts of the network to be shut down.

As Carl-Thomas said, control rooms are typically monitoring a bank of cameras, and there is only so much you can manually catch. Now imagine if you have some well positioned BLK's proactively monitoring the tunnel, giving you the ability to assess an alarm, acknowledge or dismiss it and alert the necessary local law enforcement if needed. Or imagine it is not a criminal activity that is taking place, but maybe it's an accidental train derailment or a bridge strike, the system will send fire and rescue services out.

Taking that further, imagine you have a hazardous material spill that could be very dangerous, and you have to start notifying other agencies, including the community around the area. That could include a lot of people so you might have to dynamically communicate with organizations, entities in the public, the rail industry, etc. This is where the Leica BLK feeds into our HxGN Connect system.

Carl-Thomas – Another example is if we look at banks. Using the BLK 24/7 in banks and bank vaults is interesting because even though you are scanning everything in 3D, and you can detect whether a person is around, the privacy function within our software can be set so that whilst we cannot identify what the person is putting in a box, the bank knows that someone is in the bank vault. This perfectly matches with the privacy regulations bank vault users want.

When it comes to perimeter protection, standard systems just check if someone goes over the fence or goes through it, but what we do in addition to this is monitor around the whole area. We can see if there is a person who is inside an object, track that person or persons, and see wherever the object goes – which is especially useful at airports and ports.

Then for private homes we can define 'zones' around a house. For example, we can protect the swimming pool during the night. You can check whether someone is close to the pool and start an alarm. This alarm will not be created if, for instance, the neighbour's dog is running around, or if it starts snowing – which can happen with traditional systems.

Add to that its use around critical infrastructure such as data centres. You need to know who goes in, where they move inside, and especially where they are going. If a person goes in, you want to exactly identify in front of which rack the person is standing – not just seeing that a person has gone in. With the BLK 24/7 we get the complete three-dimensional information of what's going on.

Another example is when we look at the power grid, especially electrical substations. Typically, they are somewhere far away from cities or remotely located, and there is risk of people destroying these or entering these electrical substations resulting in a blackout somewhere. You need to be able to check it with cameras because you may get a false alarm and send people out, but with the BLK 24/7, we are able to clearly identify whether it's a human that's inside these substations or whether it's something else.

How do you see the security market changing?

Carl-Thomas – When it comes to video camera usage in the security industry, we expect the number of cameras will continuously grow, but in ten years' time, we estimate that around 20% of these old cameras will need to be supported with 3D information. So, we don't see video cameras being replaced, but technology such as the Hexagon Leica BLK 24/7 will add 3D functionality to them.

I am excited about all this technology and especially its use of AI. Being able to distinguish between a person and a non-person is a new technology, and it's fantastic what we can do with it.

Jack – We are driving an autonomous future. Don't you agree, Carl-Thomas?

Carl-Thomas – Yes. Hexagon itself is involved in many different industries where autonomy is becoming a big value. This is visible in traffic where you will have cars without a driver or trains without a driver – and all this needs a network and IT infrastructure that runs. This is where Hexagon is playing a major role, providing data and information that is needed to do these things autonomously.

Jack – I would add that in the security and public safety space we are big believers in keeping humans in the loop. There are some things where human judgement, we believe, will stay at the forefront.

If we take a step back and look at Hexagon as a whole – from a business model perspective where are we going? Something found throughout Hexagon is that we believe we can create a sustainable future.

Sustainability is a big effort, and we don't believe that sustainability should be seen as a negative or a cost – we believe that it is a good business model. To be sustainable requires a lot of autonomous behaviour, optimization and efficiency. So that is very key, and the heart of where Hexagon's at.

Case Studies

Putting theory into practice can be both challenging and satisfying for the technology industry. The ability to fully understand a client's problem, analyse the situation, and then find the best solution that meets a client's technology requirements, while delivering, managing and supporting the infrastructure and services which drive progress towards the client's business goals are key elements in the industry's success.

A well written case study will follow a customer as they define a problem, determine a solution, implement it, and reap the benefits, and offers readers the ability to see a situation from the customer's perspective from beginning to end. Case studies give a first hand look at how IT companies think, work and interact with their clients.

In this section, we feature three Case Studies which have particularly caught our attention:

1. **FJ Chalke – Overcoming challenges presented by dispersed documentation and streamlining workflow processes**
   YourDMS

2. **Boels Zanders introduces modern, flexible working with Repstor Custodian for Legal from Transform Data**
   Repstor

3. **How eInvoicing, dynamic discounting leads to greater visibility into receivables for Multilingual graphic services company Intergraphics**
   Taulia

4. **Vox Telecom delivers impressive business benefits with the InfiniBox enterprise storage system from Infinidat**
   Infinidat

YourDMS

FJ Chalke Group

FJ CHALKE CASE STUDY

Established in 1929, FJ Chalke is a family owned multi-franchise car dealership representing Abarth, Fiat, Isuzu, Jeep, Kia, Nissan and Suzuki.

ANALYSIS

With showrooms throughout Somerset, FJ Chalke continues to grow, which has allowed their most recent Kia & Nissan flagship showroom to open in Yeovil in December 2019.

As with most businesses that experience rapid growth, the challenges of managing increased amounts of paperwork become a much larger task. The Sales Department were storing deal files in costly off-site storage and the team were spending a lot of time searching for the files they needed.

The challenges didn't stop there. The accounts department were now managing more invoices, dealing with more queries, paying more suppliers, and struggling to ensure documents didn't get misfiled to comply with audits. Staff were constantly having to travel between all of the branches, compiling paperwork, sending it back for approval and signing, then collecting it again, with each 50 mile round trip taking over 1.5 hours. Whilst this was a critical process for the department, it was time consuming, put a strain on resources and meant keeping track of specific documents was difficult.

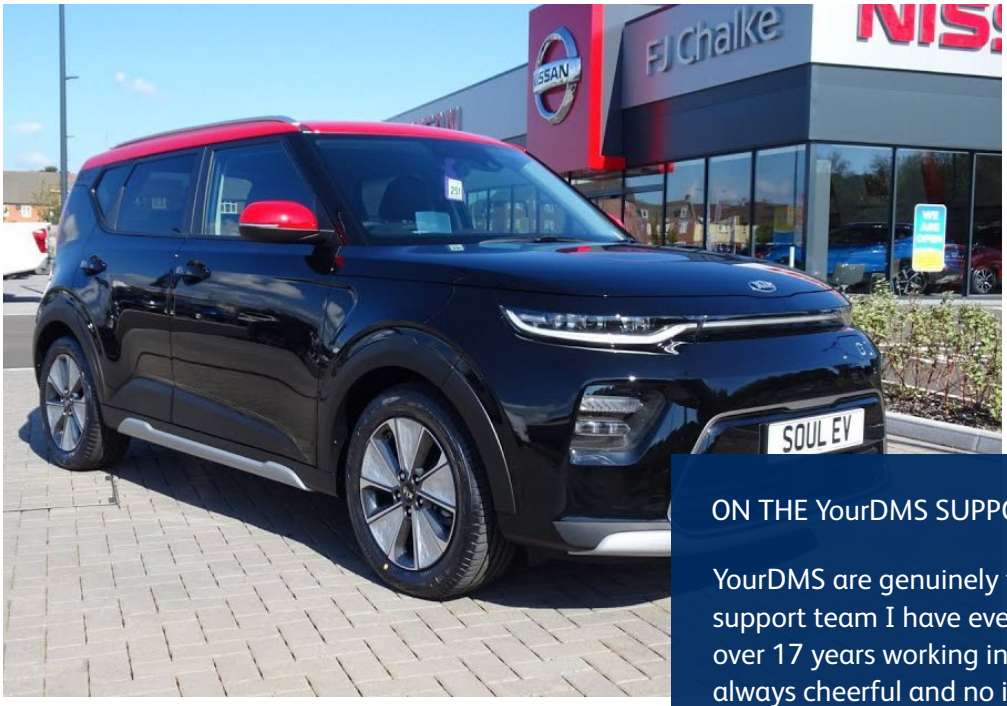
YourDMS SOLUTION

FJ Chalke wanted to store their files securely, in one place, so that all departments could easily access the information they needed.

Initially, YourDMS helped implement an Invu Document Management system in the Sales department. This allowed staff, in a matter of weeks, to scan old and current deal files in a structured manner, giving them visibility and the ability to locate any document within seconds.

With the success within the Sales department, YourDMS's mission didn't stop there. As part of the service, conversations moved swifty on to how they could help save time and money within other areas of the business, starting with the accounts department.

Invu was rolled out with integrated digital workflow functionality. A document would start its digital journey as soon as it enters the business (via post or email). Invoices are filed in Invu and users add relevant pieces of information in order for the document to be stored and distributed to the correct department manager for approval.



ON THE YourDMS SUPPORT TEAM...

YourDMS are genuinely the most helpful support team I have ever come across in over 17 years working in finance! They are always cheerful and no issue is ever a problem for them to try and help you with. They are also very understanding when it comes to implementing change at a slower pace than maybe some other businesses would.

Nicola Green
DEALERSHIP ACCOUNTANT AT FJ CHALKE

Security presets are configured when the system is setup to ensure that an invoice can only be accessed by the team member who needs to process it.

Managers could clearly see the invoice, add notes and see what is required from them with Invu's fully customisable workflow all within a click of a button.

Other features include duplicate checking, document audit trails, fixed lists, ability to action multiple work tasks at once.

RESULT

The Invu Document Management system has transformed the way the FJ Chalke Group work.

The Sales department now have their files stored in Invu, which allows them to find deal files in minutes, respond to queries quickly and deliver fantastic customer service. It also removes the risk of files being damaged and the need for off-site storage.

The Accounts team no longer have to travel between branches to collect paperwork, or to send paperwork off to be signed - it is all done through Invu. Not only does this save them a huge amount of time, it completely eliminates the issue of paperwork going missing as invoices can now be tracked through the whole process. Managers can easily query an invoice and reject it with comments.

Invu features multiple search options including by date range, invoice status, invoice number, and supplier, so the Accounts team can always find the files they need in seconds. This is especially helpful during an audit.

As Nicola Green, Dealership Accountant at FJ Chalke explains, *"It has also helped them massively when it comes to our yearly audit, because everything can be found so quickly searching through Invu, rather than having to sort through masses of paperwork in boxes in a cupboard."*

Nicola is also pleased that YourDMS have helped to identify where Invu can help in other areas of the business, with other departments such as HR using Invu to manage their paperwork.

Future steps

FJ Chalke are keen to explore how automating their Invoice Processes, to include 3 way matching, can benefit the business.

What is FJ Chalke's advice for other companies tackling similar problems?

Nicola comments, *"My advice would be to just go for it. We faced quite a bit of resistance when implementing the new system, as most organisations do, but as soon as staff started using Invu, they could see how much better it was for everyone. Any initial difficulties are well worth the effort, when it makes everything so much easier in the long-run."*

repstor

A REPSTOR SUCCESS STORY

Boels Zanders introduces modern, flexible working with Repstor Custodian for Legal from Transform Data

Boels Zanders is a full-service law firm, based in the south of the Netherlands with an international reputation.

With offices in Eindhoven, Venlo, and Maastricht, the firm services the day-to-day legal needs of entrepreneurs, business leaders and administrators of SMEs, large corporates, public sector, healthcare and non-profit organizations.

Boels Zanders maintains its leading position in this fast-changing market by using IT to enhance its client service. Together with Transform Data, Boels Zanders continuously explores new ways to maximize the use of its existing platforms in order to meet business goals and optimize processes. Recent years have seen a significant transformation in the IT landscape with a migration to the Cloud and the introduction of Custodian for Legal.

Migrating from on-premise to the Cloud

Lawyers need to work effectively from different locations, however the existing Citrix solution did not always offer seamless access if internet connectivity was limited. Moreover, connectivity aside, Citrix was expensive in terms of hardware and maintenance. Boels Zanders therefore wanted to provide all users with laptops with Windows 10 and automatic updates via a schedule that would not disrupt the lawyers' daily caseload.

To achieve this goal, Boels Zanders migrated 70 on-premise servers, which managed load-balancing, redundancy back-ups and hardware upgrades, to Microsoft Office 365 and Microsoft Azure. The number of servers has been reduced significantly but the remaining ones now run in the secure Azure cloud while Microsoft handles back-ups, hardware and redundancy. Azure offers the scalability to adjust resources when extra processing power is needed while Boels Zanders only pays for the resources it actively uses, thus significantly reducing operational costs.

"We're very happy with the move to the Office 365 and Azure platform," explains Jos Meuwissen, IT Manager, Boels Zanders: "The rapid provision of new updates, functionalities and even completely new innovative applications gives us the ability to quickly act on new business and client needs."

Introducing Custodian for Legal

The existing document management system (DMS) had been in place at Boels Zanders for many years incurring high maintenance costs and with limited functionality in terms of meta-data, reporting, staff department access and offline capabilities. In addition, it was typically configured only for a client/matter set-up and not flexible enough to adopt to meet the needs of a staff department such as HR.

Boels Zanders therefore decided to migrate to Custodian for Legal, a collaboration and document management solution from Repstor provided by Transform Data, which provides matter management capabilities on top of Office 365 and SharePoint while retaining the familiar Microsoft Outlook interface.

Custodian for Legal's more generic approach ensures solutions can have unlimited meta-data fields and support practical things as multi-value meta-data and non-client/matter structures which is a key requirement to build practical solutions that meet the needs of all staff departments, including HR.

"The rapid provision of new updates, functionalities and even completely new innovative applications gives us the ability to quickly act on new business and client needs."

Jos Meuwissen, IT Manager, Boels Zanders

Transform Data's carefully planned migration approach from iManage Work to Custodian for Legal and provided a seamless transition for end-users and the IT department.

Qwickr and Qontext for efficiency

Boels Zanders users need to find information, refine results, group data sets and preview documents as fast as possible. Furthermore, specific documents or locations of interest to users must be marked for following, notifying users in case something changes. Transform Data deployed Qwickr, which harnesses the metadata from SharePoint, to meet these needs and ensure users can work efficiently. Another Custodian for Legal add-on, Qontext, was implemented to aggregate information from various systems, including PMS, CRM and DMS, and to display the relevant information in context by offering a user-friendly portal, which integrates into Outlook and Microsoft Teams.

The road ahead

Innovation never stops and Boels Zanders is continuously looking to further optimize its environment for both internal users and clients. In the short term, the company expects to integrate its Neota Logic platform into the Office 365 and Custodian for Legal solution, allowing it to provide self-service applications, such as contract generators, to clients via SharePoint collaboration rooms and Microsoft Teams.

"We're enjoying the close collaboration with Transform Data and we're pleased that they listen to us and to our users, trying to understand how they want to work and how they can be more productive," concludes Nicole van Rossum, Office and Process Manager, Boels Zanders. "By adopting solutions such as Qwickr and Qontext, we can ensure maximum added value and efficiency to our users."

SUPPLIER CASE STUDY

Kerstin Connelly
Business Owner
Intergraphics

FINDING A BETTER WAY

Company Name
Intergraphics

Location
Pacifica, California

About
Multilingual graphic services company

Taulia Enabling Technology
Free eInvoicing
Dynamic Discounting
Visibility into receivables

"When I first started my business, I had an answering machine, typewriter, fax machine and a very slow computer. Everything was completely paper-driven. It was very old school and inefficient, it really was. It's amazing how far we've come."

- Kerstin Connelly

In 1991, Kerstin Connelly's employer, a multilingual publishing company based in San Francisco, was acquired by another organization. In the aftermath, Kerstin recalls that her employer became a "ghost town," so she decided to strike out on her own. She got an advance on a large project from a client, and that was the foundation for her multilingual graphic services company, Intergraphics. Today, Kerstin coordinates desktop and website publishing projects with a team of international expert translators and graphic designers. Recently, she's diversified her business, and now Intergraphics handles interpretation for multilingual focus groups, teleconferences, and events.

Kerstin works out of her home and handles projects for an array of large and small clients, including manufacturers, ad agencies, hospitals, public utilities, transportation entities, banks, and hospitals. As a small business owner, Kerstin handles every aspect of running a business, including ensuring the company maintains its financial health. This has been made much easier with the adoption of Taulia.

It Never Hurts To Be Ahead

As Kerstin knows all too well, cash flow for small companies like hers is always a concern. As the one responsible for ensuring bills are paid, payroll is met and the doors stay open, Kerstin relies on Taulia for timely payments, remarking that it "never hurts to be a little bit ahead."

When Kerstin first started Intergraphics, all processes were completely paper-driven and manual. From printing invoices and stuffing envelopes to dropping them in the mail and enduring the excruciating wait for payment to be delivered. Given the lag between invoicing and payment, Kerstin wasted endless hours on the phone, calling to determine the status of her invoices - instead of spending time on what really counted towards the bottom line - selling and providing her services.

SUPPLIER CASE STUDY

Kerstin Connelly
Business Owner
Intergraphics

TAULIA SPEAKS THE INTERNATIONAL LANGUAGE OF CASH FLOW

Over the years, Kerstin began introducing and relying on technology to make her business more cost effective and efficient. One innovative upgrade that has been pivotal in her success was the adoption of Taulia's supplier portal.

A few of Kerstin's clients began using Taulia and invited her to join the portal. At first, she was skeptical: clients who were using other portals were still taking up to 30-60 days to approve her invoices, leaving her with the same cash flow challenges of clients not using a portal solution. But as she discovered during Taulia's simple onboarding process, Taulia streamlines the entire invoice and payment process so her invoices are approved and paid much more quickly than before and she has visibility into the entire process.

Taulia has given Kerstin more control over her money, thanks to dynamic discounting. Once her invoices are approved in the system, she receives a notification that allows her to opt to be paid early in exchange for a discount. Even better, with Taulia, Kerstin can submit incremental invoices for each stage of work and request early payment on just these specific invoices, allowing her to pay her suppliers as soon as they finish each project.

For Kerstin, managing her small business requires "juggling life as well as juggling the business. Keeping things as simple as I can within my business is helpful for freeing me up to have time spend with family." And Taulia helps her do just that.

Taulia's online self-service platform allows suppliers to check the status of their invoices at any time, eliminating the need to follow up on invoices and saving valuable time and resources. And, with Taulia's Dynamic Discounting, suppliers like Intergraphics can get ahead by accelerating payments on their approved invoices, improving their all-important cash flow.

Interested in learning more? Contact us today:

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CASE STUDY

Vox Telecom delivers impressive business benefits with the InfiniBox enterprise storage system from Infinidat

Technology and telecommunication solutions have become key to business operations today, and service providers need a stable, available and high-capacity storage platform to deliver an excellent Customer Experience (CX). Vox Telecom (Vox) is a leading South African ICT and telecoms operator delivering a variety of services and solutions to the southern African market.

They rely on the cost-effective, high performance, high capacity and 100% availability of the InfiniBox enterprise storage solution from Infinidat, which plays a central role in supporting the entire Vox offering and has improved the performance of all services across the business.

The Challenge

At the start of 2019, Vox faced two significant difficulties around its existing storage platform. Firstly, the five-year maintenance period was coming to an end, and secondly, the company was running out of capacity much faster than anticipated. Adding to these issues, Vox was unable to utilise the full capacity of its existing storage solution, as some 40TB needed to remain 'unused' for the system to function.

"We reached the capacity limit of the system faster than anticipated. Coupled with the prohibitively expensive maintenance extension option, we made the decision to perform a technology refresh and replace the platform with a completely new solution," explained Keith Laaks, Executive Head for Technology, at Vox.

The Solution

Vox needed a cost-effective, high-performance storage array for its hosting environment in order to assist the business to meet customer demands and rampant data growth. An agile partner, who would be able to deliver quickly, was also a necessity. After evaluating 12 different storage arrays on criteria such as performance, Inputs/Outputs Per Second (IOPS), storage efficiencies, compression, deduplication and redundancy, Vox selected the InfiniBox solution from Infinidat, supplied by local partner and solutions integrator, Datacentrix.

Two InfiniBox F4304 arrays were deployed, one at each of Vox's data centres in Johannesburg within the production and Disaster Recovery (DR) environments respectively. For workloads with low Recovery Point Objective (RPO) and Recovery Time Objective (RTO), Vox makes use of VMware's vSphere replication feature.

"These arrays primarily service our virtual servers, database and voice infrastructure, and also play a key role in our data protection strategy. The solution allows seamless integration with our data protection vendor," said

"Thanks to excellent relationships, solid teams and effective planning from the outset, the implementation went smoothly and no challenges were experienced. The training and support provided by Infinidat throughout the journey ensured we got it right the first time. The proof of our success came from our customers' users, who noticed performance improvements without being aware that a storage upgrade had been performed."

Keith Laaks, Executive Head for Technology at Vox

Solution Advantages for Vox Telecom

INFINIDAT

95% minimum cache hit ratio

Enhanced performance and guaranteed uptime

Seamless provisioning of new services and solutions

Selby Maake, Cloud Storage and Virtualisation Engineer at Vox. "Each array delivers 1.7 Petabytes (PB) of virtual capacity with the actual available capacity variable depending on the compression ratio. This gives us far more storage for an extremely cost-effective rate per terabyte."

The Result

Implementation of the solution began in September 2019 and took one month to complete. Local Infinidat partner, Datacentrix, worked closely with Vox on the installation, helping Vox take the project from racking, stacking and initialisation, through to switching, provisioning, testing, and finally into the production environment. Infinidat also provided certified administration training through Datacentrix, flying in experts from its head office in Israel to South Africa. This was to ensure the data migration was seamless.

"Thanks to excellent relationships, solid teams and effective planning from the outset, the implementation went smoothly and no challenges were experienced. The training and support provided by Infinidat throughout the journey ensured we got it right the first time. The proof of our success came from our customers' users, who noticed performance improvements without being aware that a storage upgrade had been performed, said Laaks.

The InfiniBox arrays offer flexibility when it comes to scale and ease-of-use for critical workloads. Also, they deliver superior performance with a low total cost of ownership (TCO) without compromising the CX. The InfiniBox ultimately empowered Vox with a data-driven competitive advantage at petabyte scale.

"One of the key benefits we have realised results from the low-touch configuration and administration of the InfiniBox arrays. This has allowed us to provision new services and solutions seamlessly and with minimum manual interaction. Our previous solution was laborious to configure, taking up to an hour with multiple steps, increased complexity and room for error. The Infinidat solution takes less than a minute, improving our customer service, while freeing up time for our teams to attend to other business needs," Maake added.

Redundancy is another critical feature of Vox's operations. Previously, the company experienced some issues with failures, so a robust solution was required. InfiniBox's triple redundancy controllers guarantee uptime, ensuring Vox can always deliver an uninterrupted service to both internal and external customers.

Future plans

"Aside from our connectivity, broadband access and voice solutions, our cloud offering is a growing element of our business, with impressive market penetration figures. We needed the right platform to support our growth goals and storage is the key ingredient. The InfiniBox solution supports our requirements by delivering the right blend of cost-effective storage and high performance, coupled with the ability to slot seamlessly into our existing infrastructure," said Laaks.

"Infinidat also provides excellent proactive monitoring and local support through Datacentrix to ensure constant uptime and availability. This is critical to Vox from an operations perspective. Based on our forecasts, we will require additional capacity by the end of 2021. We are extremely happy with the platform and will likely expand our storage with additional InfiniBox arrays, when the time comes," he concluded.

Notes for Contributors

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Revenue recognition applications – As organizations evaluate primary revenue streams to identify revenue recognition requirements, it is necessary for businesses to install the right revenue recognition system to reduce friction and position the company for a smooth, successful changeover.

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