Customer Spotlight

Measure, then Manage: IT Director's Experience of Instrumented IT over Three Companies

Sponsored by: Virtual Instruments

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IDC OPINION

Enterprise datacenter infrastructure environments are becoming more complex, heterogeneous, and dynamic, thanks to the growing use of virtualization, cloud, and software-defined architectures. IDC observes that organizations that are investing in extensive monitoring, dependency mapping, and analytics solutions for their infrastructure including physical and virtual systems, public and private clouds, middleware, and application resources, are finding it easier to comply with performance and availability SLAs.

Infrastructure performance monitoring solutions are also becoming critical in enabling IT teams to identify the key bottlenecks in the infrastructure or identify the more demanding workloads and plan capacity resources more cost-effectively.

IDC's *European Datacenter End-User Survey* in 2016 revealed that the need for storage performance is much more pronounced than in previous years as enterprises welcome the new generation of applications that are complex, dynamic, demanding, and highly scalable. Enterprises also cited capacity planning and management of complex storage infrastructure as major challenges.

Modern infrastructure performance management solutions such as the platforms from Virtual Instruments, while remaining vendor-agnostic, are integrated with analytics capabilities and provide easy user interface and performance reports to make themselves valuable within the infrastructure portfolio. These products are designed to be cross-domain and application-centric and therefore go beyond giving insights into the storage estate to help identify issues in networking or compute components, making them critical in the ever-changing enterprise datacenter.

IDC believes that infrastructure monitoring and analytics solutions that provide a unified, integrated view of workload requirements, cross-tier dependencies, and root cause of performance problems are important enablers of today's hybrid IT architectures. This is because enterprises can use insights from the performance monitoring platforms to match the workloads with the right kind of infrastructure as they adopt a multicloud, hybrid IT approach.

Most importantly, such platforms can be used to de-risk a storage transformation project or a consolidation project because their data can be used to benchmark the expected performance from the new infrastructure for a specific application.

IN THIS CUSTOMER SPOTLIGHT

This IDC Customer Spotlight provides an overview of IDC's discussion with Simon Close, the freelance IT consultant who was responsible for managing the SAN and IT infrastructure for British supermarket chain Morrisons, Lloyds Banking Group, and HBOS, to understand about the implementation and use of Virtual Instruments' infrastructure performance management solutions and how they benefitted from using it. The study also highlights Close's reasoning behind selecting the solution and his experiences of using Virtual Instruments' various solutions for 10 years across different environments ranging from large banks through to retail. IDC also identifies recommendations and best practices for users based on the discussion with the user.

About Virtual Instruments

Virtual Instruments is a specialist in application-centric infrastructure performance management. It provides infrastructure instrumentation and performance analytics for enterprise datacenters. The company's solutions are designed to give IT teams deep workload visibility and actionable insights into their end-to-end systems across the hybrid datacenter. Virtual Instruments empowers companies to maximize the performance, availability, and utilization of their production IT infrastructure. Virtual Instruments has over 500 customers, including enterprise IT, cloud service providers, and storage vendors. The privately held company is headquartered in San Jose, California. For more information, visit https://www.virtualinstruments.com.

IDC INTERVIEW WITH SIMON CLOSE ON VIRTUAL INSTRUMENTS' SOLUTIONS

Simon Close, the former Head of Technology at British supermarket chain Morrisons and now a freelance IT consultant, has used Virtual Instruments for over a decade – starting at HBOS 10 years ago to manage storage arrays and a large SAN environment. He then went on to deploy the solution in Lloyds Banking Group after the merger of HBOS and Lloyds and then later at Morrisons in 2011.

IDC: Tell us about your first experience of using Virtual Instruments and how the solution has evolved?

Simon Close: Initially when we purchased Virtual Instruments' (VI's) solutions at HBOS, it was around establishing a world-class storage environment. So, at HBOS it was to instrument the storage estate and move away from where people talked about it being one of Europe's largest SAN environments to one that was well managed and world class in its management. That's where we first used VI to help us in that journey.

There were lots of errors in our SAN environment that were going undetected until they started affecting the services. Initially we deployed VI to identify what those errors were and where they were and to fix them to have a clean, error-free infrastructure.

IDC: So initially you were using it as a reactive tool for diagnostics?

SC: Yes, so 10 years ago when we first started using it, the tool was very engineering-based. It was a detailed, engineering type tool that required a number of SAN specialists to derive value from it. But over time, with feedback from customers like ourselves, VI has enhanced its usability for professionals without deep storage specializations. This is important since it has now become a lot easier to devolve access to VI tools to other users and admins within the enterprise as opposed to just storage specialists.

The current version of VirtualWisdom lends itself much easier to either presenting users with their own dashboards so they can see the performance of their line of business applications or schedule

monthly reports to see how the infrastructure team is meeting SLAs and see the performance of the entire storage solution.

IDC: What were the benefits of the VI tool in the early days? Were you able to resolve issues quickly, or reduce downtime?

SC: Both of those.

We could eradicate all errors from the storage environment and free it from errors such as low level protocol errors like CRC errors (cyclic redundancy check). We had a mandate of zero CRCs across the estate, and that's what we achieved and effectively cleaned up environments with VirtualWisdom. This helped us to operate the storage environment much more efficiently and effectively.

Moving forward, we used it for reactive troubleshooting when applications were slow or, on a number of occasions, even identified the root cause of a particular workload that resulted in the poor performance of the infrastructure.

IDC: Can you quantify the benefits?

SC: We didn't bother with that type of detailed TCO. For us, it was important to declare the estate as a clean environment, as one that is future-ready and ready to scale quickly, because that was what the bank really needed.

Then at Lloyds, the biggest challenge was that we were establishing a new banking environment. Everything was being built new during the integration of Halifax and Lloyds to form Lloyds Banking Group. We were building new datacenters, new storage, new fibre cabling, new network infrastructure, and so on, to host the new banking environment. So, we wanted to use the VI tools here too in order to de-risk the project like we did at Halifax, ensuring that everything was instrumented and monitored to ensure that the new target environment was working well.

IDC: Moving on to Morrisons, what was the infrastructure situation there, and why did you feel the need to invest in Virtual Instruments' technologies?

SC: Having used and benefited from VI solutions at HBOS and then at Lloyds, I was keen to invest in the solution at Morrisons too.

Morrisons were going through a large IT transformation and storage transformation was part of that project in 2011–2012. I was running the storage transformation workstream, which was a £10 million investment plan in solutions such as HPE 3PAR storage. We were looking to consolidate all disparate storage systems – from EMC, IBM, and HPE – down to a unified HPE 3PAR solution. It was a risky project and a bit of a leap of faith to move from enterprise-grade proven storage arrays to a brand new solution at that time. We were one of the first European companies to receive the new HPE 3PAR arrays hot from the production line. So, there was a risk associated with that and we wanted to de-risk the migration project. Our strategy of de-risking the move was to deploy the VI products. Actually, we deployed the Virtual Instruments infrastructure monitoring and management platform even before the migration, so we could measure the performance for benchmarking, and established a baseline for performance before we moved to the new 3PAR arrays. When the new storage estate was set up, we could again use the VI solution to compare the performance and show anticipated improvements.

IDC: What was the big motivation behind the consolidation on HPE 3PAR?

SC: It was a cost-based investment, saving money from running disparate storage arrays from different companies, and it was cost-effective to consolidate storage into a single solution. It was much more cost-effective even when we factored in the investment in Virtual Instruments.

IDC: So the VI platform played a critical role in your storage transformation project and helped you benchmark performance and demonstrate how the new storage estate was worth the investment?

SC: Absolutely.

There were some technical benefits too. It helped us understand the low-level operation of 3PAR arrays. When we first deployed 3PAR, there were some "oddities" in the arrays that we could identify only through the VI platform's reports. The platform showed us certain symptoms which we could take to HPE and they explained the reason for those oddities. As an example, it helped us understand how 3PAR replication technology within 3PAR functioned and this helped us develop a better understanding of our storage array. Had we not used dedicated infrastructure performance and management tools, we would have simply second guessed the abnormalities and placed the blame on the storage technology.

3PAR arrays themselves have metrics but the data is quite high-level, so it would have raised questions around the abnormalities – why are there so many more reads than writes, why is that application skewed, but the VI platform pin-pointed the particular behavior.

IDC: As you mentioned, storage arrays come with built-in monitoring tools and they are becoming sophisticated and feature-rich. Why not use just those?

SC: You can and you should use monitoring tools in vendor products for high-level insights. But the benefit of something like VirtualWisdom is that it is vendor-agnostic and can monitor the storage arrays and SAN environment and you have a single tool to monitor all that and even the NAS appliances. It is a holistic solution for a networked storage estate and it is nice to have a single place to go to – the VI dashboard – for your SAN estate, storage arrays and even the physical media side as well as the fiber optic cable side and transceivers because VI tools can instrument all that.

IDC: What did you do differently at Morrisons when using Virtual Instruments based on your previous experiences with it?

SC: At HBOS, we tried to deploy the solution across the full estate and it was exhaustive, time consuming, and expensive. But there, the need was to have a clean environment.

It required many storage specialists to dedicate time to using it. But the latest versions are more automated, more intuitive and more user-friendly, and abstracts that level of detail to appeal to even the line of business managers in ways they understand and use the insights into line of business application roadmaps.

The new iterations of VI products also come with a nice feature where you can compare the report to previous reports. We found this particularly useful for some of Morrisons' cyclical workloads such as our payroll workload. They can see the latest report, overlay with the previous month's report, and compare to see if the response time has got worse, stayed the same, or improved.

If it is year-end processing, you can compare with previous year-end processing to see how the service was delivered. So, this can lead to future-based capacity planning and predict the requirements and make sure there is sufficient capacity in the storage estate when needed.

The platform also helps in capacity upgrades as we could plan effectively and save money from over-provisioning but more importantly, get the best value for our budgets. It is possible to keep a close watch on the capacity and make purchase decisions to align with vendors' year end cycle to get a good deal.

IDC: Why is this important?

SC: Storage arrays and the speed of the SAN environment are getting complex and faster than ever before. So, it is more important than ever to get granular data in real-time in order to derive meaningful analysis. Storage environments are getting faster and if you don't identify a spike in real-time, then it gets averaged out and smoothed out and there is never an opportunity to find it. It is essential to have that real-time granularity if you want to have a world-class storage environment.

IDC: So, you have used Virtual Instruments to consolidate storage infrastructure. Hasn't that taken away a lot of performance issues? Is there still a need for VI in a consolidated storage environment? What are reasons to continue using VI?

SC: The consolidation can be inefficient. What if the 3PAR estate hasn't been implemented correctly. Consolidation doesn't take away all the problems. Storage administrators still need to ensure they can deploy and provision storage in the right manner. There are always some compromises in the estate and vendors aren't always willing to talk about the limitations of their technology. That's why it is important to have a third-party agnostic tool such as VI to review performance and behavior and then tweak it to optimize the estate.

But that's not all. We consolidated on 3PAR in 2011-2012, but Morrisons is on a continuous transformation. We more recently moved to 3PAR all-flash arrays, which raised issues which weren't there in traditional spinning disks. For instance, we found that workloads aren't always flash-friendly. It can sometimes move the bottleneck because if I/O is faster and arrays are quicker, then that might cause problems downstream in the switches or compute layer because the dynamics of the environment have changed. Without instrumenting the infrastructure with VI, it will be difficult to identify the changing goalposts.

Besides, flash arrays tend to be smaller and more modular than traditional storage arrays, and when you migrate key workloads on to flash, having performance metrics from VI's WorkloadWisdom (formerly named Load Dynamix) solutions is useful in getting the assurance that the workload will continue to perform better or at least the same post-migration.

Lastly, it is also useful to ring-fence some infrastructure for particular workloads and reserve critical resources such as cache and help design the storage platform better.

Talking about workload placement, using VI proved very beneficial with this important migration project.

IDC: Could you elaborate on that please?

SC: Morrisons was looking to migrate a mission-critical application on to a virtual private cloud with a third-party hosting provider. We showed the hosting provider the VI report on the application's performance. We actually showed them the report after they already provided us with the bill of materials in terms of what they were going to provision to run the workload on. After seeing the VI report, they quickly realized that the infrastructure they were proposing was inadequate to meet the I/O demands of this critical workload and they quickly revised the bill of materials to include a higher spec storage array that satisfied the requirements of the application. This ensured that we would move the mission-critical system on to the right storage and server platform at the third

party. Had we not done that and not used the VI report, then the application might have been slower and the whole migration project may have failed. So, it de-risked the scoping, the migration, and the cost and we used VI to that critical effect.

So, the level of detailed reporting is useful to show how the systems perform in the busiest time of the year, then the vendors know what to cater for and systems will be spec-ed correctly to suit the peak needs.

IDC: Moving forward, how do you see VI solutions' roadmap? Is there anything VI should particularly focus on when developing solutions?

SC: VI is improving all the time. I would say integration with other tools is important. Many organizations are now increasingly using more DevOps kind of tooling and integration with those types of tools is key for VI going forward.

If you have a large estate of IT kit, it is important to have a holistic monitoring view of it all and not simply the storage estate. You want to know what servers are doing, what cloud services or networking is doing. That's where integration with other tools can make VI tools more valuable as it can give a true end-to-end picture.

VI can certainly be used with cloud providers, especially in our own private cloud, and as more workloads move to off-premises, the performance metrics from VI on-premises will be useful to compare with to help determine where to move workloads off-premises.

IDC: Could you share some deployment best practices, please? What is your advice to first-time users on implementing the Virtual Instruments platform to get the best out of it?

SC: My views have changed with time.

10 years ago we wanted to build a world class storage environment, so we instrumented everything in the storage estate and it placed huge demands on the team to constantly use the product to get best value. My first guidance initially would have been, "start small and grow gradually."

But things have changed and the latest VI platform is easier to use and has a friendlier user interface. I have now changed my opinion. So, with the new versions, I would say instrument everything from day one because the demand overhead on the team isn't where it was 10 years ago. You can instrument everything and you still don't need an army of people on it because everything is abstracted and automated and easy to use.

The fiber optic cabling solution is a fundamental enabler and how you set the fiber optics cabling environment is key to exploiting the VI products fully. At all three organizations I was a part of, I worked with a specialist fiber optics company to ensure that they got that absolutely right, allowing us to derive maximum value from the VI solution.

Another point is that there are some VI products that can be deployed non-intrusively and new users should start with those. In terms of other appliance-based products, users can be a bit selective in deploying those to just a subset of applications, but users will soon find the value of the metrics exposed. And I feel it is as critical to the infrastructure as some applications are critical to the business.

Although companies don't have to undergo intensive training to use VI's platform and read reports, it is important to familiarize your staff with the solutions and the dashboard rather than making it a go-to tool when there is a problem because you want to use reports on a regular basis.

IDC: What is your advice to companies not using third-party dedicated infrastructure monitoring and reporting solutions?

SC: If they are not having outages and issues, they are lucky. But the benefit of having a platform like VI is that you can see what's going on in your environment, so often issues will go undiagnosed and be swept under the carpet when they go away. But if problems, however big or small, keep reappearing, you can't always ignore them since they will build up and will result in a major outage. If you can instrument the environment, it is going to be beneficial.

I'd find it difficult to work for an organization not using infrastructure management and monitoring tools because this transparency, awareness, and insight is important as there will be a lot of gray area and I would not be able to give any guarantees as IT to the business.

It has saved our lives across all three organizations on a number of occasions in identifying the root cause and identifying the bad citizen. It has given us the lifeline to save the infrastructure.

IDC: Who should own VI within the company? Would it be the storage team?

SC: A few years ago, I would have said it is a storage team product, today I feel it is more appropriate for the systems management team (ITSM team). The storage team can advise on deployment, but caring and managing the platform can be done by a systems management team that already has other monitoring and reporting tools.

IDC: What do you like about the company and the solutions?

SC: In the latest iterations, it is clear that you don't need any special training today to get the best out of the VI platform because it is much more abstracted for use by any IT literate employee to get the best out of the dashboard and understand the topologies and interpret without any formal training.

The analytics is simpler to use too. VI has taken a lot of customer feedback and built that into the analytics capabilities. The analytics analyze the patterns and diagnose them, saving the IT team from having to manually go through the whole process from scratch to identify the problems themselves. It identifies the pattern (a set of symptoms), then the root cause (whether it is a storage array or switch) and sometimes even diagnoses and explains how to fix.

Probably, the next step would be for it to even fix it without manual intervention.

10 years ago, when we adopted Virtual Instruments, it was unique in its offering. I am also happy with VI as a company and how it takes user requirements and feedback to deploy it as features. It is important to use VI products as complementary to monitoring tools that come with individual vendor products. Individual vendor products are good for identifying capacity issues and helping capacity planning for those individual solutions, while VI offers a granular picture of the larger holistic estate.

The Virtual Instruments LoadDynamiX product is useful to test the workloads against flash arrays to see how workloads perform in certain arrays.

The products can even be used to monitor the storage you are backing up to in the same way you monitor performance of transactional applications in production. Some backup applications were doing things like dedupe and compression that was very demanding of storage infrastructure, and it is quite important to instrument them with VI to make sure they perform optimally and dedupe is working efficiently because you can find that some of those indexes and metadata are better suited on flash arrays than on spinning disks.

Lastly, VI has been good with support, at both hardware and software levels. Customers also have access to consultants and talk about anomalies in the estate and tap into their knowledge base without involving individual storage array vendors or SAN vendors.

ESSENTIAL GUIDANCE

In conversations with Simon Close, IDC notes that infrastructure performance monitoring and analytics solutions can prove valuable to organizations in de-risking their storage transformation and migration and consolidation strategies. This is because the insights from the reporting tools can be used to set a base line for performance and set expectations for the new infrastructure.

It can also prove valuable to ring-fence infrastructure resources for certain workloads and manage capacity more cost-effectively.

As organizations adopt a multicloud, hybrid IT infrastructure, the challenge will be to understand varying infrastructure needs of every critical application and service them in the most efficient manner.

IDC believes that organizations of all sizes should consider investing in infrastructure performance monitoring and analytics tools to bridge the gap between application development and infrastructure operations to have a DevOps process for the entire lifecycle and ultimately make applications function better.

Enterprises struggling to build a business case to convince stakeholders should consider building a business value case for investment in infrastructure performance management tools amid a major storage uplift to demonstrate the commercial benefits of doing it, just like Simon Close implemented at Morrisons.

About IDC

International Data Corporation (IDC) is the premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications and consumer technology markets. IDC helps IT professionals, business executives, and the investment community make fact-based decisions on technology purchases and business strategy. More than 1,100 IDC analysts provide global, regional, and local expertise on technology and industry opportunities and trends in over 110 countries worldwide. For 50 years, IDC has provided strategic insights to help our clients achieve their key business objectives. IDC is a subsidiary of IDG, the world's leading technology media, research, and events company.

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