White Paper

The Real World Value of the IBM XIV Storage System

European User Experiences

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June 2010

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Introduction

Purpose

IBM has been shipping its IBM XIV Storage System for well over a year, with worldwide shipments now exceeding 2,000 units. Much of the industry buzz has been around its US-based customers, but IBM has also achieved significant wins in EMEA and around the globe. A number of those customers have now had sufficient time using IBM XIV in production to be able to comment in detail on their experiences.

This paper summarizes the real-life stories of six medium-sized enterprise European XIV users from their choice of the system through installation and into workload migration, live production, and daily use. The interviews were conducted as informal, unscripted discussions so as to capture frank accounts of the customer experience to whatever extent possible. Since IT operations have much in common no matter where in the world they are, the user insights and experiences with XIV documented here apply just as much in India and Indiana as in Italy or Ireland.

With the main purpose of this paper being to record the "voice of the customer," commentary is kept to a minimum. A brief introduction (or a reminder for readers that are already familiar with the product!) of the essence of XIV follows here and each section has a few summary notes that precede user quotes.

Introduction to the IBM XIV[1]

The XIV system was developed as a totally distinct approach to general purpose disk storage with the intention of addressing some of the major drawbacks of conventional approaches; chief amongst these is the fact that something always becomes a bottleneck. Users and applications need to access some data on an electromechanical disk, but if too many applications access that disk concurrently, access time increases unacceptably. The traditional way around this challenge—at its core—has been to make storage faster by brute force using faster disks and faster, more efficient caching. The XIV system from IBM takes a fundamentally different approach by distributing data evenly over all of the disks, which, combined with a massive processing capability, ensures that traditional bottlenecks are mostly eliminated.

At the center of the XIV approach is the way data is mapped onto the actual media. XIV takes a fundamentally different approach to data protection and performance maximization. Rather than mirroring whole disks or portions of disk (like the various RAID methods and large scale stripe sets that have been typically used), XIV leverages its huge compute capability to divide all system data up into tiny 1 MB chunks and then mirror each chunk to another disk on another data module in the system. This means that regardless of the application workload, every disk takes an equal amount of that workload to ensure that the storage system is always completely balanced.

Furthermore, the XIV system is one of the first mainstream storage systems to be constructed exclusively from industry-standard components rather than the specialized and vendor-specific components to which the enterprise storage market is more accustomed. It is composed of three parts:

- **Data Modules** are self-contained storage modules with quad core processors and 8 GB RAM. Each module contains 12 disks (currently shipped as SATA, but Fibre Channel and SSD disks could be accommodated and, indeed, this has been done in IBM labs). All data accesses always involve all data modules and, in this way, the massive parallel power of the XIV system can be brought to bear.
- **A pair of redundant Gigabit Ethernet switches** connects the data modules in a mesh.
- Each frame of the XIV system includes **three self-contained UPS systems**.

[1] Note: This section contains passages repurposed from the ESG Brief, *XIV: Workload Independent Performance*, September 2009, which is recommended as further reading.

The new architecture supports a new approach that enables advanced software functionality to be combined with the advantage of commodity component costs for the underlying physical system.

This architecture has some attractive implications for users—and this paper is designed to see which of those have motivated some users to choose XIV in addition to what they have actually experienced using the products. Clearly, some of XIV's abilities run counter to what the market has recognized as the norm for many years and therefore "seeing is believing." As the interviews found, some customers were cautious in their approaches, a tad skeptical even, but were reassured through experience of not only the committed and expected XIV capabilities, but also by some unexpected pleasant surprises as to what the system's architecture could deliver.

Backgrounds of the Companies Interviewed[2]

The end-users selected represent pan-European industries and geographies as well as a diverse set of storage issues and points of view (see Table 1).

Table 1. End-user Backgrounds

Company	Geography	Industry
STIHL	Germany	Power Tools
SILCA	France	Banking & Insurance
VINCI PLC	UK	Concessions & Construction
LeasePlan	Ireland	Vehicle Leasing
Oxfordshire County Council	UK	Local Government
MeesPierson (formerly Fortis Bank)	Guernsey CI	Private Banking

Further details for each company are contained in the appendix, which includes a brief description of each of their businesses and some elaboration on their IT models and storage issues. The table on the next page gets into the more immediately relevant detail for this paper:

- Whom ESG spoke with at each user organization.
- What storage platforms each user was running before choosing XIV.
- What criteria they base their storage platform choices upon.
- What other products were in the running in their decision process.

[2] Note: All the interviews documented here were carried out by the primary author of this report, Steve O'Donnell, in late 2009 and early 2010. Having been a long-time senior IT operations professional responsible for IT budgets in US$ billions and cognizant of the day-to-day practicalities of keeping business "up" and effective, O'Donnell was able to conduct the discussions as an industry peer rather than reporter. The conclusions later in the paper are drawn from the six documented cases, as well as an understanding of the IBM XIV system developed through discussions at various levels with over 60 users in the past year.

Table 2. Interviewees and Product Selection

Company and Interviewee	Prior Storage Platform	Motivating Factors	Other Products Considered
STIHL Eckhard Heim	HDS 600 USP AMC 200	TCO Simplicity and flexibility	Pillar Data 3PAR NetApp HDS EMC
SILCA Didier Crétien	HDS USPV EMC DMX1000	Procurement costs, being able to include a second controller to provide resilience. Rich functionality, including synchronous replication.	Not disclosed
VINCI PLC Ben Paddick	HP EVA 6000	Reduced management overhead. Faster backup and restore times. Better flexibility in provisioning.	HP EVA 8100 HP XP 2400 Compellent Storage Centre SAN LeftHand (pre-HP)
LeasePlan Mark Treanor	IBM SVC with DS8300 and DS4300	Better handling of tiered storage. Scalable with a modular base architecture that didn't need to change with growth. Simplification of charge back calculations. Cost effectiveness.	Dell CLARiiON and NS40 NAS Compellent Storage Centre SAN IBM DS5000 IBM XIV
Oxfordshire County Council Stephan Conaway	IBM SVC Various IBM DS4X00 IBM DS5100	Licensing model.	IBM DS6800 IBM XIV
MeesPierson Jason Sarre	IBM DS4500	Easy to manage without a dedicated storage administrator. Able to deal with a split into two independent units to support business division.	Compellent Storage Centre SAN IBM SVC with DS4500

Why IBM XIV?

Why XIV was Chosen: *Clearly, the varying decision criteria of the different organizations had a direct effect on what motivated their choices; but certain themes do emerge from their comments. Varying financial aspects were significant—from raw cost, to TCO, to software licensing simplicity. Management and operational simplicity were also notable factors.*

What the Customers Said

Mark Treanor of LeasePlan identified the simplicity of calculating the cost of storage (and being able to justify the cost to business managers) as a key buying decision point for him. "It was just too hard to explain to my CFO why the type of RAID I use and the different layered software I need can make such a difference in terms of cost per terabyte. Because IBM XIV has a simple per-terabyte licensing model, it's easy and actually very cost effective. It makes my job much easier not having to worry about accounting for additional licenses to support replication or thin provisioning."

Stephan Conaway at Oxford County Council also singled out licensing costs as a major reason for selecting IBM XIV. "Virtually all of the essential modules are blended into the one time price that in itself makes XIV a lot more cost efficient for us. In fact, a good chunk of the cost of purchase was recovered from cancelled licenses for products we already had. A vendor is being sensible about storage software license fees for the first time, ever."

Being able to afford a second system to provide resilience was a major factor for Didier Crétien at SILCA. "I selected IBM XIV for two reasons: integrated functionality and total cost of ownership." Getting his VMware environment configured with "storage consuming no more than one third of the budget" was the winning point in his selection criteria. Said Crétien, "IBM XIV's offer embeds the cost of the software licenses in the system cost, ensuring no surprises."

Jason Sarre at MeesPierson made it clear that simplicity of management was his key buying driver. When he first saw IBM XIV, he told the engineer demonstrating the system, "That's more like it! The interface is so clear that exactly what you need to do just jumps out at you. That is what I want." In talking to ESG about a later stage in the evaluation process, Sarre spoke of comparing the prices of the competitive Compellent and IBM systems, saying, "They cost around the same money from a capital perspective. What did it for IBM XIV was that the other systems were over-complex and messy and would need a lot of consulting time to set up. Once I saw IBM XIV, I knew that this was what we needed."

Eckhart Heim at STIHL didn't pull any punches—he wanted a storage solution that would cost less money to operate and could cope with his firm's massive forecast growth. "We are very pleased that IBM XIV meets our goals; we will run this architecture now for the next 10 to 12 years, as our data growth rate is enormous. Managing our data growth was just becoming too expensive and we needed to extend the lifecycle management process at a lower price point."

STIHL also performed a very comprehensive set of acceptance tests on the storage systems that it compared and considered. "We kept SAP performance data for three years prior to buying IBM XIV, so we were certain of the business requirements." Heim continued, "IBM XIV offers very good, predictable performance up to a sustained 50,000 IOs per second and then it starts degrading a bit. We knew our SAP needed 2,000 IOPS and that the rest of the workload needed a maximum of 15,000 IOPS. So we set up a test that ran the IBM XIV at 40,000 IOPS and, at the same time, ran a production instance of our SAP environment. We took measurements every five minutes and found that IBM XIV gave us very good and predictable performance."

VINCI PLC's Ben Paddick said, "Disk performance was obviously a primary consideration when choosing our storage system and the IBM XIV has proved itself. I am not even pushing it for performance yet and we have got it 98% full. We are nowhere near the IOPS count it can handle. From a performance point of view, everything just ticks along extremely well. I am sure we could take it to four or five times more than we are asking at the moment."

LeasePlan's Treanor "liked the IBM XIV's modular approach," noting that "as more disks are installed, more processing power and cache are added, improving the overall capacity of the system." Treanor also commented on IBM XIV's implementation of a single-tier storage system: "This single feature removes the need for any performance tuning and frees up the storage administrator to do more important things."

SILCA's Crétien noted that "tiering is catastrophic in terms of storage management" and that he liked to "simplify by having fewer tiers to manage."

Overall Impressions

Customer Experience: *The general reaction of the users with whom we spoke was that they had received better value (in terms of performance and capabilities) than they had expected or that IBM had promised. Any trepidation about the abilities of a commodity-based platform was dispelled in real-world operations.*

What the Customers Said

Treanor commented that he "got slightly more value from the IBM XIV purchase than expected." He went on to say, "I had originally intended to continue using my existing systems for enterprise-class applications while migrating the lower value data onto the IBM XIV. I was wrong. IBM XIV soaked up the performance demands of our high end Windows applications and I have been able to completely move everything except our i-series workload onto the IBM XIV."

He continued, "Actually, I feel that IBM didn't really know how to sell the IBM XIV properly. They didn't know whether to place it as either low-end or enterprise-class. Actually, it's both at the same time—the best of both worlds—with the ability to self tune and soak up all we can throw at it and without producing hot-spots or any performance degradation. If IBM XIV supported our i-series, I would look to test it right away."

MeesPierson's Sarre said the IBM sales pitch was compelling, but only when he started putting real production workloads on the IBM XIV storage controller did he recognize just how different a system it is. After migrating over the first "serious" workload, he was apparently heard to exclaim, "Flipping heck, that *is* quick!" Sarre made a specific point of saying that "even now, after over a year, it constantly surprises me with how good it really is. I am so glad we bought this one rather than something else."

STIHL's Heim said, "IBM XIV is better in performance than the HDS USP, better in monitoring, better in support, better in reporting, better in functionality—and has easier management. It gives us simplicity of use and more flexibility to manage the machines. We have been able to reduce the number of storage administrators from two to one since installing IBM XIV."

Oxfordshire County Council's Conaway said, "We are getting faster responses from this machine than we did from an array that had 15,000 RPM disks on it—and these are only 7,200 RPM. The machine is fast and that speed isn't degrading as we add more things. Response times are not increasing, they are staying flat. Scarily enough, it's true: we don't get hot spots."

Crétien from SILCA commented that "IBM XIV's performance is very satisfying; the system has a lot of cache and it competes quite well with other vendors' systems. Our proof of concept evidenced performance levels that were not expected given the components inside the box." He commented particularly favorably on the application latency of IBM XIV compared to his HDS and EMC systems, delivering an "average of 5ms during the day and a maximum of 15ms during the full system backups in the evening—an overall 30-40% performance improvement."

Ben Paddick at VINCI PLC said, "We run our entire Tivoli Storage Manager database, logs, and storage pools on the IBM XIV. We initially did it by mistake; we had a problem where the TSM database got beyond the physical size of the external disks, so we dumped it onto the IBM XIV to do a test restore onto bigger external disks. We backed up to the IBM XIV, recovered, and rebooted the TSM system in half the time it would have taken with the direct-attached SAS disks. We moved the whole lot onto IBM XIV and, as a result, all of our backup times have halved. We haven't gone back since."

Installation and Operation

Summary: *Universally, the interviewees were impressed by both the simplicity of implementation and its daily management functions.*

User Comments: LeasePlan's IBM partner installed its two 43 TB IBM XIV controllers over the course of two days in August 2009 and gave the storage team a half day of training. Treanor comments, "The IBM XIV is very easy to operate, nearly too simple, and we need to be careful who we give access to it. Creating volumes, snapshots, and other administrative tasks are fast to execute and simple to master."

SILCA's Crétien commented, "Administration is almost too simple and I am concerned that people might get lazy and make mistakes—for example, when deleting volumes. We are not used to this with our existing systems, which have many, many more steps involved in administrative tasks." Crétien also said that, "We only have to show the GUI once to an operator and they are immediately able to operate the system by themselves. Our IBM XIV storage administrator was, until recently, an intern from school. It's not at all difficult to manage."

Oxfordshire's Conaway was extremely clear: "The IBM XIV is extremely simple to use and easier to configure than anything we have run before. It takes the criticality out of storage management. Beforehand, this was a high risk area that required resources; that has just gone away. It has taken the problems associated with storage management away from us."

STIHL's Heim explained that his very experienced storage administrator "didn't need any training. He was interested, so just used the GUI and started administering without needing to read the book." Heim went on, "It took a little time for the administrators to learn to love the IBM XIV because they lose the need to have a lot of know-how. There are no difficult tasks to think about; it is all very easy."

When faced with requests for administrator training, MeesPierson's Sarre declined, explaining, "No, you don't need any. Just take a few moments and look at the interface. You don't need to be a rocket scientist to manage this." Sarre went on unprompted, "It will make storage guys' jobs obsolete. Every time I hear someone carping on about IBM XIV, I just think—that is someone who is worried about losing their job. Why would I want to spend my entire life moving data around and saying goodbye to my weekends?"

Ben Paddick of VINCI PLC explained, "The IBM XIV is so straightforward to manage; it's really no different or more difficult than looking after local disk arrays, which means that server administrators can do it. This was one of the key reasons for choosing the product."

Workload Migration

Summary: *No-one expressed anything other than high satisfaction with the migration ease and outcomes; lengthy migration periods were always due to other operational or administrative requirements and not to any delay with IBM XIV, which also performed well during live migrations.*

User Comments: LeasePlan migrated its Windows data over a period of five months. Treanor explained, "Although the IBM XIV boxes were ready to go in two days, we needed to arrange application downtime with the business in order to migrate away from our old equipment. As we migrated, what became obvious was that the IBM XIV platform was able to absorb new workloads without any noticeable degradation in performance."

SILCA's Crétien said that they moved their workload over a three-month period. "It took three months to do the pilot and two additional months to deploy heavily. We had 98% of our servers migrated by the end of January 2010 and we're only missing one management server that is waiting for IBM XIV to provide geocluster MSCS support."[3]

When questioned about why it took three months to complete the pilot, Crétien said that he had to complete "performance benchmarks and migration scenarios with the USP-V systems that were being replaced, as well as an update of IO components." He also said, "There was reluctance and some reservations from the Windows and UNIX

[3] Note that this feature became available shortly after the interview.

teams to go along with the new IBM XIV system; that, combined with holidays in May, a change freeze, and this being only one of several projects we had to manage."

Oxfordshire's Conaway explained that it took six weeks to migrate 80% of the council's workload to a pair of IBM XIV controllers and then apologized. "We slowed it down due to operational workload. We could have done it all in a day or two." The Oxfordshire workload is a "mixed-bag" of Oracle and DB2 databases, WebSphere, e-mail, and a highly virtualized server environment.

STIHL's Heim has completed the migration of his workload to "two full IBM XIVs configured to replicate between sites to provide DR capability. We have achieved 92% of the full capacity and, last Friday, ordered another two IBM XIVs. We are interested in using thin provisioning to deliberately over-subscribe the machines."

Running a combination of a large SAP environment on IBM AIX Servers, along with Exchange Server and a large VMware virtual Linux and Windows server environment, STIHL is fully migrated. "We had IBM deliver the IBM XIV on a try-before-you-buy basis in April 2009 so that we could run our tests. We have been in production since the first of September. We use a lot of the features, such as mirroring, snapshots, and thin provisioning. We also use monitoring and reporting to help us answer questions about the SAP performance. The information IBM XIV gives us is good."

MeesPierson ordered four IBM XIV systems on the 28th of April 2009, had them delivered on the 18th of June, and was operational on the 20th of June. IBM professional services arrived on the 30th of June to perform the first migration only to find that it had already been done! Jason Sarre explained, "I got shown how to do it on a Webex presentation from the US, then I just went and did it without waiting for IBM to arrive. The migration tool is part of the GUI, and is easy and simple to operate." Sarre went on to explain, "Once the data is on the IBM XIV disk, it generally doesn't need to move again. Mirroring and snapshots are just pointer moves and execute immediately. In my opinion, this is the way to do it. This is really good."

VINCI PLC's Paddick explained, "Migration is really easy: you create a Linux host on the EVA and present that to one of the data ports on the IBM XIV, specifying that port as a data migration manager port. Then you create a new logical volume on the IBM XIV and present that to the host. You shut the host down and rescan for the new disks. It literally takes 15 minutes work to complete. We have done it on our Data Warehouse platform, Cognos 8, and we've done it on 2 TB LUNs presented to our Windows hosts. I don't know how it does this but even while the migration is still underway, the system is faster than when the data was on the old storage system."

Operation and Maintenance

Summary: *Aside from some very minor and non-impactful issues in a couple of sites, the most useful outcome of this area of discussion was that a couple of users had experienced disk failures, but that the system had worked as advertised and there was no known performance or availability issue in either site.*

User Comments: LeasePlan has not had any reason to call for support since the equipment was installed.

Crétien at SILCA mentioned that he had experienced two faults: the first, "a disk failure that rebuilt in 13 minutes with absolutely no user impact" and the second, an incident after a power outage that caused a false message that the UPS was faulty. An IBM technician was called out to reset the problem.

MeesPierson's Sarre explained, "We have only implemented 2 GB FC interfaces, as there are so many controller ports (and we get more communications as we add modules) that the load is really well balanced across the switches. We don't get the normal situation with some ports stupidly high whilst others are unused."

When asked how he knew that the switch fabric was well balanced, he explained, "We use the built-in IBM XIV SAN diagnostic through the GUI. It's there, it gives you live and historical data, and you don't have to pay for anything else or buy third-party tools."

MeesPierson has had two disk failures, both of which were recovered within 15 minutes with no user impact. Sarre said, "Living in such a remote region, the IBM XIV self-healing, self-repairing approach works really well. We can be cut off by bad weather and still have a protected system, even if the engineer can't get here." He made a point of

explaining that "I've watched, and the IBM XIV GUI is the same for the engineer: dead easy and simple, so it can't take long for IBM to train a specialist."

STIHL has not had any failures and explained, "The IBM XIV calls home if it identifies a problem, and IBM has specialist XIV advisors who can give us very quick feedback. We are SAP experts with our partner IBM."

Oxfordshire County Council has had two disk failures; Conaway explained, "When a disk fails, it illuminates a light on the box and calls home for an engineer to visit. IBM XIV self heals and no one notices. There is nothing to do on the machine because it takes care of itself."

VINCI PLC's Paddick hasn't had any significant problems, "We placed our IBM XIV on top of an open air conditioning tile in the data centre and it was getting too cold. It carried on working, but it did complain and record the fact that it was operating too cold. It's been very, very reliable." [4]

Use in Production

Summary: *A varied range of workloads—in terms of applications, scale, performance and virtualization— have all been handled admirably by the XIV systems in the real world. The self-management of the system was favorably commented on by multiple users.*

User Comments: Crétien mentioned that "the IBM XIV systems are used for several environments: UNIX, Linux, Windows, and VMware with 800 to 1000 VMs. We do not currently use IBM XIV with critical Oracle or SQL Server databases. Since installing IBM XIV, we have added new applications supported by VMware competitor Hyper-V."

MeesPierson's Sarre explained that the old DS4500 is now switched off and awaiting disposal and that all of its production, test, and backup systems are installed on a pair of 9-module (43 TB) IBM XIV systems. "We have an additional 43 TB of capacity on demand. IBM just monitors what we have used and sends us the bill."

In addition to a demanding VMware environment, Sarre said that "In production, we have a number of AIX platforms running our banking systems that cause extreme IO load. As we put more and more on the IBM XIV, it doesn't slow down. Virtual disk backups and snaps can be done during the day without anyone noticing. I don't tell anyone here, but it is so fast that—if we need to—we can actually reboot some of our live AIX UNIX servers so quickly that the users don't notice. I think it gets more efficient as it goes along, learning and smart caching."

Heim was very clear: based on the extensive testing that STIHL had conducted, "We are very pleased and have achieved all of our goals. As we predicted, running in production has been no problem for STIHL."

Oxfordshire County Council has two IBM XIV controllers supporting a mixed workload of 350 physical servers. "There is nothing to do on the machine—it takes care of itself. We are quite happy; it is a good product. It does what it says on the tin and, when we need more storage, we will buy another one."

VINCI PLC's Paddick described his setup, saying "We have an HP/UX system running a specialist construction industry application called COINS, based on a Progress database. It needs about 3,000 IOPS and this caused problems for our previous storage system. We have lots of Wintel servers, with Exchange 2007 e-mail being the largest data usage on the IBM XIV at about 9 TB. We also have a SQL Server 2005-based data warehouse that needs fast disks and uses about 300 to 400 GB. We also use the IBM XIV for file and print off Windows servers. We have a large VMware ESX 3.5 installation with 4 to 5 TB of space used. These run off two IBM XIVs: one in Watford for production and one 200 miles away for DR."

[4] Note: Readers interested in further details can also view the IBM video with VINCI PLC, which provides first-hand commentary on its experience in increasing XIV capacity while the system is running and online.

IBM Claims for IBM XIV

The IBM XIV sales team has been making a number of quite aggressive claims about the product, among them:

- It incurs no hot spots, regardless of workload (excluding high intensity database applications).
- Its single tier architecture meets performance requirements while simplifying administration.
- Pricing for hardware and software is simple and straightforward, with all software charges being inclusive.
- It is extremely simple to manage and operate.
- It has enterprise-class reliability, features, and functionality.
- Storage reporting is integrated and comprehensive.

Many of the users with whom ESG spoke had initially been skeptical that a box constructed from SATA drives and other commodity components could deliver on these claims, but all saw the potential:

- Eckhart Heim at STIHL constructed an elaborate and comprehensive set of performance tests to prove or disprove the IBM claims before he decided to buy.
- Jason Sarre at MeesPierson saw the GUI and rejoiced that he no longer needed to be the storage administrator.
- Didier Crétien at SILCA performed three months of intensive testing before he bought.
- Mark Treanor at LeasePlan ran the TCO numbers and knew that at last he could justify storage costs to his business people.
- Stefan Conway at Oxfordshire County Council worked out that he could pretty much afford to buy the IBM XIV on avoided storage software licensing costs alone.
- Ben Paddick at VINCI PLC described the ease of reporting as something his previous storage lacked and that it enabled him to get rid of spreadsheets.

None of the customers had any regrets after buying the IBM XIV. STIHL's Heim and SILCA's Crétien had done all the testing and knew what to expect. Others have been pleasantly surprised that the zero touch operations and well-behaved performance profile of the IBM XIV have been so good in real life.

The Bigger Truth

Customer feedback from these interviews shows clearly that IBM XIV delivers absolutely predictable performance across the whole array, even when supporting unpredictable IO workloads. This fact, combined with the highly detailed logging and reporting functionality, makes IBM XIV highly suited for environments in which active day-to-day storage administration and load-balancing activities are either undesirable and/or impractical.

IBM XIV offers the same quality of service to all applications equally so that tiering is not even a consideration. This is a mixed blessing: on the upside, there is no administration involved in moving data between tiers or defining the tier from which data should be served; on the other hand, unimportant transactions that could perhaps wait are given the same priority as critical production systems. This does not seem to produce any real world issues for the interviewees. Indeed, the user feedback from these interviews shows that, at least for a significant portion of use cases, tiering has been more of an administrative burden than a technical advantage; a burden that IBM has chosen to preclude with XIV's single tiered architecture.

A number of interviewees expressed strong support for the simple and comprehensive IBM XIV storage software licensing model, citing it as the main—or a very significant—decision criterion. The combination of a rich set of enterprise features, efficient use of storage, and simplicity of management, together with this simple licensing model, have made IBM XIV compelling for many of them.

Simplicity of operation was also a significant driver to buying IBM XIV. Every interviewee said that the IBM XIV user interface is extremely simple to use. Customers have been able to de-skill and de-risk storage administration to a significant extent. A number of the users pointed out the benefits of being able to have multi-skilled IT technicians who could deploy and support many technologies from storage and servers to virtualization and networks.

Many of the interviewees commented on the rich functionality of the IBM XIV platform and, because of the licensing model, most have taken advantage of at least some of them. IBM XIV's software team has demonstrated an ability to develop and deliver code sufficiently fast that the functionality can be viewed as a significant competitive advantage—such alacrity is no doubt aided by the simplicity of the IBM XIV architecture.

Over the course of a year or so, ESG has spoken with more than 60 IBM XIV customers globally. The six detailed in this study are definitely representative of that wider population, and the overriding impression we are left with is that end-users really like the IBM XIV. Indeed, some are absolutely fanatical about IBM XIV in the same way that some Apple and Harley Davidson owners are about their respective favorites.

The users say they like the IBM XIV system because it is smart, simple, and robust. They have said that they like the simple and honest licensing model. They love their IBM XIVs because they quietly get on with being storage systems and make no fuss. And, after all, isn't that what IT infrastructure ought to be about?

Appendix: Company Information

SILCA – Credit Agricole SA

SILCA, a Paris-based subsidiary of Credit Agricole Group (Banking & Insurance), provides IT services for Credit Agricole & LCL and operates two data centers. Their workload is a mix of Windows, Linux, and UNIX applications, with Lotus Notes e-mail and Oracle and Microsoft SQL Server databases.

SILCA became a new IBM storage customer with its XIV purchase, having previously used HDS and EMC storage systems. It initially put significant effort into virtualizing its Windows and Linux estate into VMware ESX and, more recently, into Microsoft's Hyper-V. SILCA has approximately 1,000 virtualized guests. Its choice of infrastructure investments is primarily cost-driven, although new deployments are subjected to extensive proof of concept testing before being brought into service.

LeasePlan

LeasePlan is a Dutch financial services company focused on fleet management; LeasePlan Infrastructure Services is an outsourced company responsible for delivering IT infrastructure services to the parent company's 26 in-country operating businesses and offers a centralized infrastructure platform based in two data centers in Dublin, Ireland.

LeasePlan has been a significant IBM customer for some time, using a mix of Intel-based IBM System x servers as well as IBM System i (AS-400) mid-range systems—all of which, prior to the IBM XIV purchase, were running on an IBM SAN with SAN Volume Controller (SVC) with DS8300 and DS4300 storage arrays. Citrix is central to LeasePlan's delivery architecture, enabling application delivery to remote locations with low bandwidth demands.

Oxfordshire County Council

This large UK local government organization serves a region of England that is mainly rural but also contains a number of major towns and cities. Its IT department supports multiple departments and applications, including trading standards, education, planning and environment, health and social care, roads and transport, and leisure and public safety.

Oxfordshire County Council has had a strong and longstanding relationship with IBM. When the time came to replace its old IBM storage platforms, moving on to IBM XIV was a natural progression.

STIHL

This 80-year-old German provider of high quality power tools depends significant on its SAP ERP environment. Supporting 35,000 dealers in 160 countries and employing 7,800 staff, STIHL is a very large manufacturing and distribution business.

STIHL states on its corporate website that it is committed to "quality, integrity, and professionalism" in everything it does. In line with that corporate policy, when selecting the IBM XIV platform, STIHL demonstrated an ability to clearly understand its business needs and to ensure that the storage system selected met all of those requirements.

MeesPierson

This private bank, with a history stretching back to 1720, is wholly owned by the Dutch government. Based in Guernsey, in the Channel Islands, MeesPierson is focused on providing offshore private banking and investment management services. Until late 2009, it was part of Fortis Bank NL; upon its divestment, it was faced with the need to migrate 10 TB of data to the newly formed company.

MeesPierson had used IBM storage for some time, but was finding that its aging DS4500 system was not well-suited to a workload mix that featured an ever-growing number of VMware-hosted applications. The split from its parent company also meant that part of the business would no longer have a storage administrator! MeesPierson

therefore had an urgent need to simultaneously improve performance and dramatically simplify the management of its storage platform.

VINCI PLC

VINCI PLC is based in Watford, UK, and is part of VINCI, the world leader in the concessions and construction industry. The UK operation's largest subsidiary, VINCI Construction UK Limited, specializes in building, civil engineering projects, and facilities management projects, and is in the region of £1 billion.

To consolidate several acquisitions and implement a new ERP system, VINCI PLC needed to extend its storage infrastructure and sought a reliable, flexible, easy-to-manage platform for handling rapid growth.

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