The Print Security Landscape, 2022

Securing the remote and hybrid workforce

January 2022

QUOCIRCA

Executive summary

Quocirca's Global Print Security Landscape 2022 report reveals that many organisations are struggling to keep up with print security demands in today's hybrid work environment. Home printing is creating new security concerns, exacerbated by shadow purchasing of devices. SMBs and mid-size organisations are finding it harder to keep up with print security challenges leading to a higher incidence of print-related data loss. This is leading to a lower confidence, particularly among SMBs, in the security of their print infrastructure. However, in Quocirca's Print Security Maturity Index, those organisations classed as leaders that have implemented a range of technology and policy measures are seeing lower levels of data loss and have higher confidence in the security of their print infrastructure. Print manufacturers and channel partners must strengthen their security propositions for organisations of all sizes to help customers mitigate risk in the new era of hybrid work.

The study is based on the views of 531 IT Decision Makers (ITDMs) in the US and Europe. 23% of the respondents were from SMBs (250 to 499 employees), 29% from mid-size organisations (500 to 999 employees) and 47% from large enterprises (1,000+ employees).

The following vendors participated in this study:

Manufacturers: Brother, Canon, Epson, HP, Kyocera, Konica Minolta, Lexmark, Ricoh, Xerox
ISVs: EveryonePrint, Kofax, MPS Monitor, MyQ, PaperCut, Ringdale

Key findings

- **Remote working is here to stay and is creating an expanded threat landscape.** Pre-pandemic approaches to securing the print environment focused around a primarily static, office-based workforce now need to move to supporting workers who spend some time in the office, and some in the home environment. On average, 44% of employees are expected to work remotely as offices fully reopen. Hybrid work creates significant security challenges for IT teams to manage as the exploitable attack surface increases. The proliferation of shadow IT and unsecured home networks means that organisations need to rethink their security posture around the print environment.

- **IT security remains the top investment priority over the next 12 months.** 53% of respondents say it is one of their highest three priorities. MPS (managed print services) are second in importance (41%) followed by managed IT services (38%) and cloud services (35%). 70% of organisations expect to increase their print security spend over the next 12 months, with only 11% expecting a decrease.

- **A reliance on printing creates a need for effective print security.** Despite rapid digitisation over the course of the pandemic, many organisations remain reliant on printing. Printing will remain critical or very important for 64% of organisations in the next 12 months. 44% anticipate that office print volumes will increase, and 41% that home print volumes will do likewise. Printers and networked MFPs pose a security risk not only in terms of printed documents being accessed by unauthorised users, but also as an ingress point to the network if left unprotected.

- **Just a quarter (26%) feel completely confident that their print infrastructure will be secure when offices fully reopen.** Organisations are struggling to keep up with print security demands: more than half (53%) say it has become considerably or somewhat harder to do so. 67% of respondents are concerned about the security risks of home printing, compared to 57% who are concerned about office print security.

- **Print security is lower on the security agenda than other elements of the IT infrastructure.** Top security risks are considered to be cloud or hybrid application platforms, email, public networks and traditional endpoints. Employee-owned home printers come in as the 5th top security risk (24%) ahead of the office print environment (21%). This suggests both a lack of awareness and complacency in not

fully appreciating the security vulnerabilities around printing, which remains an integral endpoint in the IT environment.

- **There are marked differences between MPS users and non-MPS users.** Organisations that use an MPS provider foresee much greater growth in print volumes and are most confident in the security of their print environment – despite having a higher awareness of the risks. They are also twice as likely to state that keeping up with print security challenges has become somewhat or a lot easier. The visibility and control provided by an MPS appears to ease the security burden for users, increase assurance that they can ramp up print volumes if needed, and reduce complacency, therefore lowering the likelihood of being blindsided by a security incident.

- **In the past 12 months, over two thirds (68%) of organisations have experienced data losses due to unsecure printing practices.** This has led to a mean cost per data breach of £631,915. Such quantified financial losses are bad enough for organisations to manage, but they also state many other negative impacts, such as a loss of business continuity and ongoing business disruption after the breach. Customer loss is reported to be the biggest impact for SMBs. Large organisations are less likely to have suffered a print-related data loss, with 36% reporting no breaches compared to 24% of SMBs. The public sector is the most affected vertical. Vulnerabilities around home printers were cited as the top reasons for data loss – such as home workers not disposing of confidential information securely, and interception of documents stored in the home printer environment.

- **Quocirca's Print Security Maturity Index reveals that only 18% of the organisations can be classed as Print Security Leaders**, meaning they have implemented six or more security measures. The number of leaders rises to 22% in the US and falls to 12% in France, which also has the highest number of laggards (37%). Print Security Leaders are likely to spend a higher amount on print security, experience fewer data losses, and report higher levels of confidence in the security of their print environment. When compared by vertical, finance has the largest percentage of leaders (23%).

- **Less than a third (28%) of ITDMs are very satisfied with their print supplier's security capabilities.** This drops to 20% in the public sector. US organisations are most satisfied, with those in Germany least happy. ITDMs who use an MPS have far higher satisfaction levels (42% are very satisfied) than those who don't (20%).

- **Most ITDMs turn to managed security service providers (MSSPs) for print security advice.** MSSPs are the primary source of security guidance for 35% of organisations overall, rising to 40% in the US. Just 18% of ITDMs overall would turn to an MPS provider for print security guidance, while 21% would consult a print manufacturer. This points to an opportunity for MPS providers and channel partners to collaborate more closely with MSSPs.

- **CIOs and CISOs differ in their views on the future of print, and their handling of security challenges relating to the hybrid print environment.** CISOs are more bullish, with 53% and 58% respectively expecting a rise in office and home print volumes, compared to 42% and 40% of CIOs. Notably, CIOs (32%) and CISOs (33%) show the most concern around home printing compared to other IT respondents, ranking it as their second top security risk. CIOs also seem to be finding it harder than CISOs to keep up with print security challenges – 61% stated that they were finding it considerably or somewhat harder, compared to only 44% of CISOs, where 29% also stated that they were finding it somewhat or a lot easier.

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Work environment and technology trends

Any hopes that the pandemic would just go away, and that everything would return to how it was, have been dashed. Pre-pandemic approaches focused around a primarily static, office-based workforce now need to move to supporting workers who spend some time in the office, and some time in the home environment. Security is high on the list of most organisations' priorities when managing this hybrid working environment.

Remote working is here to stay

Pre-COVID, 32% of an average organisation's workforce was working predominantly remotely (Figure 1). Once offices fully reopen, this is expected to grow to 44%. Geographically, the biggest increase is expected in the UK (29% to 45%), with the public sector being the vertical experiencing the biggest growth (26% to 45%). Smaller organisations (250-499 employees) are expecting to see a higher rise than those of other sizes (from 29% to 42%).

This demonstrates the scale of the problem organisations have to deal with: a largely office-based workforce, where sales and field staff once formed the majority of the remote working population, will now become a far more disparate environment with closer to half of the workforce working remotely – at least part of the time.
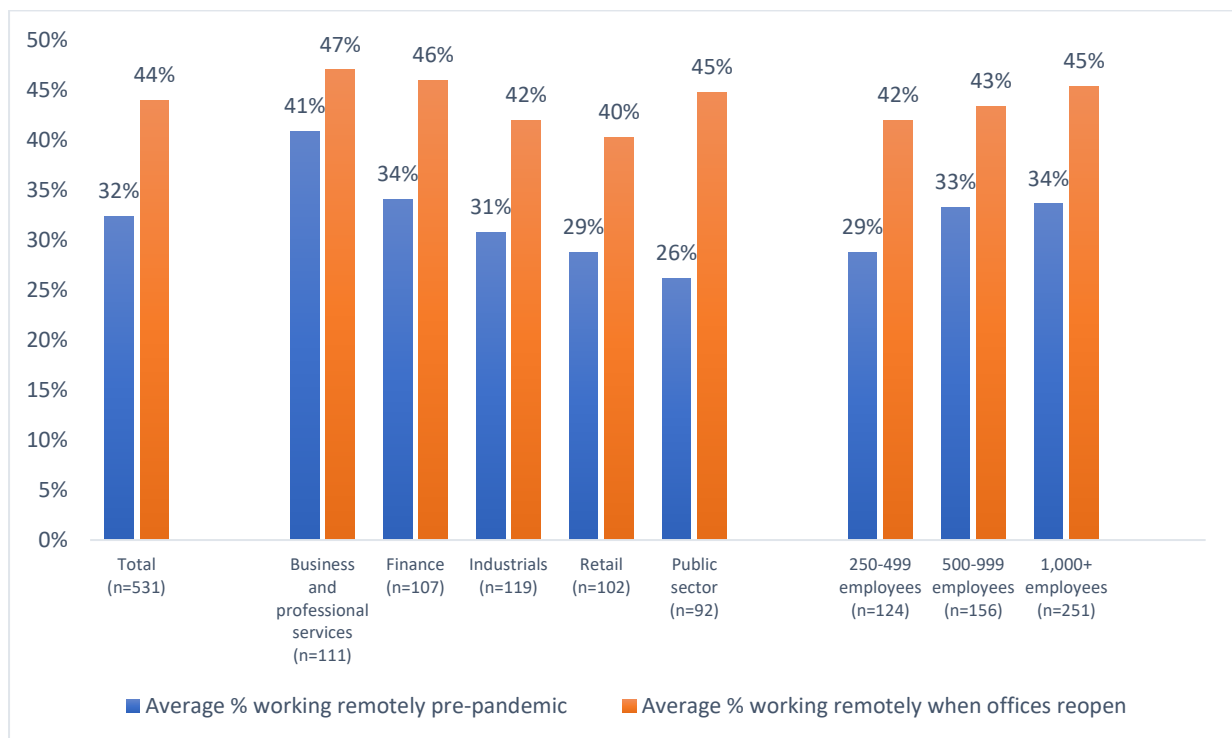

Figure 1. Average percentage of workforce working fully or predominantly from home

Most workers will not be based at home full time. This means the organisation must apply security measures that cover the whole gamut of work practices: those 100% in the office, those 100% remote, and those somewhere along the spectrum between the two.

Cloud adoption is set to accelerate

The cloud has been the foundation of digital transformation over the course of the pandemic, enabling the rapid shift to homeworking and supporting virtual collaboration for dispersed workforces. Cloud adoption is set to increase with 21% of organisations expecting to be fully in the cloud in two years' time, compared to 2% now (Figure 2). The proportion that expects to be fully in the cloud in the next two years rises to 28% in the US and 26% in retail.
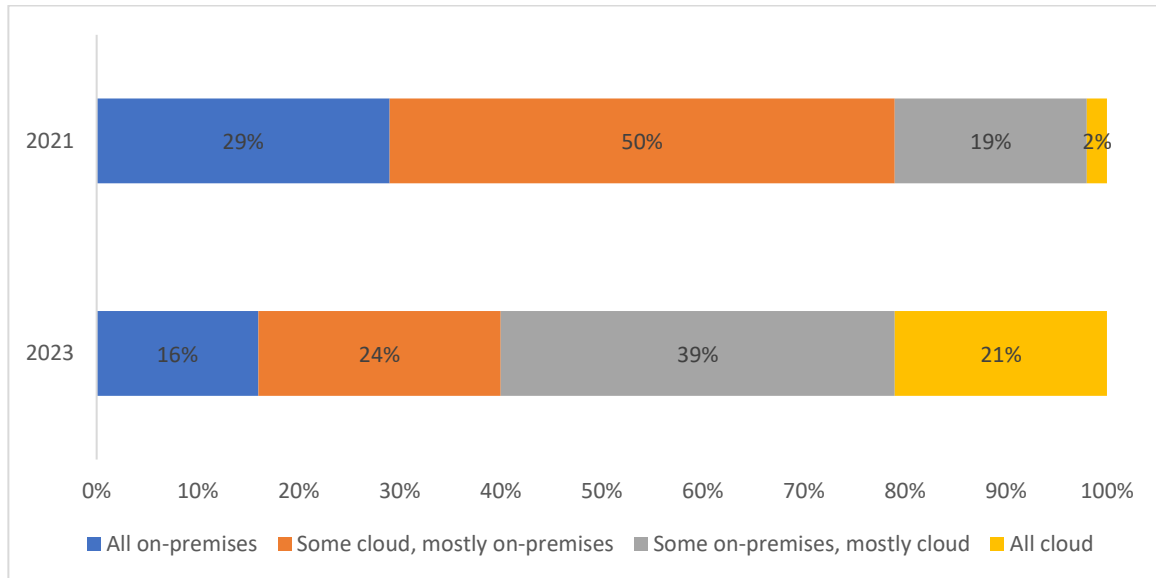

Figure 2. Which statement best reflects your organisation's total IT environment (infrastructure, applications, data, etc, excluding client devices)?

When it comes to printing, overall 44% reported that they were currently using a cloud-based print service, with a further 43% planning to do so. In fact, 52% believe using a cloud print service is more secure than managing printing on-premise, with a further 35% saying it is somewhat more secure.

Increased use of the cloud across all business sizes creates the need for robust security measures to protect users and keep data and business operations safe from cyberattacks. It is unsurprising therefore that security is a top technology investment priority for the next 12 months.

Security leads technology investment priorities

IT security remains a key priority for the majority of organisations, with 53% of respondents placing this among their top three key areas for investment (Figure 3).

63% of French respondents stated security as one of their top three priorities, compared to 50% in the US and the UK. 56% of UK respondents state that cloud services will be a key area for investment, against an overall average of 35%. Only 41% of public sector respondents see security as one of their highest priorities, against 62% in business and professional services.

Overall, 41% expect that MPS will be an investment priority over the next 12 months, rising to 59% in the UK, 52% in the retail sector and 46% in large organisations. A move to operating offices at lower overall capacities will accelerate the need to evaluate and change current printer fleet deployments. This will create new opportunities for MPS providers to deliver secure and agile print solutions that support the hybrid working model.
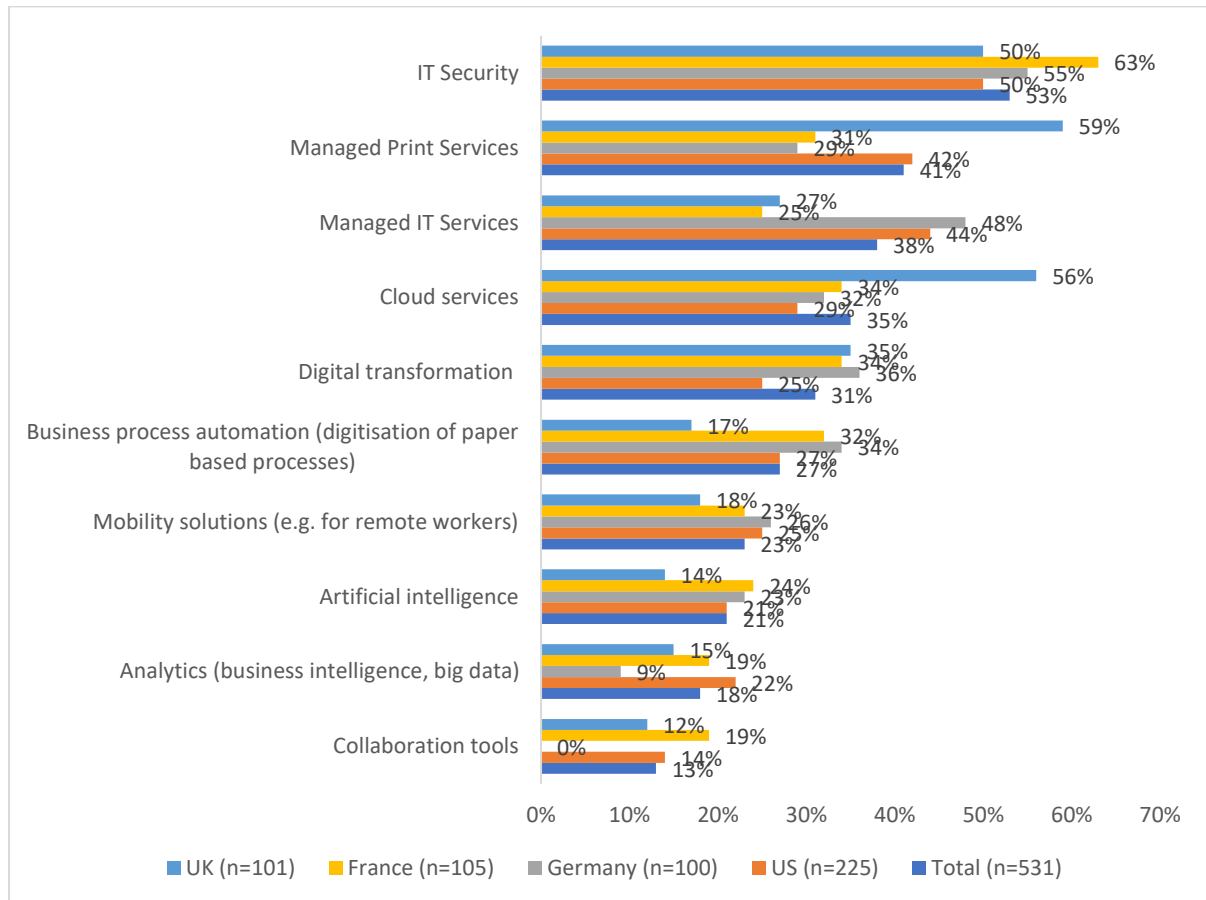

Figure 3. Top technology investments for the next 12 months (Top 3 selected)

A continued reliance on printing requires effective print security

Overall, 64% indicate printing will remain critical or very important in the next 12 months, down from 71% now (Figure 4).
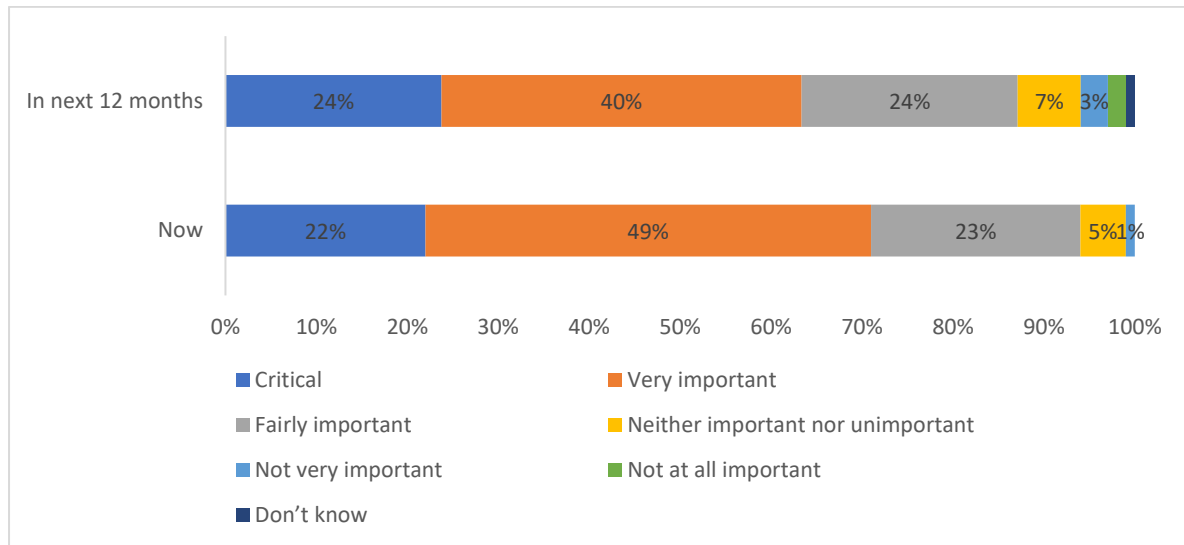

Figure 4. How important is printing to your business?

Notably it is smaller organisations that expect the importance of printing to decline faster – 59% believe it will be critical or very important in the next year down from 72% now. In comparison, 65% of larger enterprises believe it will be critical or very important compared to 73% now. This ongoing dependence on printing, particularly in large organisations that are managing a hybrid workforce, will demand more effective and integrated print security measures that protect and manage devices, documents and the network.

Although office closures have severely impacted office print volumes over the past year, 44% expect office print volumes to increase over the next 12 months (Figure 5). However regional variations prevail, with just 28% of German respondents expecting an increase compared to 59% in the US. Overall, 41% expect home print volumes to increase. Notably, CISOs are more bullish with 53% and 58% respectively expecting a rise in office and home print volumes, compared to 42% and 40% of CIOs.
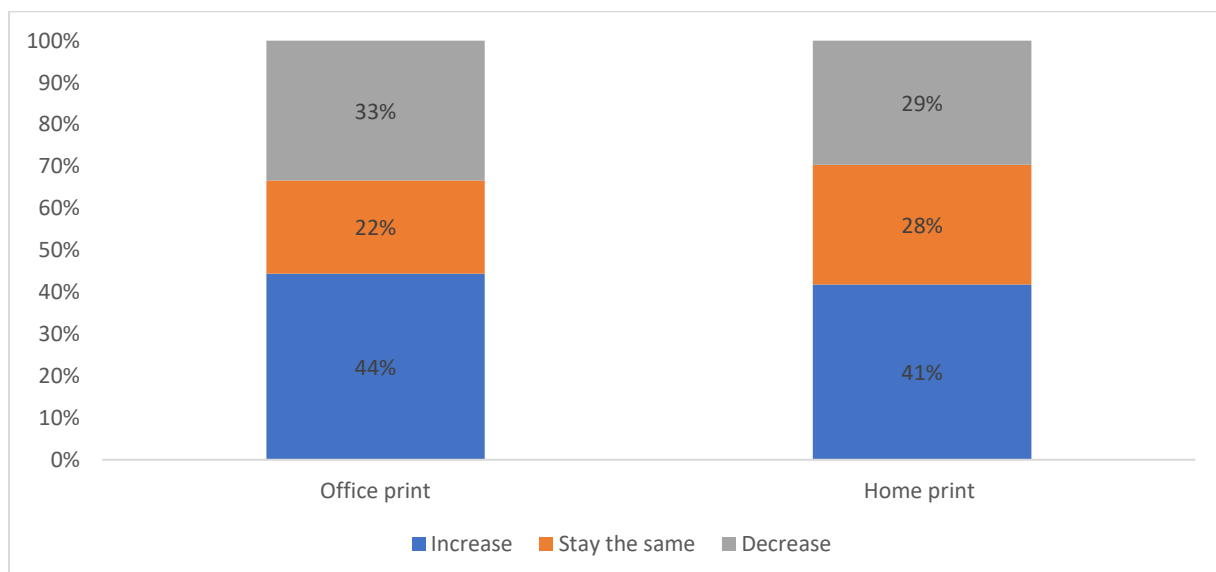

Figure 5. Over the next 12 months, how do you expect your organisation's print volumes to change?

There is an even bigger gap in expectations between those organisations that use an MPS provider and those who do not (Figure 6).

Those not using an MPS provider expect to see office and home print volumes to stay the same or fall slightly over the next 12 months. Those using an MPS provider foresee much greater print volume growth. Being able to measure volumes accurately using MPS tools and reporting systems, alongside having more control over how and where printing takes place, will make many MPS users more open to increasing print volumes as needed.
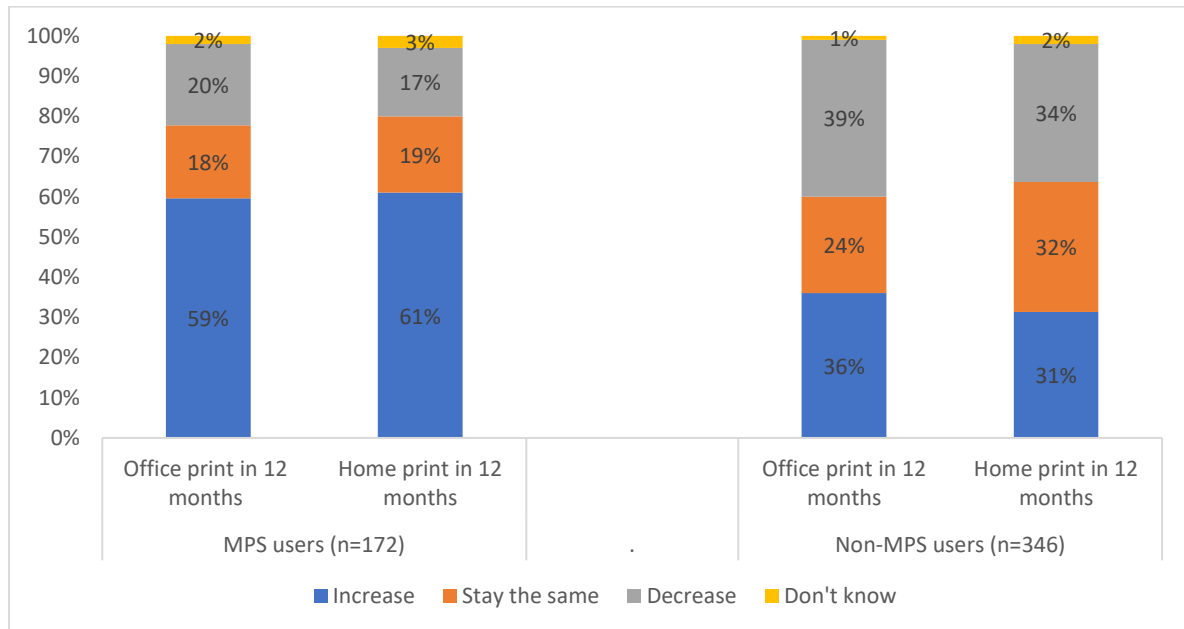
Figure 6: How do you expect print volumes to change over the next 12 months? (By MPS usage)

When looking at the level of confidence that print levels will return to pre-pandemic levels, the US has the greatest certainty, with 86% either very (46%) or somewhat (40%) confident (Figure 7). Germany has the lowest level of overall confidence (61%).

Figure 7: How confident are you that office print volumes will return to pre-pandemic levels over the next 12 months?

The expanded threat landscape

The move to hybrid working means that more devices are being used – many of them not provided, managed or controlled by the organisation. Bring Your Own Device (BYOD) has expanded to become Bring Your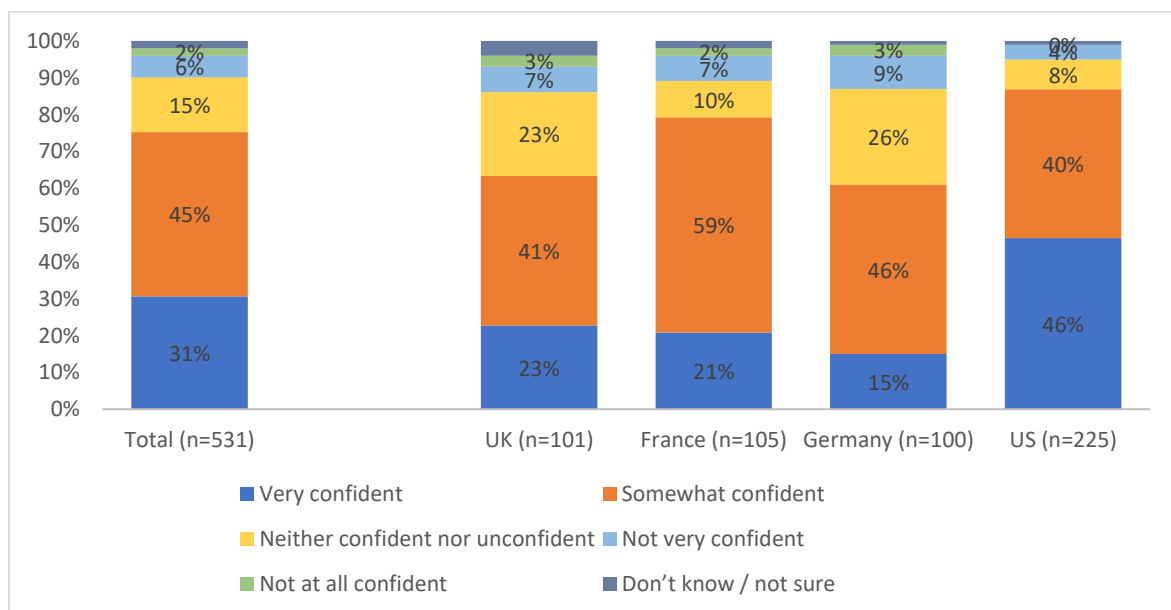 Own Office (BYOO), with desktop/laptop computers being used alongside tablets, mobile phones, printers and other devices, mainly bought and set up by the user themselves. This has major impacts on the overall threat landscape that an organisation has to monitor and manage: not only via direct endpoint management, but also when protecting the security of data and information when devices connect across public networks.

Employee-owned home printers are viewed as a high security risk

Despite the continued prevalence of printing across both the home and office environments, print security continues to be lower on the security agenda than other elements of the IT infrastructure (Figure 8). Overall, 24% view employee-owned home printers as a top security risk with 21% citing the office print infrastructure poses a top risk. This compares to 33% that cite cloud or hybrid platforms, email (28%), public networks (28%) and traditional endpoints (24%).

There are distinct variations in the perceived risks around printing depending on whether the organisation is using an MPS. In most cases – apart from email and traditional user endpoints – MPS users are far more wary of the threats posed by each area. They are also far more likely to have visibility of their print environment and should be implementing measures to mitigate risks around both home and office printing.

Notably, CIOs (32%) and CISOs (33%) show the most concern around home printing compared to other IT respondents, ranking it as their second top security risk. This awareness of the security vulnerabilities of remote working and shadow IT around home printing amongst C level respondents is encouraging. However, it also points at the security challenges they face in managing and securing home printing, particularly as remote working is set to persist.
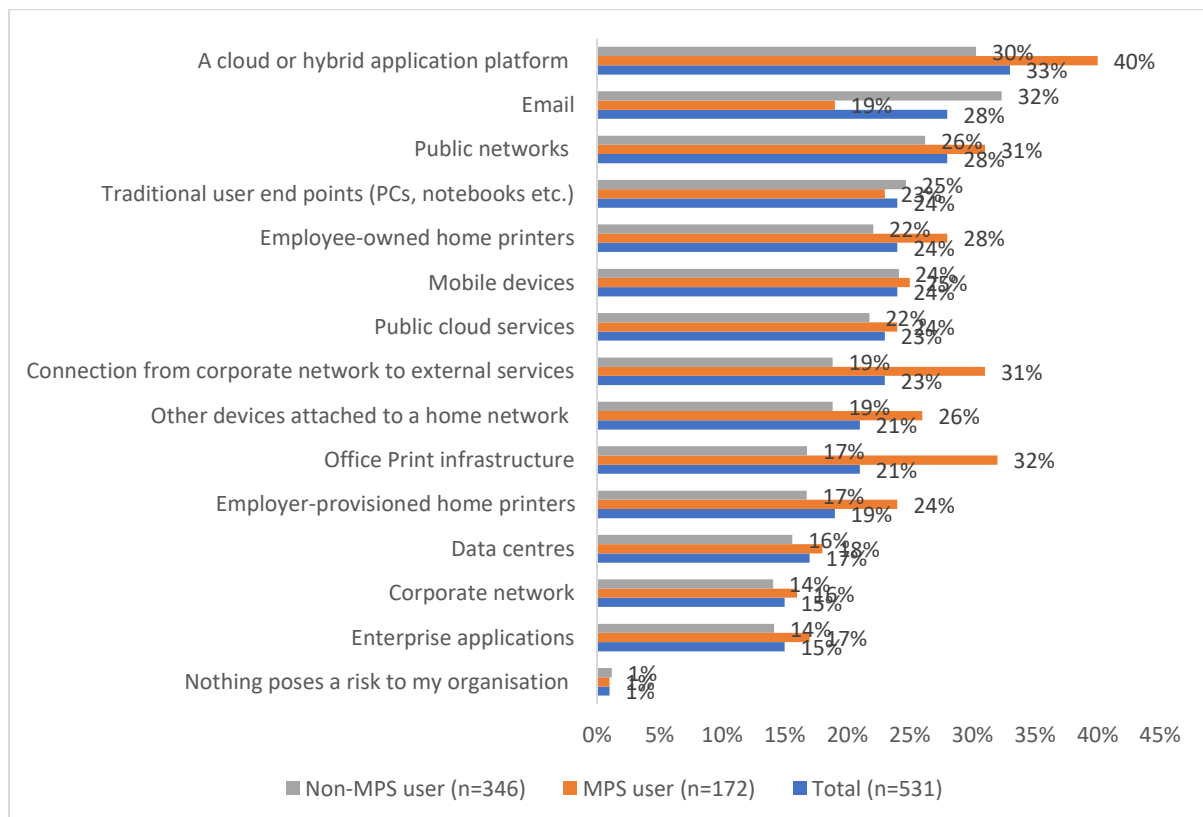

Figure 8: Which areas are considered to pose the greatest security breach risk? (Select up to five)

Print security challenges are harder to keep up with

The shift to remote working has made it more difficult for many organisations to keep up with print security challenges (Figure 9), with more than half (53%) overall stating that it was either considerably or somewhat harder. This rises to 55% amongst SMBs. This was highest in the UK (63%) and lowest in the US (47%). Although MPS and non-MPS users were not far apart in their perceptions of how much harder it had become, MPS users were twice as likely to state that it had become somewhat or a lot easier (31%) than non-MPS users (15%).

CIOs also seem to be finding it harder to keep up with challenges – 61% stated that they were finding it considerably or somewhat harder, compared to only 44% of CISOs, where 29% also stated that they were finding it somewhat or a lot easier.
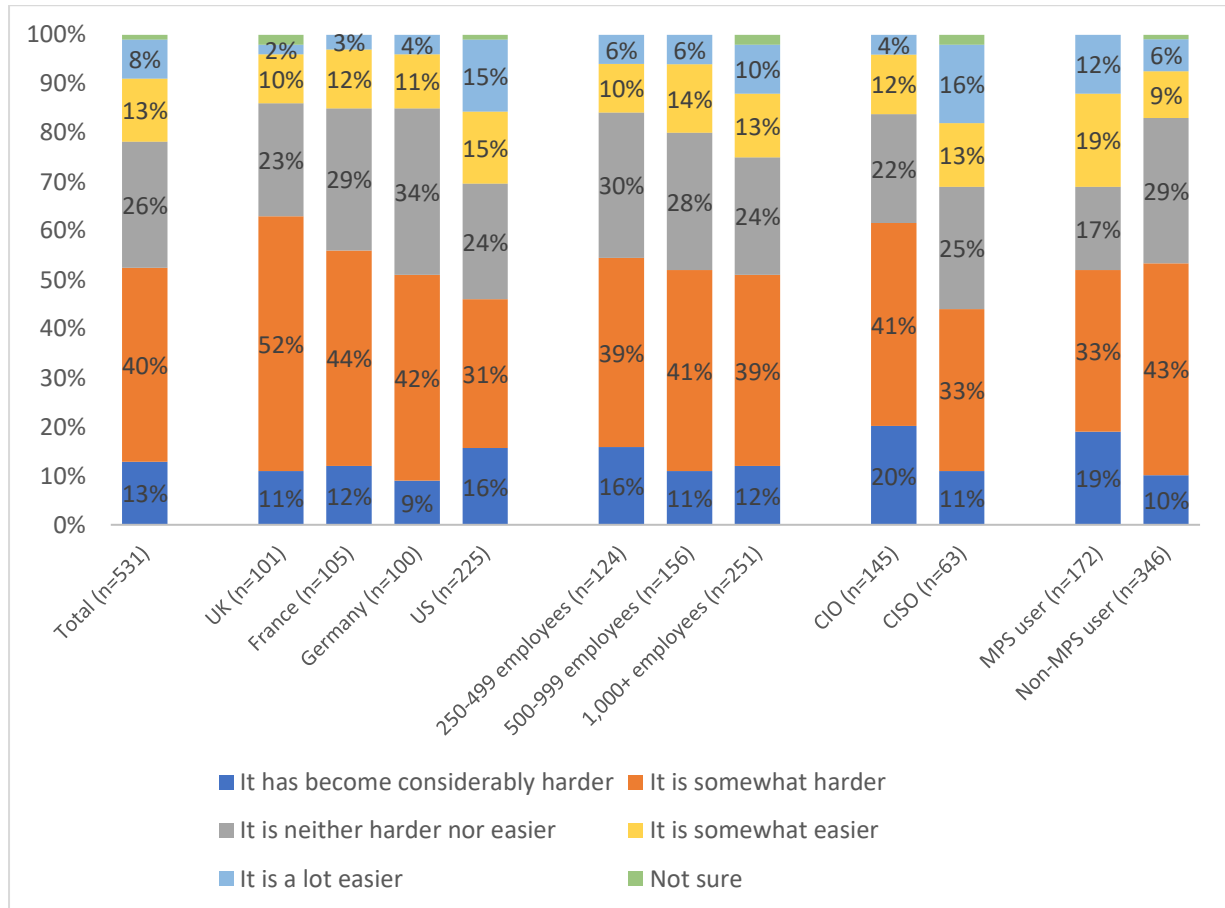

Figure 9: How do you feel about keeping up with print security challenges and demands?

Organisations using MPS are most confident in their print security

Overall, 26% of respondents say they are completely confident and a further 34% are mostly confident in the security of their print infrastructure once offices reopen (Figure 10). US respondents are the most confident, with 37% reporting they are completely confident compared to just 16% in the UK, 17% in Germany and 22% in France. Industrials is the most confident sector (31% say they are completely confident), dropping to 21% in the finance sector. Mid-size organisations report the highest confidence (33%) compared to 20% of smaller organisations.

Notably, organisations using an MPS have the most confidence in their print security. 84% of MPS users are completely (37%) or mostly confident (47%) in their security compared to only 49% of non-MPS users (22% and 27% respectively).

This positive finding demonstrates how MPS can help organisations mitigate risk and instil confidence in their security posture. MPS can deliver proactive security measures such as remote monitoring and remediation and in-depth security assessments are fundamental in understanding security vulnerabilities across the hybrid work environment.
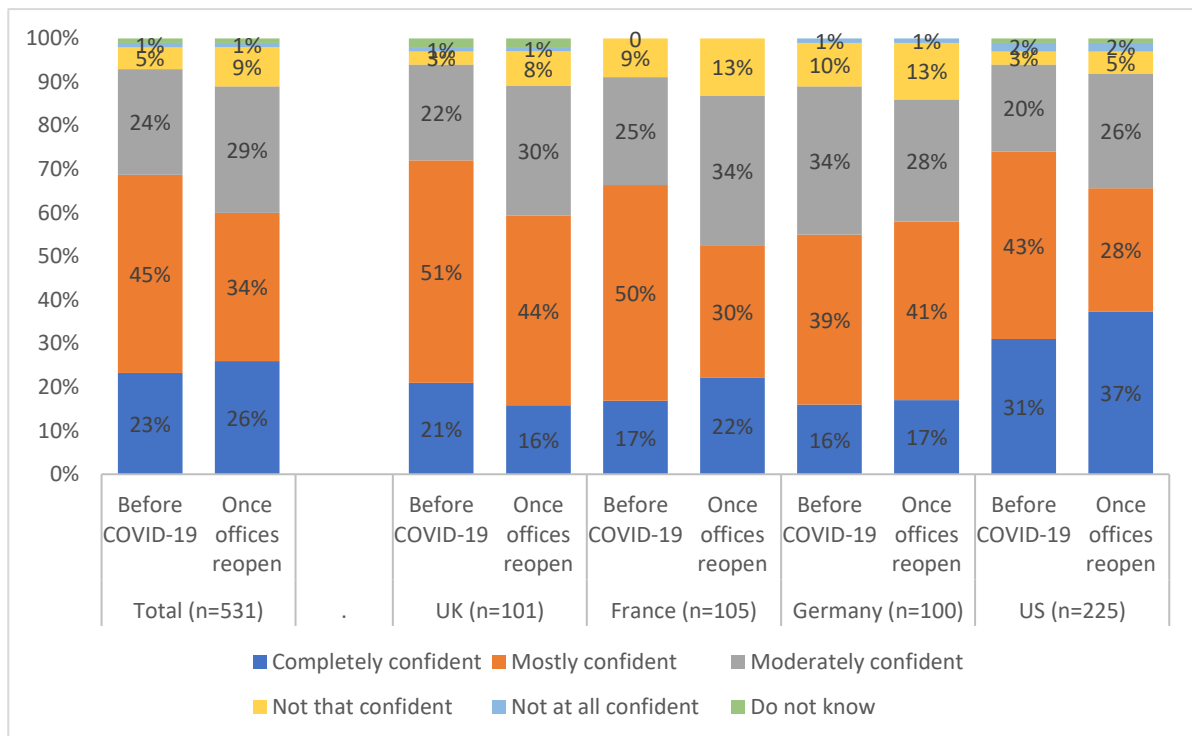

Figure 10: How confident are you that your organisation's print infrastructure (office and remote workplace) was/is protected from security breaches and data loss?

Print related data loss, cost and impact

The majority report print-related data losses, particularly in smaller organisations

68% of organisations have reported at least one print related data loss over the past 12 months (Figure 11), rising to 72% in the US and 77% in organisations with 500-999 employees and dropping to 59% amongst large organisations. Public sector organisations were most likely to have experienced a data loss during the period (77%), while industrials reported the lowest volume of data breaches (62%).

With mid-sized organisations stating the highest confidence levels in the security of their print platforms, yet also disclosing the highest number of data breaches, there is an obvious disconnect between perception and reality here. The channel should step up to help in providing solid security audits backed up with advice that will enable an organisation to better understand its security risks. The organisation can then make better decisions on what it implements as adequate security measures – aided by the channel partner.

Notably, 73% of those operating a mixed fleet of printers reported data breaches – while only 58% of those with a standardised fleet did. For MPS providers this opens up major opportunities to move customers to a managed, single vendor fleet in order to better control data security – focusing on the message that data breaches result in material business and reputational costs to an organisation.

MPS and non-MPS users reported pretty much the same levels of data breaches, although those using an MPS service did report a greater level of "many data losses" (20%) than non-MPS users (10%). Although this may look bad, it is likely that the MPS service itself uncovered the data breaches, whereas those not using an MPS service may well have had more breaches that they were unaware of.
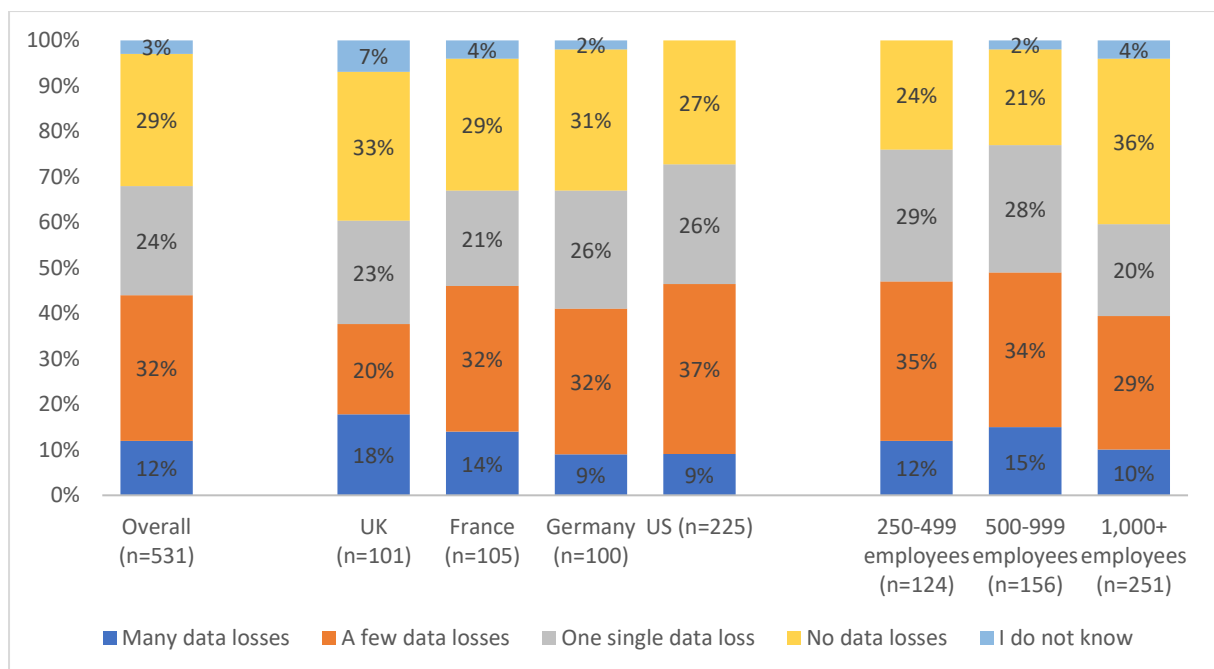
Figure 11: Level of data losses through printers/MFPs due to insecure printing practices (in past 12 months)

When asked to consider the reasons behind the print related data losses they had suffered, 28% cited vulnerabilities around home printers such as homeworkers not disposing of confidential information securely. 27% indicated the printer was used as an access point into the corporate network and 26% stated user credentials for an office printer were compromised.

The cost of a print related data loss

These data losses are costing organisations an estimated average of over £630,000 per breach, rising to over £806,000 in the UK and dropping to under £545,000 in the US (Figure 12).

Figure 12: Estimated average cost of a data loss

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The broad consequences of a data loss threaten SMBs

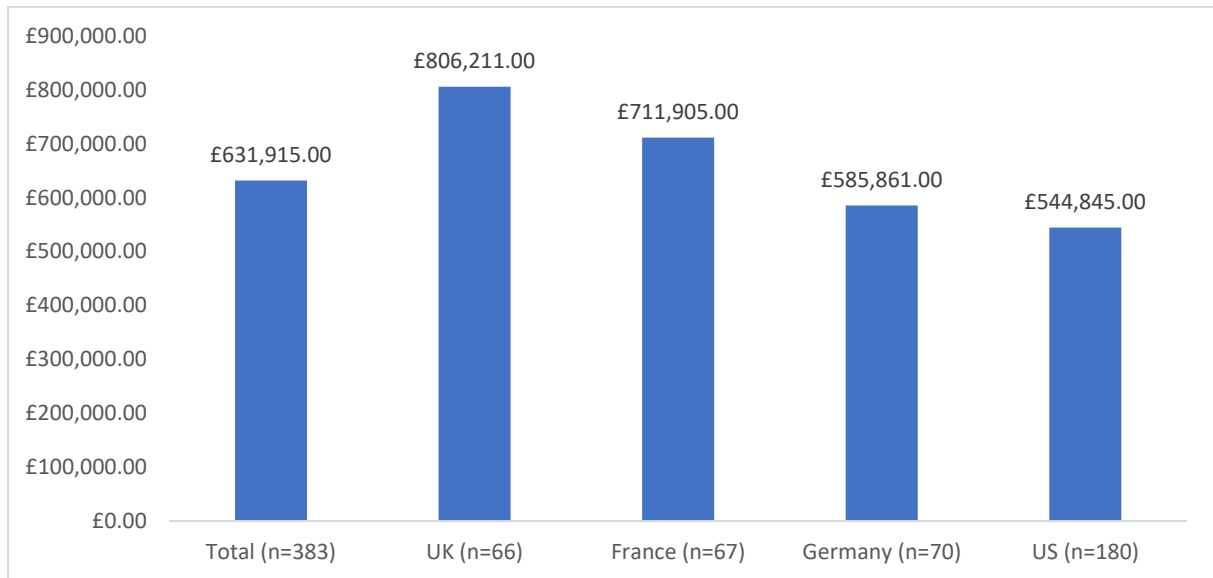Beyond the simple direct costs of a data breach, organisations also report a range of other impacts (Figure 13). The highest impact overall is on the amount of time it takes the IT team to respond to and manage the issue (33%).

Although SMBs find this less of a problem, with only 23% stating it as a major impact, 30% report that the data loss had led to lost customers. This compares to just 18% of mid-size businesses. The impact of lost customers on any SMB cannot be underestimated. Smaller companies need to understand the consequences of a data breach in order to assess risk. Many often mistakenly believe that they are too small to be a target or underestimate the vulnerabilities around their print environment – creating weaknesses for cyber attackers to exploit.

Given that just 20% are confident in their print security this is an opportunity for the channel to deliver security services and solutions to this market segment.
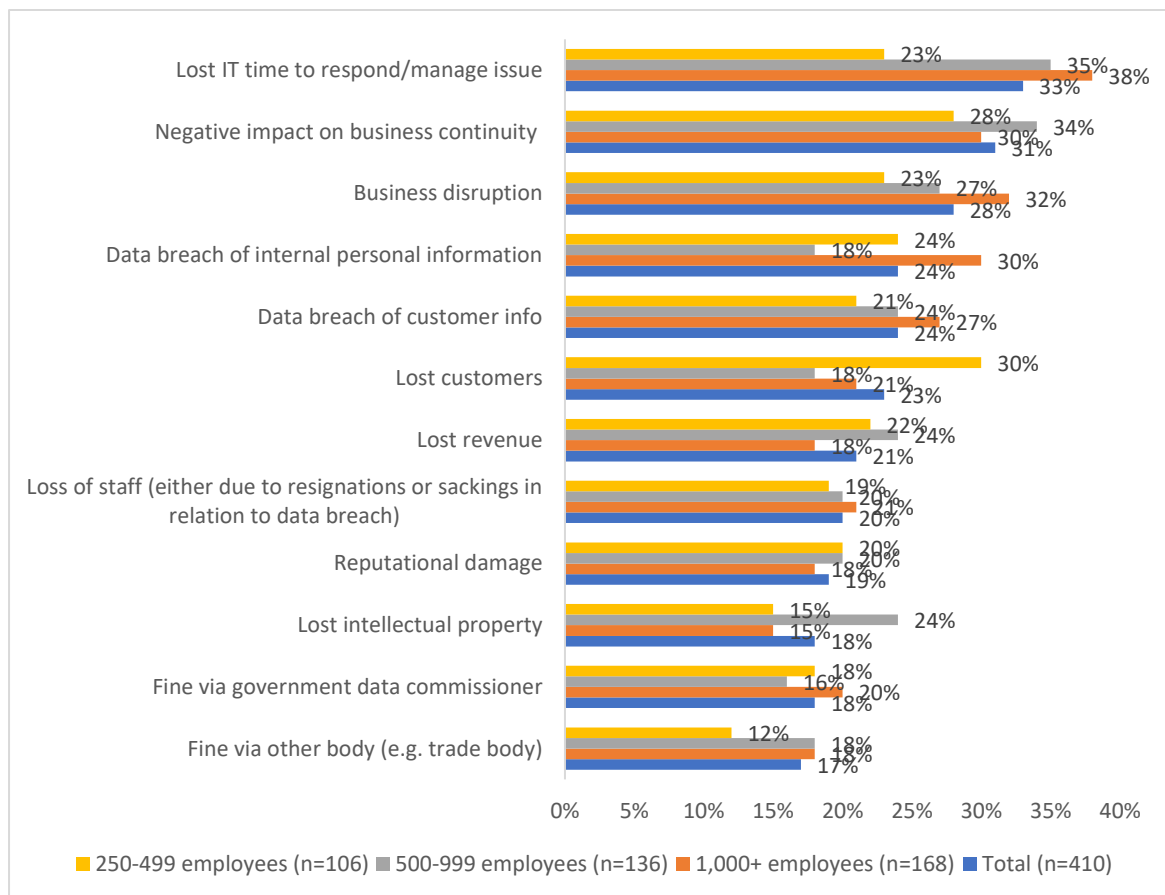

Figure 13: What were the major impacts of these data losses? Select all that apply

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Awareness and effect of PrintNightmare

In June 2021, Microsoft was made aware of a pair of critical errors in its print spooler. The two related issues enabled remote code execution and privilege escalation – both of which can present catastrophic security issues to organisations. Microsoft issued out-of-band patches to attempt to resolve the errors – but this led to some printers no longer working and the need for administrators to manually install print drivers for users in some cases. The organisation that first discovered the issues, Sangfor, accidentally published a proof of concept (PoC) means of leveraging the errors to gain access to an organisation's environment. Although rapidly deleted, the PoC was copied and distributed widely. PrintNightmare was covered extensively in the technical press, and Microsoft pushed hard for its patches to be installed as a matter of urgency.

Quocirca's research shows that 27% of respondents are unaware of PrintNightmare (Figure 14), rising to 41% in the UK. Overall, 19% say it had impacted their business, rising to 25% in the US and 26% in smaller businesses. Somewhat surprisingly, those in the largest organisations are the least aware, with 33% stating that they have not heard of PrintNightmare.

For those using a well-provisioned and run MPS service, there is less need to know too much about such threats: the MPS provider should be monitoring for them, and patching and managing the environment to minimise them.
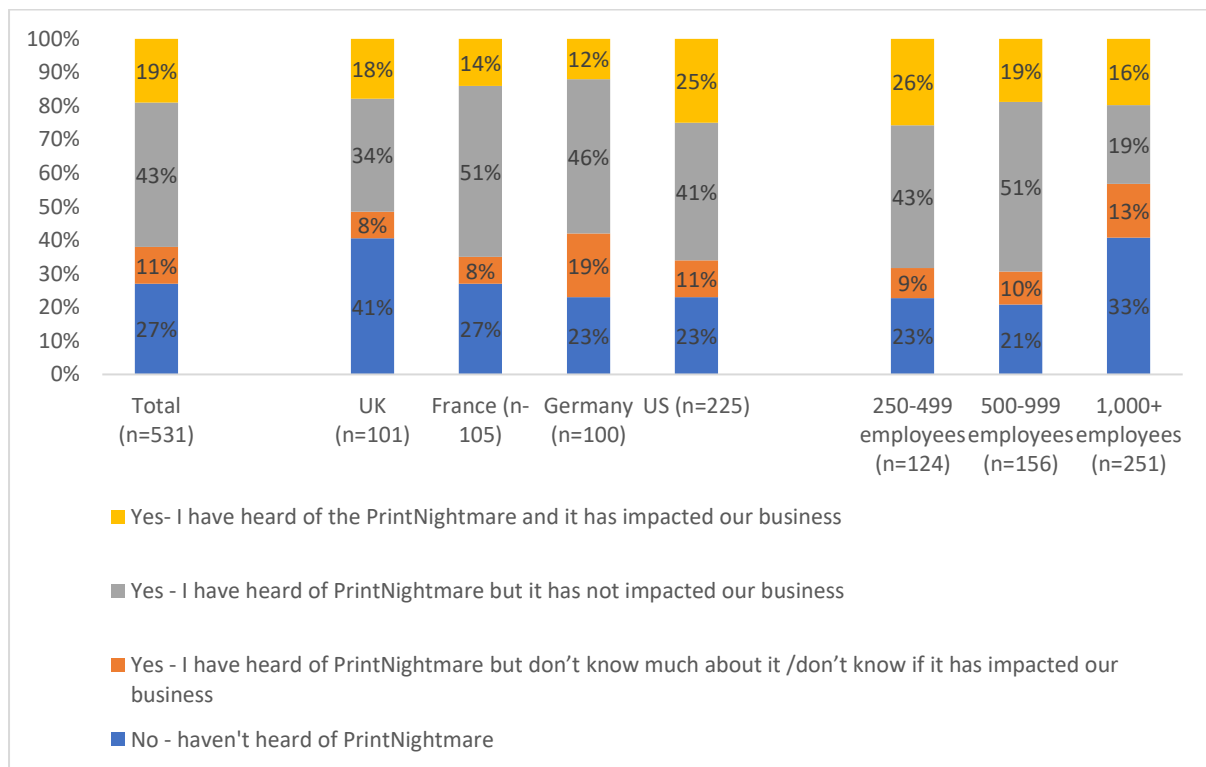

Figure 14: Are you aware of the Microsoft PrintNightmare printer spooler flaw/vulnerability, and has it had any impact on your business?

Taking measures to address print security

With such marked differences between respondents' confidence in the security of their print environments, and the problems they have encountered due to a lack of adequate print security, organisations must now take the steps required to create a long-term strategic approach to information security, moving to embrace the change to hybrid working and the use of a more disparate printer fleet.

Print security spend set to increase over next 12 months

Overall, 70% of organisations expect their print security spend to increase over the next 12 months (Figure 15), with only 11% expecting a decrease. This rises to 77% in France and drops to 59% in the UK. Overall, 13% are expecting an increase in print security spend of greater than 26%.

The largest organisations (1,000+ employees) report the highest expectation of an increase (72%), with industrials being the vertical with the greatest expectations (76%). 77% of MPS users expect to see an increase in print security spend, compared to 66% of non-MPS users.
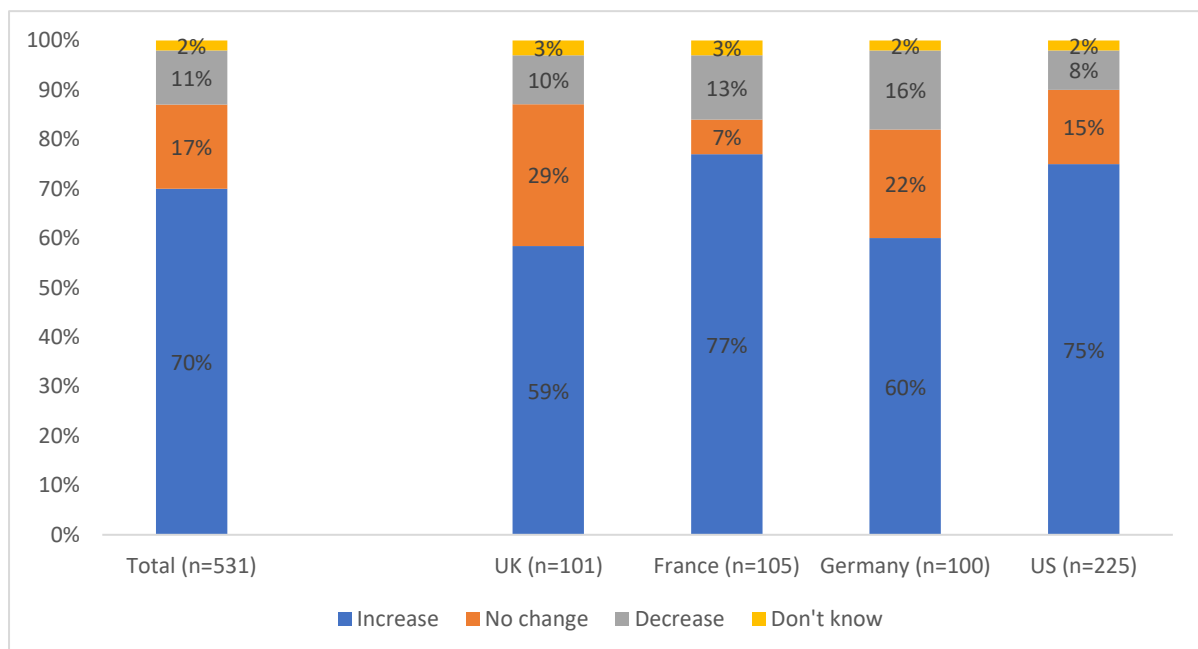

Figure 15: How do you expect your organisation's print security spend to change over the next 12 months?

Formal print security assessments and reporting are the top measures implemented

A variety of print security technologies and processes are being adopted (Figure 16).

The use of reporting and analytics (38%) along with formal assessments (38%) is the most widely implemented approach. This rises to 41% and 45% respectively in large organisations, which are also far more likely to implement many of the other measures. SMBs show lower adoption in areas such as implementing formal print security and risk assessments (30%) and revising security/BYOD policies to cover home printers (23%). 32% of organisations have adopted a zero trust security model.

The US is ahead in terms of having already implemented each area – by some degree. For example, 45% of US respondents state they have implemented reporting and analytics, against only 32/33% in other regions. Likewise, 44% of US respondents have adopted formal processes to respond to print security issues, against only 30% in France. 44% of US respondents also say they have adopted a zero trust approach to security – compared with only 21% in the UK, 22% in France and 30% in Germany.

42% of respondents in retail state they have adopted reporting and analytics as a means to secure print, dropping to 32% in business and professional services, which scores higher on the presence of formal processes to respond to print security incidents (41%). Formal assessments and security audits of cloud and MPS providers are high on the finance sector's list (45%), along with the use of content security solutions such as DLP (44%). Pull printing scores poorly, with only 31% of respondents saying they use it, rising to 38% in finance.
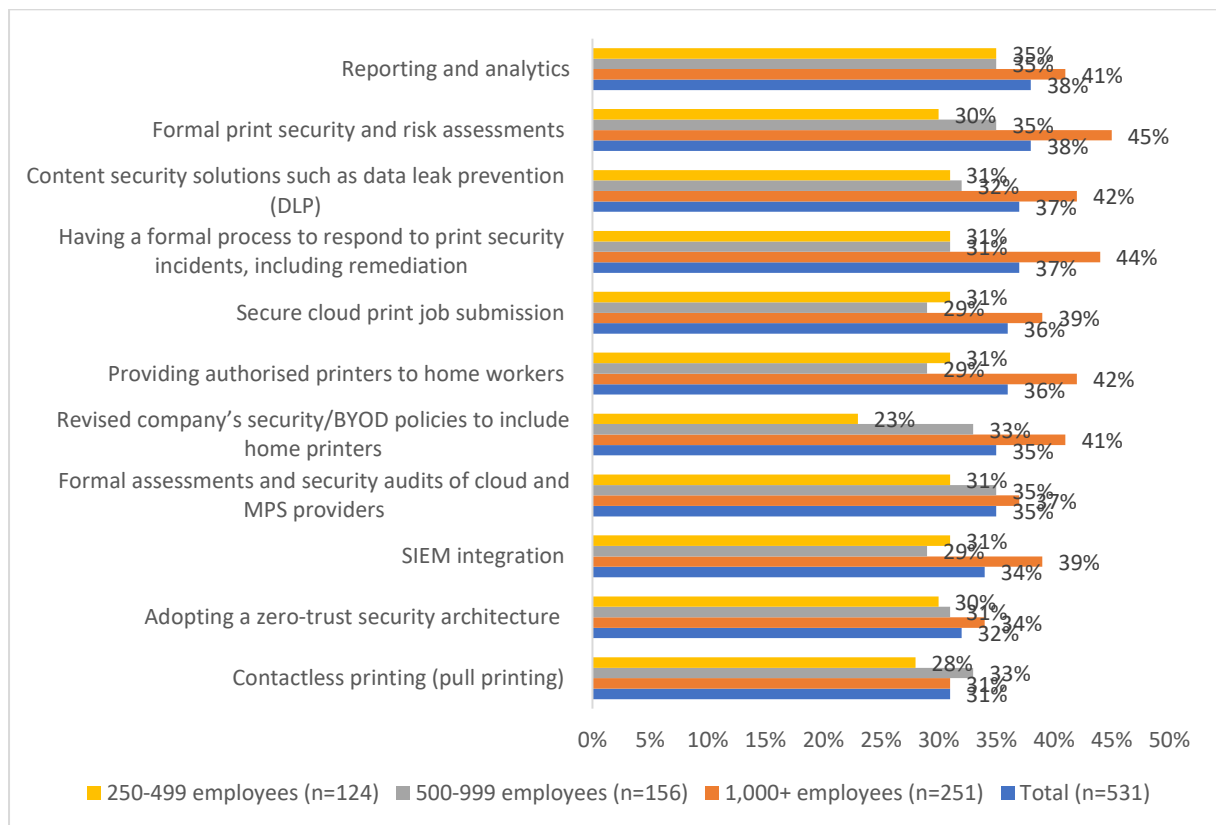

Figure 16: Has your organisation implemented any of the following print security measures?

The Quocirca Print Security Maturity Index

To understand and compare the extent to which organisations are adopting these measures, Quocirca has created a Print Security Maturity Index based on the number of measures implemented by our research sample, dividing them into leaders, followers and laggards.

- **Leaders** have implemented six or more of the measures (i.e. more than 50% of the measures indicated in Figure 16).
- **Followers** have implemented between two and five measures.
- **Laggards** have implemented one or none of the measures.

Overall, just 18% are classed as print security leaders, rising to 22% in the US (Figure 17). France has the largest proportion of laggards (37%).

When compared by vertical, finance has the largest percentage of leaders (23%), with all the others on 17% or 16%. Although there is not much of a spread, business and professional services has the highest proportion of laggards at 27%. Large organisations are the most mature, with 23% being leaders, with mid-sized organisations on 14% and SMBs on 12%. (Figure 18).
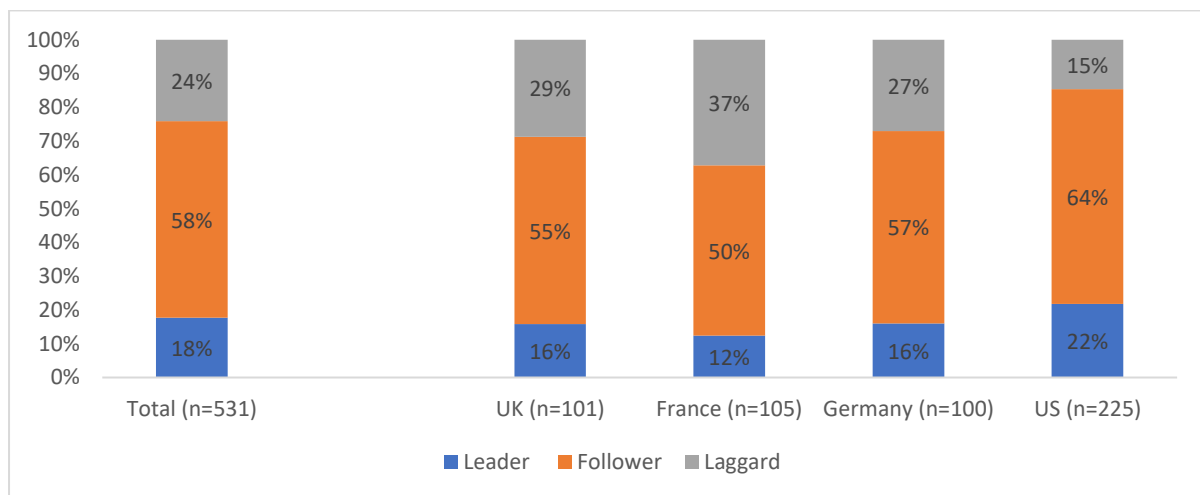

Figure 17: Quocirca's Print Security Maturity Index by country
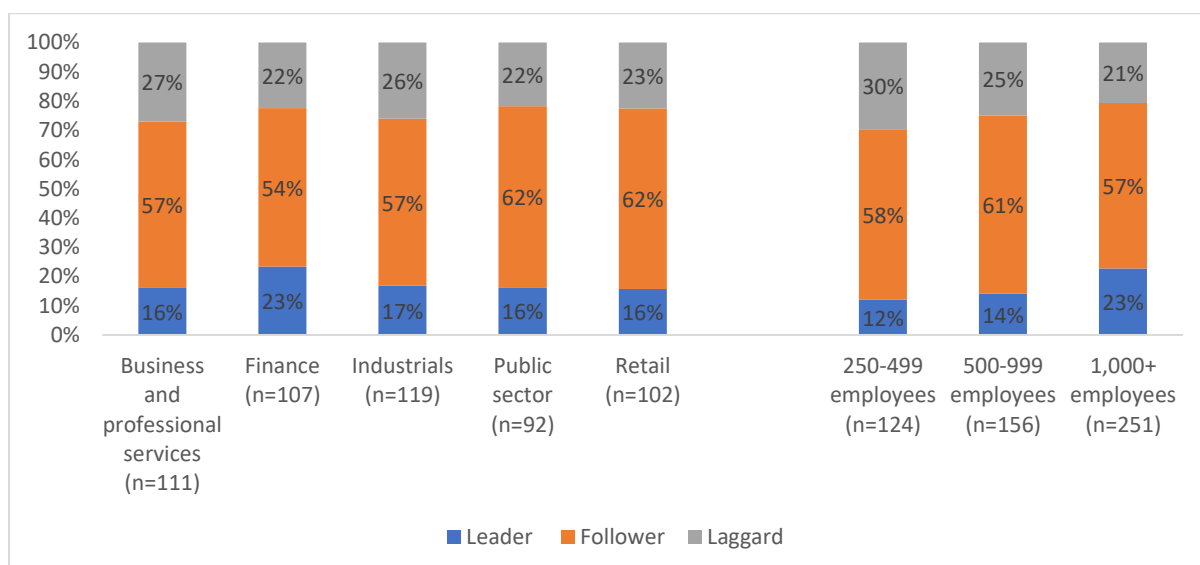
Figure 18: Quocirca's Print Security Maturity Index by vertical and size

How organisations are positioned among these segments has a major impact on other aspects of how well they are performing. For example:

- 72% of those in the leader segment use MPS, compared with only 30% of those in the follower segment and 9% of laggards.
- 80% of leaders expect their print security spend to increase over the next 12 months, compared to 70% of followers and 60% of laggards.
- 74% of leaders worry about the security of the home print environment, compared to 70% of followers and only 52% of laggards. This is probably down to greater awareness of what is happening on the platform. However, 81% of leaders are completely or mostly confident that their print infrastructure is secure against data breaches as offices reopen, compared to 64% of followers and only 38% of laggards.
- 36% of those in the leader segment report no data losses in the last 12 months, whereas only 28% of followers and 27% of laggards state no losses (Figure 19).

Figure 19: Reported data losses by Print Security Maturity Index

Organisations using MPS are most satisfied with print security

US organisations are most satisfied with their print suppliers' print security capabilities (Figure 20), with German respondents least satisfied. Notably, German respondents also tend to be least confident in their print security. Just 20% of public sector organisations are very satisfied, compared to 32% of retail organisations. There is an opportunity here for suppliers to drive up satisfaction rates by extending their security offerings and working with customers to increase confidence in print security.

Those using an MPS have far higher satisfaction levels (42% being very satisfied) than those without an MPS (20%). This is a strong point: it is obvious that the services which fall under an MPS offering lead to better relationships with customers.
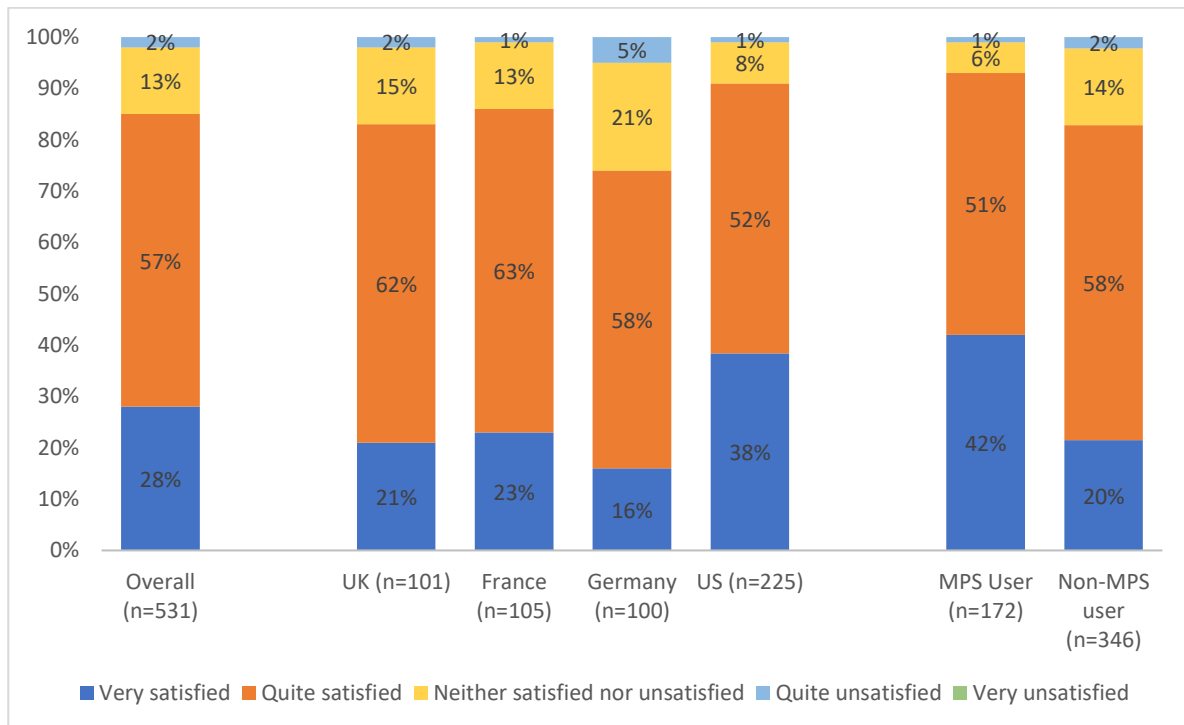

Figure 20: How satisfied are you with your print supplier's capabilities when it comes to securing your print infrastructure?

Most are turning to advice from MSSPs

Managed security service providers (MSSPs) are a popular choice for print security advice (Figure 21); overall, 35% of respondents say they would turn to an MSSP. 21% would turn to either an ISV or a print manufacturer. Whereas mid-sized and larger organisations are more likely to turn to an MSSP (40% and 36% respectively), smaller organisations favour ISVs – although there is more diversity in who they would turn to overall. 18% of respondents would consult an MPS provider for print security advice.
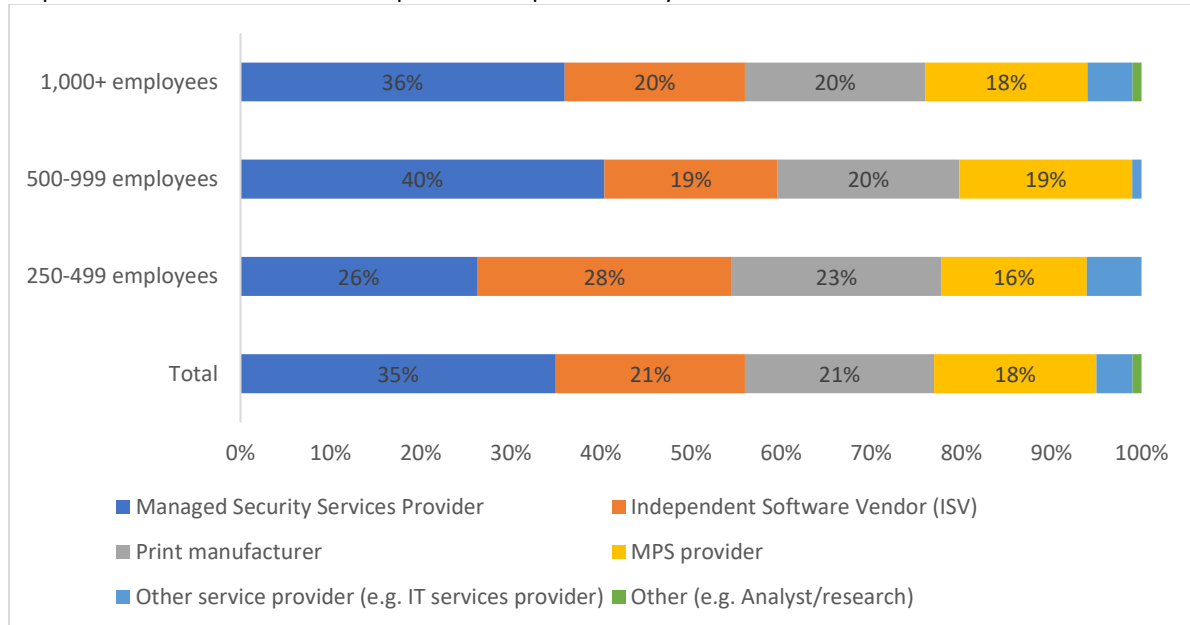
Figure 21: Where would your organisation go first for more information about improving print security?

Interestingly, those organisations using an MPS provider are still more likely to turn to an MSSP (40%) than to their existing MPS provider (23%). Those not using an MPS provider are likely to turn to a MSSP (33%) or a print manufacturer (24%). For those offering MPS, bolstering security offerings in order to fight off competition from dedicated MSSPs makes sense – maybe even through partnering with an MSSP to provide such services under the MSSP's banner.

Supplier recommendations

With 70% of organisations expecting to increase print security spend over the next 12 months, this is an area of opportunity for print manufacturers, service providers and channel partners – in particular those offering MPS. They have a vital role to play in encouraging customers to treat print security with the same urgency as other areas of IT, and helping them to implement solutions that will protect the print environment from a device, document and network perspective.

More than half of organisations are already struggling to meet the demands of securing today's fragmented print environment. Suppliers can become the 'hero' here; taking on some of the day-to-day responsibility for protecting critical data while enabling both office- and home-based employees to work in an optimised way.

- **Offer targeted maturity assessments of the security of customers' home and office print environments.** These should encompass the identification of security vulnerabilities, and the recommendation of layered measures to address their specific security requirements. Introducing services that continuously monitor print infrastructure for threats and data breaches will foster recurring revenue.

- **Demonstrate and promote competencies across IT and print security.** Endpoint security in particular has risen in importance given the expanded threat surface created by remote and home working.

- **Help clients to become Print Security Leaders.** According to Quocirca's Print Security Maturity Index, just 18% of organisations are considered leaders, which means they have implemented six or more print security measures. Providing expert guidance around reinforcing security will be worth the effort: Print Security Leaders are more likely to increase their print security spend than other organisations.

- **Seek strategic collaborations with MSSPs.** More than a third of ITDMs turn to MSSPs for print security advice, with just 18% saying they would consult MPS providers. There's an opportunity for MPS providers and channel partners to collaborate strategically with MSSPs.

- **Highlight the benefits of using an MPS to help sway non-users.** MPS usage brings organisations greater control, consistency and confidence around printing, providing visibility over the security of the entire environment while easing the burden of monitoring and managing the risks.

- **Bolster MPS security offerings to strengthen client relationships.** Less than a third (28%) of ITDMs are very satisfied with their print suppliers' security capabilities. ITDMs who use an MPS are far happier: with 42% saying they are very satisfied, compared with 20% of those who don't.

- **Aim to move customers to a managed, single vendor fleet.** Far fewer organisations that operate a standardised fleet experienced a data loss in the last 12 months than those with a mixed fleet. Standardisation will enable better control over data security, minimising the financial and reputational costs associated with a data breach.

Buyer recommendations

Print devices continue to become more sophisticated, with greater intelligence being built into even low-end consumer printers. Such intelligence can be used by those with malicious intent to access a print environment, and if that then provides direct access back into the corporate environment, chaos could ensue. Organisations must therefore pay far closer attention to protecting the print environment, particularly when looking to the continuation of hybrid working.

Organisations need to look at investing in the following areas to ensure that the print environment is secured to the same levels expected across any other area of the IT platform.

- **Conduct in-depth print security and risk assessments.** Most organisations have these in place for the overall IT environment, but the print platform often seems to be left out. Given the increasing threat landscape associated with hybrid work, organisations must ensure that the print infrastructure is fit for purpose across device, document and network security. This can be carried out internally, or by third parties such as managed security service providers (MSSPs) or managed print service (MPS) providers. New assessments must fit in with the broader IT security and risk assessments.

- **Implement a zero trust architecture.** Zero trust operates on the basis of 'never trust, always verify', assuming that an environment will be compromised and no device should ever be fully trusted. Organisations have started to implement zero trust environments, but mainly within the constraints of their owned and managed IT environment. This now needs to be extended to the wider hybrid environment, embracing home workers and all the devices that are being used for work purposes across that environment – including print devices.

- **Provide defined and authorised printers for home workers.** Individuals still require access to printed output when working from home. However, basic consumer printers do not come with the capabilities they may require, such as print speed and quality, and will not generally adhere to the needs of the organisation – such as security and manageability. Organisations should move to defining classes of printer that individuals can use, depending on need. These should then be supplied and provisioned by the organisation, along with the means of managing and controlling what business content the individual prints on the device.

- **Revise BYOD policies to include employee printers.** For many organisations, supplying and provisioning printers to all employees working from home may not be practical. Existing bring-your-own-device (BYOD) policies must now be updated to cover the home environment – moving to a BYOO (bring your own office) approach, with policies covering desktop/laptop PCs, tablets, mobile devices, desk phones and print devices. An effective BYOD/BYOO policy will help ensure that each individual's environment adheres to an organisation's basic security needs.

- **Evaluate content security solutions.** Content management systems based around document metadata, where documents are classified based on their sensitivity – along the lines of 'Public', 'Commercially sensitive', and 'Internal use only' for example – allow specific policies to be set, such as '*this document cannot be printed*' or '*this document can only be printed on an approved printer*'. This enables home-based employees to use their own printers for routine jobs without the risk of restricted documents ending up in their wastebins.

- **Implement pull printing.** Requiring a PIN or a Bluetooth or NFC token to release a job at a printer means that the print job owner has to be present before the job is printed out. Pull printing is most useful in shared access environments, as is the case for many office printers. However, it could also be applied to allow home users to submit print jobs securely via the cloud to office printers, or even their own printer – enabling them to be tracked at a central level. Jobs that the owner forgets about are held, and can be securely deleted if not printed out after a defined period of time.

- **Continuously monitor through reporting and analytics.** Risk assessments, tuning content security and configuring SIEM (security information and event management) systems all require insight provided by gathering reports from across an organisation's network, including its extension into employees'

homes. SIEM systems themselves can often provide this information, as can other log management tools.

- **Formalise processes to respond to print security incidents.** Accept that leaks are likely to happen – and plan how to deal with the repercussions. Most of the respondents to Quocirca's research had at least some security measures in place, and a reasonable belief that their print environment was secure, but 68% still experienced at least one print-related data loss in the past 18 months. Organisations must put appropriate processes in place to respond to data breaches by dealing with the possible legal and reputational damage caused, while building back business capabilities in the shortest possible time.

- **Use cloud routing for certain print jobs.** While a lot of printing is informal and needs to be near to the user to be effective – for example, printing a report in order to review it – other print jobs are part of larger business processes, and the user who submits the job may never see the output. For example, letters to be mailed to customers, marketing output, and forms that make up part of a broader process may be better printed at a more suitable printer. Employees can securely submit such jobs from home to a cloud print service, which can check the veracity of the submission, and seek secondary authorisation before allocating the job to the most suitable print resources available. Even within the office environment, such routing can help in minimising print wastage by making sure that certain print jobs go to the most suitable printer.

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Vendor landscape

Quocirca has created a snapshot of the positioning of vendors in the Global Print Security market (Figure 22). Please note due to varying service offerings for each vendor, and regional differences this is intended for guidance only.

The graphic represents Quocirca's view of the competitive landscape for vendors based on the following categories:

1. **Leaders:** Vendors with strong strategic vision and a comprehensive print security product and service offering. Leaders have made significant investments in their hardware, solutions and service portfolio and infrastructure and also demonstrate a strong vision for future strategy.
2. **Major players:** Vendors that have established and proven offerings and are continuing to develop their solutions service portfolio. These vendors are most likely to be strongly focused on the SMB market with a hardware-centric approach.
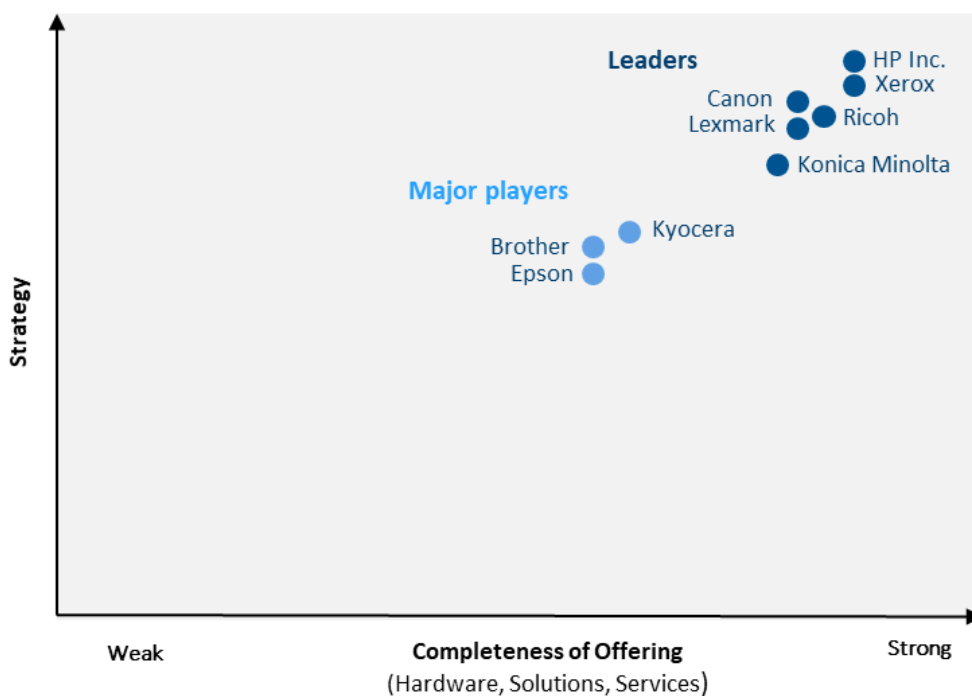

Figure 22. Quocirca Print Security Vendor Landscape, 2022

Vendor Profile: Lexmark

Quocirca opinion

Lexmark retains a leadership position in Quocirca's assessment of the print security market in 2021. Comprehensive security is built into every Lexmark product; standard security features include encrypted and digitally signed firmware, secure boot technology, continuous verification and secure by default capabilities. Its secure by design model is well established across its hardware portfolio and this is complemented by a broad range of security consulting services and a robust cloud print services offering that addresses the security needs of businesses of all sizes.

Key security highlights

Secure by design approach
Lexmark is committed to its Secure Software Development Lifecycle (SSDL), a transparent and comprehensive development process that addresses the features it builds, the testing it conducts, its vulnerability response process, and more. Lexmark also meets stringent industry and government security standards including Common Criteria and the Federal Information Processing Standard (FIPS).

Notably, in 2020, Lexmark was the first printer manufacturer to achieve ISO 20243 certification on an entire printing device. ISO 20243 is an accreditation that certifies the supply chain integrity of hardware products, evaluating development practices, supplier management, related IT systems, manufacturing processes, and logistics.

Comprehensive professional services offerings
Lexmark continues to invest in and build out its professional services security expertise, assessment practice, cloud strategy and device security solutions. Its assessment practice is implemented by a team of security experts who use a variety of internally developed and industry standard tools. The process includes a print security maturity survey, which quickly scores customers' practices and provides customised but broad security recommendations.

The Security Consulting Team offers a wide range of security assessment services, which include assessing vulnerabilities and risk for print devices (inclusive of firmware, settings and software), print server configuration (ports and drivers) and physical document security. The roadmap for Lexmark's security consulting growth will include expanding this service through relationships with its security partners to deliver full IT and network assessment services beyond the print environment scope.

Robust cloud print security
Lexmark Cloud Services (LCS) combines dedication to security with the lightweight ease of the cloud. As a result, LCS simplifies print needs while offering the framework to manage users and their activities. Built on the LCS platform, Lexmark Cloud Print Management (CPM) removes infrastructure from the physical environment to the cloud, eliminating on-premises print servers and, with them, the need to keep them all up to date and secured. Lexmark Cloud Services allows users to print securely, retrieve documents, monitor print behaviour, and view statistics. Users can also manage the printer configurations and monitor the status of print devices. The solution offers scalability and cost-effectiveness of print and on-demand content services, while maintaining the same levels of security, control, and performance. Lexmark Cloud Services is instantiated in data centres in the United States and EU that comply with SOC2 Type II, ISO 27001 and SSAE 16 standards.

Lexmark continues to strengthen its security offerings – particularly for those customers that manage their own fleets. Planned enhancements will simplify the management of firmware, network settings and access controls across a fleet of print devices. Lexmark is also looking to develop solutions related to information protection, document authenticity and the management of physical object authenticity.

Comprehensive assessment services

Lexmark's security assessment services have been designed to ensure customers' print devices and security policies are configured in alignment with their specific network security requirements and industry best practices. Lexmark's Security Consulting Team, composed of dedicated security professionals, assesses vulnerabilities and risk for print devices (inclusive of firmware, settings, and software), print server configuration (ports and drivers), authentication and physical document controls. Its standard assessment practice encompasses:

- A Print Security Maturity Survey that quickly scores customers' practices and provides customised but broad security recommendations.
- A Security Needs Assessment that takes a deeper analysis of a customer's fleet, evaluating access controls, network settings, and firmware levels to develop very specific recommendations.
- A Document Security Assessment that provides an analysis of how documents are used in an organisation with a focus on reducing misuse or theft of information.

Security products and services portfolio

Hardware

Core security is built into every Lexmark product - standard security features include encrypted and digitally signed firmware, secure boot technology, continuous verification and secure by default firmware. Lexmark also has plans to update its encrypted print strategy, to keep up with the latest in cryptography and to expand the scope of supported solutions to its latest offerings.

Key features include:

- **HDD overwrite.** Devices offer a file-based automatic wipe capability that is compliant with the National Institute of Standards and Technology (NIST) and US Department of Defence (DOD) that immediately overwrites areas of the disk used for job processing.
- **Run-time intrusion detection.** Lexmark has developed a chain-of-trust process to check and validate the integrity of a device's operating system during start-up, normal operation and execution of internal applications. There are several checks and tests that occur and if any of the tests fail, the device halts operation of all processes and reports an error. This continuous verification ensures that the device has not been tampered with and any attempt at intrusion is futile.
- **BIOS protection.** A secure start process and operating system protections ensure that only trusted firmware is installed on Lexmark devices.
- **SIEM integration.** Audit logging available on Lexmark devices can be sent to any SIEM using industry standard formats.
- **User monitoring.** Lexmark Print Management (cloud, hybrid and on-premise versions) enable print, copy, scan and fax activity to be tracked by user. Easy to use dashboards provide administrators with full visibility.
- **Lexmark Secure Document Monitor (LSDM).** Helps deal with threats inside customers' organisations, such as the intentional or accidental release of sensitive documents or information. LSDM lets the customer see every document that is printed, copied, scanned or faxed through a Lexmark device, and allows for discovery alerts to notify authorised users when keywords or phrases are found.
- **Access controls.** Supports authentication via CAC/PIV (smart card), proximity and PIN. Customers are also able to enhance security by controlling access permissions to specific menus, functions, and workflows on each device, examples include: copy, scan to email, scan to fax, scan to FTP, print held jobs, printing from and scanning to USB devices, and access to and launching embedded applications.
- **Remote printing.** Lexmark's Cloud Print Management solution allows remote workers to print conveniently and securely to networked printers and multifunction devices that are outside the corporate network.
- **Encrypted data.** Solutions include Lexmark's proprietary PrintCryption protocol and standards-based solutions such as Secure IPP and IPsec.

- **Data Loss Prevention.** Lexmark works with a variety of DLP vendors to verify the capability of monitoring printed documents as well as documents scanned into monitored systems for full end-to-end document security.
- **Cloud print security.** Users are required to authenticate to access device features providing tracking and accountability and securing printed output. Instead of sending documents through a print server to a designated print device they are transferred to the Lexmark cloud where they are held until a user authenticates at the printer. For organisations with compliance concerns, a hybrid option holds print jobs on the users' PC instead of sending them to the cloud. Additionally, Cloud Print Management can be implemented through Lexmark's Cloud Print Infrastructure as a Service, eliminating another level of risk through the deployment of a modern fleet with a consistent set of security features and capabilities.

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About Quocirca

Quocirca is a global market insight and research firm specialising in analysing the convergence of print and digital technologies in the future workplace.

Since 2006, Quocirca has played an influential role in advising clients on major shifts in the market. Our consulting and research is at the forefront of the rapidly evolving print services and solutions market, trusted by clients who are seeking new strategies to address disruptive technologies.

Quocirca has pioneered research in many emerging market areas. More than 10 years ago we were the first to analyse the competitive global market landscape for managed print services (MPS), followed by the first global competitive review of the print security market. More recently Quocirca reinforced its leading and unique approach in the market, publishing the first study looking at the smart, connected future of print in the digital workplace. The Global Print 2025 study provides unparalleled insight into the impact of digital disruption, from both an industry executive and end-user perspective.

For more information, visit www.quocirca.com.

Disclaimer:

This report has been written independently by Quocirca. During the preparation of this report, Quocirca has spoken to a number of suppliers involved in the areas covered. We are grateful for their time and insights.

Quocirca has obtained information from multiple sources in putting together this analysis. These sources include, but are not limited to, the vendors themselves. Although Quocirca has attempted wherever possible to validate the information received from each vendor, Quocirca cannot be held responsible for any errors in any information supplied.

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