VDI like a PRO
End User Computing
State of the Union 2019

VDI LIKE A PRO

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State of the Union – 2019

Bitdefender

Parallels

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Sponsors

In previous years this survey relied on direct mailing campaigns to find and remind participants about the survey. However, due to stricter rules and regulations and our own stand on privacy this year, for the first time we have not used mailing lists to reach out to new participants. To reach a big - enough - audience we've opened ourselves up to sponsors (https://vdilikeapro.com/sponsorship-options/). Funds have been used to pay promoted messages on Twitter, you might have seen them.

Bitdefender® is a global cybersecurity company that helps organizations fulfill the compliance mandate while promoting the success of data center transformation initiatives like hyperconverged infrastructure-, cloud-, and digital-workspace adoption. Bitdefender® GravityZone® is a cloud-workload protection platform that leverages award-winning layered next-generation defenses to protect server and VDI workloads, while enabling efficient centralized security management and improving infrastructure performance and end-user experience. With GravityZone, customers achieve up to 55% higher virtualization density (hence, higher infrastructure ROI) and 36% lower latency (hence, better end-user experience) in VDI deployments, as demonstrated in Login VSI tests.

Parallels® is a global leader in cross-platform solutions, enabling organizations to overcome hardware and software limitations by providing users with access to their applications and desktops on any operating system.

Parallels® Remote Application Server (RAS) is an application delivery and VDI solution that delivers desktops and applications to users on any device, anywhere, enabling a productive, seamless and cost-effective digital workspace.
The flexible and scalable architecture of Parallels ® RAS allows organizations to quickly adapt to continuous environment changes and user demands for new applications or desktop types while providing a rich and consistent user experience. While delivering applications and desktops hosted on Microsoft RDSH or VDI running on VMware ESXi, Microsoft Hyper-V, Citrix hypervisor, KVM, Nutanix Acropolis, and Scale Computing HC3, users are able to access their resources on any device by using Parallels Clients available for Windows, Mac, iOS, Android, Linux, Chrome OS, or clientless on any HTML5 browser.

By leveraging a centralized management console with built-in automation capabilities such as auto-provisioning and auto-scaling, along with the availability of Powershell and REST APIs, Parallels® RAS enables administrators to automate and simplify complex and repetitive tasks. With such a powerful yet easy-to-use solution Parallels® RAS is able to drastically reduce IT management overhead whether deploying on private, hybrid, or public clouds.

- All sponsorship funds are used to cover out-of-pocket costs such as the creation and PR of the research reports, and on advertising to get more survey participants.
- The research team provide their resources and hours for free and this will not change.
- The VDI like a Pro research is and remains unbiased. Sponsors have no influence over questions, answers and content.
- Sponsors do not get access to raw survey-data and/or personal information from survey participants

Contents

Highlights

VDI Like a Pro conducted the fifth worldwide ‘End User Computing – State of the Union’ survey in 2019. Over the years, similar surveys were conducted in 2012, 2014, 2015, 2017 and 2018.
The ‘End User Computing – State of the Union’ is truly unique because it’s unbiased, independent, powered by the community and the results are available for everyone—free of charge. The document provides valuable insights in real-world deployments, configuration and usage, both on-premises and public cloud environments, from more than 582 people who supported the survey.

Highlights include:

- In 2019, 59.07% of participants don’t have any plans to change their hypervisor, a small increase compared to 2018.
- With 14.85% Healthcare continues to be the largest business vertical market for on-premises VDI and Server Based Computing solutions.
- Centralized management, DaaS, and security are the primary reasons for SBC adoption, with cost reduction becoming an increasingly important factor as well.
- There were slightly more SBC environments this year compared to 2018 but, overall, the trend has been stable.
- The usage of Windows Server 2016 in Server Based Computing is at 37.76% which is 12.4% increase compared to 2018.
- Compared to the survey results of past years, we clearly see more VDI environments running 5 years and older. Newly designed VDI environments declining from 3.07% in 2017 to 1.18% in 2018 and increased to 3.57% in 2019.
- VDI environments with 100K concurrent users has been increased from 0.6% in 2018 to 2.2% in 2019.
- Most participants do use Citrix VDI on-premises technology, 50.29% in 2019, a decrease of 7.4% compared to 2018. VMware is being used in 30.11% of the deployments an increase of 3.2%.
- The biggest difference is in the number of participants who are seriously considering moving away from on-premises to public cloud DaaS offerings -- 12.57% in 2018, with 10.61% investigating their options and 14.24% in 2019, with 10.85% investigating their options.
- With more than 57%%, usage of Windows 10 surpassed Windows 7 (21.7%) as the main platform for VDI.
- VMware remains by far the largest vendor delivering virtual infrastructure for VDI, though the usage is slowly decreasing from 68.22% in 2017, 63.17% in 2018 and 59.79% in 2019.
- Organizations who are running 100% of their Windows applications in VDI and SBC increased from 15% in 2014, 28% in 2017 to 31.8% in 2018 and decreased a bit to 29.97% in 2019.
- Usage of FSlogix (now part of Microsoft) increased with 2.38% over the last year while Liquidware declined from 2.60% in 2018 to 1.48% in 2019.

- We are pleased to see that IT Admins are steering away from making manual changes to their master images, with 23.74% in 2017 dropping down to 21.86% in 2018 and 21.25% in 2019.

- While Citrix Provisioning Services (PVS) remains a popular choice in many Citrix VDI/SBC environments, we do see a drop-in popularity from 30.9% in 2017, 25.80% in 2018 and 20.79% in 2019. Citrix Machine Creation Services (MCS) usage has increased from 15.78% in 2017, 18.72% in 2018 and 19.47% in 2019.

- Just over half the respondents (54.41%) patch their systems once per month, which is an 3.4% increase compared to 2018.

- Microsoft OMS/SCOM is the most popular solution to monitor the SBC/VDI environment, 12.09% of the respondents are using the Microsoft solution which is a decrease of 2.29% compared to 2018.

- While more participants are using application virtualization, we do see that those who do virtualize their applications have a higher adoption rate as the 80-100% category grew from 19.17% in 2017, 26.32% in 2018 and 30.86% in 2019.

- The biggest competitor for application virtualization solutions isn't Microsoft or VMware -- it's NoAppVirt. Almost 32.25% of the organizations are not using any application virtualization solutions (like Microsoft App-V, VMware ThinApp, Cloudhouse, Numecent or Turbo).

- While most respondents aren't using layering solutions in VDI/SBC, 74.16% in 2017, 66.59% in 2018 and 60.13% in 2019 it is interesting to see more people are using Citrix and VMware.

- A Workspace portal will bring Windows, Web/SaaS applications and data together. A workspace portal often is referenced as 'Workspace aggregator. 39.94% of the participants are investigating if they will add a workspace portal to their environment while 21.05% already are using solutions from Citrix, Liquit, Microsoft, Software2, Parallels, Workspace365, VMware or others.

- With recent outbreaks of ransomware, the leaks of government-funded zero-day exploits, and the threats of traditional viruses—it's no surprise that, even in virtual environments, anti-virus protection remains popular. The major brands such as Symantec, McAfee, and TrendMicro all see a decline in usage in 2018. While by far the largest vendor, Symantec declined from 18.8% in 2017, 16.07% in 2018 and 15.48% in 2019.

- Most participants are using Microsoft Office 2016, 44.48% while 26.95% are using the latest office build delivered via Office365 which is surprising with latest huge adoption of Office365. Office 2019 is used in 1.30% of the deployments.

- 36.27% of the participants use MSI/MST to deploy their office applications to VDI/SBC while 25.82% manually install Office and 25.49% use click-to run. On 7.52% use 3rd party solutions to deploy and configure office applications.

- The biggest GPU competitors aren't AMD versus Intel versus NVIDIA—it's the CPU. Many organizations think the CPU can handle the graphics-related activities and therefore don't use GPUs. "No GPU" declined from 78% in 2014, 67% in 2016, 56% in 2017, 44.92% in 2018 and 43.06% in 2019.

- Many organizations think the CPU can handle the graphics-related activities and therefore don't use GPUs.

- All dual display configurations combined totals 58.57% and are more popular than a single display configuration at 35.51%. Dual display configuration surpassed single display configuration in 2019.

- In 2017, the laptop was the primary used in 29.7% of the cases to access applications or desktops, in 2018 this number is down to 15.18% and in 2019 it increased to 24.74%. Linux Thin Client usage declined from 19.20% in 2018 to 10.64% in 2019.

- "Work isn't a place, it's something you do" -- this statement applies to many. With increasing focus on digital transformation, user experience, and collaboration, we clearly see more people are using unified communications.

- In total 54.32% perform load tests in their VDI/SBC environment which is an 18.20% increase compared to 2018.

- In 2018 the biggest VDI/SBC challenges are complexity, the migration to public cloud, and costs. User experience and streamline management between VDI/SBC and PC is also considered challenging. Storage costs and licensing is less of a challenge in 2018.

- In 2019 around 8.7% of the participants are switching from SBC to VDI, 10.80% are considering Windows 10 Multi user via Windows Virtual Desktop (WVD).

- 27.82% of the participants are either already using or plan on changing to public cloud Desktop as a Service / Remote Application as a Service solutions which is a decrease of 7% compared to 2018.

- Remote application and Desktop as a Service provided by a service provider using Citrix, Microsoft or VMware solutions are being considered by 23.36% of the participants which is an increase of 7.36% compared to 2018. Citrix Cloud will be introduced or is being used by 15.99% which is a decrease of 2.17% compared to 2018.

- The four biggest challenges in adopting public cloud Desktop as a Service (DaaS) and application remoting as a service are cost (23.20%), trust (11.51%), creating a positive business case (11.34%) and performance (11.34%). Legal and regulation with 10.65% also is a challenge.

- Pay as you go (14.4%), Disaster Recovery (14.4%), Cloud first strategy (13.63%) and reduce risk and complexity (12.67%) are the four main reasons why participants are interested in DaaS. People who are not interested in DaaS is declining rapidly to 3.65% in 2019.

- Unsurprisingly, most of the respondents (12.71%) are busy digging into Windows 10 and migrating their current solution to Windows 10. The second-most important initiative for 2019/2020 is Office 365 at 9.37% followed by DaaS with 9.24%.

Introduction

Welcome to the “VDI Like a Pro” - End User Computing – State of the Union 2019 edition.
We believe the results presented in this report will provide valuable insights in real-world deployments, configuration, and usage of end-user computing (EUC) solutions such as VDI and SBC, both on-premises and in public clouds. They will also provide a great perspective on key end-user computing trends for the forthcoming years, which will help you with planning and creating your EUC roadmap.

Topics in the survey will cover Virtual Desktop Infrastructure (VDI), Desktop as a Service (DaaS), public cloud, security, devices, Server Based Computing (SBC), storage, hypervisors, GPUs, and the key EUC initiatives for 2020. The goal of the survey is to get a clear view on how the industry is changing and to support all involved with valuable, independent, and unbiased research results based on actual and objective customer data.

Over 580 people supported the survey and, with support from the EUC community, the results are freely available to everyone. This is truly a great achievement and community effort.

About VDI Like a Pro

Independent research organization VDI Like a PRO started the State of the Union Survey in 2013, with the goal to provide an annual insider view of the End User Computing (EUC) market.
VDI Like a Pro (www.vdilikeapro.com) is an initiative by Ruben Spruijt, Sr. Technologist at Nutanix and former CTO at Frame, Mark Plettenberg, Senior Product manager at Login VSI and Christiaan Brinkhoff Cloud Architect and Technology Evangelist at Microsoft.

With most of the questions repeated annually, the survey not only gathers data about the current status of the industry but also discovers changes and trends. This year more than 580 respondents participated in the survey, making this research initiative one of the largest on the EUC market currently. The survey closed on 28/5/2019.

The results of the survey are reported in this whitepaper which is available to all at www.vdilikeapro.com. The content from this survey will also be presented at leading industry events such as Microsoft Ignite, VMWorld, ExpertsLive, Citrix Synergy, NVIDIA GTC, E2EVC, and more.

If you want to share information from the survey or participate in the EUC community, feel free to contact Christiaan, Mark or Ruben.

Made possible by:

Login VSI

Login VSI (www.loginvsi.com) is the industry standard in synthetic load testing and active monitoring for SBC/VDI and DaaS environments (infrastructure and applications). The software of Login VSI is used by enterprises with centralized desktop environments and/or business-critical applications running in VDI, and by all major IT vendors that offer infrastructure solutions for VDI. Login VSI has paid for the use of the survey tool ($1200, per year).

Teamwork

A community project cannot be successful without inspiring individuals and dynamic companies. Here are some that made this possible:

- Jack Madden, for announcing and providing the first review of the survey at BrianMadden.com
- Login Consultants & PQR for running earlier surveys as ProjectVRC
- Login VSI, Atlantis Computing and FRAME for running earlier surveys as TeamVRC
- The Login VSI marketing team for their support
- Login VSI and Nutanix for support of this year's survey
- Many other community friends on LinkedIn and Twitter

Team and contact

All information about VDI Like a Pro can be found at www.vdilikeapro.com. We try to provide accurate, concise, and practical information. We appreciate any feedback. If you have any comments, corrections, or suggestions for improvements of this document, then we want to hear from you! Please send an email to Mark Plettenberg (m.plettenberg@loginvsi.com), Christiaan Brinkhoff (mail@christiaanbrinkhoff.com) or Ruben Spruijt (ruben@rspruijt.com) and include in your message: the title of the document, the version number, and the page that you refer to.

Leaderboard

The State of VDI survey is executed by:

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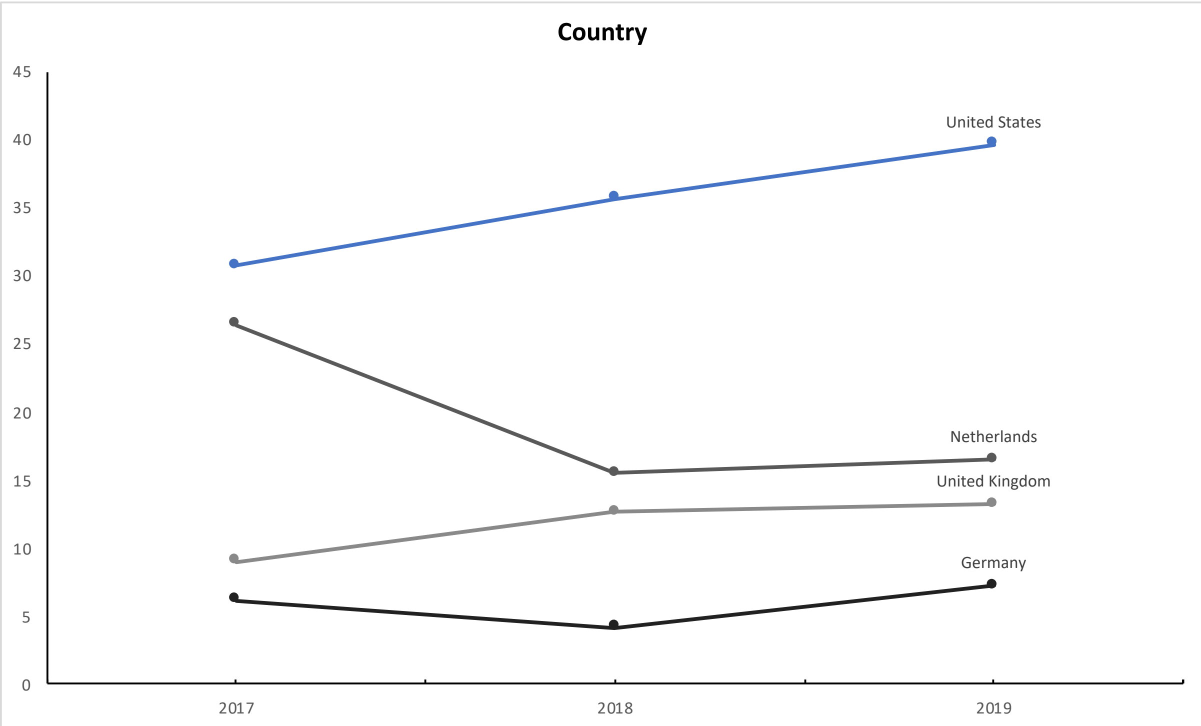
Participant information

Over 580 people supported the survey and on average, completed the survey in less than 12 minutes. Participants from almost 50 different countries around the globe took part in the survey, with a majority in North America. Approximately 39% of respondents were from North America and 60% from EMEA. The response is measured based on client IP address.

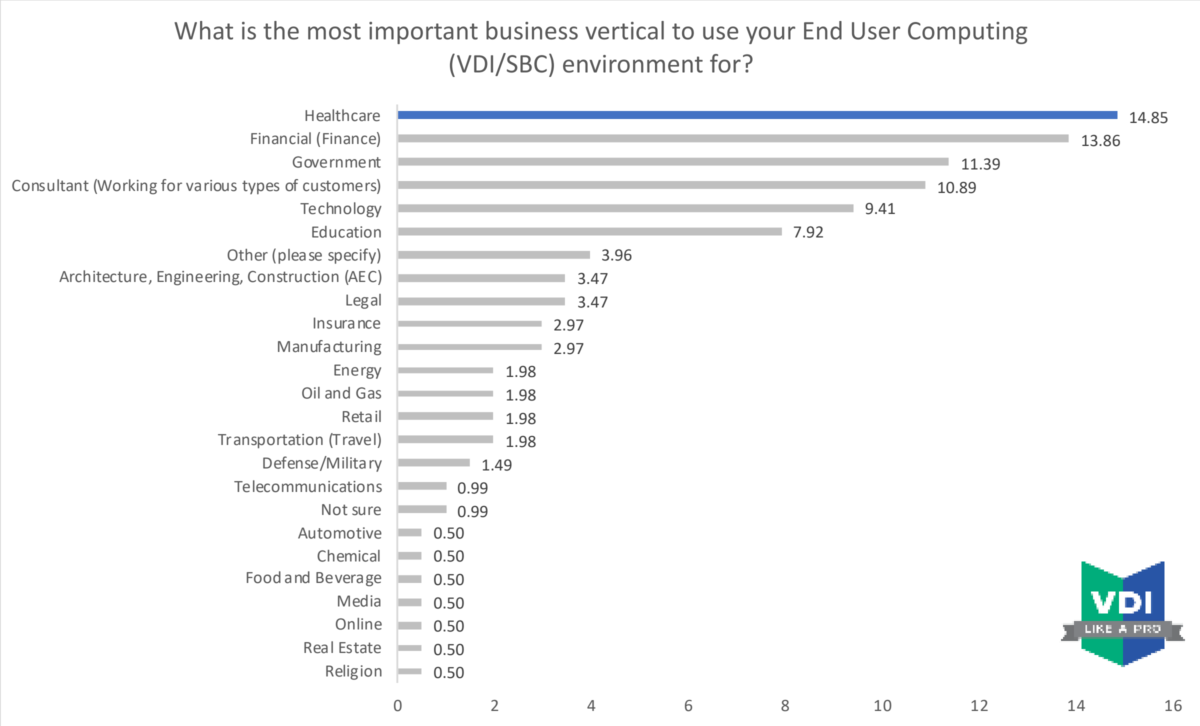
North America has the largest response distribution and is clearly the largest region by far. There is a relatively high number of participants from the Netherlands (16.4%), primarily because VDI Like a Pro and their team members are well-connected with end-users, partners, and vendors in this region. We could have said that the Dutch are leading the way in the EUC space with their high adoption rate, awesome customer deployments, and super engaged community consisting of leading MVPs, CTPs, NTCs and vExperts -- but that's just bragging about the Dutch and isn't based on survey results ☺.

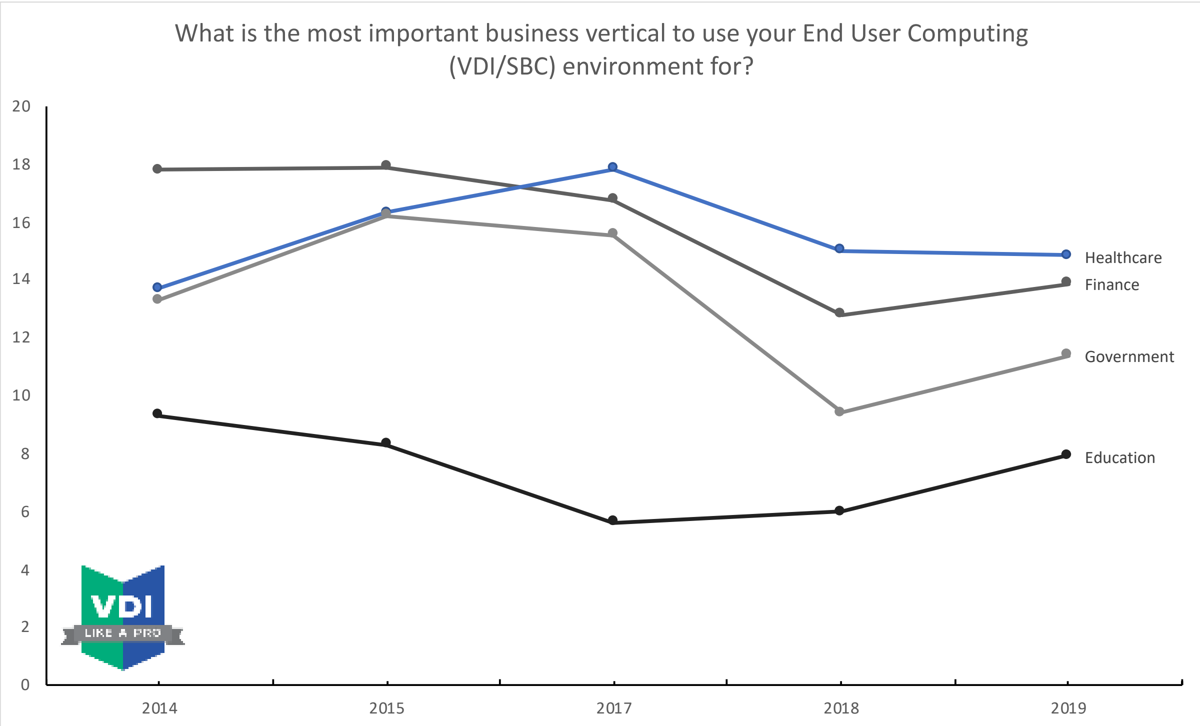

Response Distribution
Countries
Responses
NL
GB
DE
CH
DK
RU
BE
CZ
RO
World | US | Canada | Europe


Country
45
40
35
30
25
20
15
10
5
0
United States
Netherlands
United Kingdom
Germany
2017
2018
2019

What is the most important business vertical to use your End User Computing (VDI/SBC) environment for?

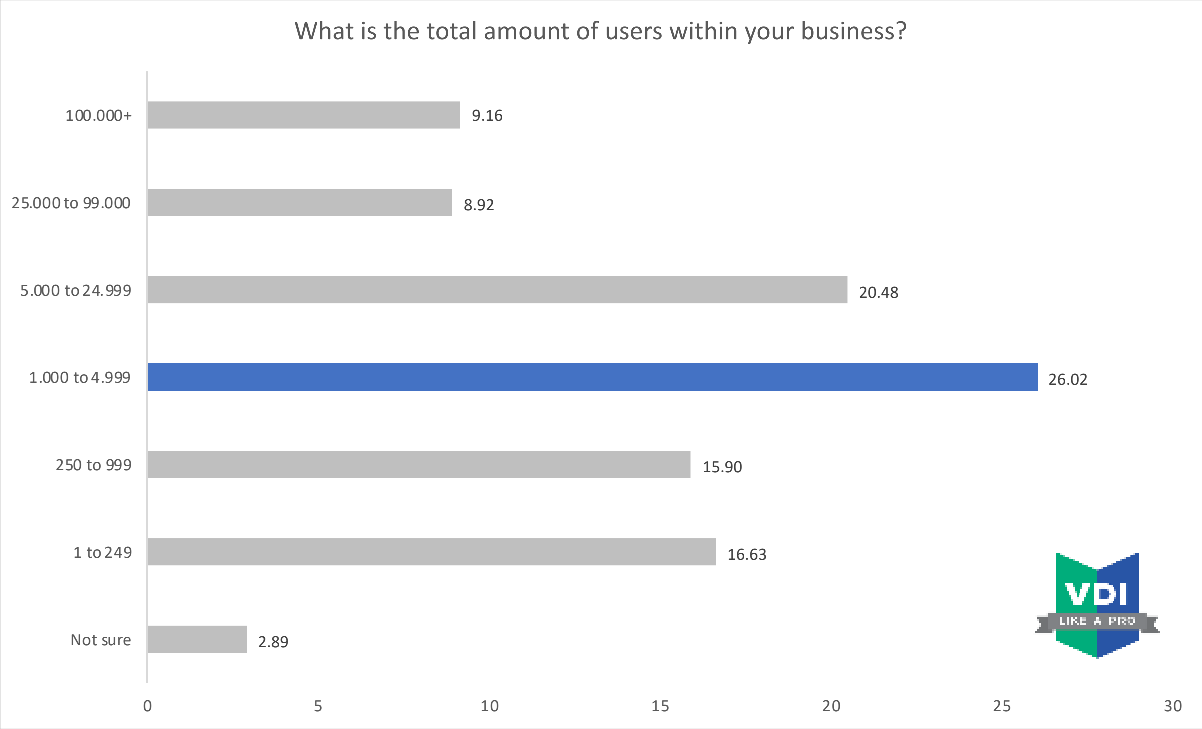
With 14.85% Healthcare continues to be the largest business vertical market for on-premises VDI and Server Based Computing solutions.
Finance with 13.86% is 2nd and Government with 11.39% is 3rd largest vertical.
Usage of VDI and Server Based Computing in Finance, Government and Education is increased in 2019 while Healthcare was declining a little bit.

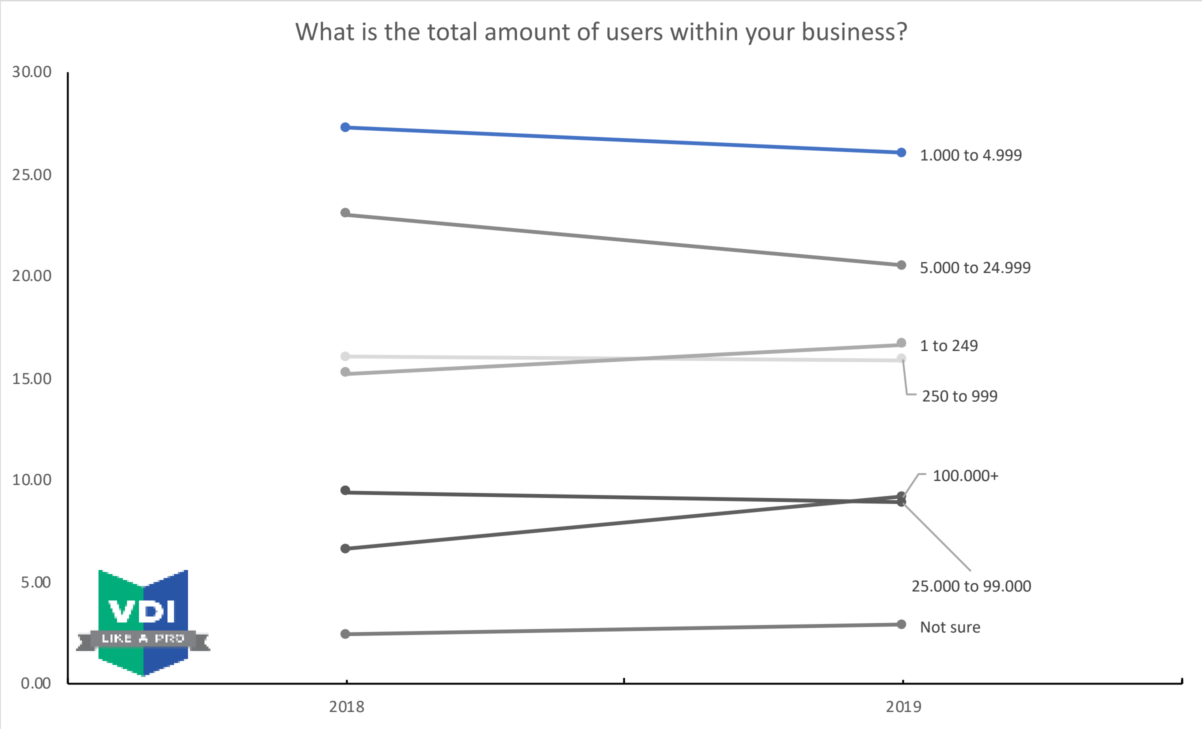




What is the total amount of users within your business?

In 2018, the survey respondents working in an organization with 100,000+ users totaled 6.61%. This year, the percentage totals 9.16%. While the percentage has increased, this does not necessarily mean that their VDI/SBC environments are the same size. More information will be provided later in this document.



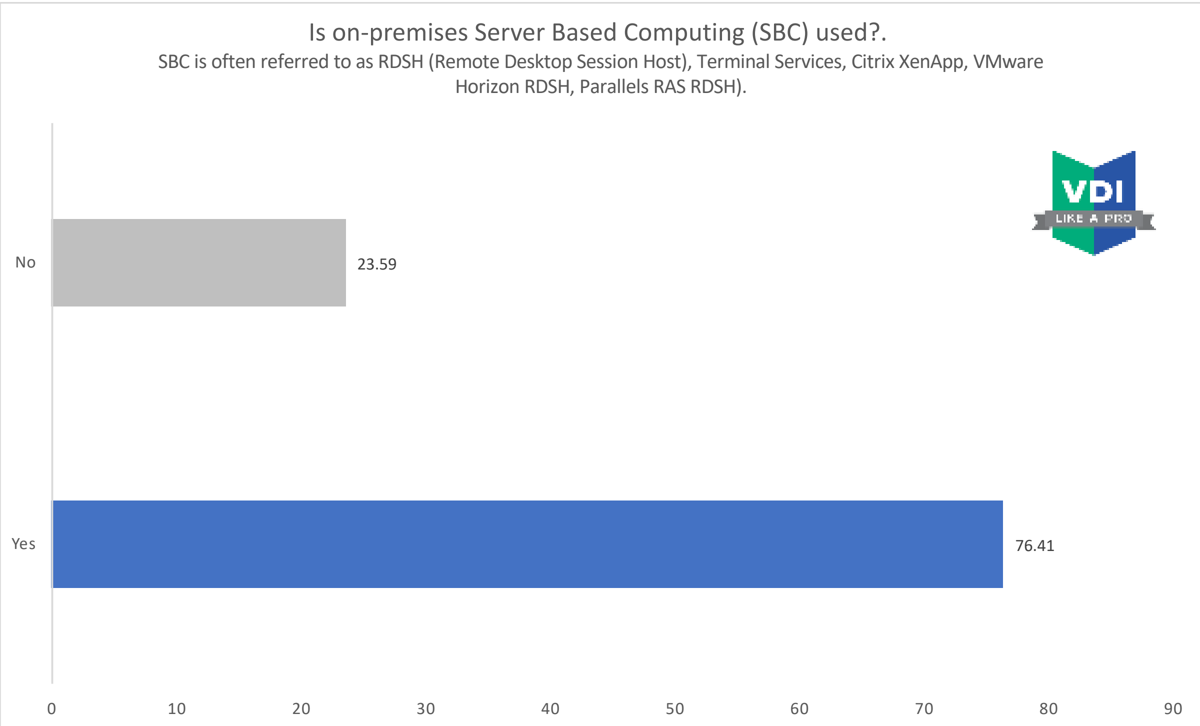


Server Based Computing (SBC) related questions

Server Based Computing (SBC) is often referred to as Remote Desktop Session (RDS), RD session hosting, XenApp, or Terminal Services. SBC continues to be a popular choice for delivering published desktops or published applications into an organization. Although vendor marketing has focused more on VDI over the last few years and customer adoption in VDI compared to SBC is notably increasing -- SBC remains a scalable and reliable option for the delivery of (classic) Windows applications and desktop via on-premises and Desktop as a Service (DaaS) public cloud infrastructure. A small decrease in Yes from 78.12 in 2017 to 78,8 in 2018 and 76.41 this year.

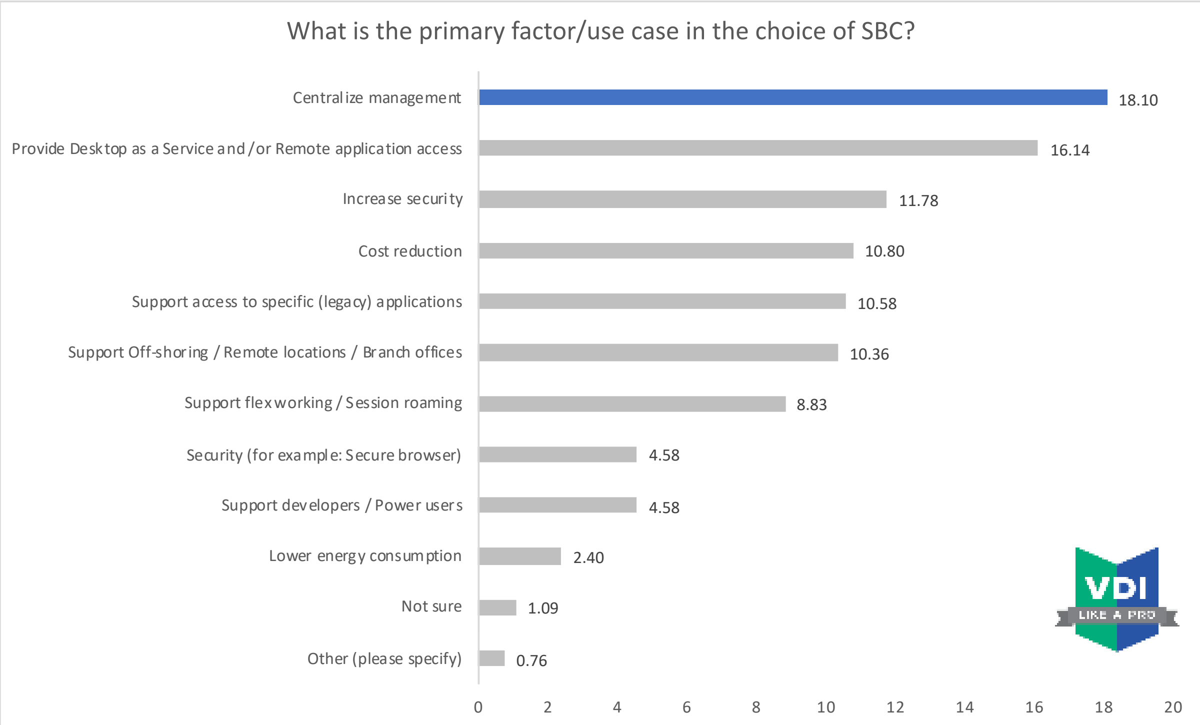
Is on-premises Server Based Computing (SBC) used often?

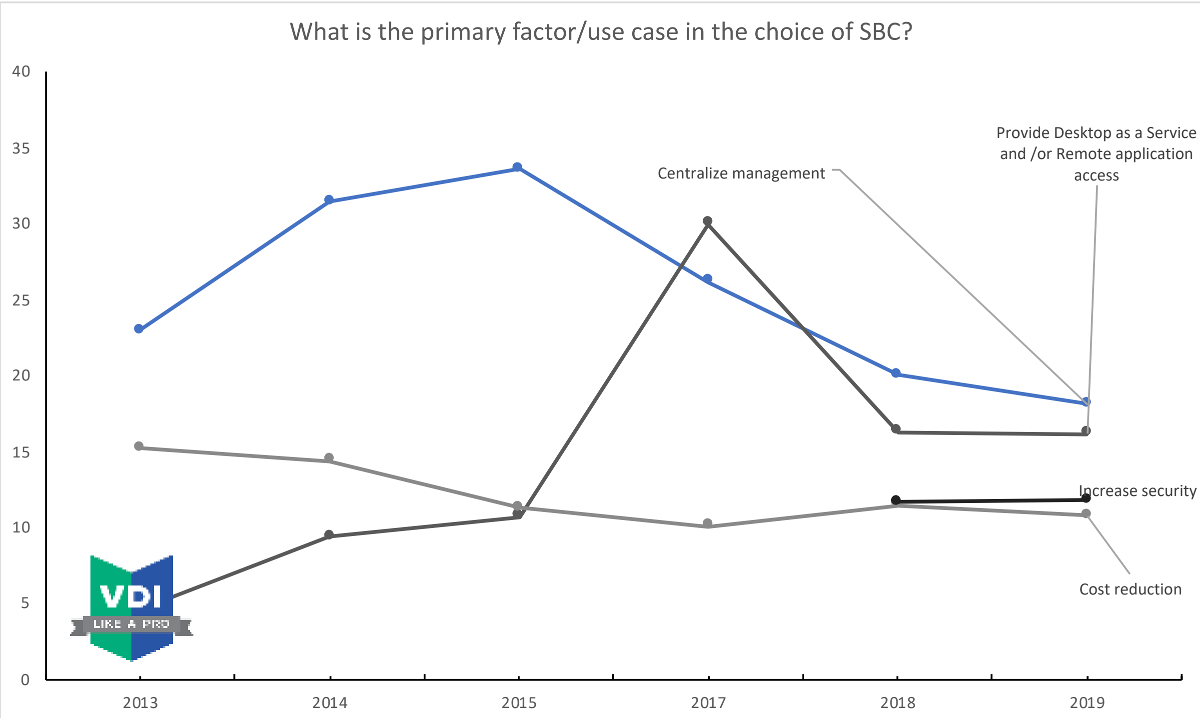
There were slightly more SBC environments this year compared to 2018 but, overall, the trend has been stable. We expect to see more customers using application remoting and more public cloud services such as Desktop as a Service (DaaS) in 2019.



What is the primary factor/use case in the choice of SBC?

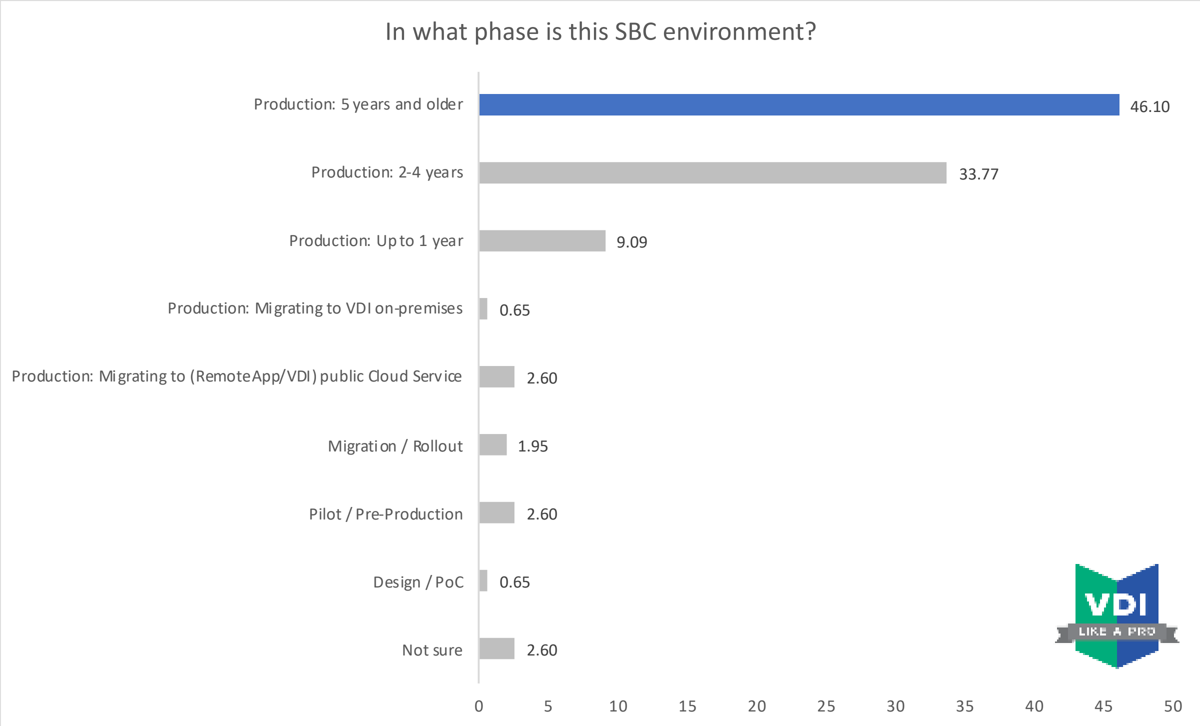
Centralized management, DaaS, and security are the primary reasons for SBC adoption, with cost reduction becoming an increasingly important factor as well. Support access to specific (legacy/classic) applications is gaining more interested compared to 2018's survey.

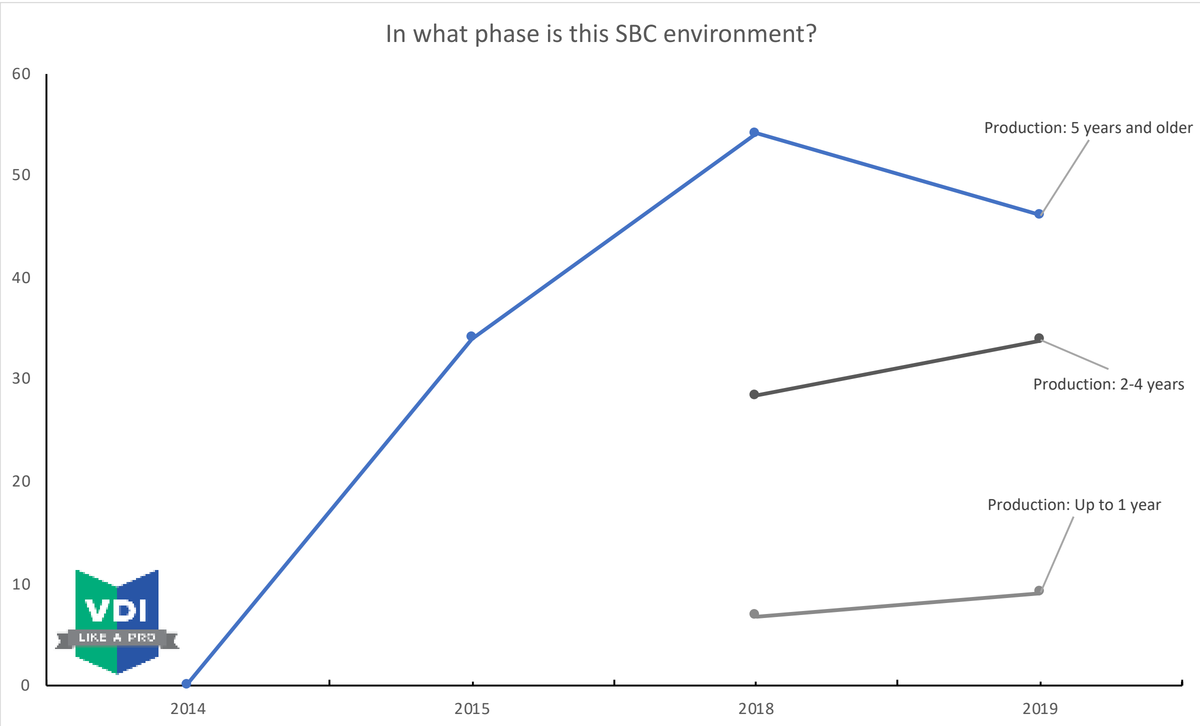




In what phase is this SBC environment?

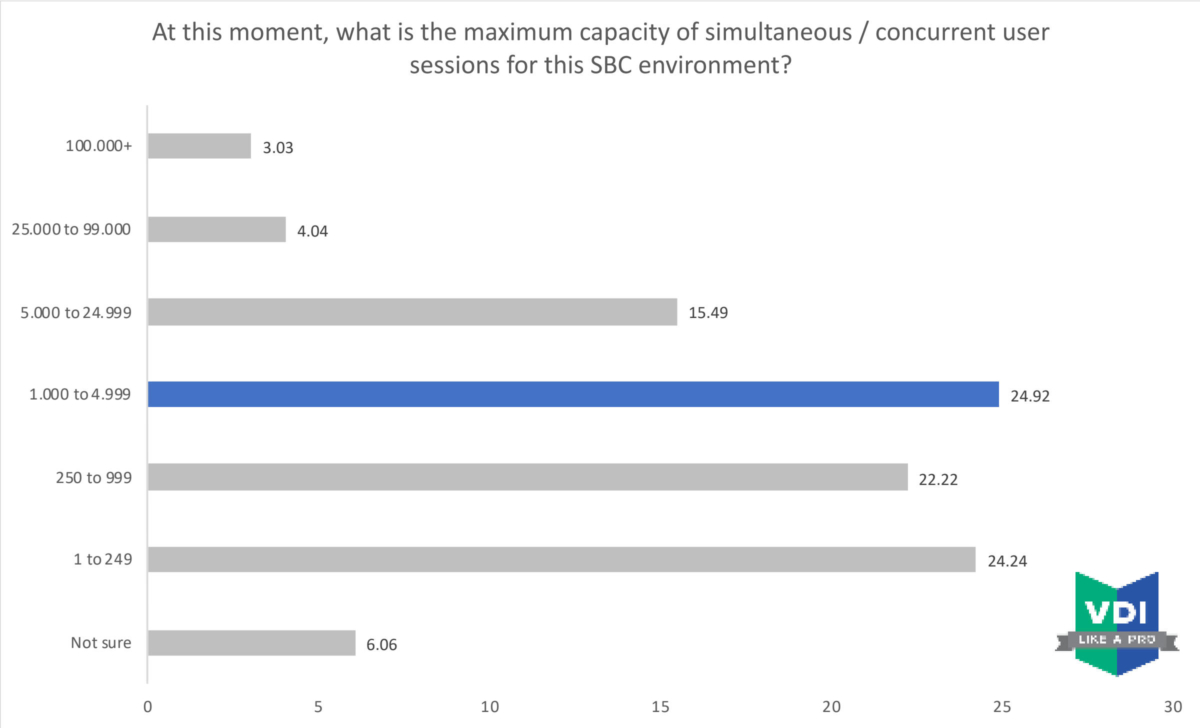
There is a clear increase in mature SBC environments running 2-4 years and 5+ years compared to the survey results of previous years. Newly designed SBC environments are declining from 0.81% in 2018 to 0.65% in 2019. Also, SBC pilot/pre-production and migration/rollout-related activities are declining -- the 2018 and 2019 results are nearly at zero. It is possible that more participants are updating their environments in small increments, rather than with large migrations.

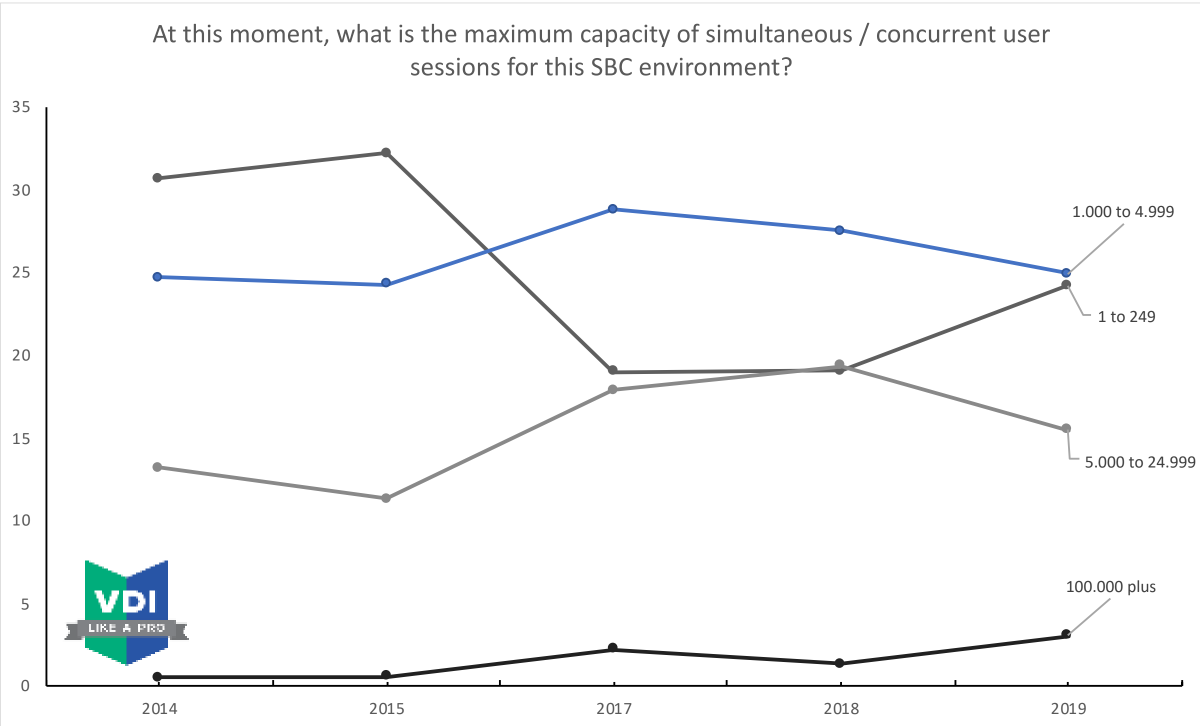




At this moment, what is the maximum capacity of simultaneous / concurrent user sessions for this SBC environment?

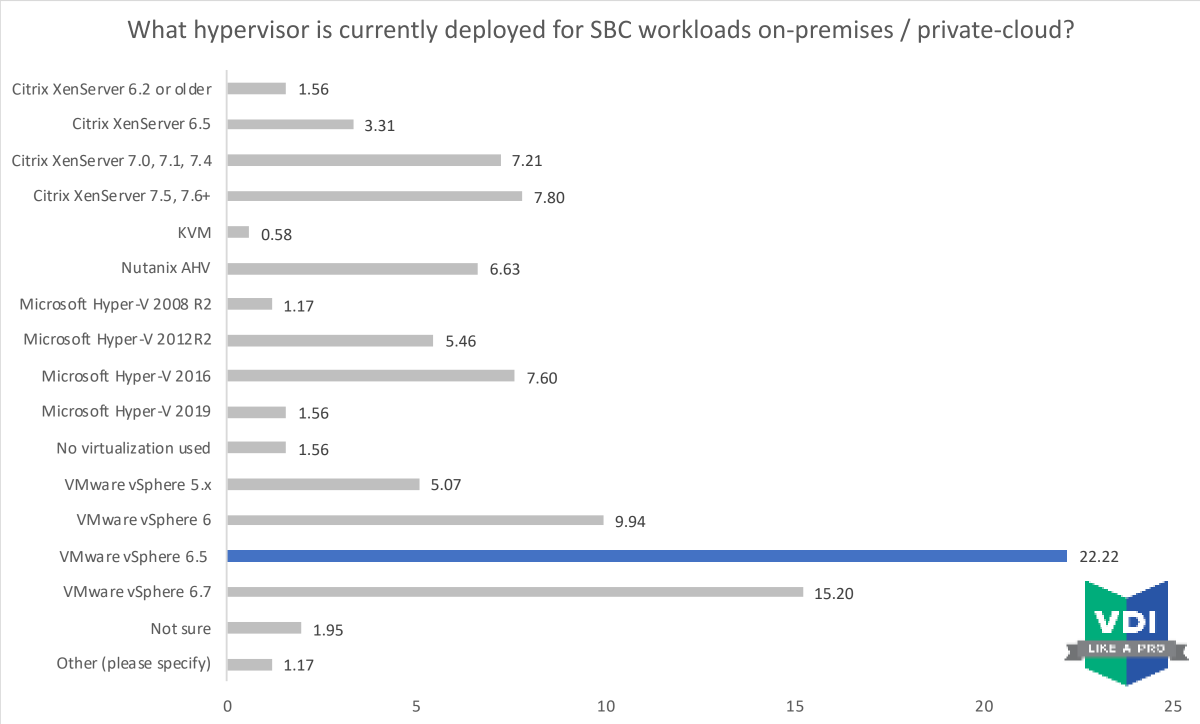
There are larger (100,000+ users) SBC environments in 2019 compared to 2018.
However, in medium-sized enterprises (5,000-24,999 users) we do see an decline of SBC usage. Customers are likely using VDI and/or DaaS instead of SBC while others have been moved to physical devices such as laptop, Ultrabook 'PCs' and mobile.
Interesting to see this he response on the survey question "will you introduce or change to new on-premises VDI/SBC broker vendor?" 25% are investigating options and seriously considering public cloud services while the transition to PCs is below 2%.

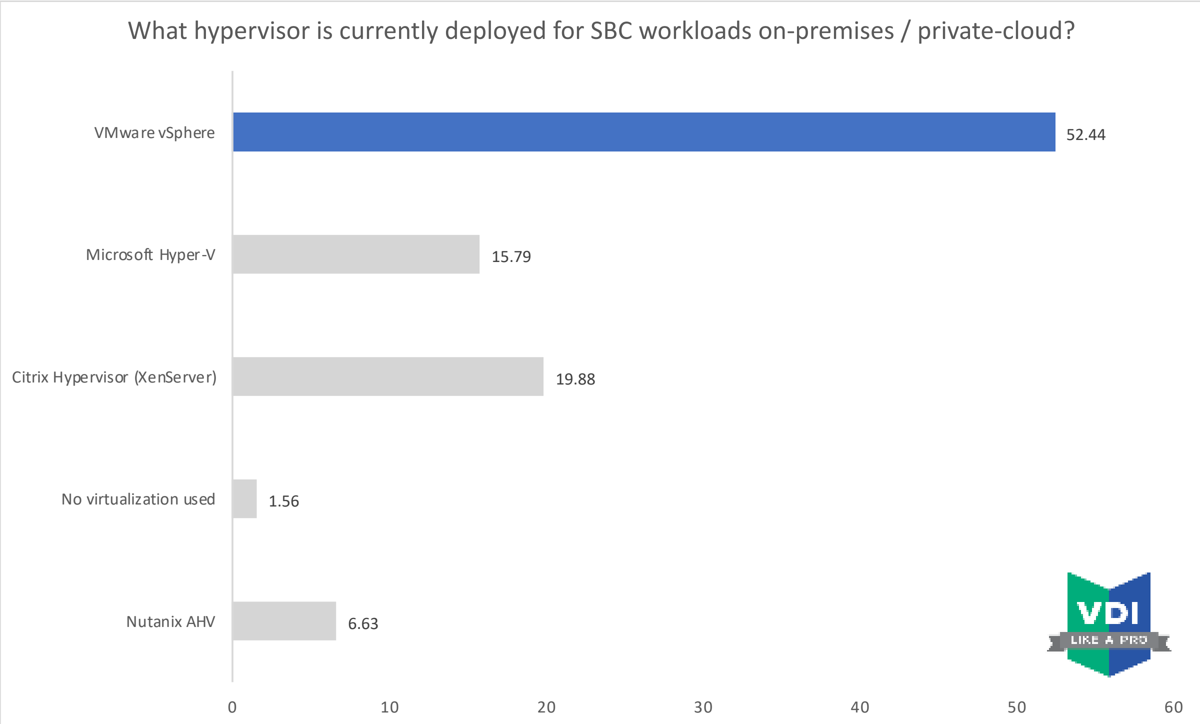


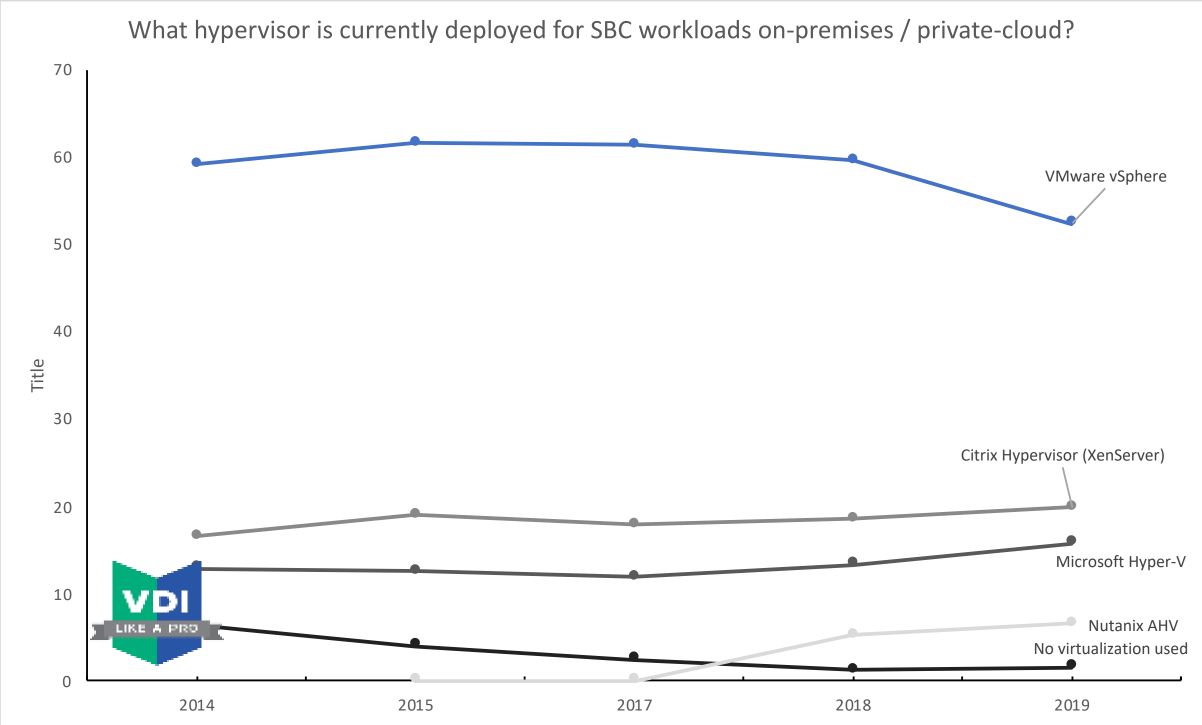


What hypervisor is currently deployed for on-premises SBC workloads?

VMware remains by far the largest vendor delivering virtual infrastructure for SBC, although the usage is slowly decreasing from 61% in 2017, 59% in 2018 to 52.4% in 2019. While VMware usage is decreasing, Citrix, Microsoft and Nutanix are increasing. Adoption of KVM (predominantly Nutanix) is growing from 1.49% in 2017 to 5.27% in 2018 to 7,21% in 2019. It's important to mention that, for the first time in this survey, multiple hypervisors could be selected. Selecting your hypervisor is a long-term commitment, organizations are updating their solutions but migration to another platform isn't happening overnight.

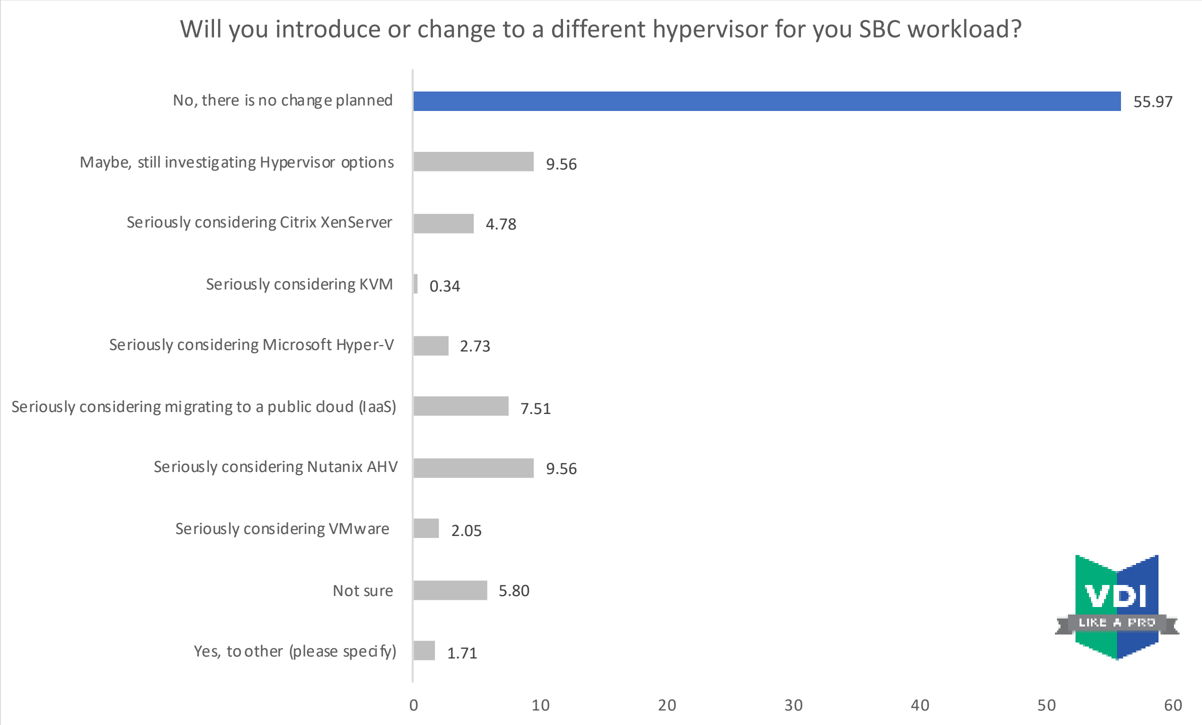


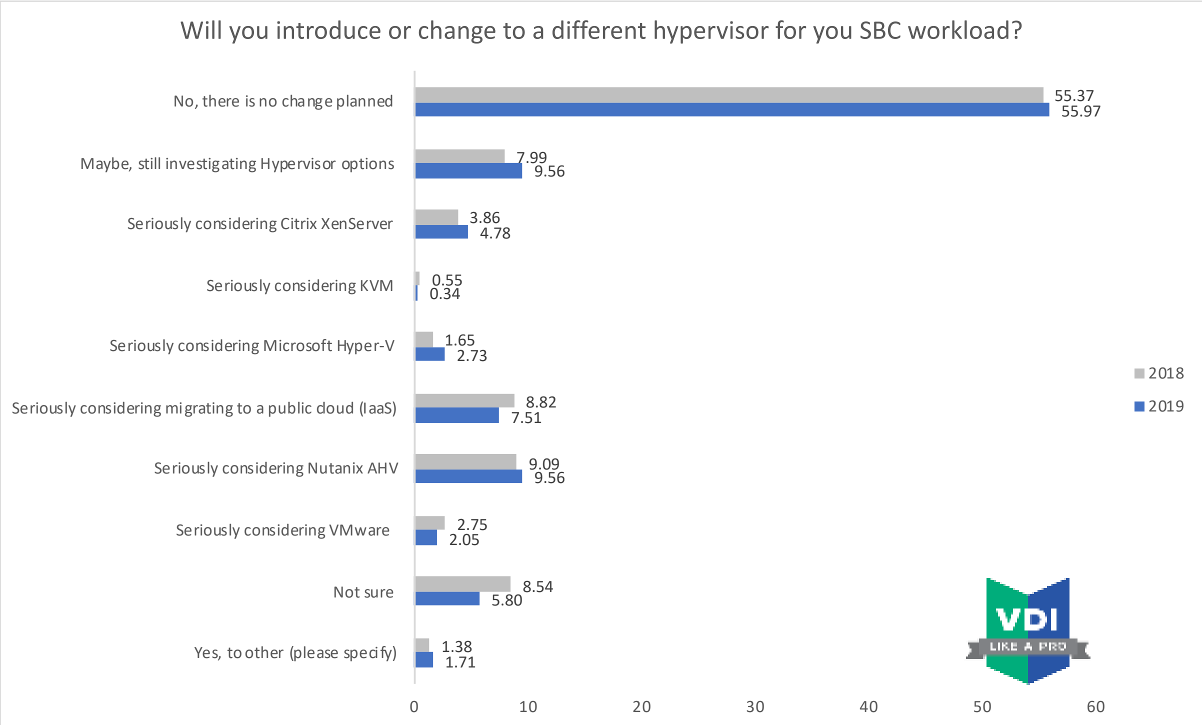



What hypervisor is currently deployed for SBC workloads on-premises / private-cloud?
70
60
50
40
30
20
10
0
Title
2014
2015
2017
2018
2019
VMware vSphere
Citrix Hypervisor (XenServer)
Microsoft Hyper-V
Nutanix AHV
No virtualization used
VDI
LIKE A PRO

Will you introduce or change to a different hypervisor for you SBC workload?

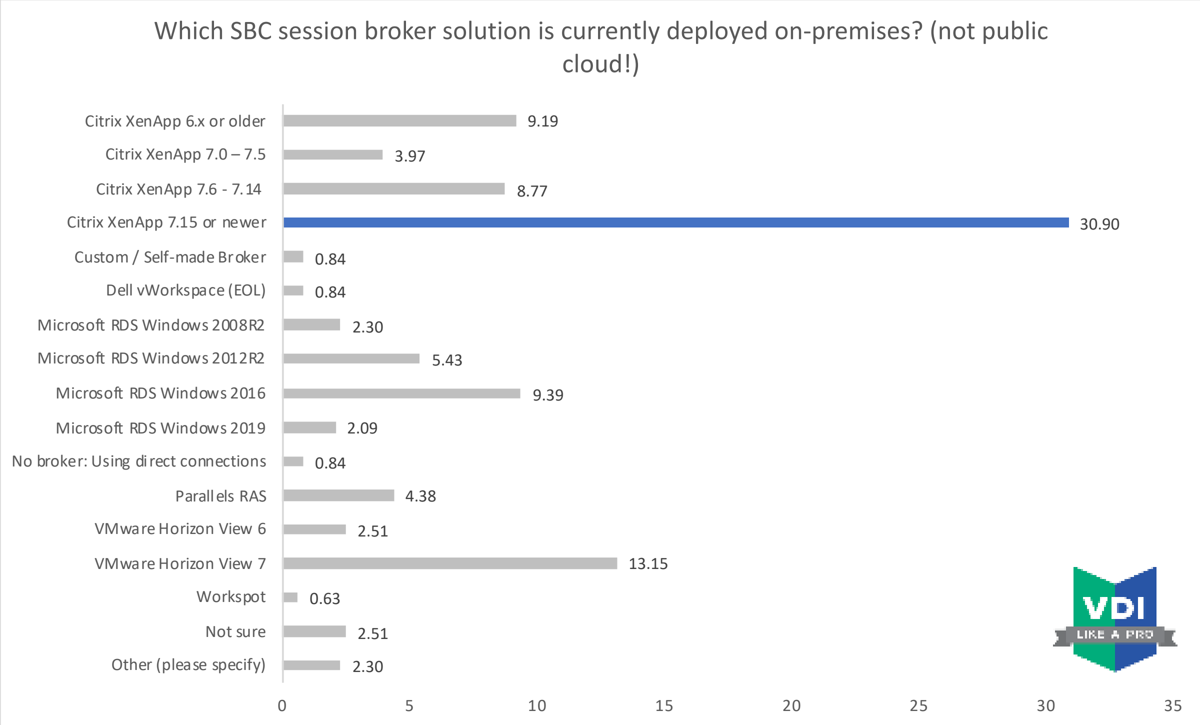
This year 55.9% of participants stated they didn't have any plans to change their hypervisor. 19.46% of the participants are seriously considering another hypervisor. 9.56% are considering options. Respondents seriously considering SBC to run in public cloud (IaaS) totaled 9,56%. Nutanix is being seriously considered as a new or additional hypervisor by 9.56%. Nutanix and Public cloud IaaS are both areas of growth for SBC and remote application as a service scenario.

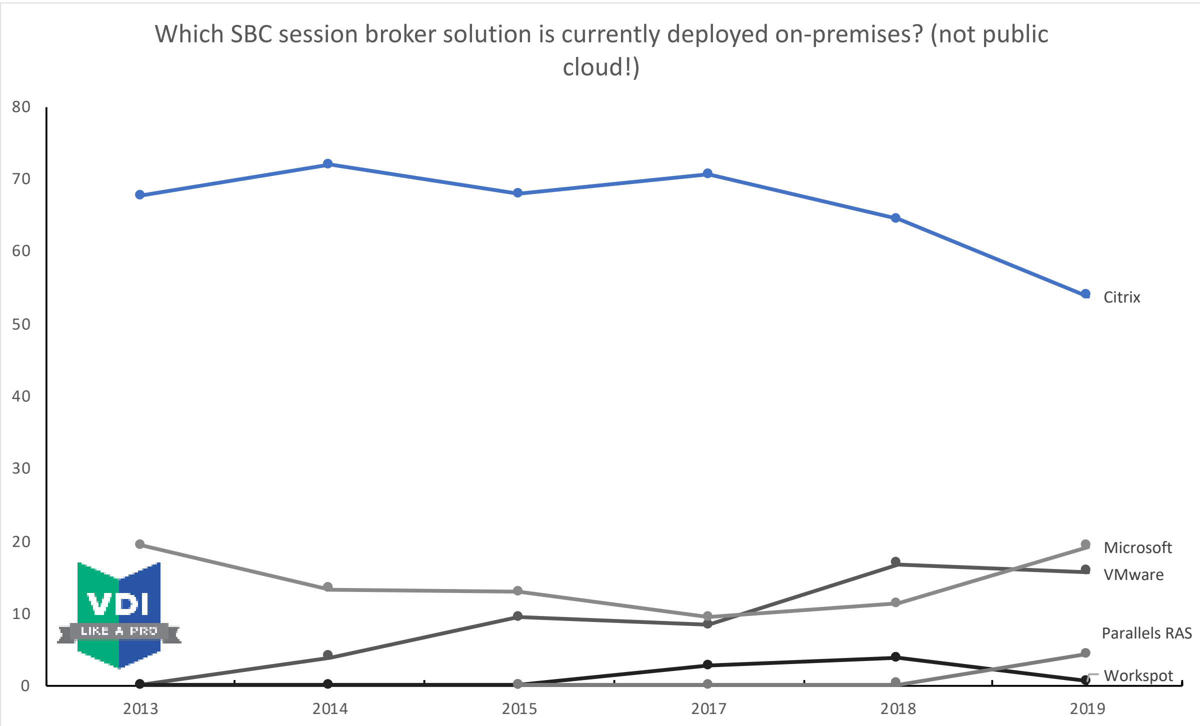




Which SBC session broker solution is currently deployed on-premises? (not public cloud!)

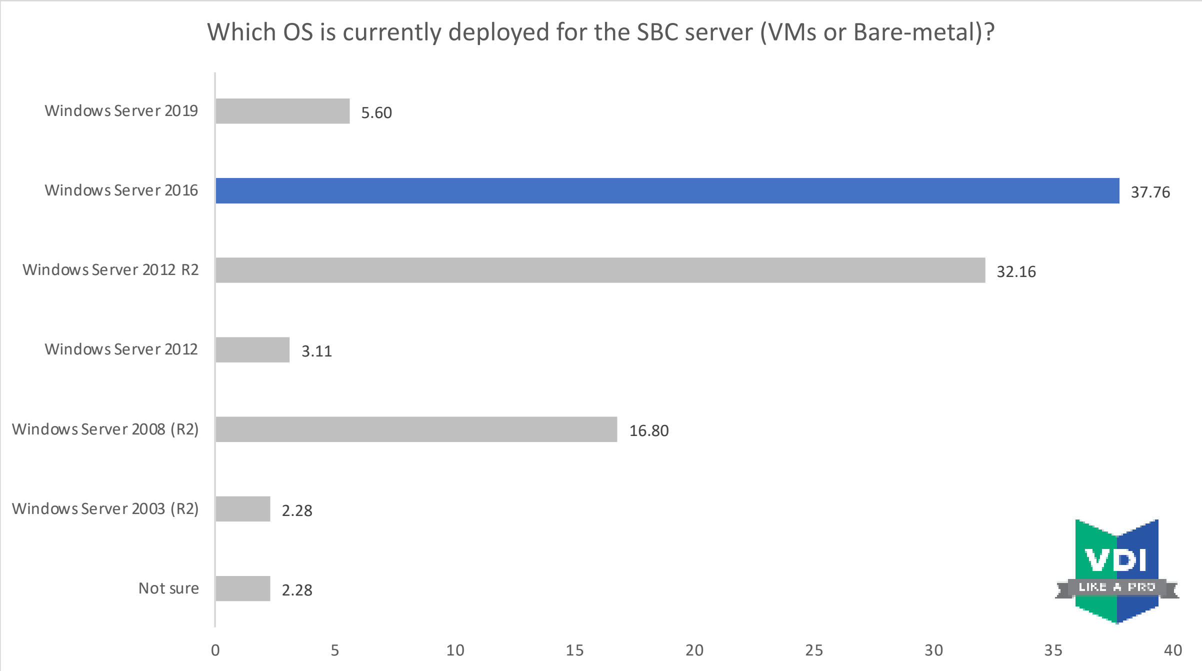
Within SBC, it's clear that Citrix is in the lead. However, there is a notable decline of Citrix usage since 2017. In 2017, more than 70% of respondents used Citrix while in 2019 drop down to 52%. Reason can be competition but also the transition to VDI/DaaS. VMware horizon has drastically increased from 8.3% in 2017 to 16.79% in 2018 and declined a bit to 15.66%. Microsoft-only RDSH environments are being used in 19.2% of the scenarios which is a 8% increase compared to 2018. Workspot usage declined from 3.74% to close to 0.63% while Parallels RAS increased from 0.18% in 2019 to 4.3% in 2019.

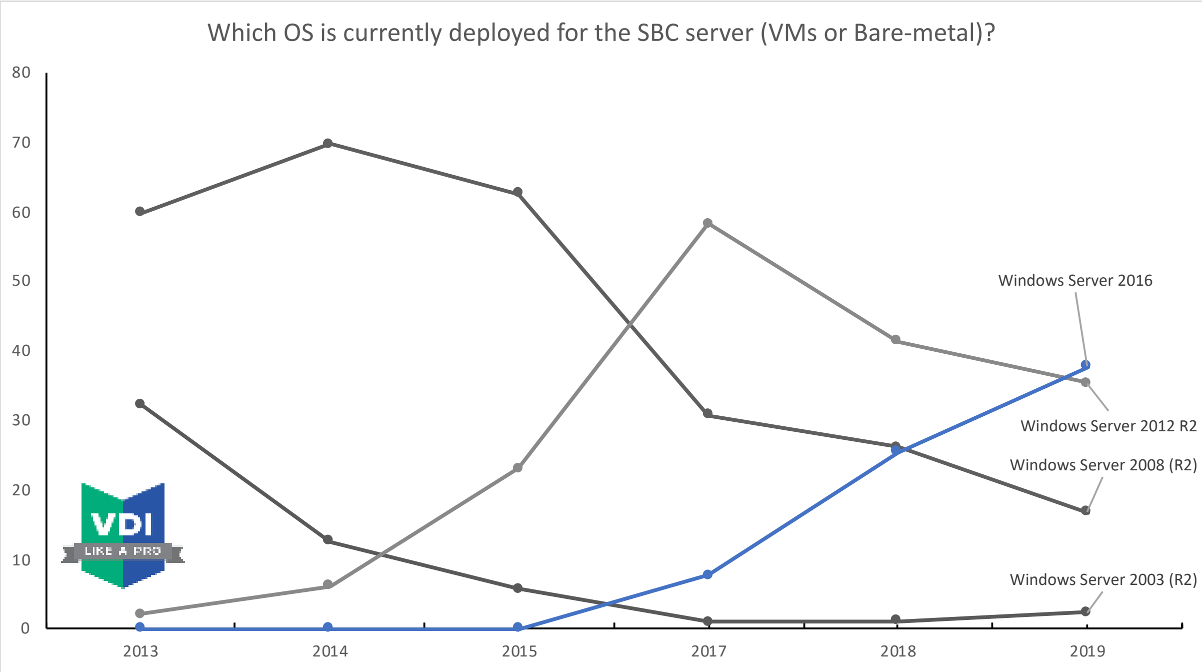




Which OS is currently deployed for the SBC (VMs or Bare metal)?

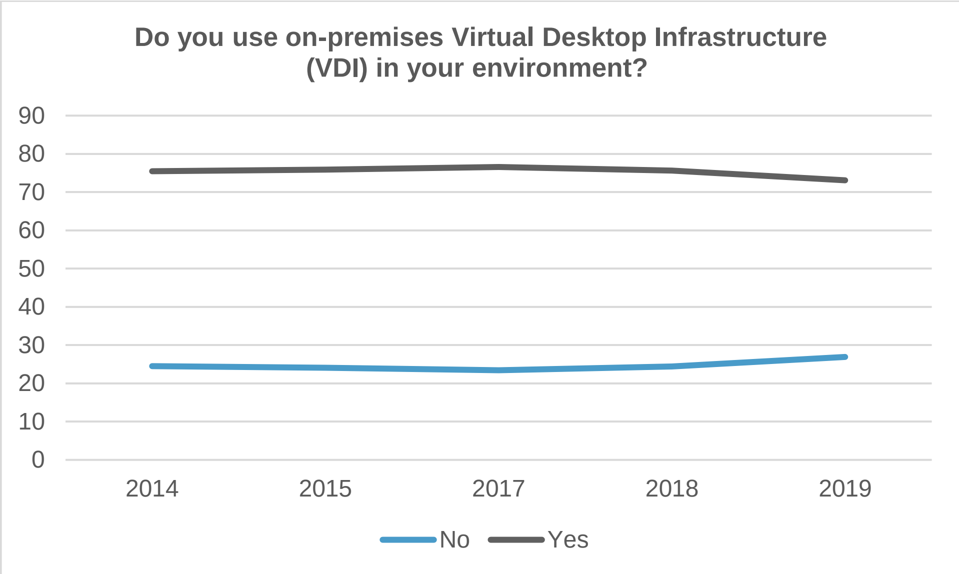
The usage of Windows Server 2016 in Server Based Computing is at 37.76% which is 12.4% increase compared to 2018. Server 2016 surpassed 2012R2 as we expected and wrote in the 2018 survey report. 32.1% of the participants are currently using Windows Server 2012R2 a 9.3% decline compared to 2018. Interestingly Server 2019 is used by 5.60% of the respondents. Server 2008(R2) usage in 2019 was 19.08% while in 2018 this was 26.09%.





Hosted Virtual Desktop Infrastructure (VDI) questions

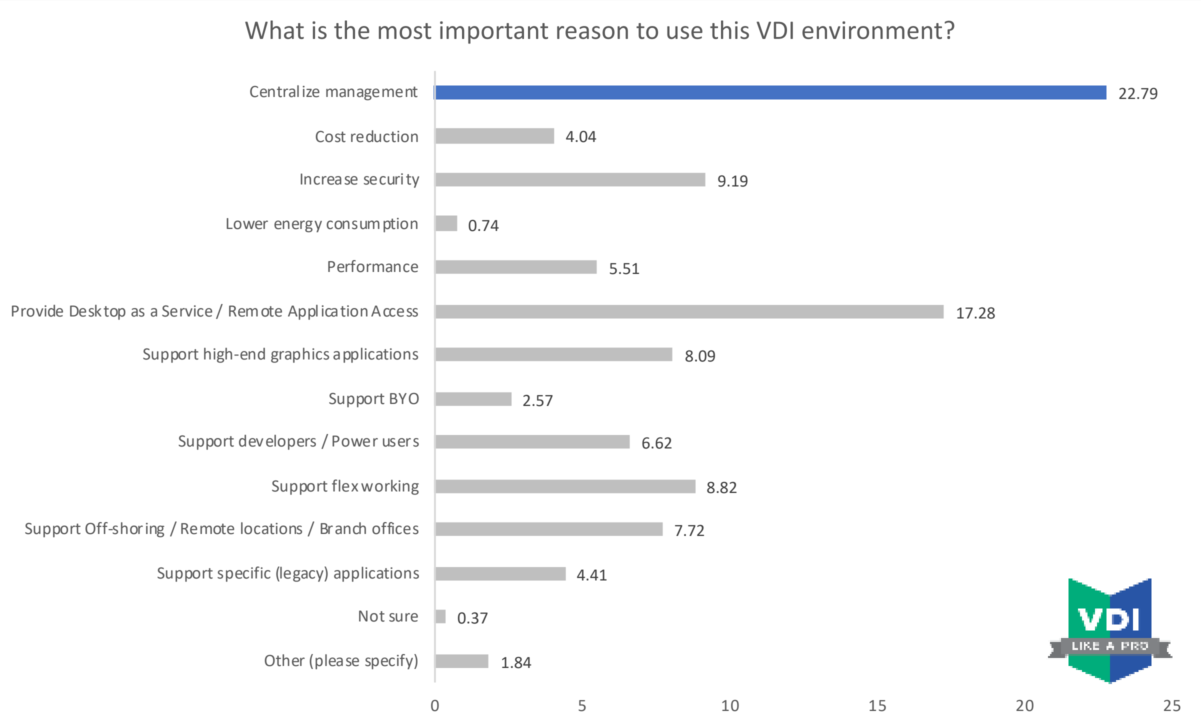
Designing, building, maintaining and using VDI in a cost-effective and less complex way is becoming much easier. Also, user experience is improving with better GPU availability and enhanced functionality in the latest versions of Citrix, Microsoft Nutanix Frame, and VMware remoting protocols. Manageability across virtual and physical environments is much simpler due to streamlined solutions as well as newer solutions like layering and Unified Endpoint Management (UEM).

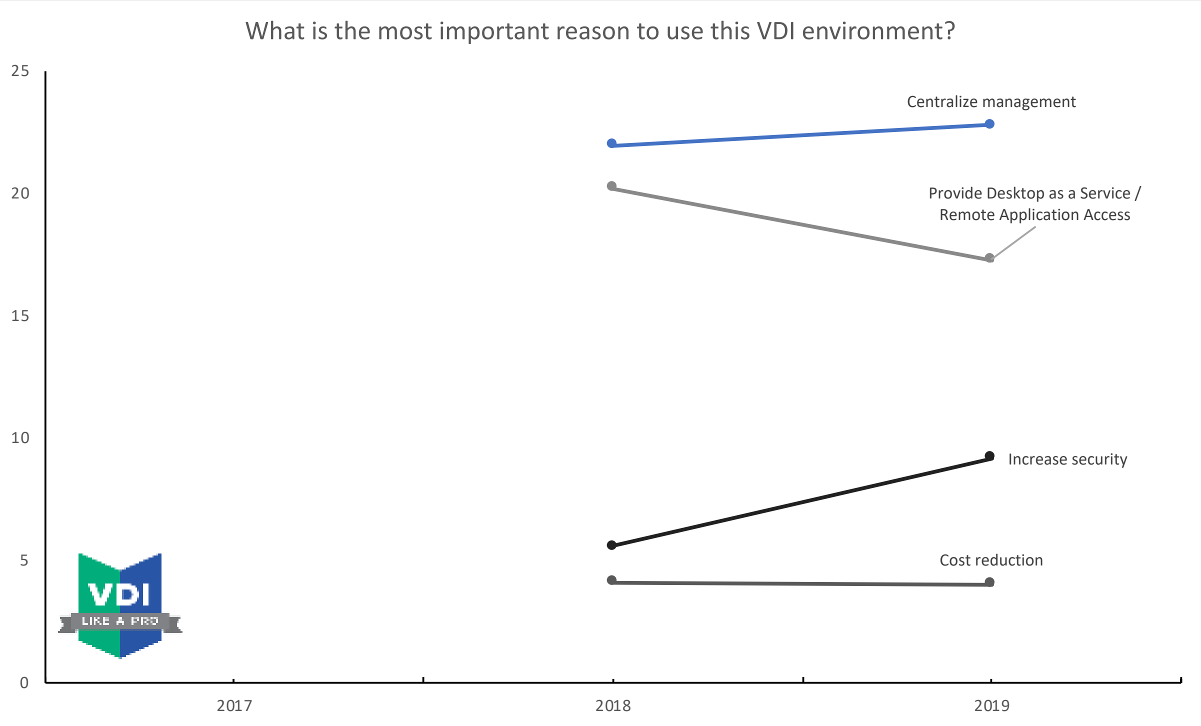


The performance impact with VDI is lower compared to SBC, which is interesting when you consider the Spectre and Meltdown security challenges. Finally, VDI is also gaining ground because of increased focus on security. VDI allows one to isolate users on the VM level -- no noisy or risky neighbors. Strong integration with network virtualization (such as Nutanix Flow or VMware NSX) and security solutions are all key drivers for many organizations to adopt VDI both in on-premises and in public cloud scenarios.

What is the most important reason to use this VDI environment?

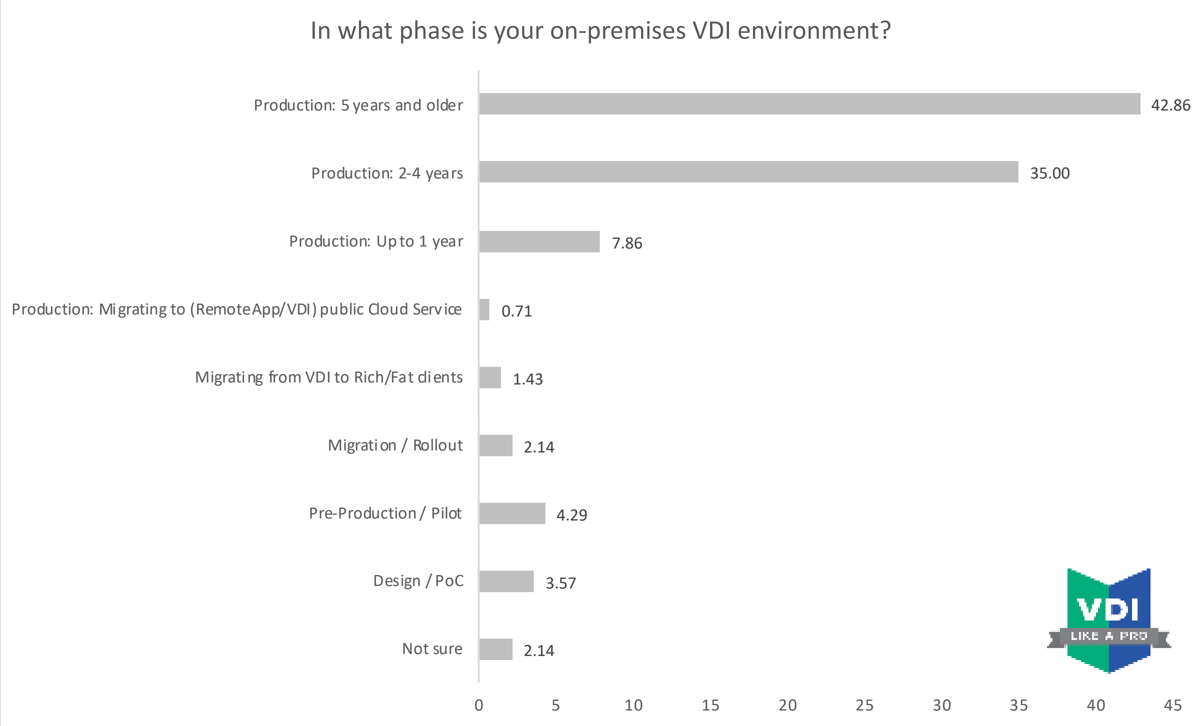
Centralized management (22.79%), DaaS with Remote Access (17.28%), and increase security (9.19%) are the most important reasons to use VDI.

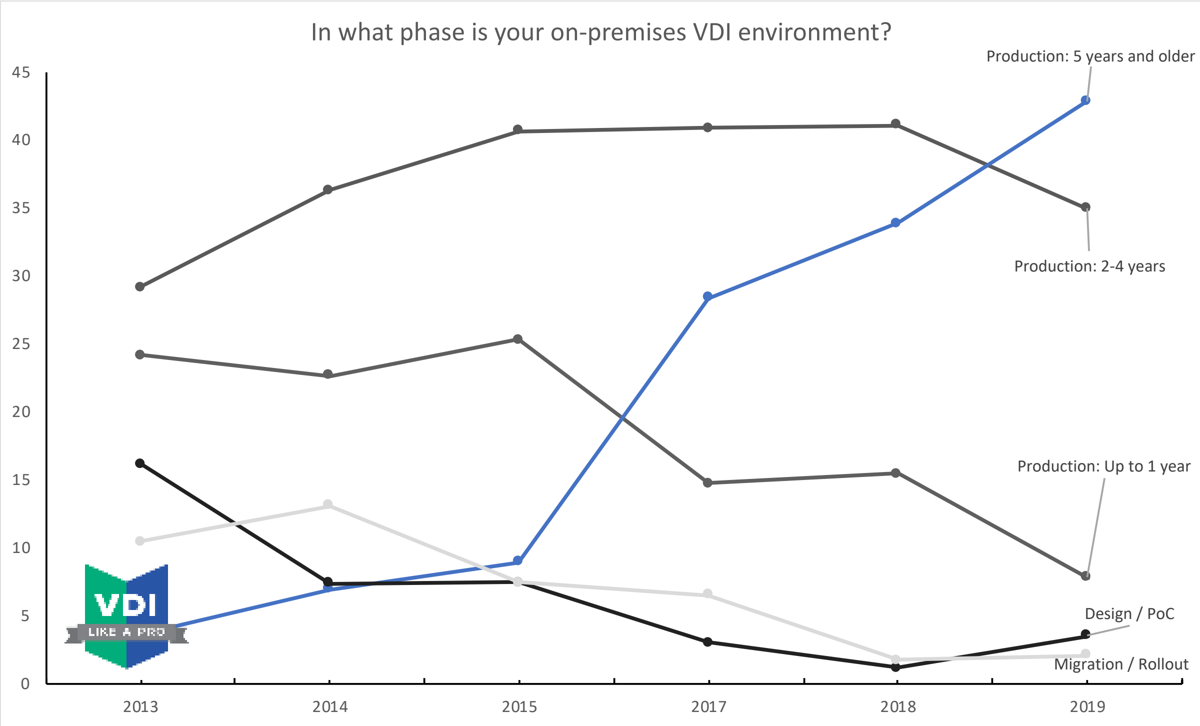




In what phase is your on-premises VDI environment?

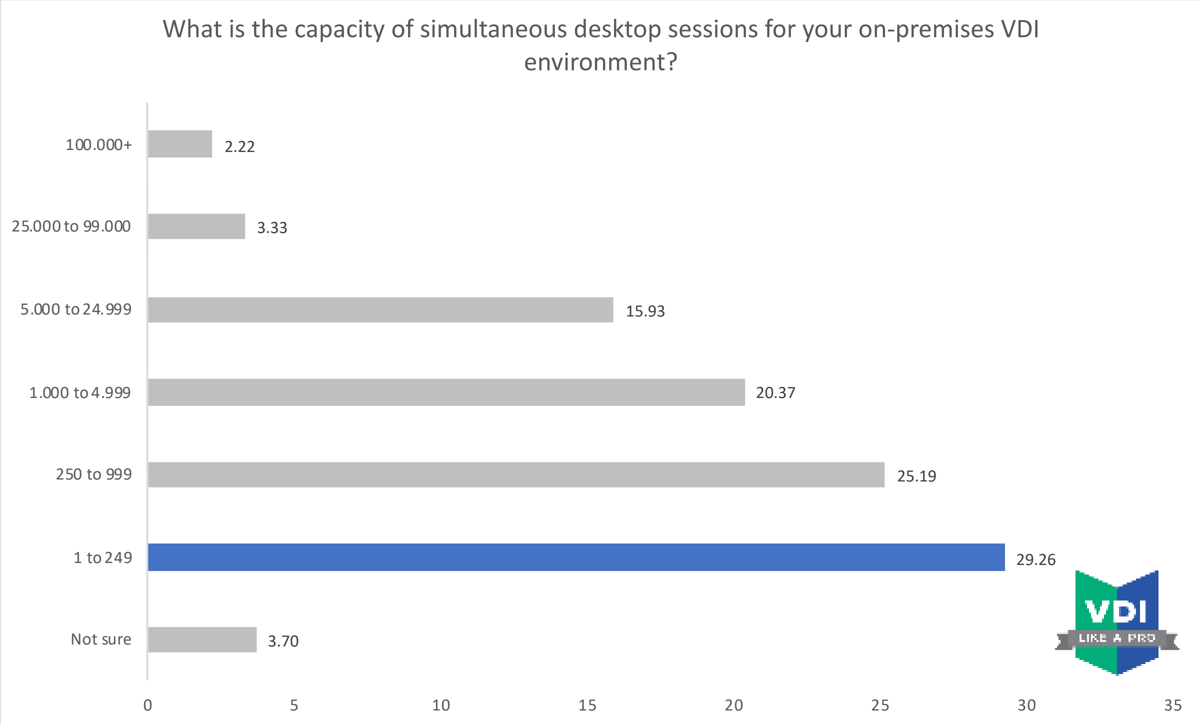
Compared to the survey results of past years, we clearly see more VDI environments running 5 years and older. Newly designed VDI environments declining from 3.07% in 2017 to 1.18% in 2018 and increased to 3.57% in 2019. Virtual Desktop Infrastructure pilot/pre-production and migration/rollout-related activities increased from 2.95% in 2018 to 4.29% in 2019.

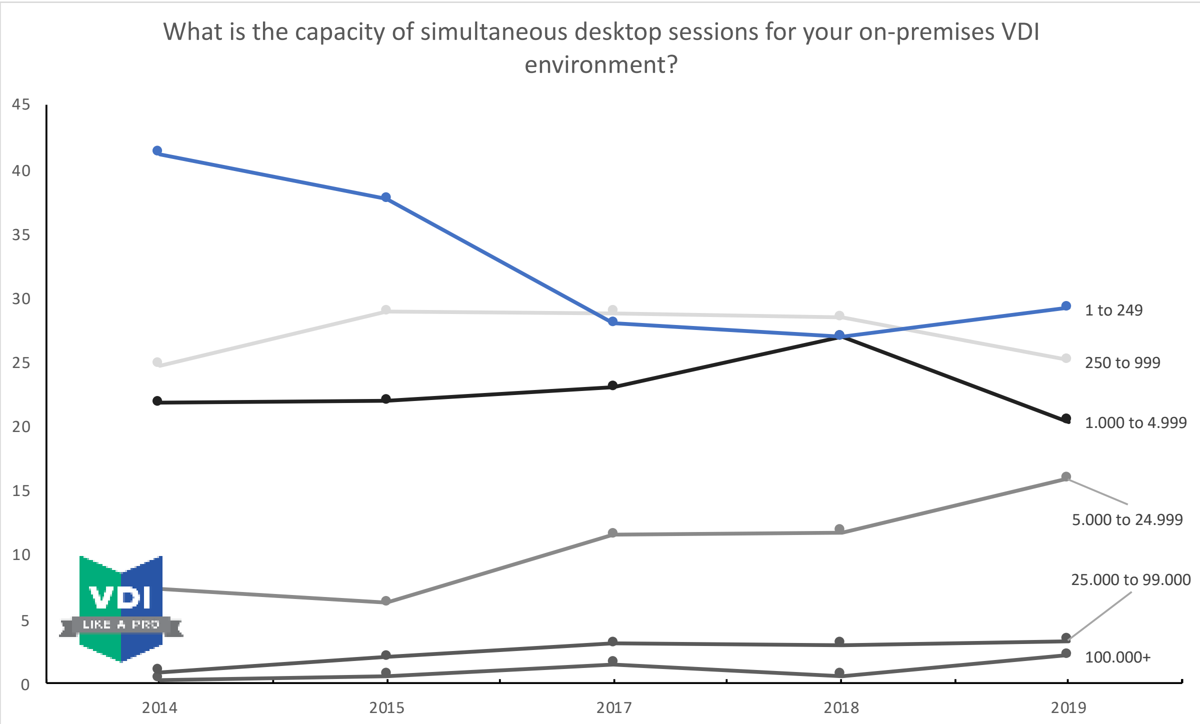




What is the capacity of your on-premises VDI environment?

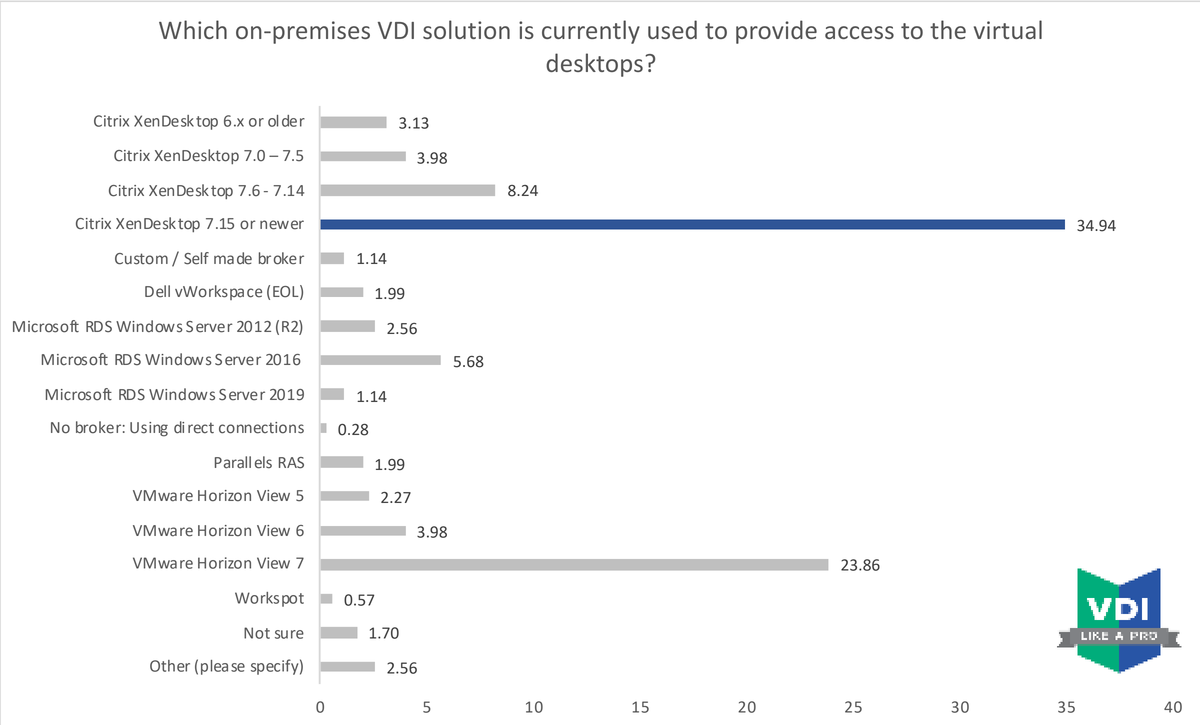
VDI environments with 100K concurrent users has been increased from 0.6% in 2018 to 2.2% in 2019. 5.000-24,999 CCU also increased from 11.71% in 2018 to 15.93% in 2019. 1.000-4.999 CCU usage declined from 27.3% in 2019 to 20.3% in 2019. Smaller VDI deployments increased slightly from 27.03% in 2018 to 29.2% in 2019.

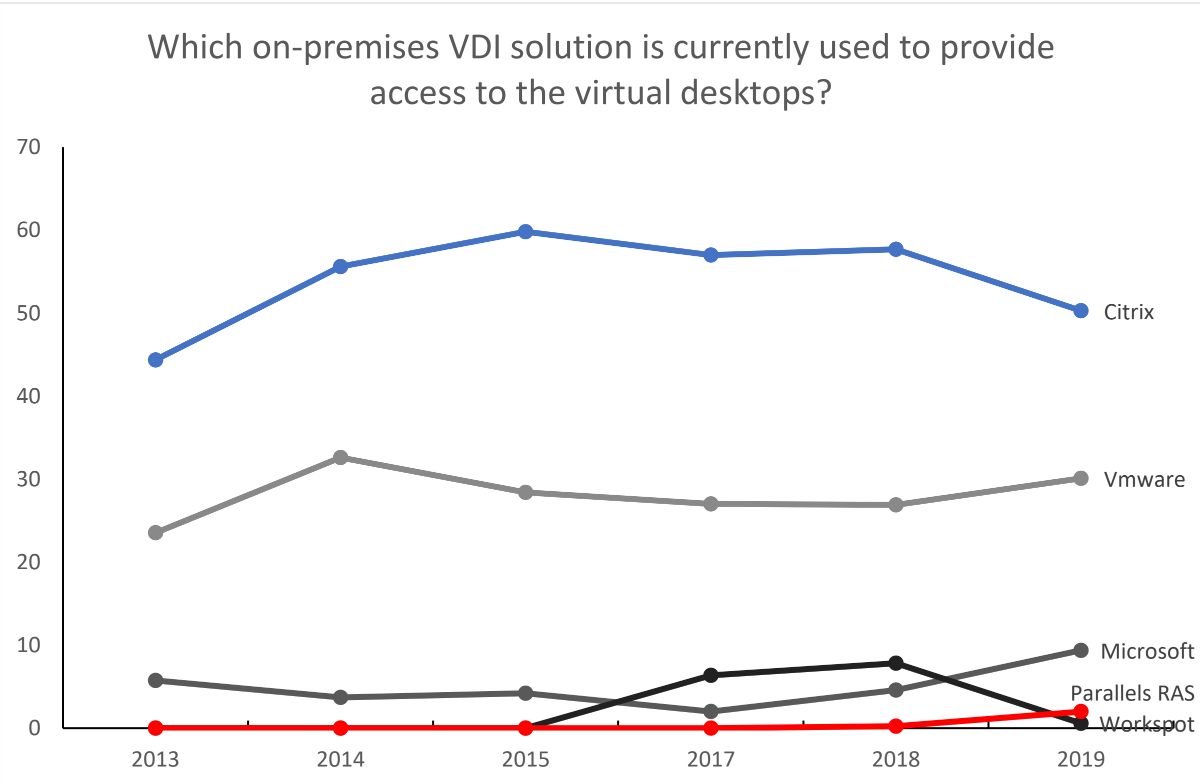




Which on-premises VDI solution is used to provide access to the virtual desktops?

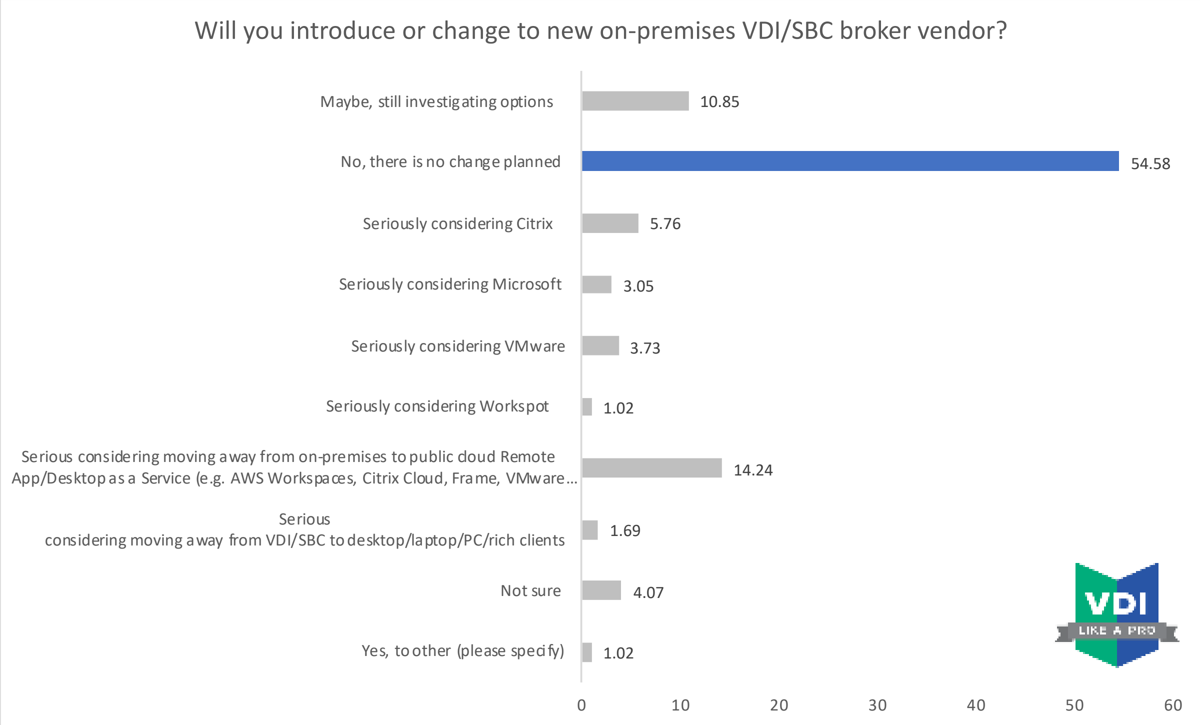
Most participants do use Citrix VDI on-premises technology, 50.29% in 2019, a decrease of 7.4% compared to 2018. VMware is being used in 30.11% of the deployments an increase of 3.2%. There is a huge difference between Citrix adoption and adoption with VMware. We believe this is mainly because Citrix historically has a larger customer base and the Citrix EUC community is much stronger and more active compared to the VMware EUC community. Microsoft RDVH/VDI adoption is still small but increased from 2% in 2017, 4.6% in 2018 and 9.38% in 2019. Workspot VDI usage declined from 7.76% in 2018 to 0.57% in 2019. Parallels RAS increased from 0.23% in 2018 to 1.99% in 2019.





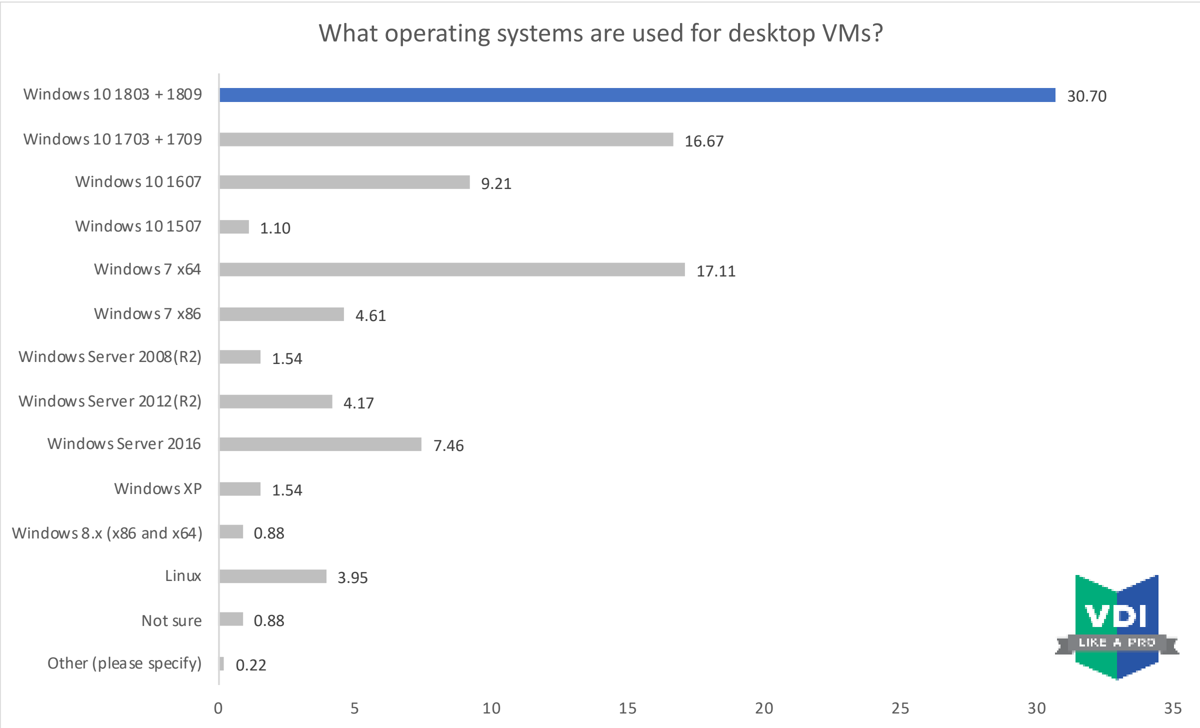
Will you introduce or change to new on-premises VDI/SBC broker vendor?

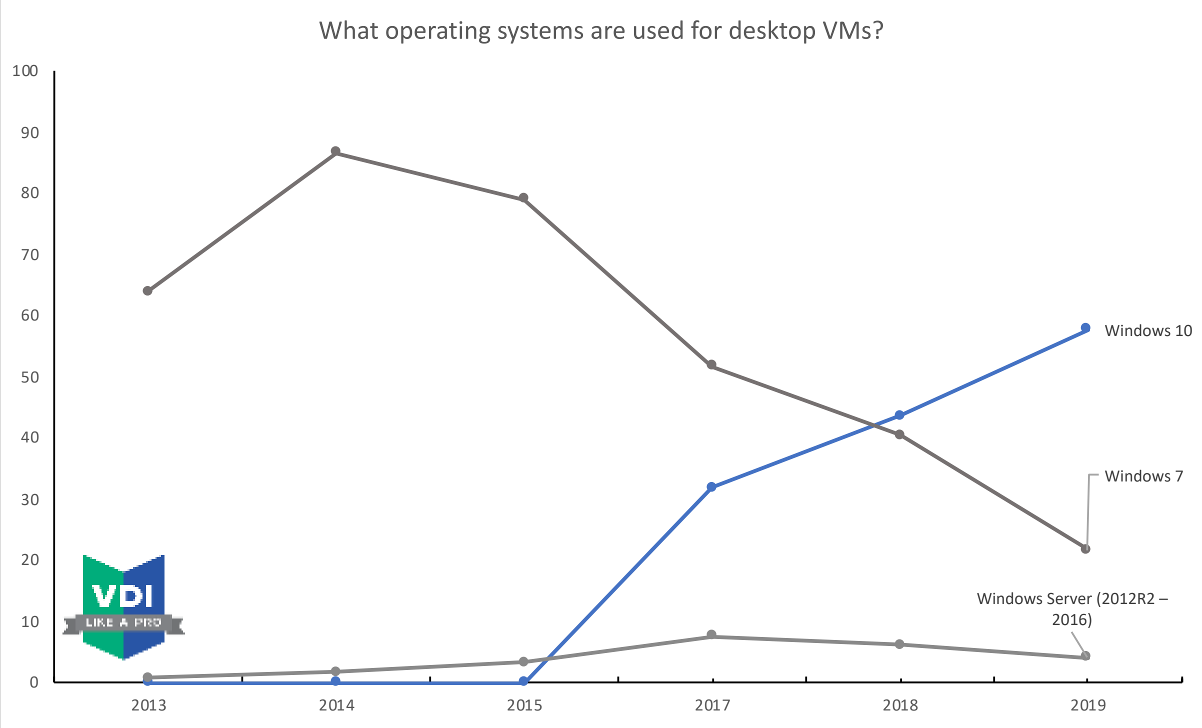
In 2014, 71.1% of the respondents didn't consider changing their VDI/SBC solution, while in 2018, 55% didn't consider changing the VDI/SBC broker. In 2019, this number didn't really change. The biggest difference is in the number of participants who are seriously considering moving away from on-premises to public cloud DaaS offerings -- 12.57% in 2018, with 10.61% investigating their options and 14.24% in 2019, with 10.85% investigating their options.



What operating systems are used for desktop VMs?

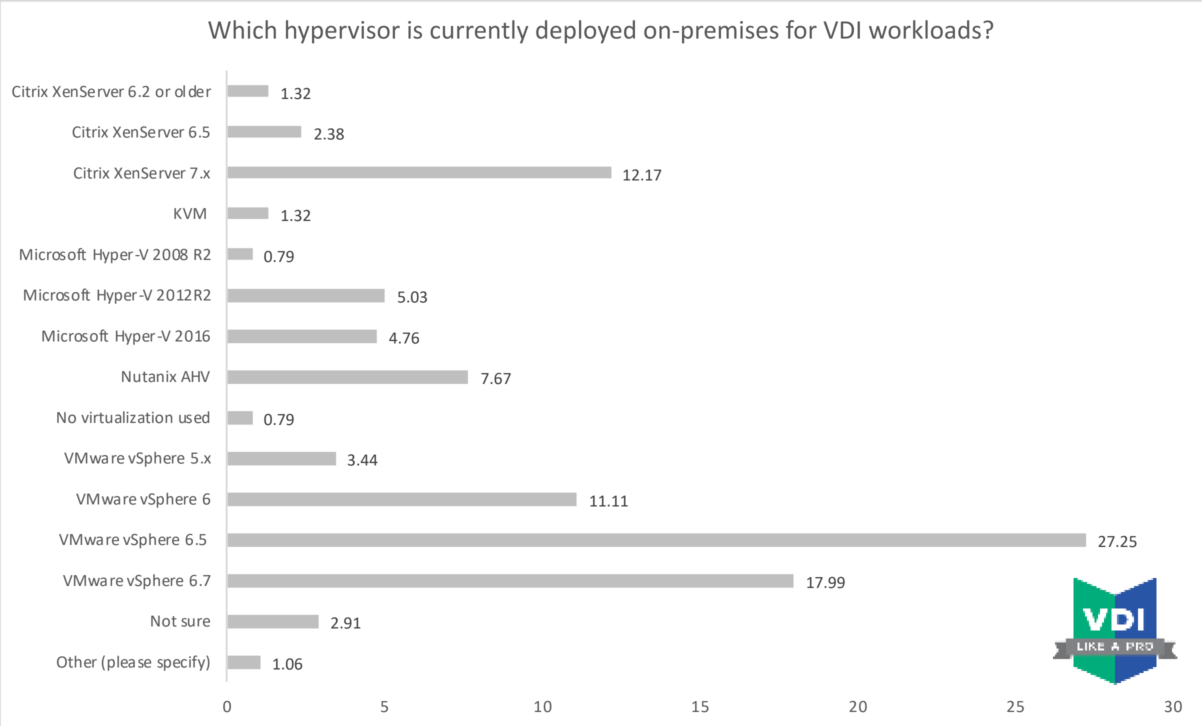
With more than 57%%, usage of Windows 10 surpassed Windows 7 (21.7%) as the main platform for VDI. Many organizations have adopted Windows 10 with 1809 leading the game with 30.7%. Windows Server 2016 usage increased from 2.97% in 2018 to 7.46% in 2019.
With just 1.5% of respondents using Windows XP and 0.8 % using Windows 8 -- it's clear they are both legacy platforms. Linux as a guest OS for VDI is slowly growing from 0.3% in 2014, 2% in 2017, 2.97% in 2018 and 3.95% in 2019. It will likely remain niche in our Windows-dominated EUC space. We see Linux for specific application use-cases such as in engineering and secure browser. Windows Server 2012/2016 adoption as a guest operating system increased from 1.7% in 2014 to 7.6% in 2017 and has declined to 6.18% in 2018.

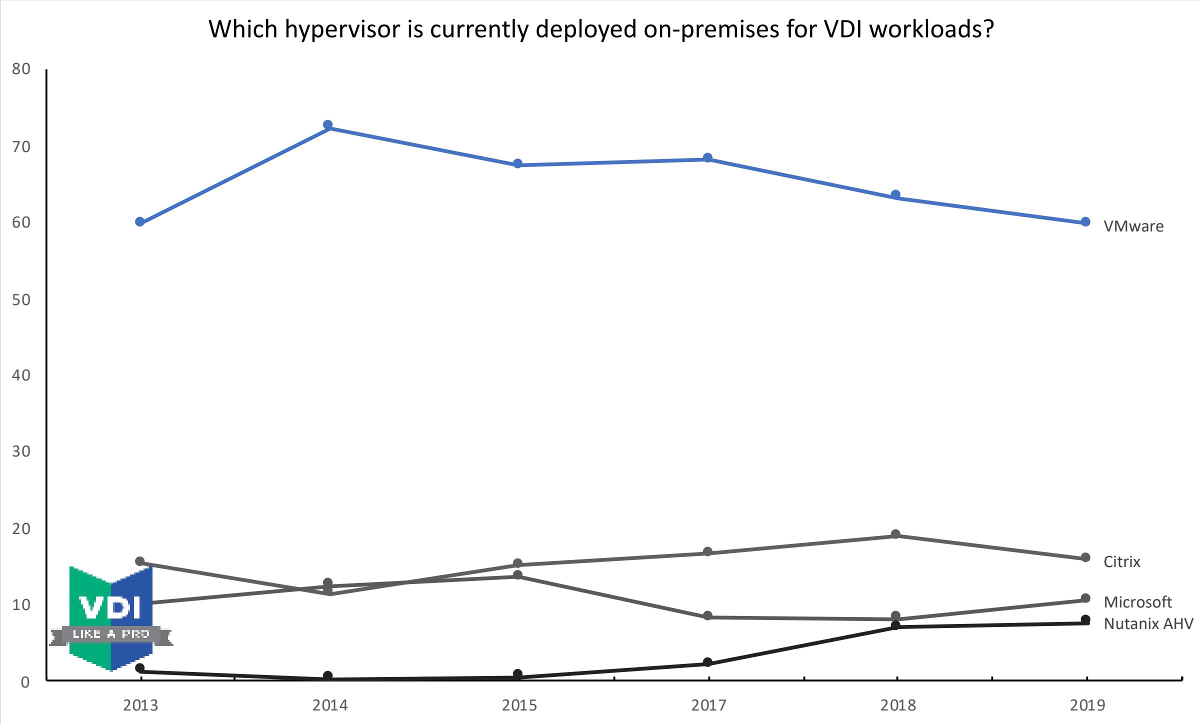




Which hypervisor is currently deployed on-premises for VDI workloads?

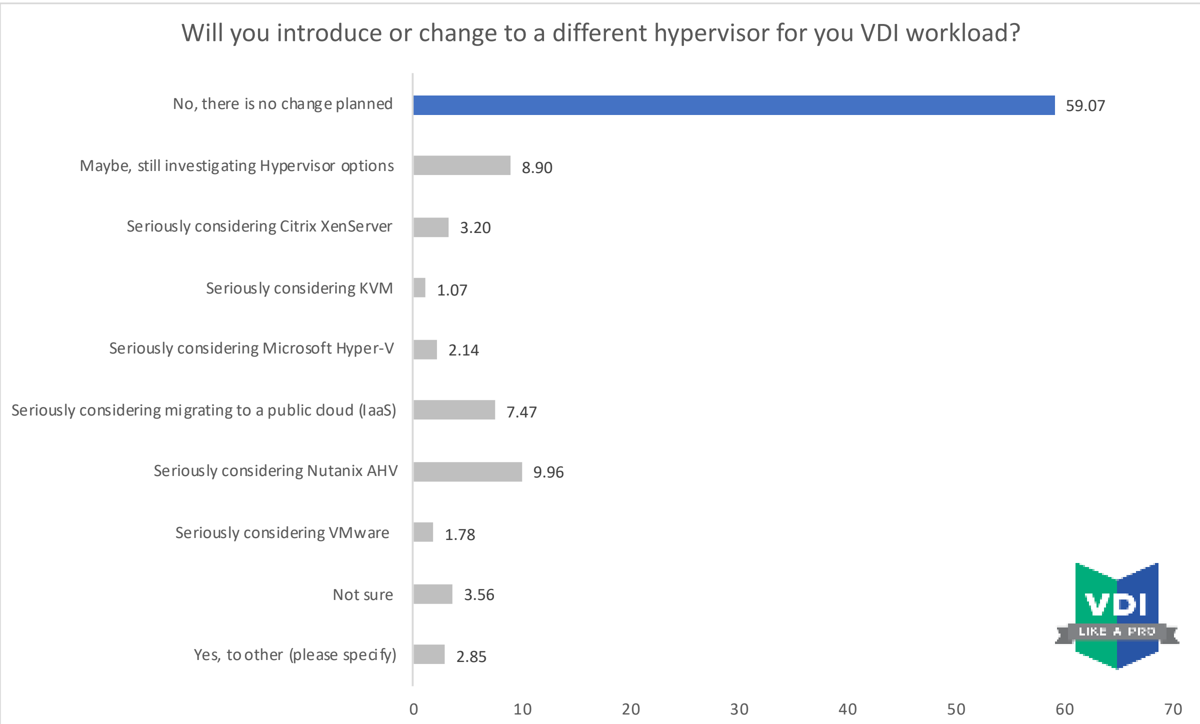
VMware remains by far the largest vendor delivering virtual infrastructure for VDI, though the usage is slowly decreasing from 68.22% in 2017, 63.17% in 2018 and 59.79% in 2019.
Citrix Hypervisor/XenServer adoption has decreased from 18.88% in 2018 to 15.87% in 2019.
Microsoft Hyper-V usage increased from 8.16% in 2018 to 10.58% in 2019.
Usage of KVM/Nutanix is increasing, 2.13% in 2017 to 6.99% in 2018 and 8.99% in 2019. It's also good to mention that multiple hypervisors could be selected in this year's survey.





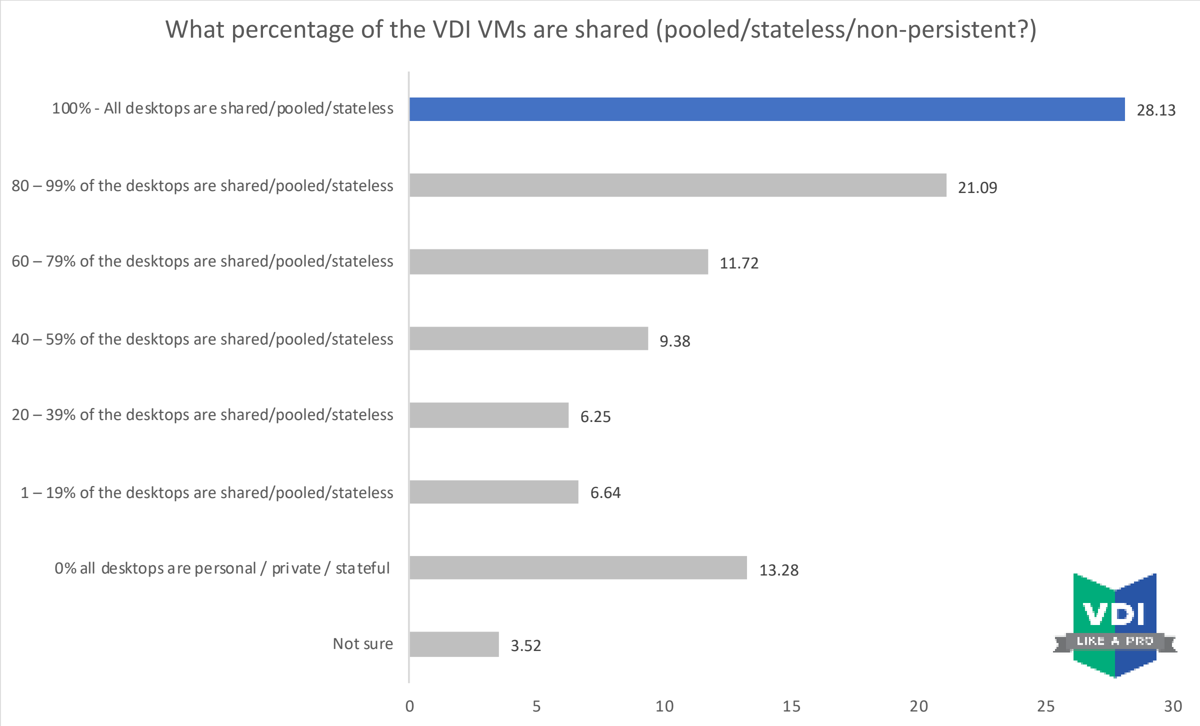
Will you introduce or change to a different hypervisor for your VDI workload?

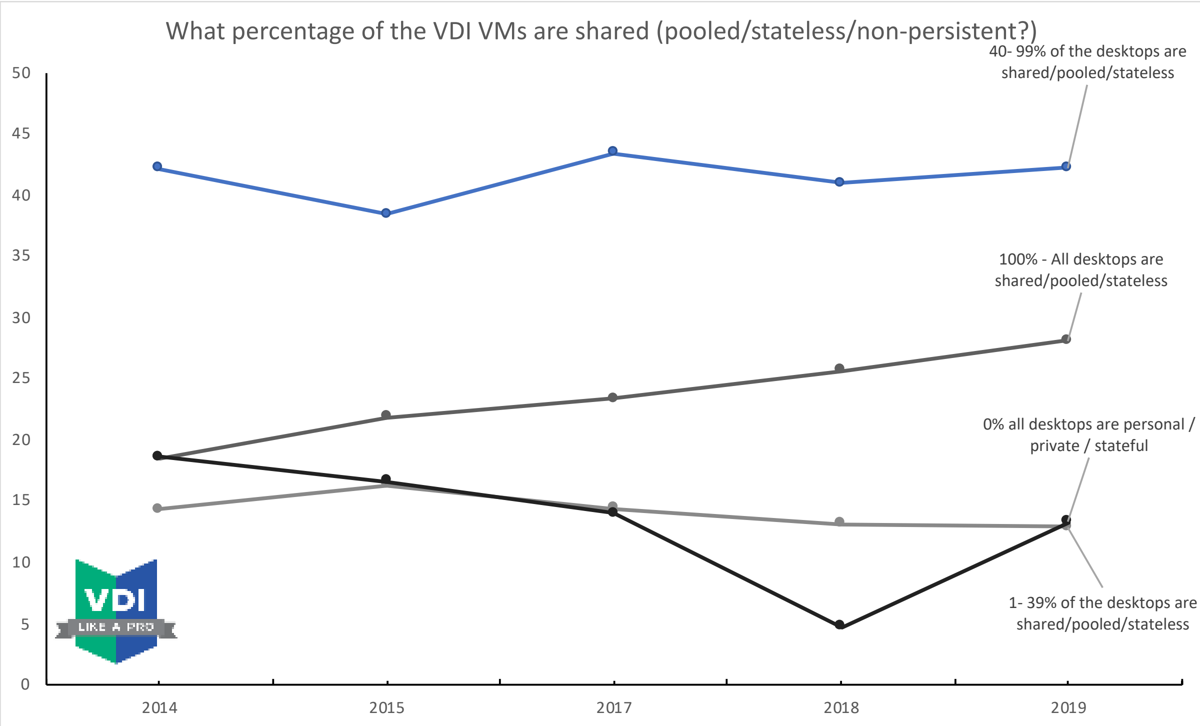
In 2019, 59.07% of participants don't have any plans to change their hypervisor, a small increase compared to 2018. 8.9% if investigating options, 7.47% of the participants in 2019 are seriously considering migrating to public cloud (IaaS such as Azure and AWS).
Also, 9.96% are seriously considering Nutanix AHV. Nutanix and public cloud IaaS are both leading in areas of growth.



What percentage of the VDI VMs are shared (pooled/stateless/non-persistent?)

28.13% of the respondents are using VDI in a 100% stateless fashion, which is an increase compared to 2017 and 2018. Overall stateless VDI configurations are increasing compared to 2018. While 13.28% of the respondents are using VDI in a 100% stateful/persistent setup, a small decline 2.5% compared to 2019. The majority are using VDI in a mixed setup.

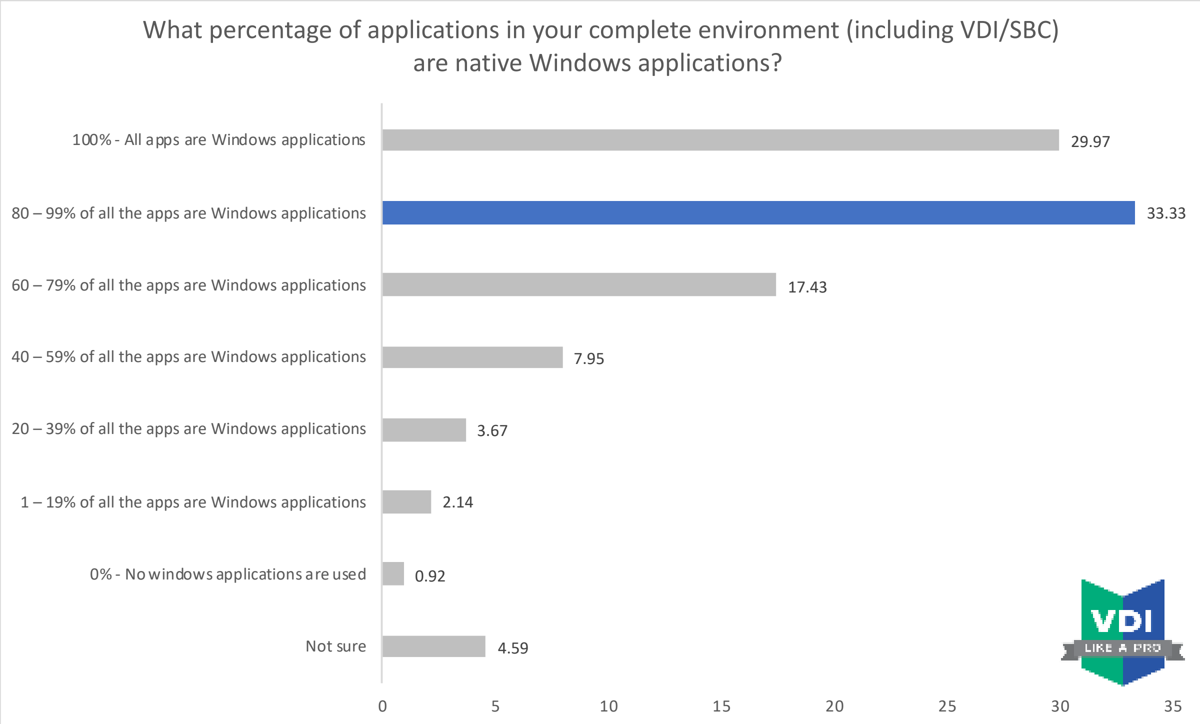


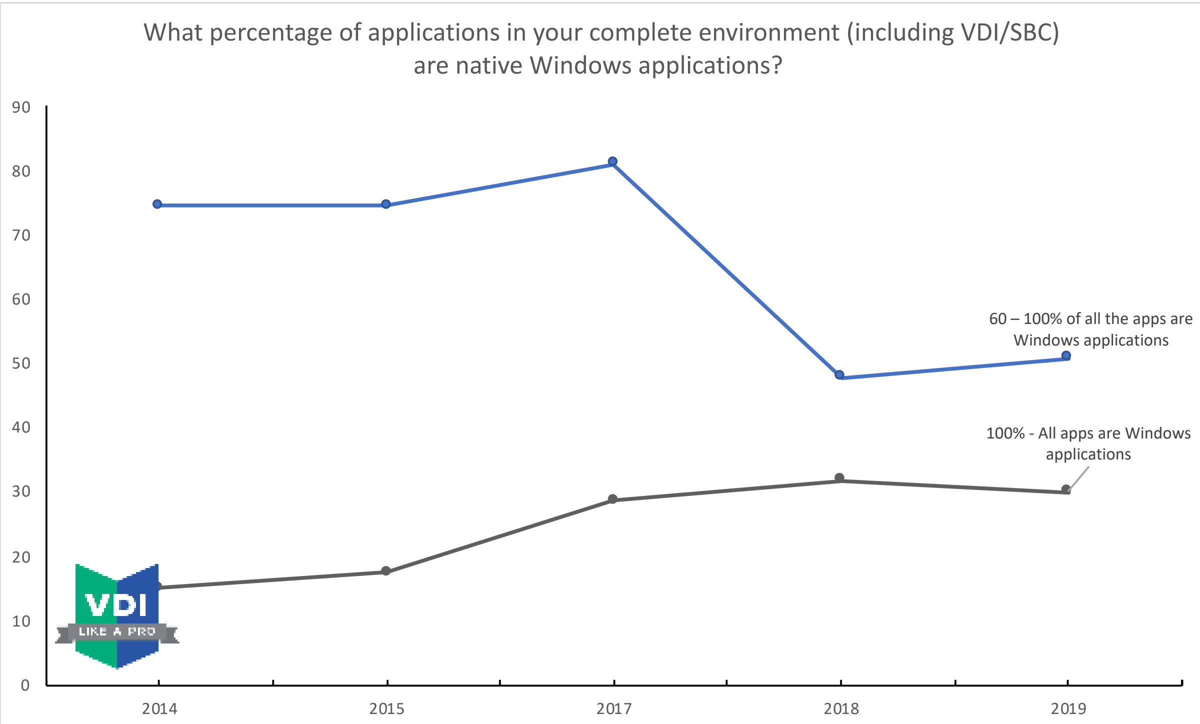


Application related questions

What percentage of applications in your environment (including VDI/SBC) are native Windows applications?

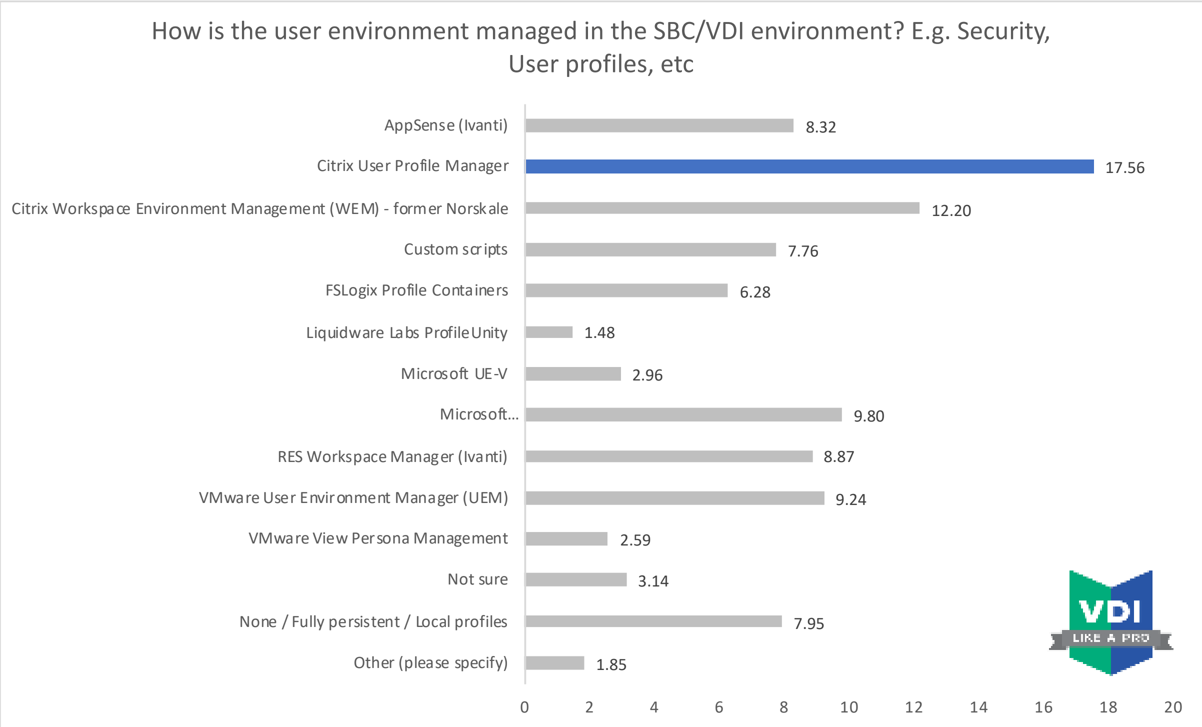
Organizations who are running 100% of their Windows applications in VDI and SBC increased from 15% in 2014, 28% in 2017 to 31.8% in 2018 and decreased a bit to 29.97% in 2019.

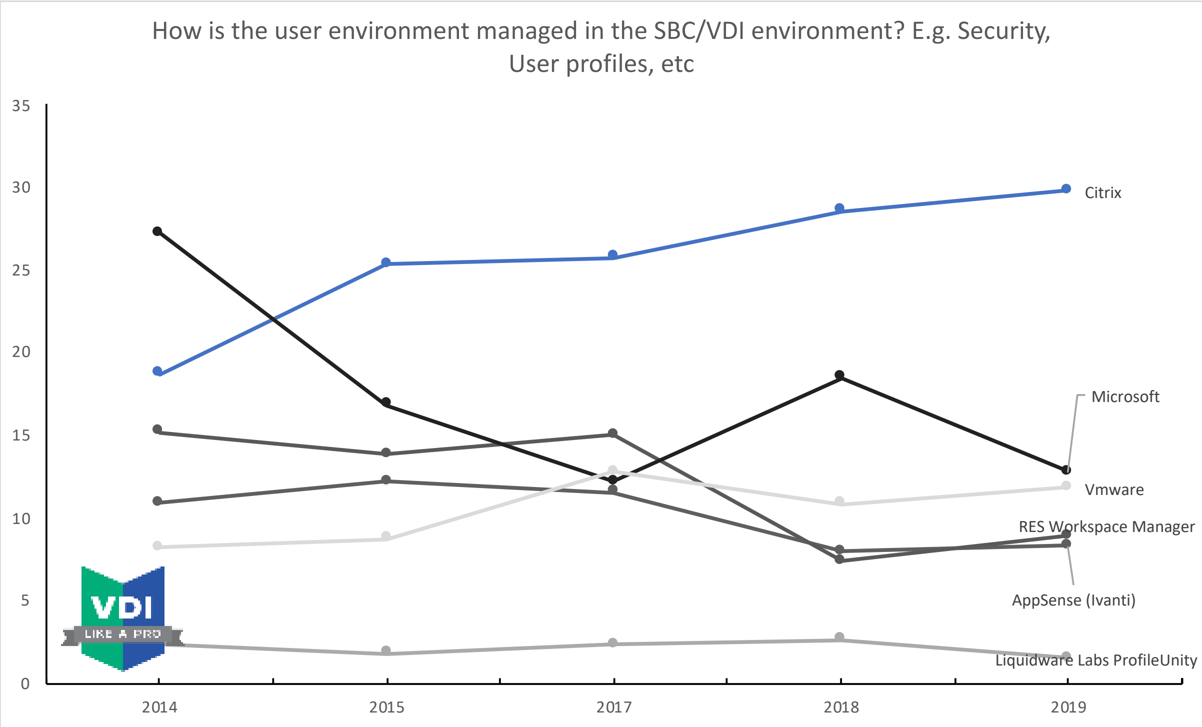




How is the user environment managed in the SBC/VDI environment?

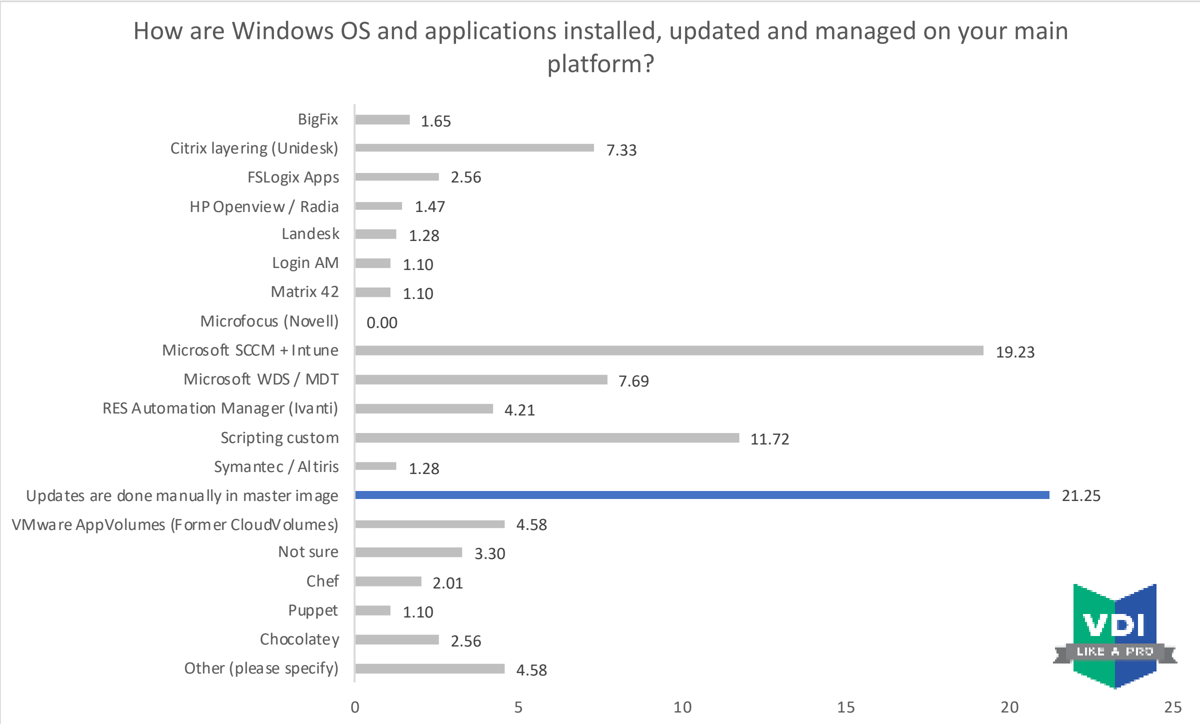
Most of organizations use user environment management (UEM) solutions from Citrix, Microsoft or VMware, totaling 54.35% in 2019. UEM solutions such as Ivanti (Appsense and RES), FSlogix, and Liquidware are used within 24.95% of the organizations. Usage of FSlogix (now part of Microsoft) increased with 2.38% over the last year while Liquidware declined from 2.60% in 2018 to 1.48% in 2019. The use of custom scripts also declined from 8.23% in 2018 to 7.76% in 2019. Both Appsense and RES usage increased from 15.30% in 2018 to 17.19% in 2019.

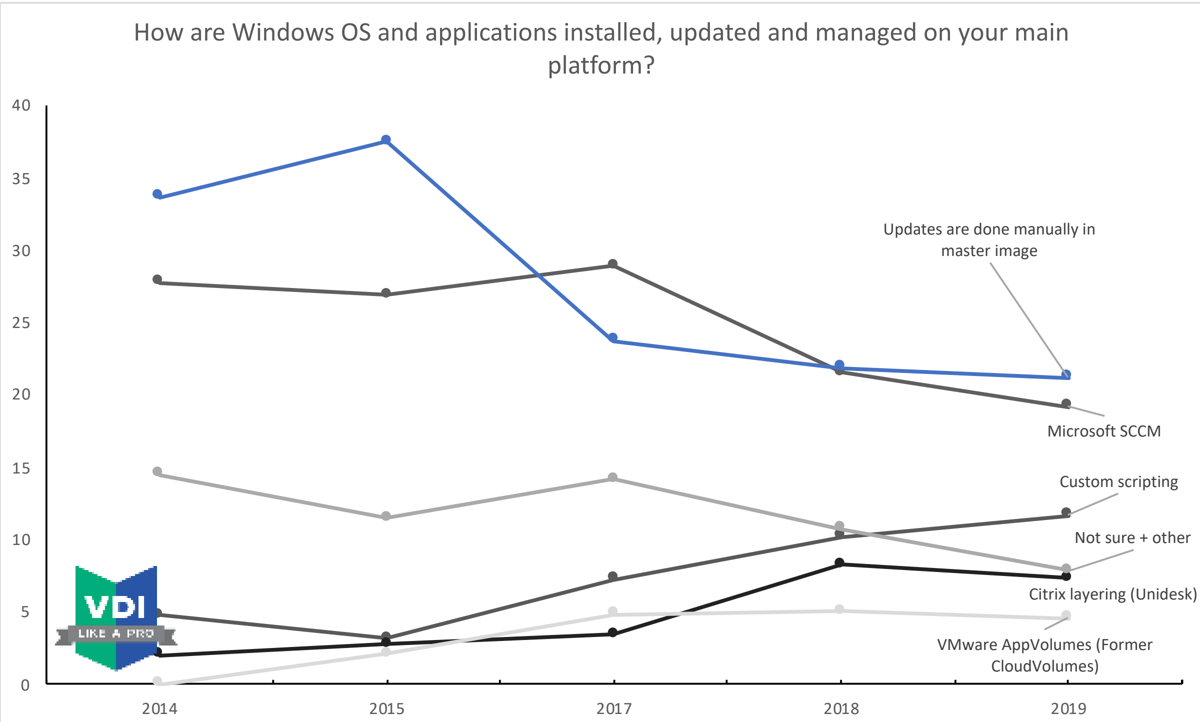




How are Windows OS and applications installed, updated and managed?

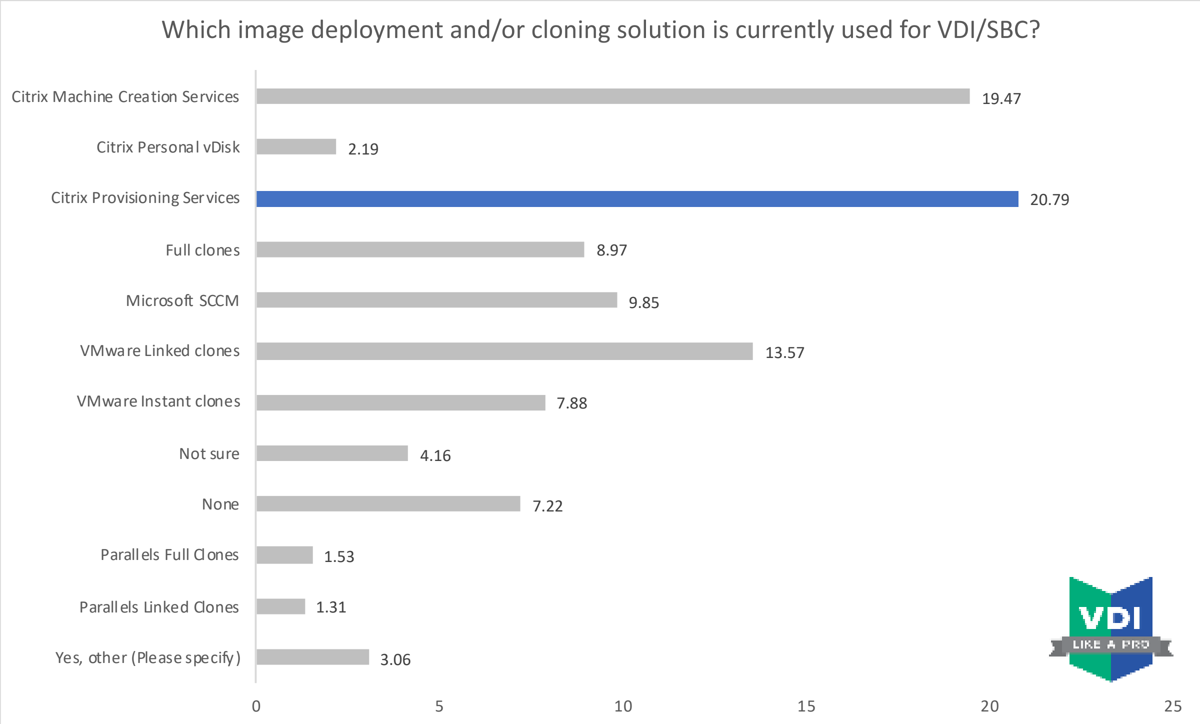
We are pleased to see that IT Admins are steering away from making manual changes to their master images, with 23.74% in 2017 dropping down to 21.86% in 2018 and 21.25% in 2019. This labor-intensive and error-prone way of working can seriously impact the performance and uptime of your environment, while plenty of alternatives already exist that can automate these tasks. Microsoft SCCM adoption is declining from 28.93% in 2017, 21.86% in 2018 and 19.23% in 2019. Microsoft WDS/MDT is increasing from 4.87% in 2017 to 9.60% in 2018 and decreasing in 2019 to 7.69%. Usage of layering technologies from Citrix and VMware is declining from 13.29% in 2018 to 11.91% in 2019. RES (Ivanti) Automation Manager is declining from 7.23% in 2017, 4.73% in 2018 and 4.21% in 2019.

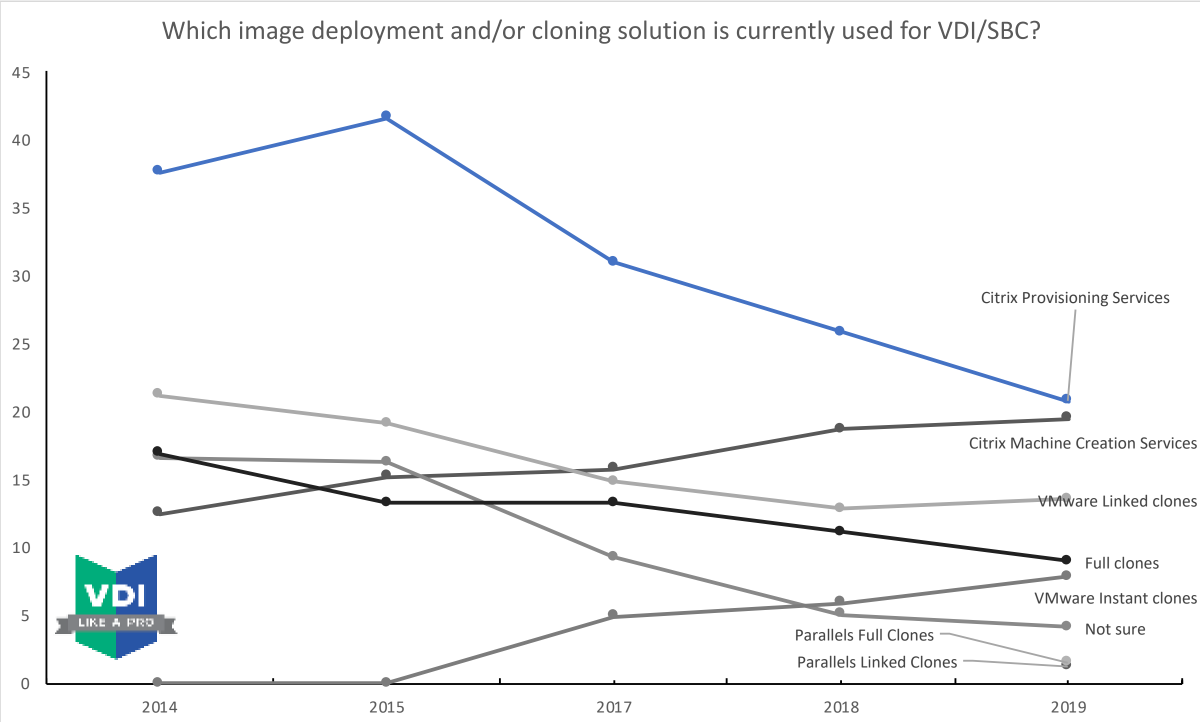




Which image deployment and/or cloning solution is currently used for VDI/SBC?

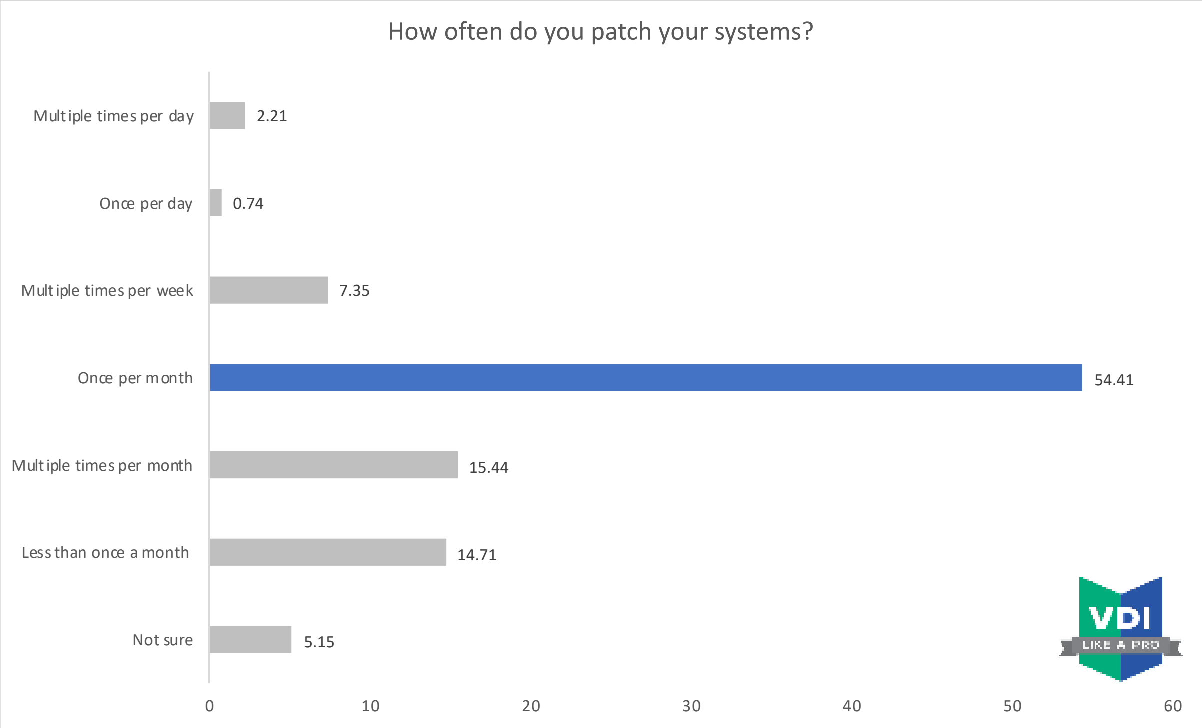
While Citrix Provisioning Services (PVS) remains a popular choice in many Citrix VDI/SBC environments, we do see a drop-in popularity from 30.9% in 2017, 25.80% in 2018 and 20.79% in 2019. Citrix Machine Creation Services (MCS) usage has increased from 15.78% in 2017, 18.72% in 2018 and 19.47% in 2019. We wouldn't be surprised to see MCS surpassed PVS in the 2020 survey. VMware instant and linked clones are used in 21.45% the VDI/SBC scenarios which is an 2.75% increase compared to 2018. Full cloned decreased from 11.13% in 2018 to 8.97% in 2019. Finally, the usage of 'none – no cloning technology' increased from 5.40% in 2018 to 7.22% in 2019.

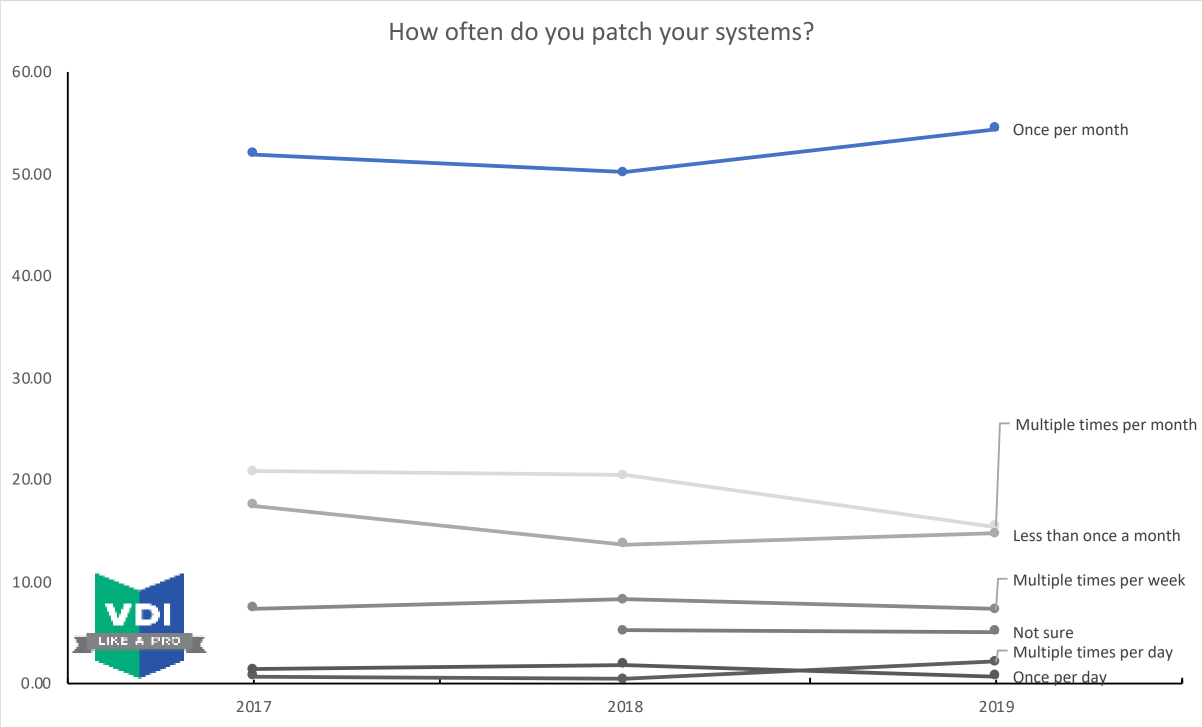




How often do you patch your systems?

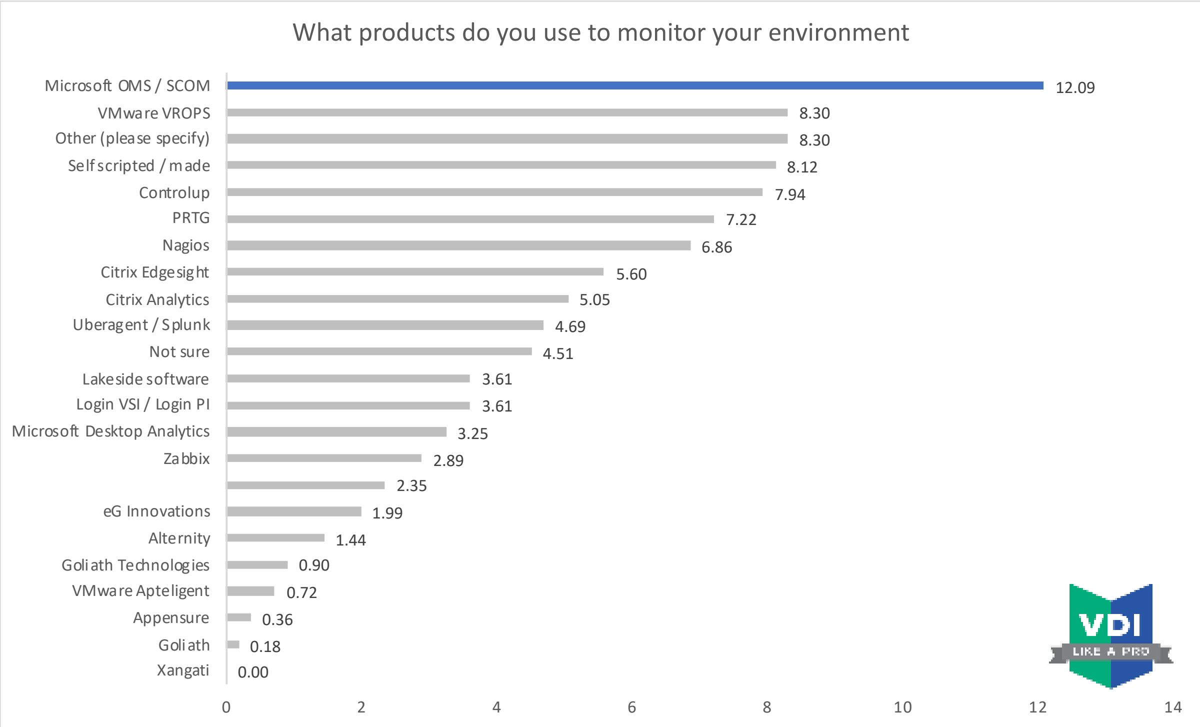
Just over half the respondents (54.41%) patch their systems once per month, which is an 3.4% increase compared to 2018.
Almost 15.44% patch multiple times per month which is a decrease of 5.05% compared to 2018.
We can see a increase in people who patch less than once a month, 13.65% in 2018 and 14.71% in 2019.





What products do you use to monitor your SBC / VDI environment?

Microsoft OMS/SCOM is the most popular solution to monitor the SBC/VDI environment, 12.09% of the respondents are using the Microsoft solution which is a decrease of 2.29% compared to 2018. VMware VROPS (8.30%), and ControlUP (7.94%) and PRTG (7.22%) are following Microsoft adoption. Interesting to see VMware VROPS usage declined 1.9% in 2019 compared to 2018. Also, ControlUP declined 1.15% in 2019 while PRTG increased usage with 1.77% in 2019. Citrix Edgesight dropped from 10.08% in 2018 to 5.60% in 2019.

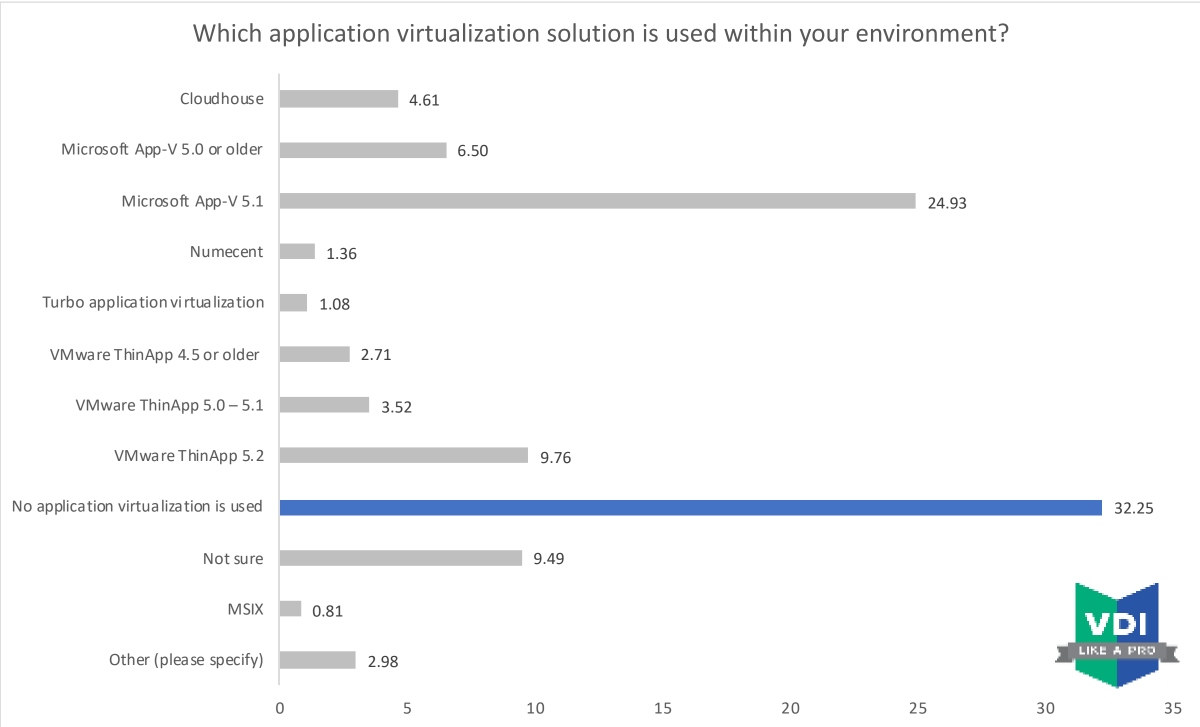


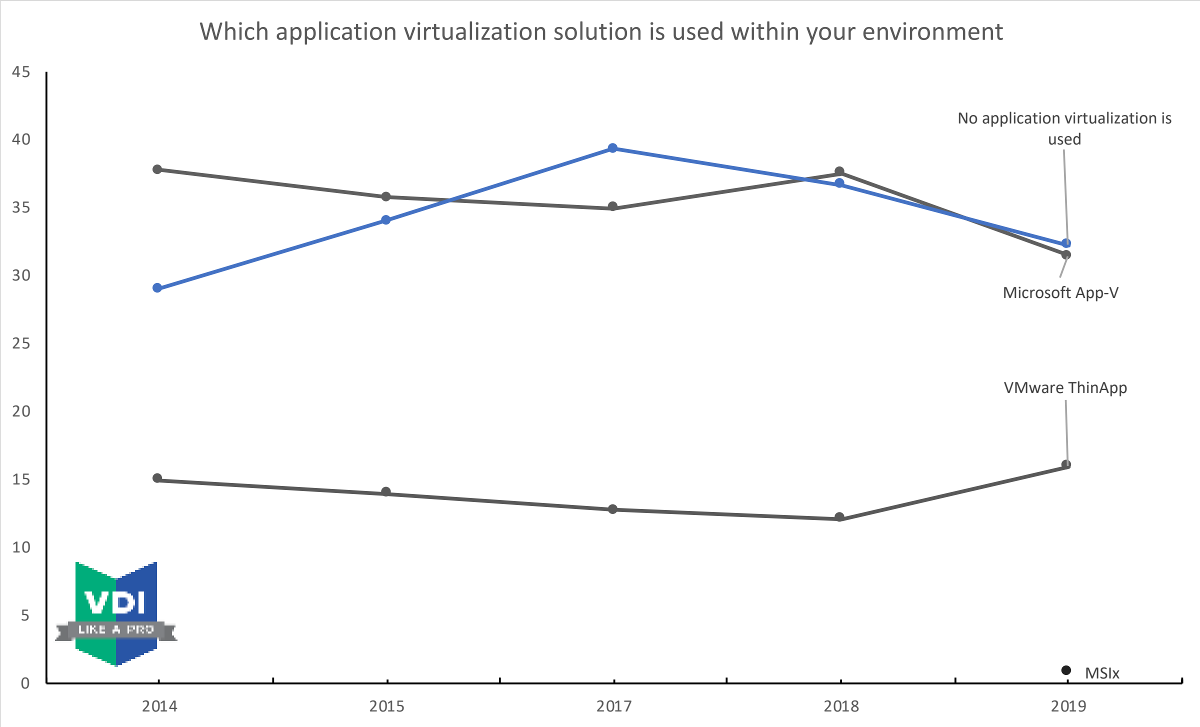
Which application virtualization solution is used within this VDI/SBC environment?

(Note: App Layering is addressed in another question. Application Virtualization is not e.g. Citrix XenApp)

The biggest competitor for application virtualization solutions isn't Microsoft or VMware -- it's NoAppVirt. Almost 32.25% of the organizations are not using any application virtualization solutions (like Microsoft App-V, VMware ThinApp, Cloudhouse, Numecent or Turbo).

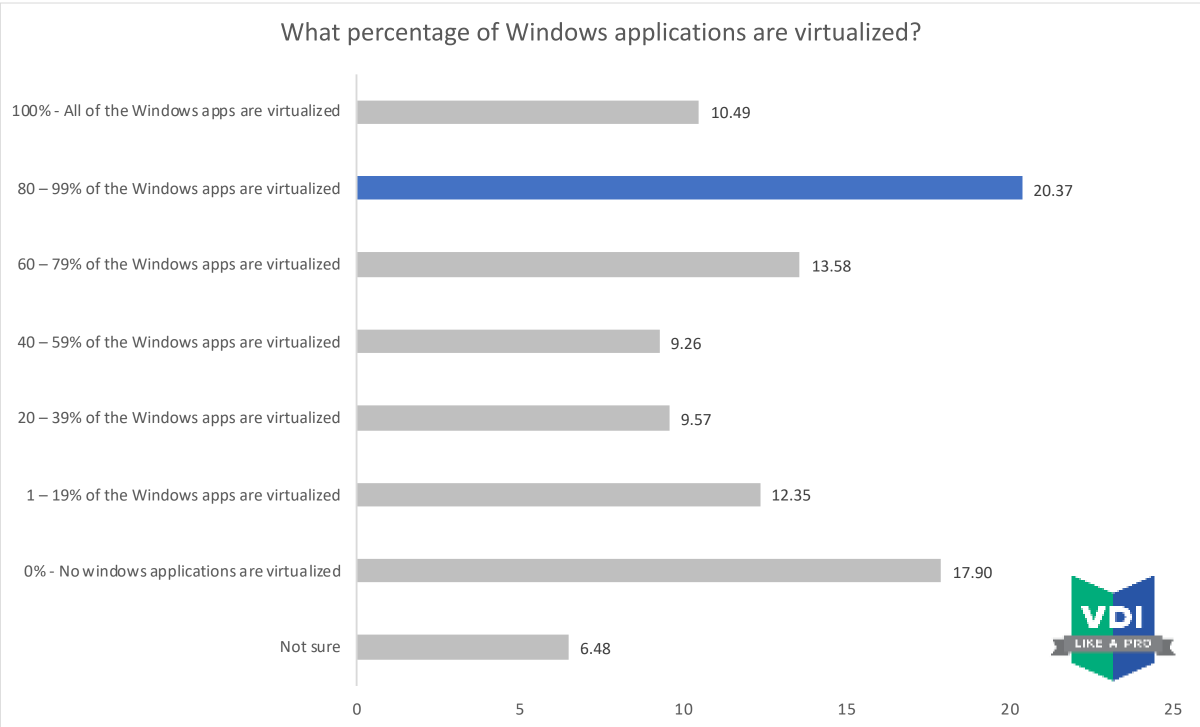
Compared to previous years, we can see an increase of participants using application virtualization. Less of the participants aren't using application virtualization at all, 39.27% in 2017 is down to 36.67% in 2018. Is down to 32.25% in 2019. Microsoft App-V is the main application virtualization solution in VDI/SBC with 31.43% which is a 6.08% decrease compared to 2018. While VMware ThinApp, with 13.28%, is the second most common application virtualization solution for VDI and SBC. ThinApp usage increased from 12.09% in 2018 to 15.99% in 2019.
It's interesting to see Cloudhouse with 4.61%, which is likely because of Windows 10 adoption and the ability of Cloudhouse to support this adoption with their strong application compatibility technology. Turbo and Numecent aren't being used a lot in SBC/VDI scenarios – combined 2.04% usage in 2019. MSIX usage is very low, let's see what happens next 2-3 years.

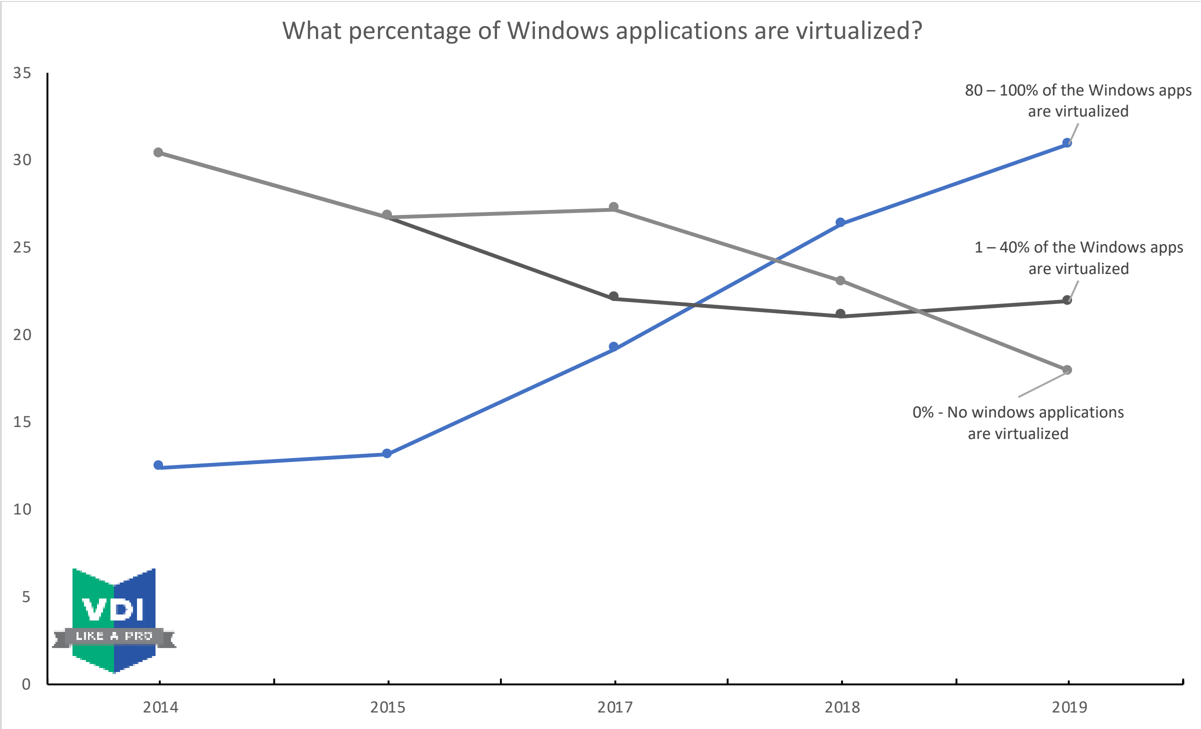




What percentage of Windows applications are virtualized?

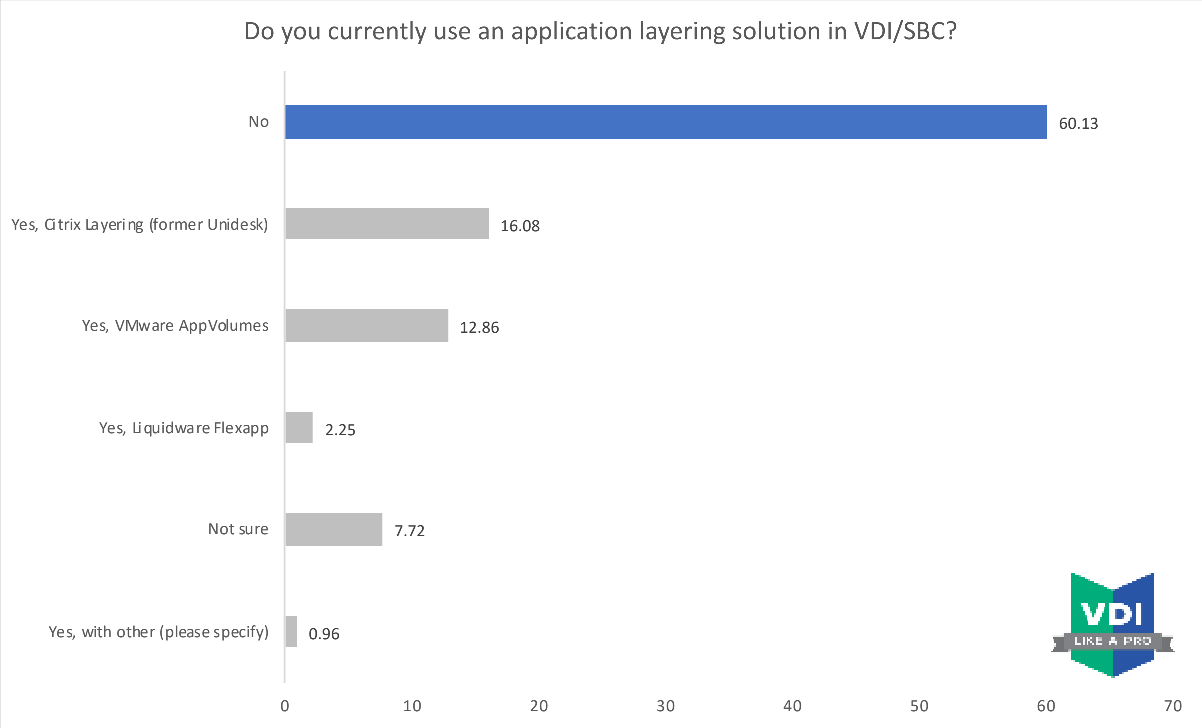
While more participants are using application virtualization, we do see that those who do virtualize their applications have a higher adoption rate as the 80-100% category grew from 19.17% in 2017, 26.32% in 2018 and 30.86% in 2019.

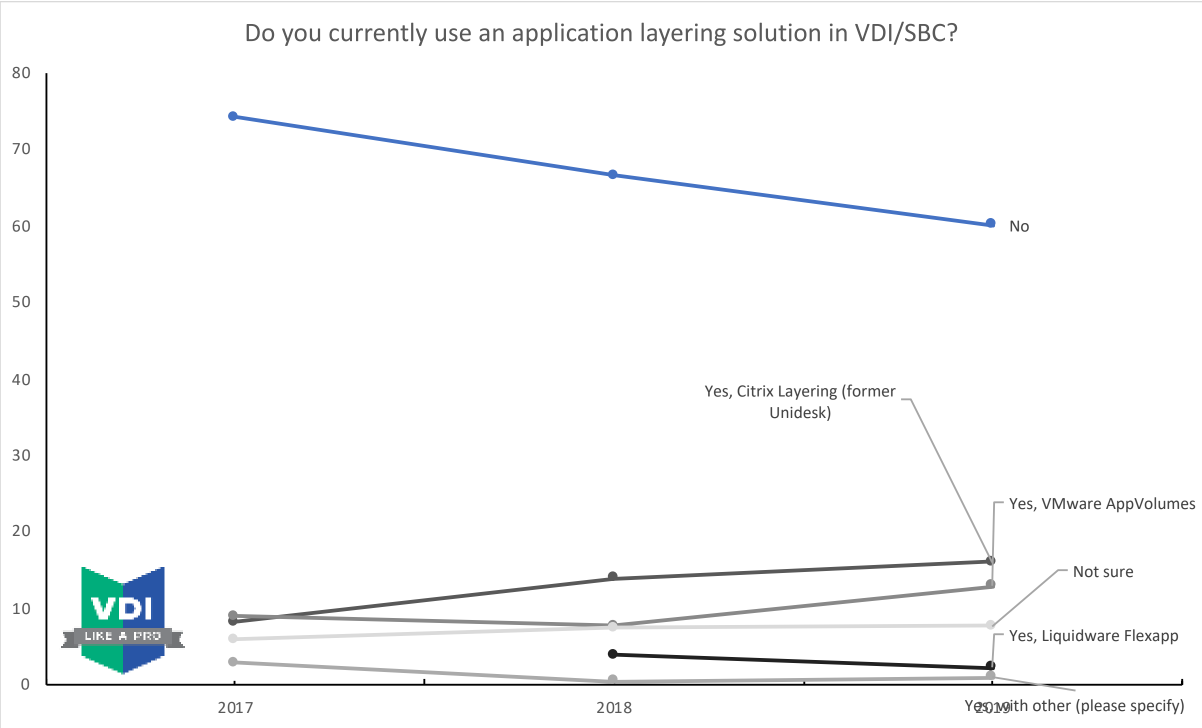



What percentage of Windows applications are virtualized?
35
30
25
20
15
10
5
0
2014
2015
2017
2018
2019
80 – 100% of the Windows apps are virtualized
1 – 40% of the Windows apps are virtualized
0% - No windows applications are virtualized
VDI
LIKE A PRO

Do you currently use an (application) layering solution in VDI/SBC?

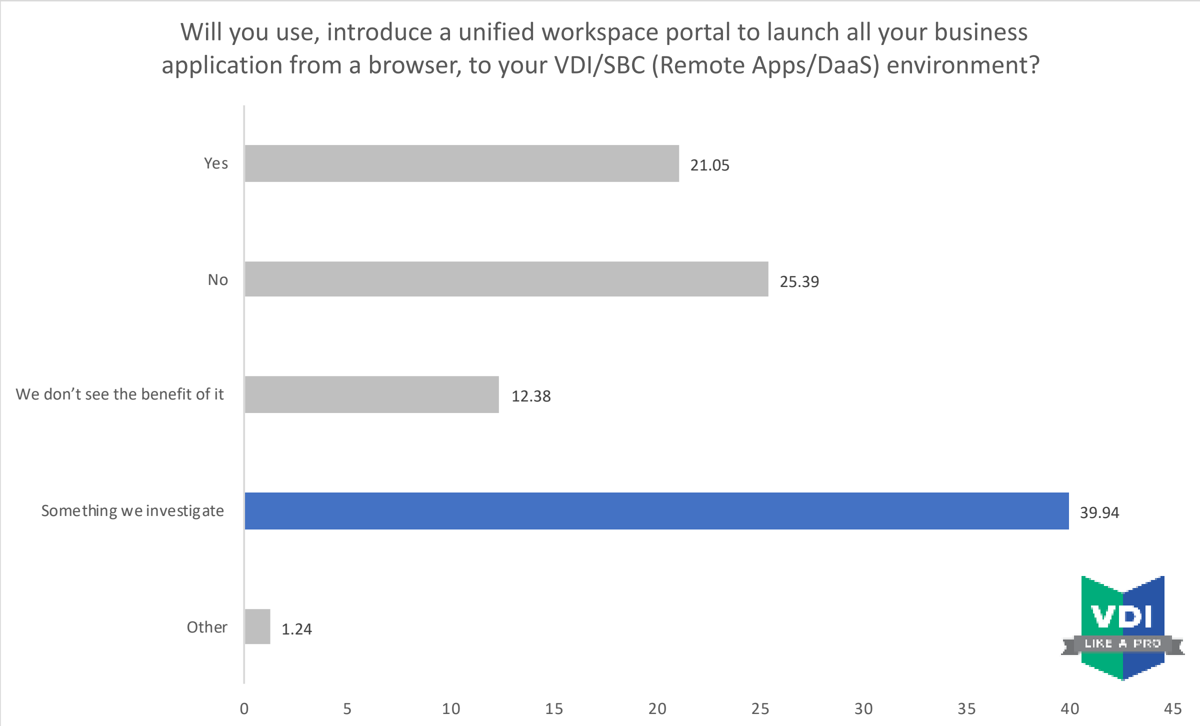
While most respondents aren't using layering solutions in VDI/SBC, 74.16% in 2017, 66.59% in 2018 and 60.13% in 2019 it is interesting to see more people are using Citrix and VMware. Citrix is leading with 16.08%, followed by VMware with 12.86% which is a 5.17% increase compared to 2018. Liquidware FlexApp usage decrease from 3.85% in 2018 to 2.25% in 2019.

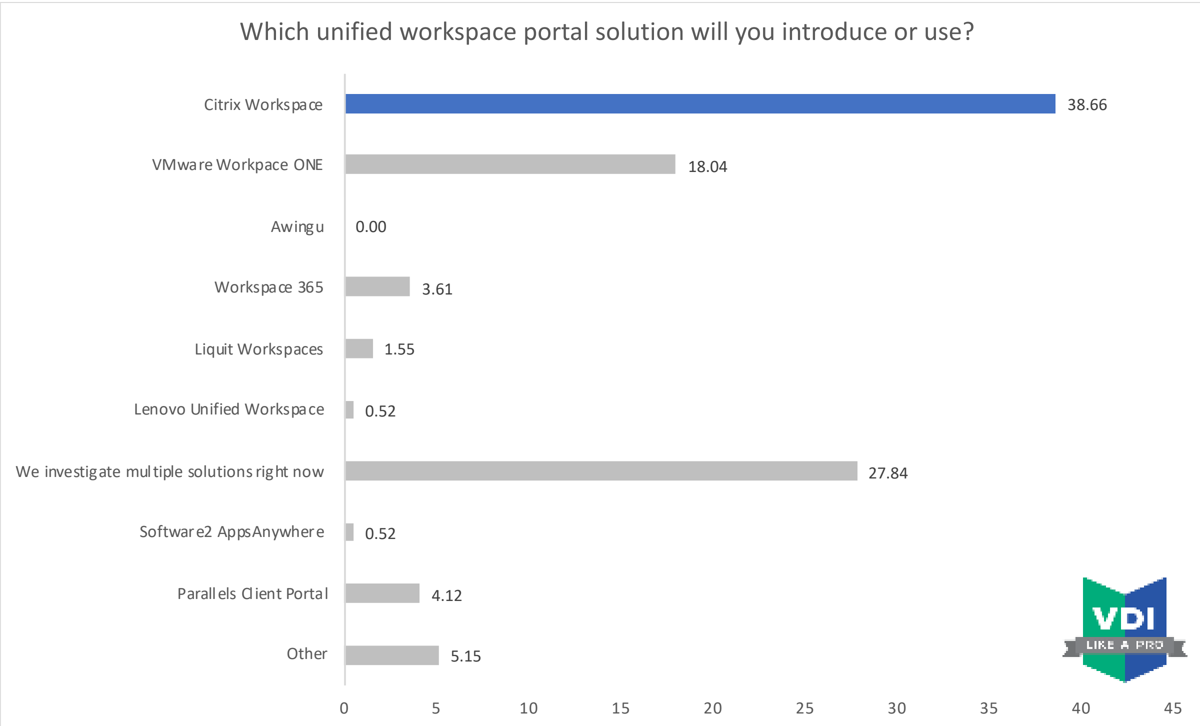




Will you use, introduce a unified workspace portal to launch all your business application from a browser, to your VDI/SBC (Remote Apps/DaaS) environment?

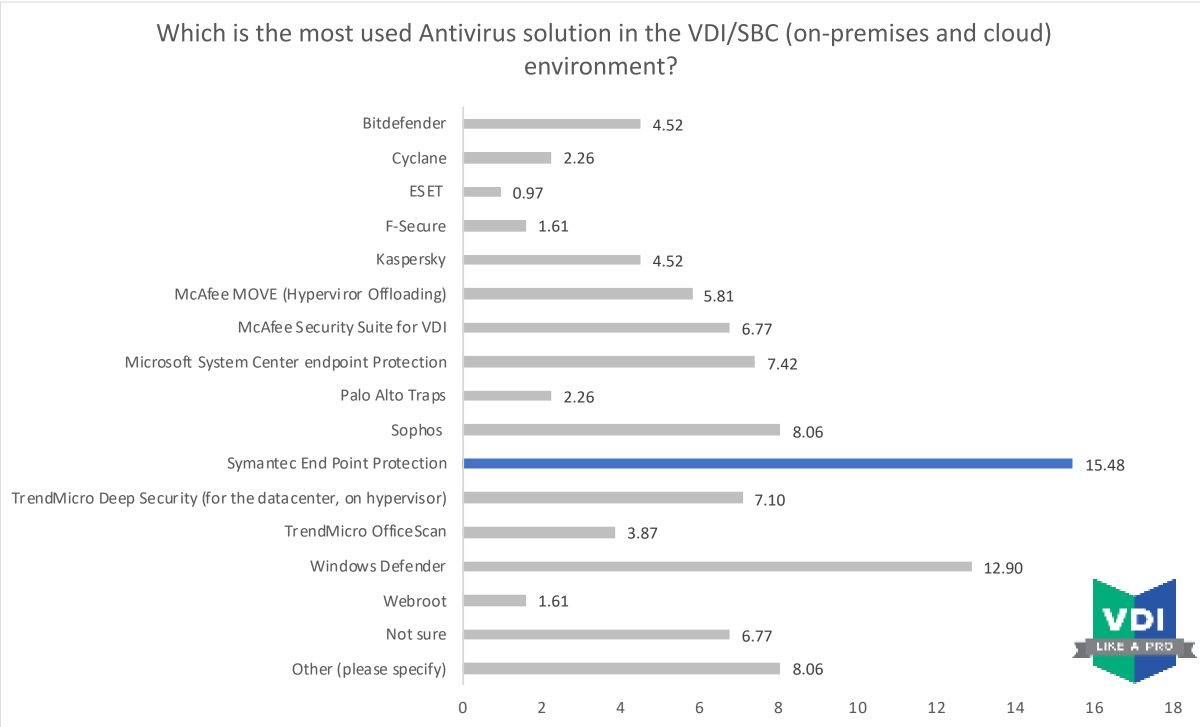
A Unified Workspace portal will bring Windows, Web/SaaS applications and data together. A workspace portal often is referenced as "Workspace aggregator". 39.94% of the participants are investigating if they will add a workspace portal to their environment while 21.05% already are using solutions from Citrix, Liquit, Microsoft, Software2, Parallels, Workspace365, VMware or others.

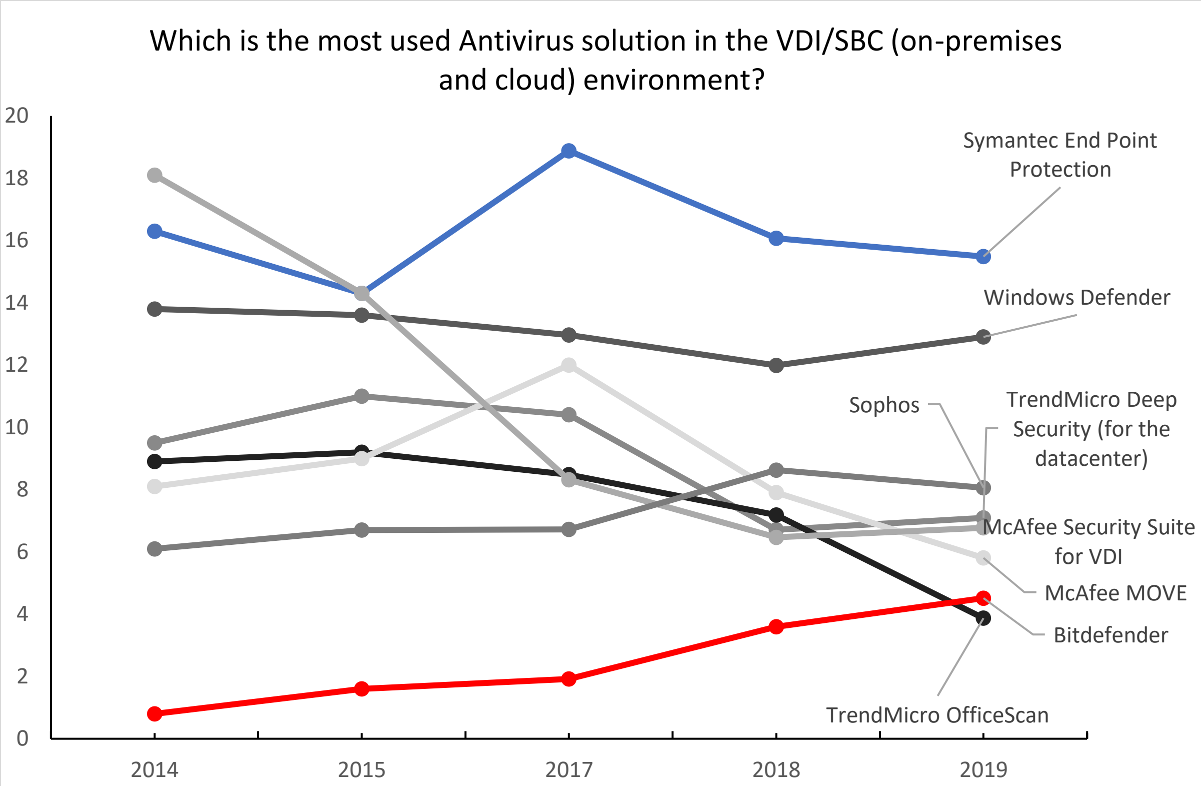




Which is the most used Antivirus solution in the VDI/SBC (on-premises and cloud) environment?

With recent outbreaks of ransomware, the leaks of government-funded zero-day exploits, and the threats of traditional viruses—it's no surprise that, even in virtual environments, anti-virus protection remains popular.
Although you can argue the value of traditional security solutions in VDI and SBC with zero-day exploits and unpatched systems in mind, it is common to use end-point security solutions in both VDI and SBC.
The major brands such as Symantec, McAfee, and TrendMicro all see a decline in usage in 2018. While by far the largest vendor, Symantec declined from 18.8% in 2017, 16.07% in 2018 and 15.48% in 2019.
McAfee solutions declined from 20.32% in 2017, 14.38% in 2018 and 12.58% in 2019
TrendMicro declined from 18.88% in 2017, 13.90% in 2018 and 10.97% in 2019.
Bitdefender usage increased from 3.60% in 2018 to 4.52% in 2019. Microsoft SCEP usage declined from 9.59% in 2018 to 7.42% in 2019 while Windows Defender slightly increased.
Palo Alto, Kaspersky and Sophos increased in popularity.

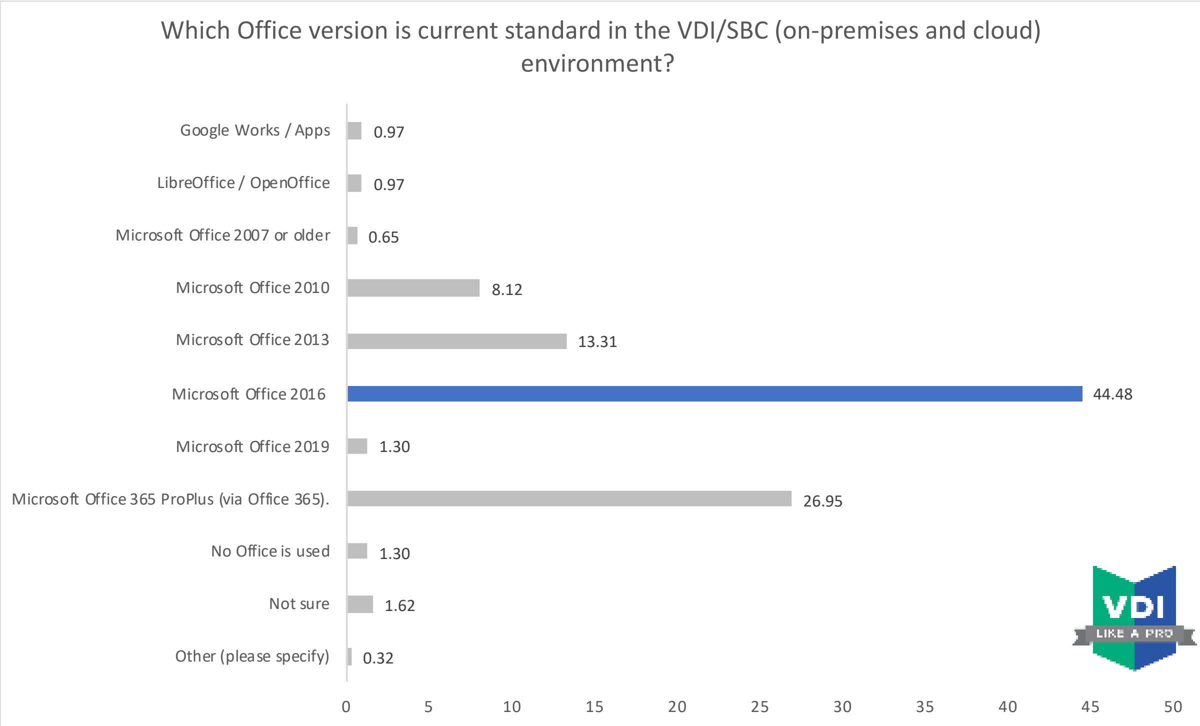



Which is the most used Antivirus solution in the VDI/SBC (on-premises and cloud) environment?
20
18
16
14
12
10
8
6
4
2
0
2014
2015
2017
2018
2019
Symantec End Point Protection
Windows Defender
Sophos
TrendMicro Deep Security (for the datacenter)
McAfee Security Suite for VDI
McAfee MOVE
Bitdefender
TrendMicro OfficeScan

Which Office version is current standard in the VDI/SBC (on-premises and cloud) environment?

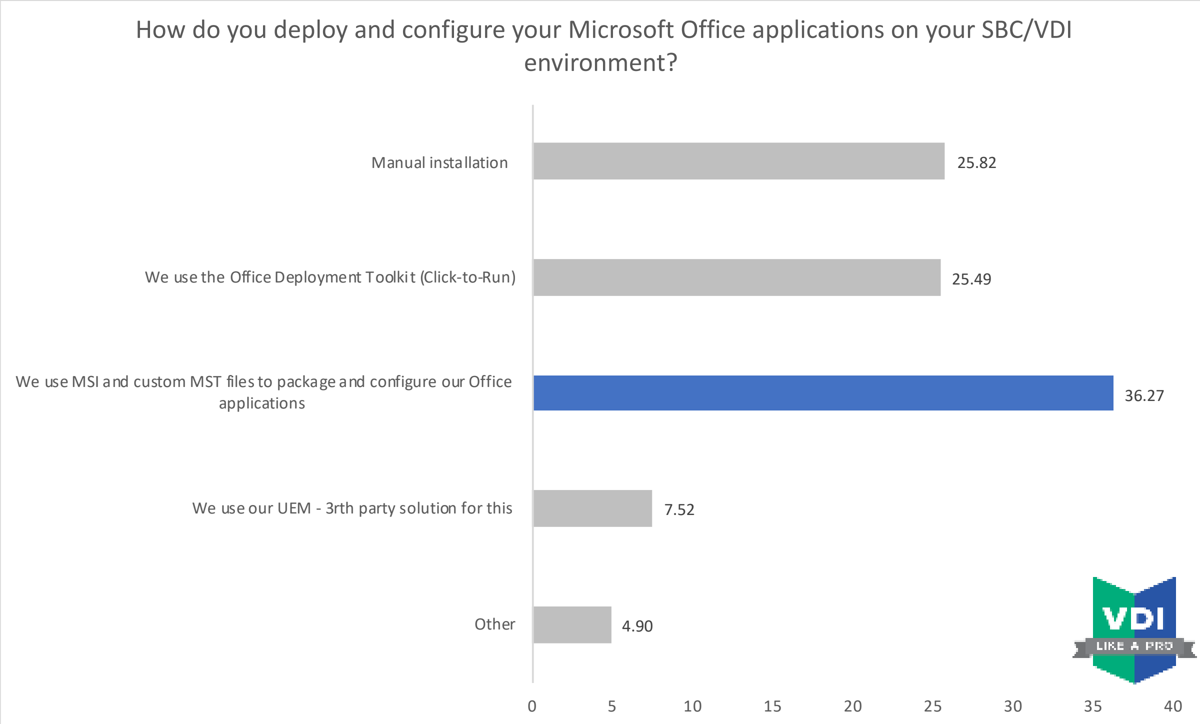
Most participants are using Microsoft Office 2016, 44.48% while 26.95% are using the latest office build delivered via Office365 which is surprising with latest huge adoption of Office365. Office 2019 is used in 1.30% of the deployments.

Microsoft Office 2013 usage is declined from 25.30% in 2018 to 13.31% in 2019. Microsoft Office 2010 is used in 8.12%% of the environments. Google Works/Apps it is being used in 0.97% of the VDI/SBC environments. Based on customer feedback in the field we do see Google Apps growing, not so much in VDI and SBC, but more on physical devices, such as Chromebooks and other devices.



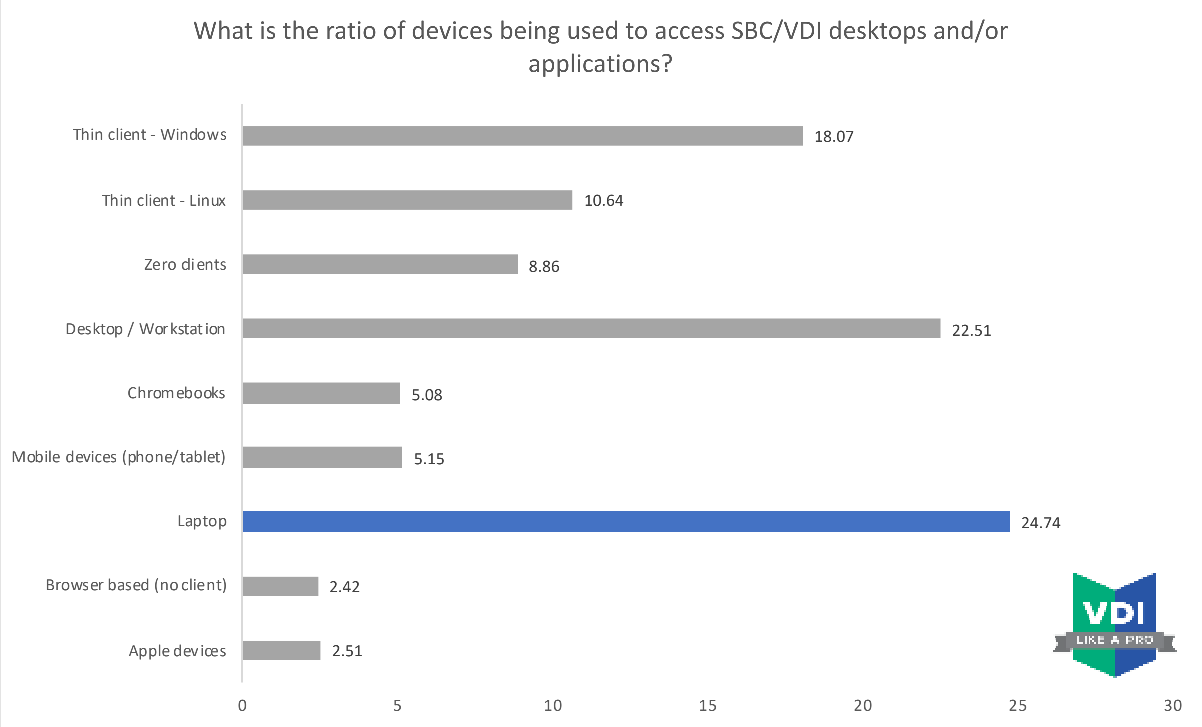
How do you deploy and configure your Microsoft Office applications on your SBC/VDI environment?

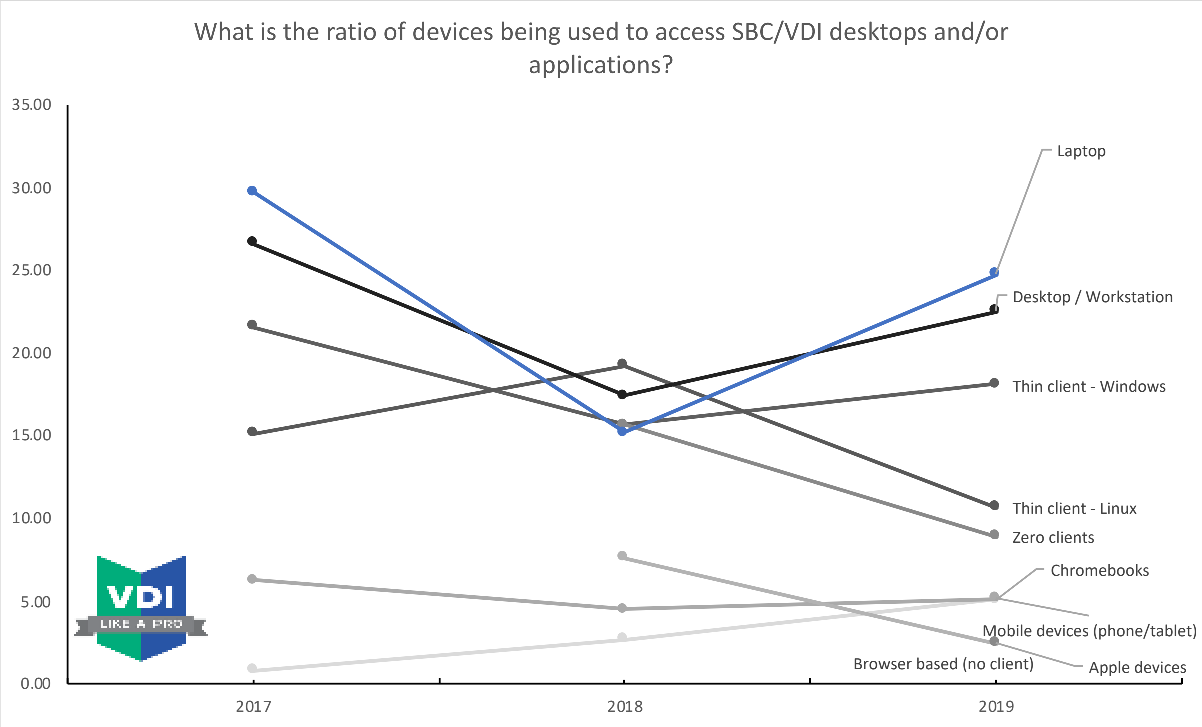
36.27% of the participants use MSI/MST to deploy their office applications to VDI/SBC while 25.82% manually install Office and 25.49% use click-to run. On 7.52% use 3rd party solutions to deploy and configure office applications.



What is the ratio of devices being used to access SBC/VDI desktops and/or applications?

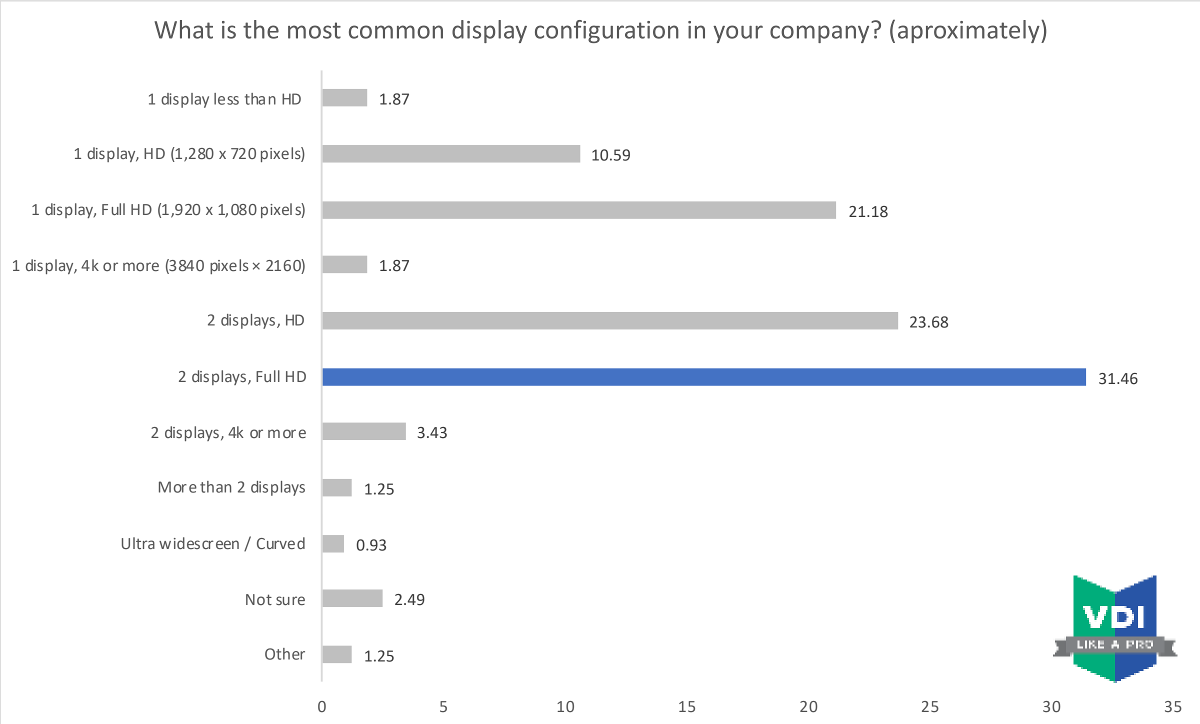
In 2017, the laptop was the primary used in 29.7% of the cases to access applications or desktops, in 2018 this number is down to 15.18% and in 2019 it increased to 24.74%. Linux Thin Client usage declined from 19.20% in 2018 to 10.64% in 2019. Zero clients declined heavily from 15.63% to 8.86% in 2019. Also, browser based (no client) declined from 7.59% in 2018 to 2.42% in 2019.
Desktop/Laptop as primary access device to access VDI/SBC is the leading platform in 2019.
We do see an increase of adoption of Chromebooks, 0.77% in 2017, 2.68% in 2018 and 5.08% in 2019.

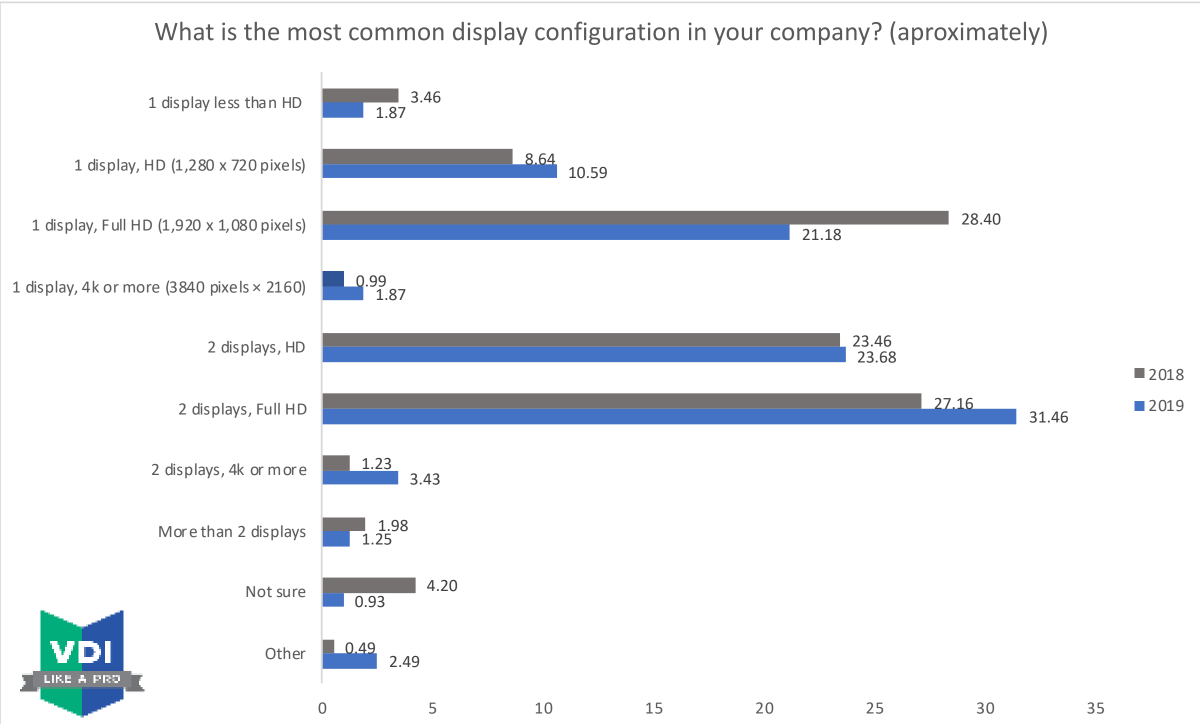




What is the most common display configuration in your company? (approximately)

All dual display configurations combined totals 58.57% and are more popular than a single display configuration at 35.51%. Dual display configuration surpassed single display configuration in 2019.

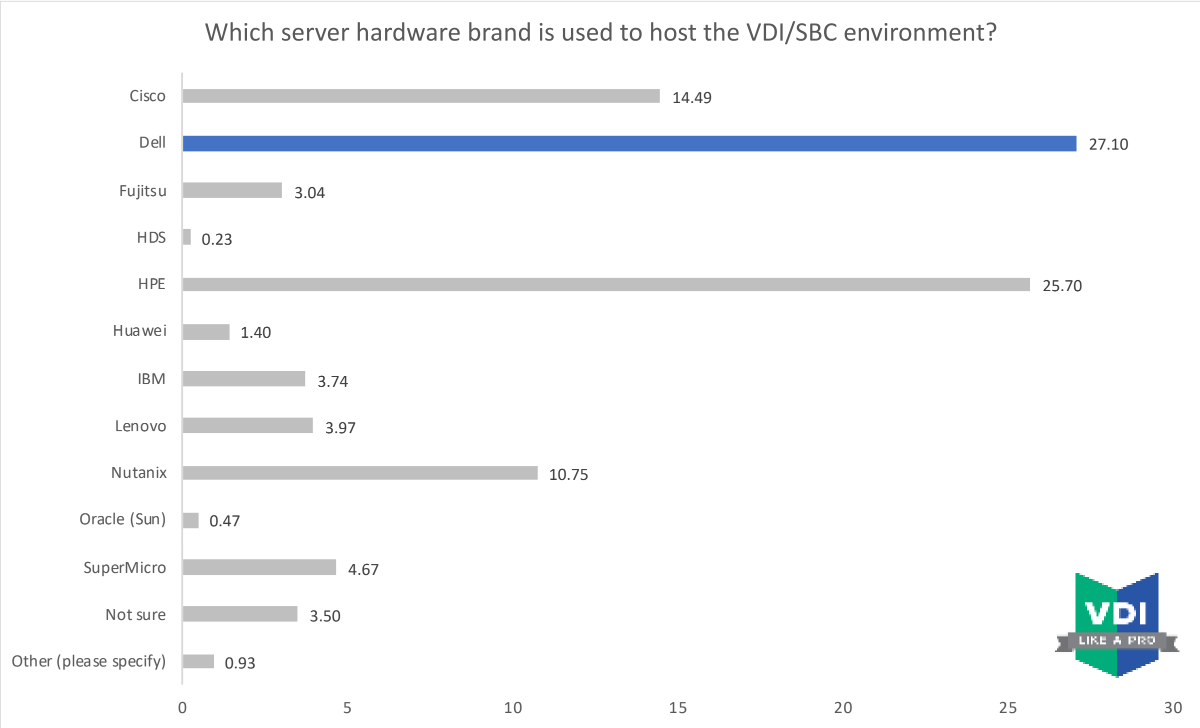


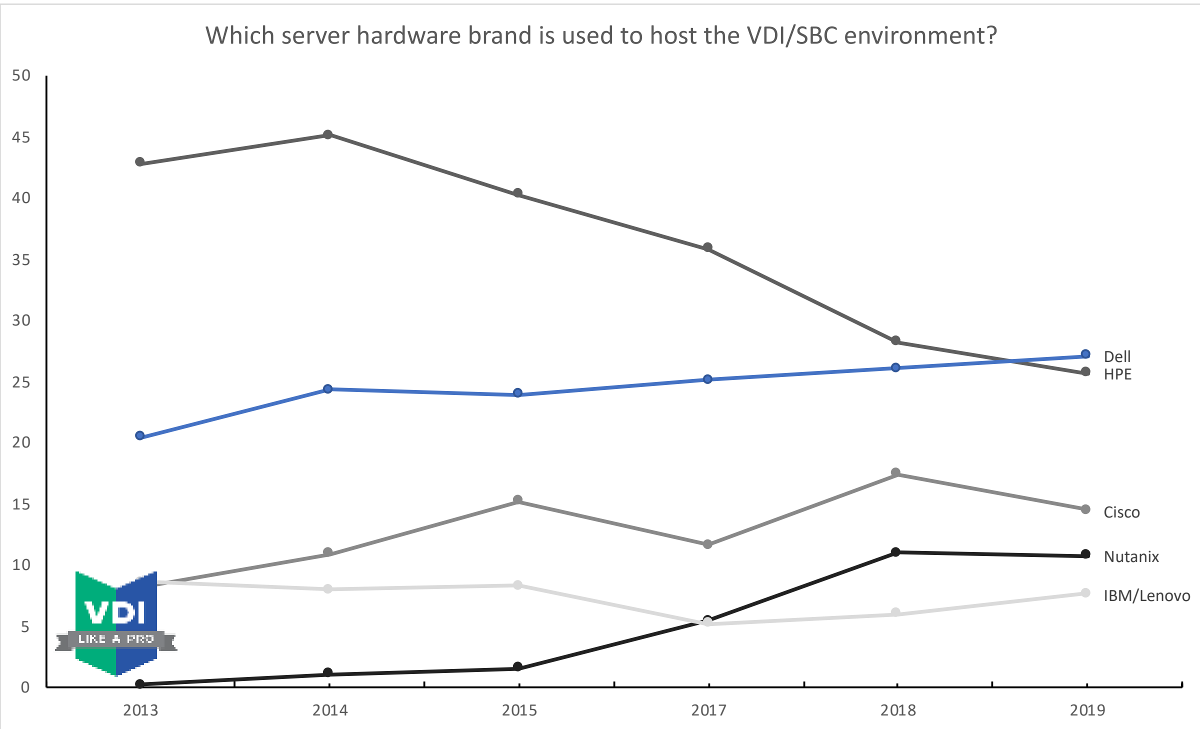


Which server hardware brand is used to host the VDI/SBC environment?

With 27.10%, DELL is the server vendor being used the most with VDI and SBC workloads, closely followed by HPE with 25.70%. We see a gradual decrease for HPE—from 45% in 2014, 40% in 2015, 35% in 2017, 28.24% in 2018 and 25.70% in 2019.

While Dell is slowly increasing its market share—from 23% in 2015, 25% in 2017, 26.11% in 2018 and 27.10% in 2019. After a huge jump from 10.9% in 2014 to 15% in 2015, Cisco's marketing share declined to 12% in 2017, increased to 17.4% in 2018 and declined to 14.49% in 2019.
Finally, Nutanix jumped from just 1% in 2014 and 2015 to nearly 6% in 2017 and growing to 10.75% in 2019 becoming the 4th largest platform to run VDI/SBC workloads.

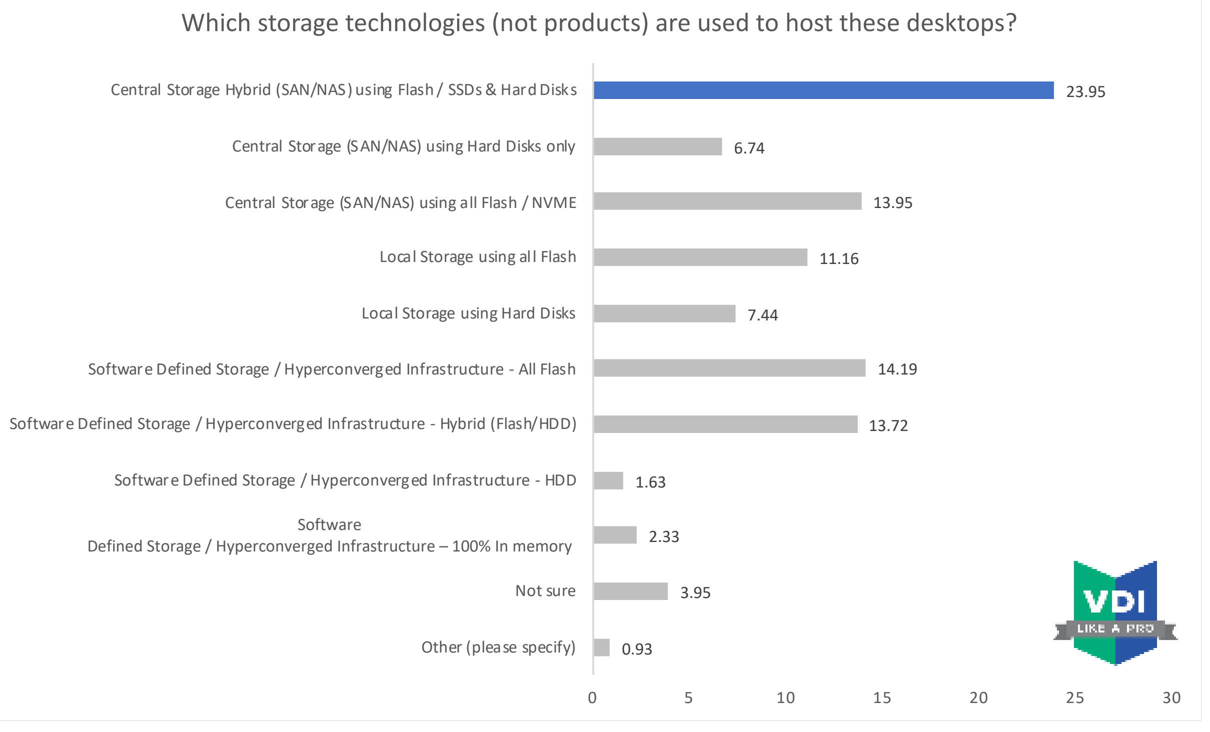


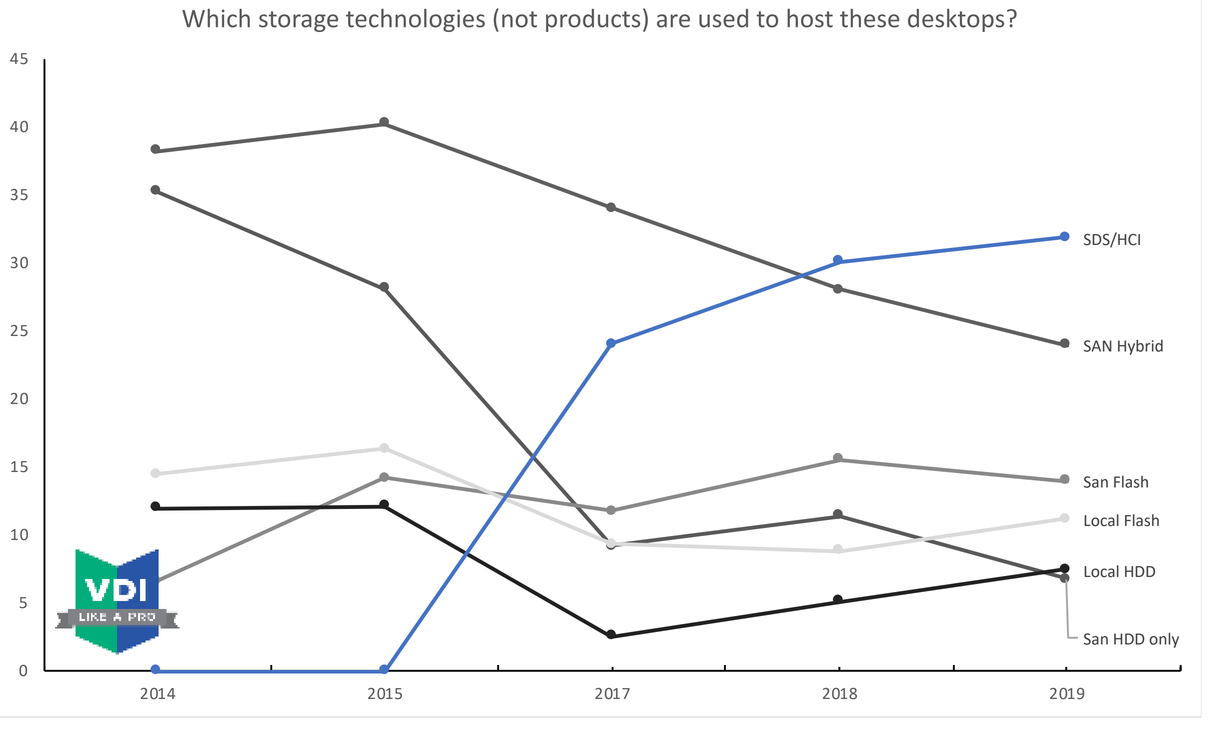


Which storage technologies (not products) are used to host these desktops?

Central 5534 in 2018 and 4464 SDS/HCI 2427 in 2018 and 3187 in 2019. Central storage (SAN) usage is declining in 2019. Although SAN is being used in 44.64% of the VDI/SBC scenarios, a decrease of 10.70% compared to 2018. Hyper converged infrastructure (HCI) and Software defined storage (SDS) usage for VDI/SBC increased from 24.27% in 2018 to 31.87% in 2019.
It's also interesting to see more people use local HDD and Flash in 2019 compared to 2018 and 2017. We're not sure why but it may be related to technology leveraging RAM and HDD in such scenarios or building their own scale-out storage services (HCI/SDS).

Note: this question is a multi-select question because many organizations have a mixture of storage solutions.



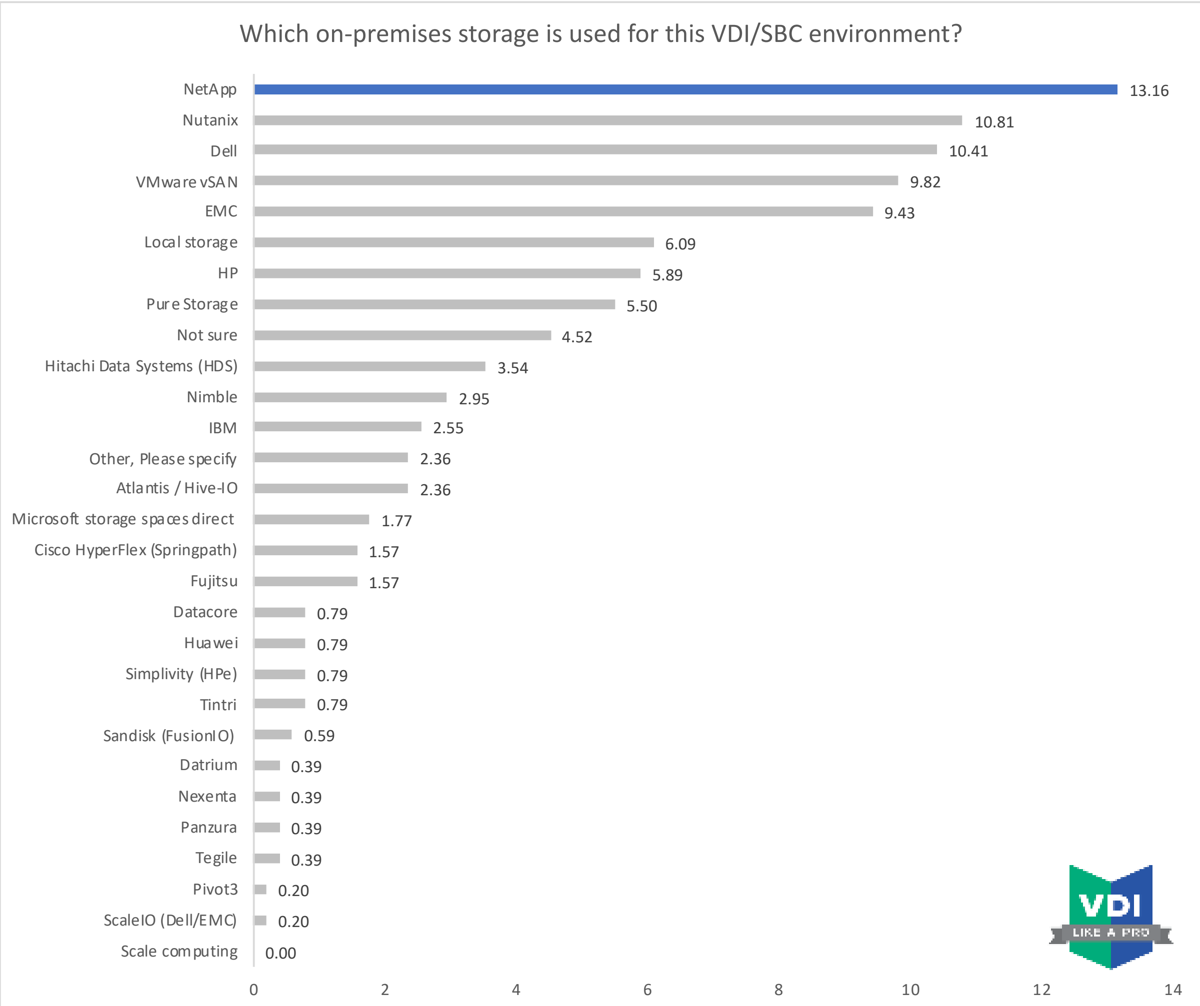


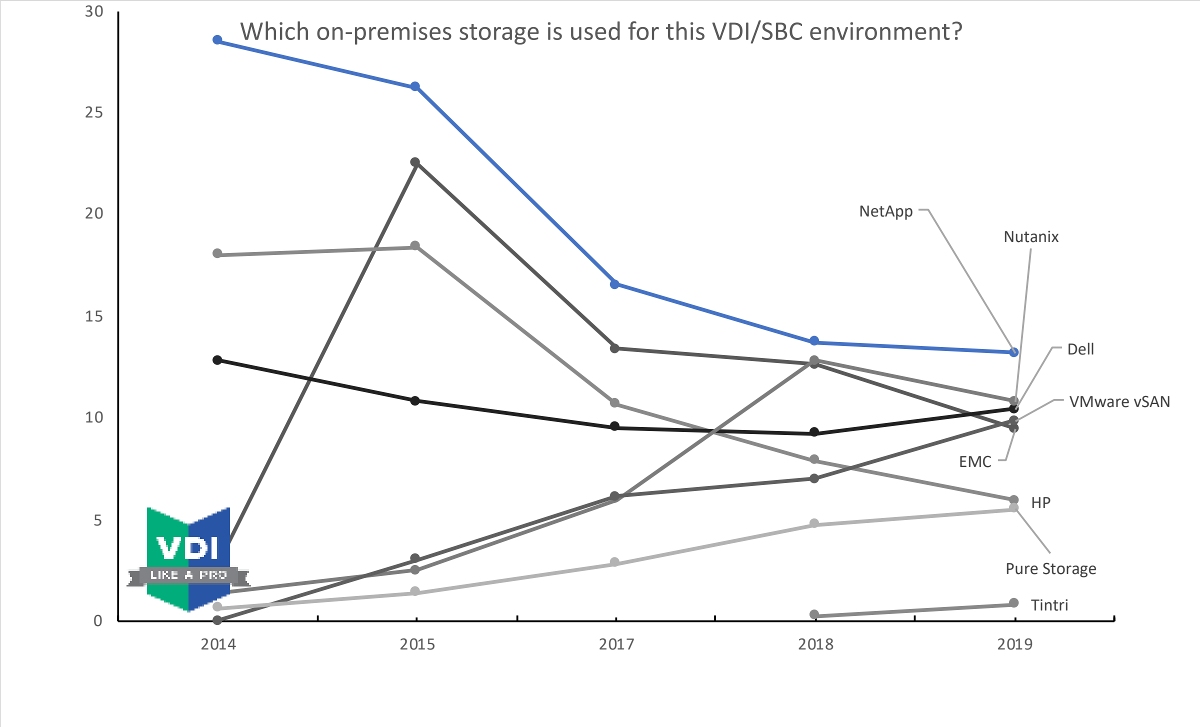
Which on-premises storage is used for this VDI/SBC environment?

It’s clear that the 3-tier storage vendors, such as NetApp, EMC, HPE, and IBM are all facing a strong decline in usage of their solutions in VDI/SBC scenarios.
NetApp dropped from 28.5% in 2014, 17% in 2017, 13.71% in 2018 and stabilized at 13.16% in 2019.
EMC declined from 22.8% in 2014, 13.3% in 2017, 12.58% in 2018 and 9.43% in 2019
HPE declined from 18% in 2014, 10.6% in 2017, 7.87% in 2018 and 5.89% in 2019.

Pure storage adoption is increasing from 2.81% in 2017, 4.72% in 2018 and 5.50% in 2019. Dell increased from 9.21% in 2018 to 10.41% in 2019. VMware VSAN increased from 6.97% in 2018 to 9.82% in 2019. Nutanix usage declined from 12.81% in 2018 to 10.81% in 2019. HCI solutions from Cisco and HPE/Simplivity combined are used in 2.36% of the VDI/SBC deployments.

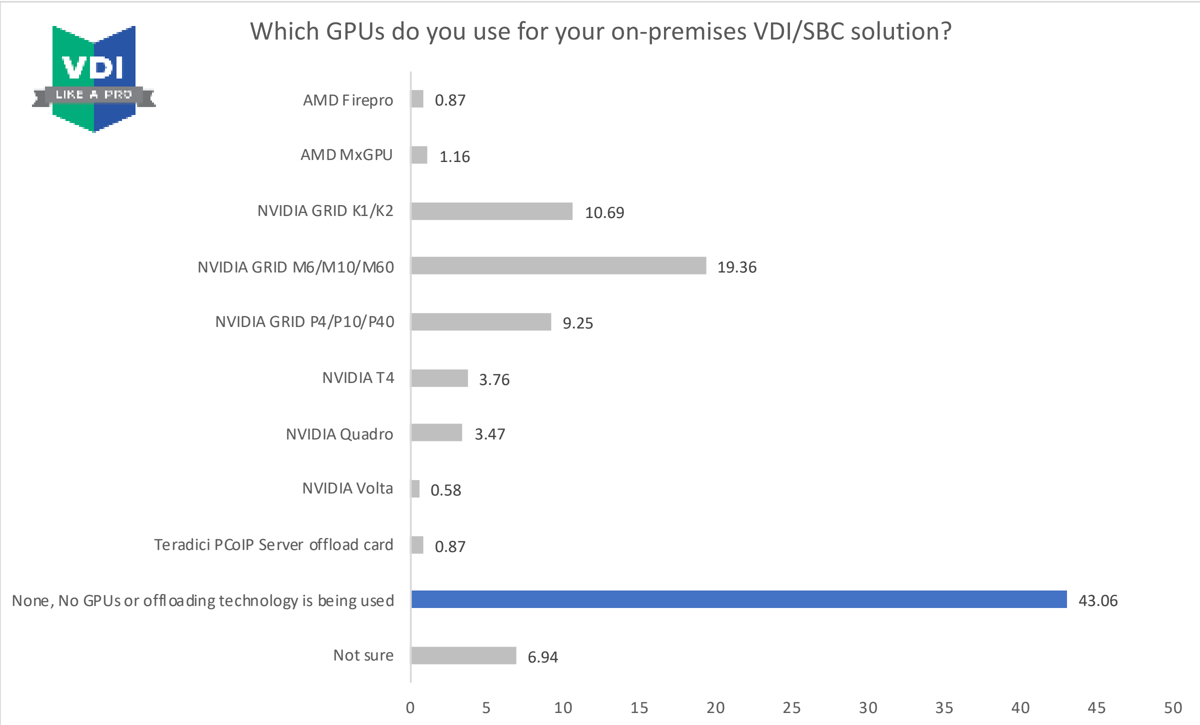
Market share of software-defined storage (SDS) and hyper-converged infrastructure (HCI) solutions is growing rapidly, Nutanix and VMware are the leading with close to 20% adoption.

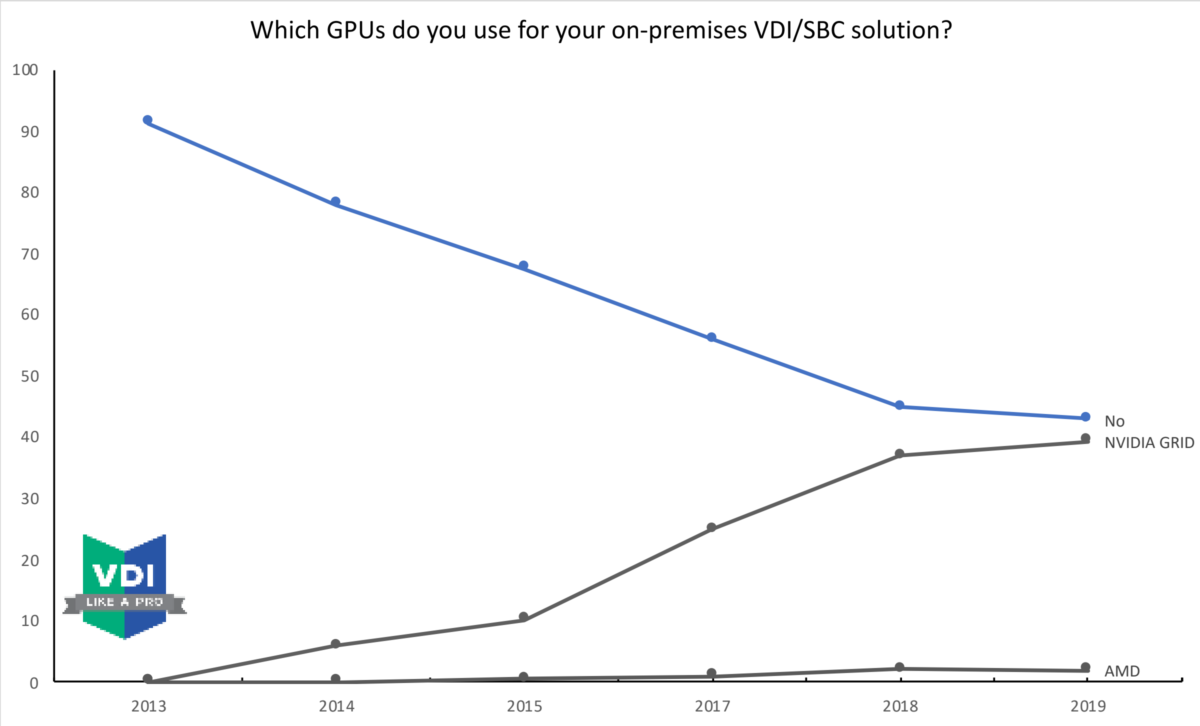



Which on-premises storage is used for this VDI/SBC environment?
30
25
20
15
10
5
0
2014
2015
2017
2018
2019
NetApp
Nutanix
Dell
VMware vSAN
EMC
HP
Pure Storage
Tintri
VDI
LIKE A PRO

Which GPUs do you use for your on-premises VDI/SBC solution?

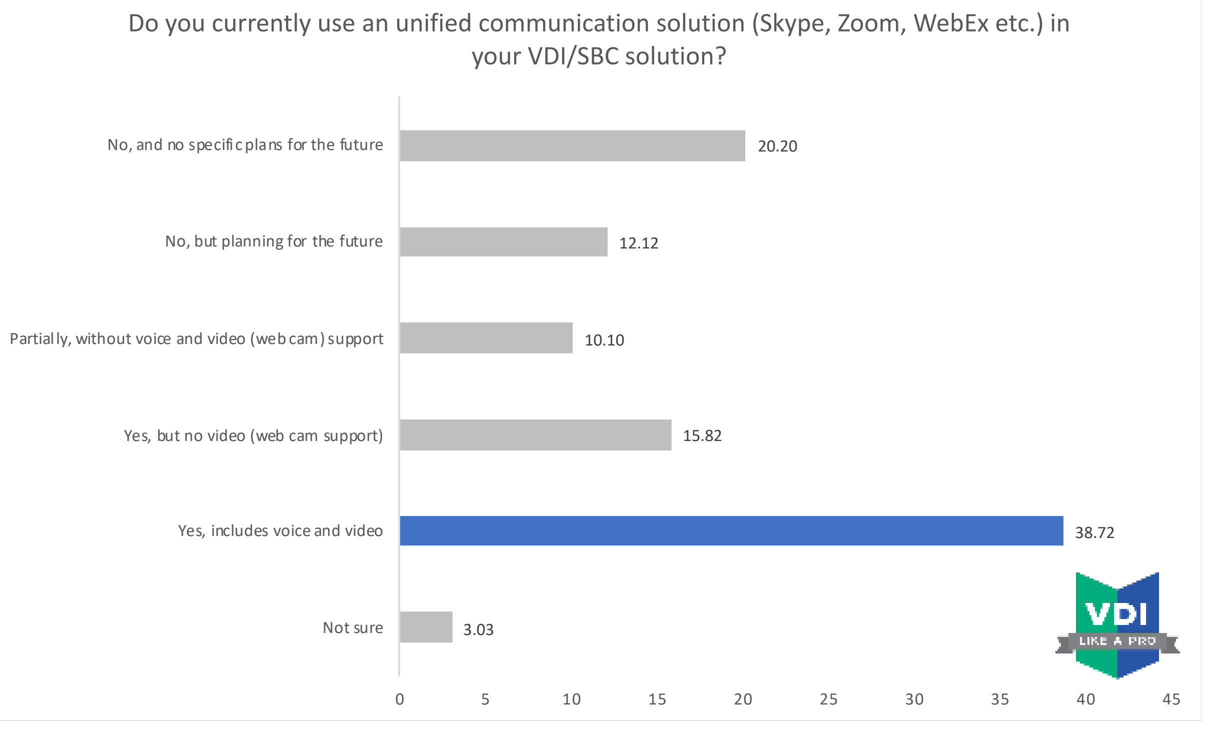
The biggest GPU competitors aren't AMD versus Intel versus NVIDIA—it's the CPU.
Many organizations think the CPU can handle the graphics-related activities and therefore don't use GPUs. "No GPU" declined from 78% in 2014, 67% in 2016, 56% in 2017, 44.92% in 2018 and 43.06% in 2019.
"User experience without GPU is good enough", "we don't need GPUs for our legacy applications" and "adding a GPU is way too expensive" are reasons we hear often in the field. Despite this feedback, we can see usage of GPUs (NVIDIA specifically) grew from 6% in 2014, 10% in 2015, 25% in 2017, 40.60% in 2018 and now 43.35% in 2019.
Many organizations have GPUs on their VDI/SBC roadmap for 2019/2020 in on-premises and public cloud DaaS EUC scenarios. AMD is slowly entering the EUC space with promising EPYC CPUs and Radeon GPUs. We expect 2020/2021 to see larger adoption of AMD here which is great because competition is healthy and good for customers and partners.

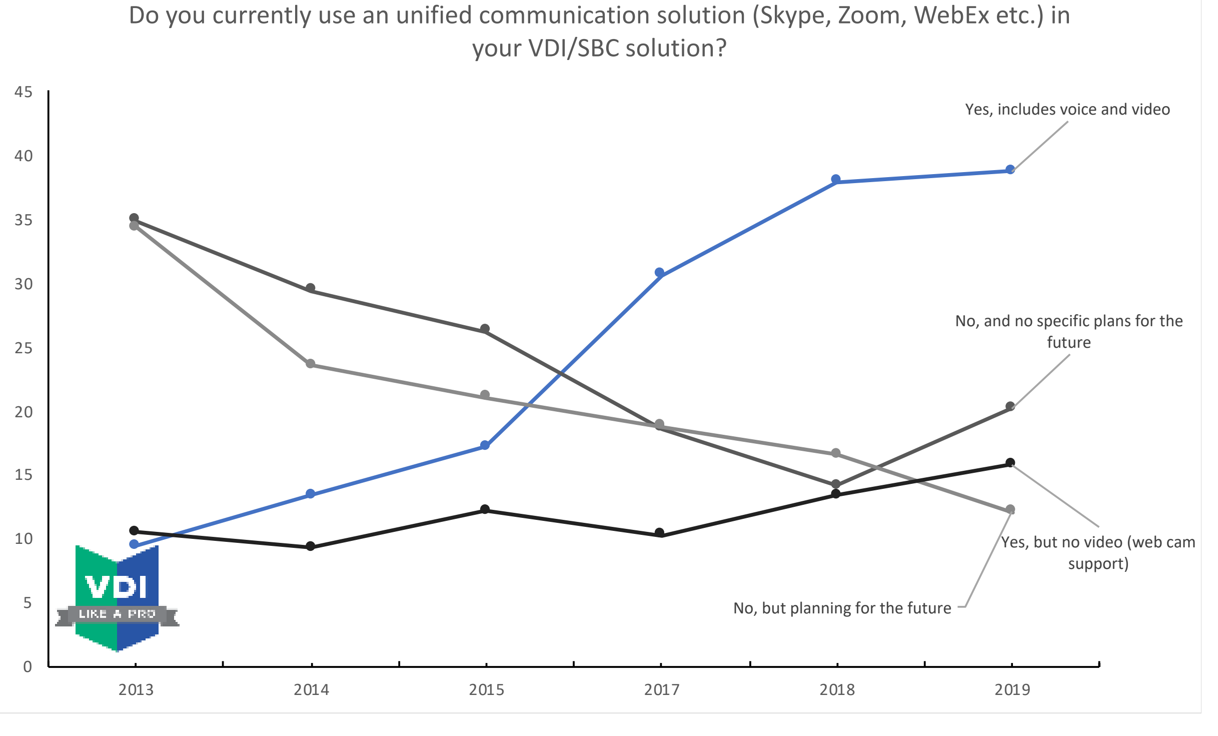



Which GPUs do you use for your on-premises VDI/SBC solution?
100
90
80
70
60
50
40
30
20
10
0
2013
2014
2015
2017
2018
2019
No
NVIDIA GRID
AMD
VDI
LIKE A PRO

Do you currently use a unified communication solution (Skype, Zoom, WebEx etc.) in your VDI/SBC solution?

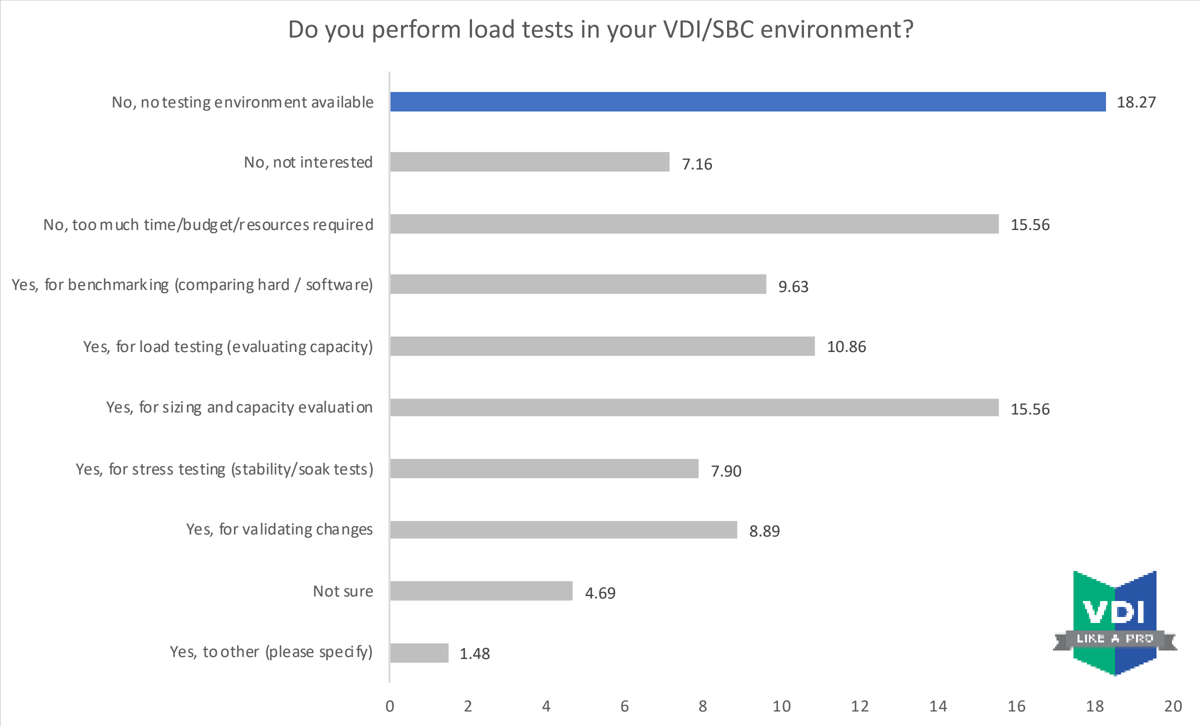
“Work isn’t a place, it’s something you do” -- this statement applies to many. With increasing focus on digital transformation, user experience, and collaboration, we clearly see more people are using unified communications. The use of unified communications with voice and video support has increased rapidly from 13.4% in 2014, 30.6% in 2017, 37.90% in 2018 and 38.72% in 2019. While Unified Communications in VDI/SBC/DaaS always is ‘attention’ and often challenging it is great to see usage increasing.

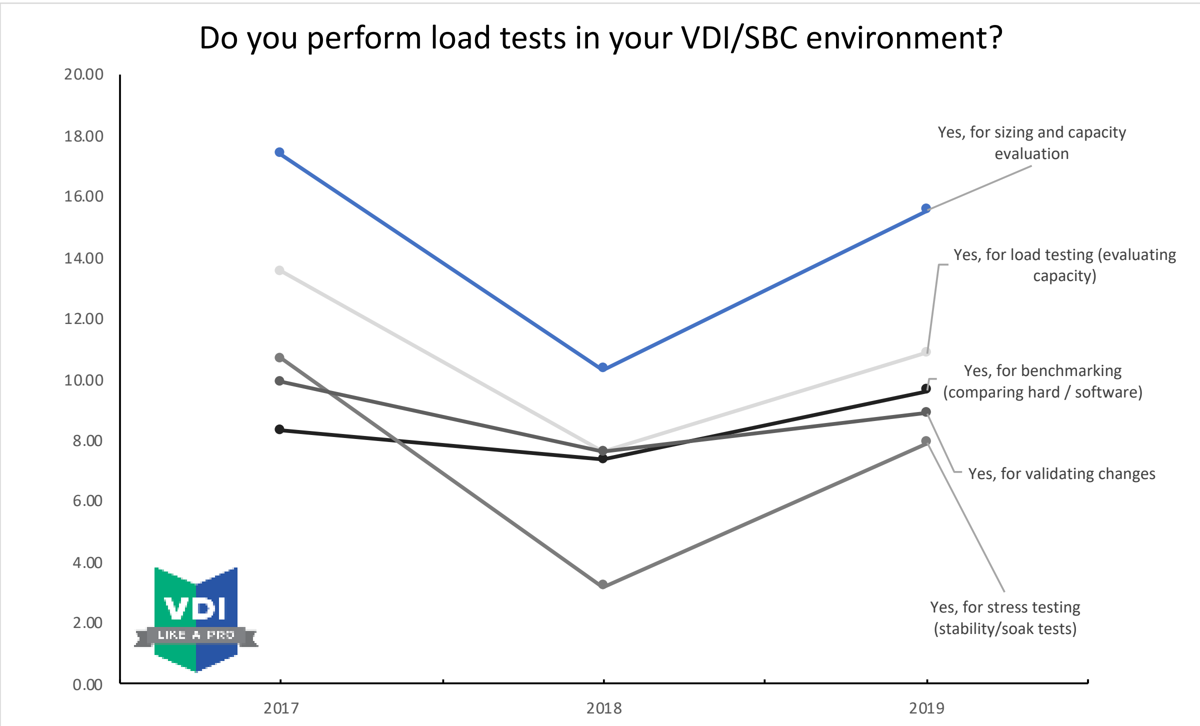




Do you perform load tests in your VDI/SBC environment?

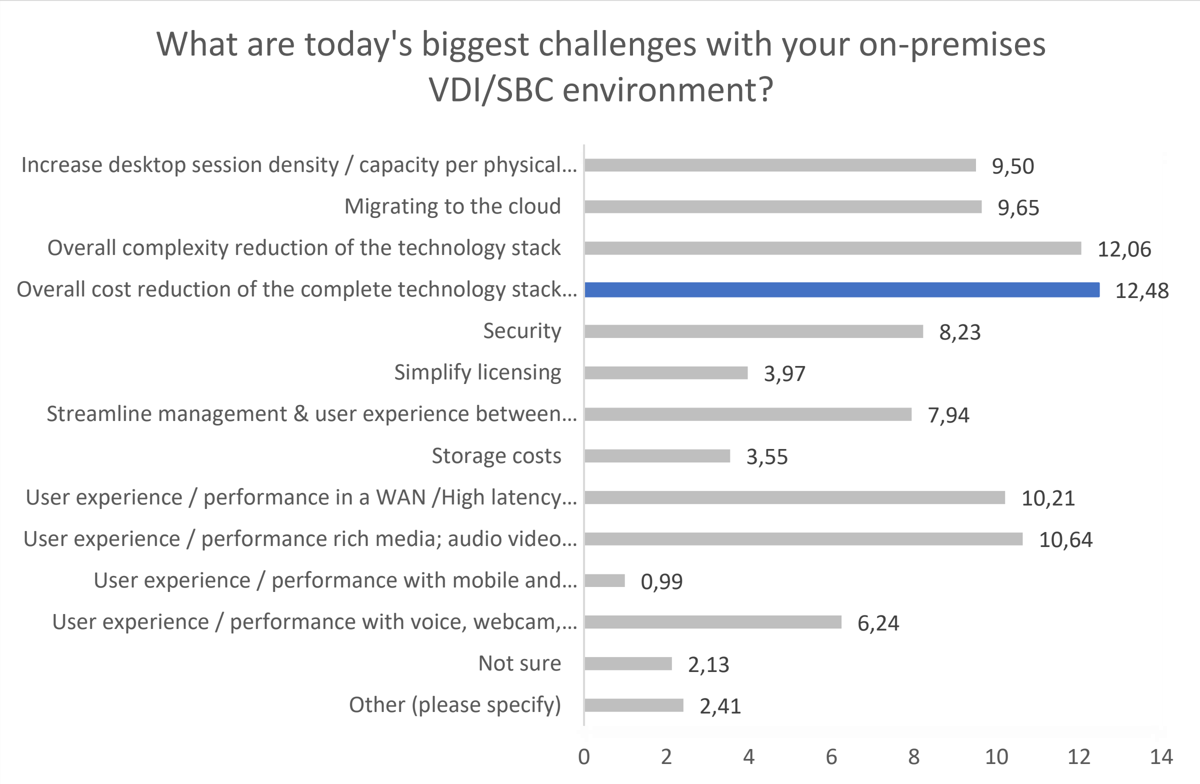
In total 54.32% perform load tests in their VDI/SBC environment which is an 18.20% increase compared to 2018. Load testing has become increasingly popular in VDI/SBC environments over the years. Not only for newly built environments, but more importantly to continuously monitor the performance of the applications and desktop from the end-user perspective -- especially after Meltdown and Spectre performance impact findings. Many of the participants (21.3%) don't have a test environment available to do performance testing. While 15.56% of the respondents don't perform load/stress tests because of budget/resources or time constraints.

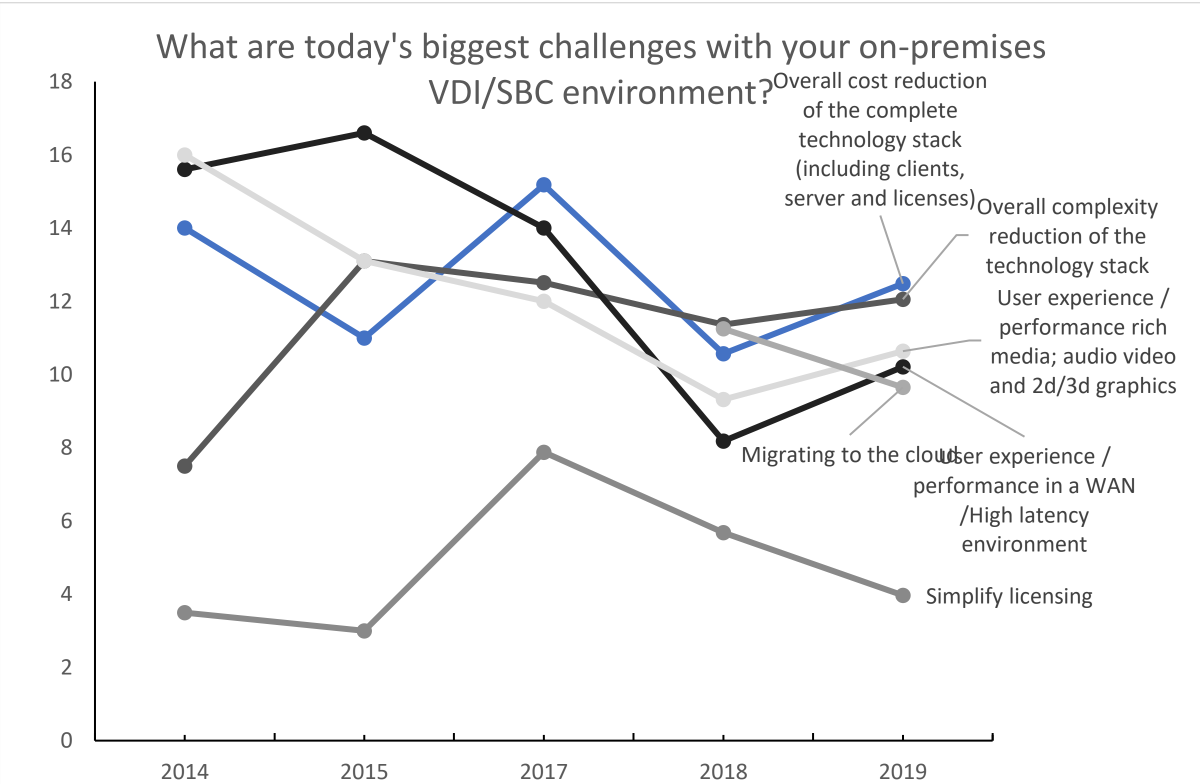




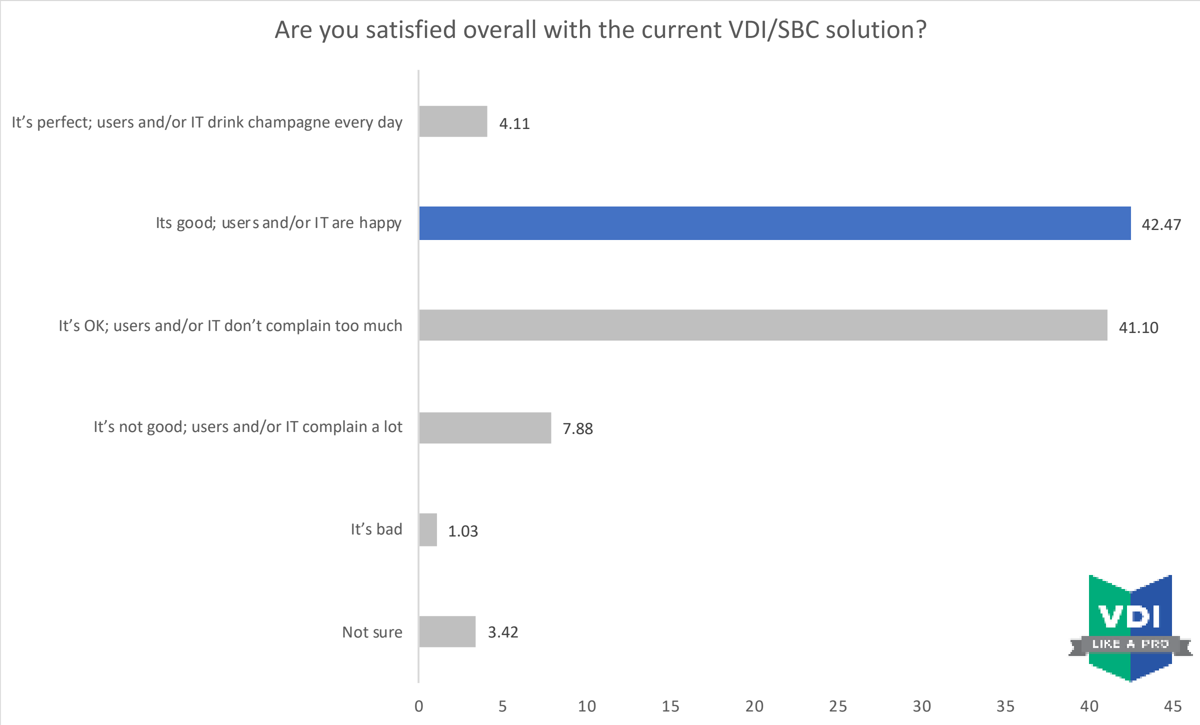
What are today's biggest challenges with your on-premises VDI/SBC environment?

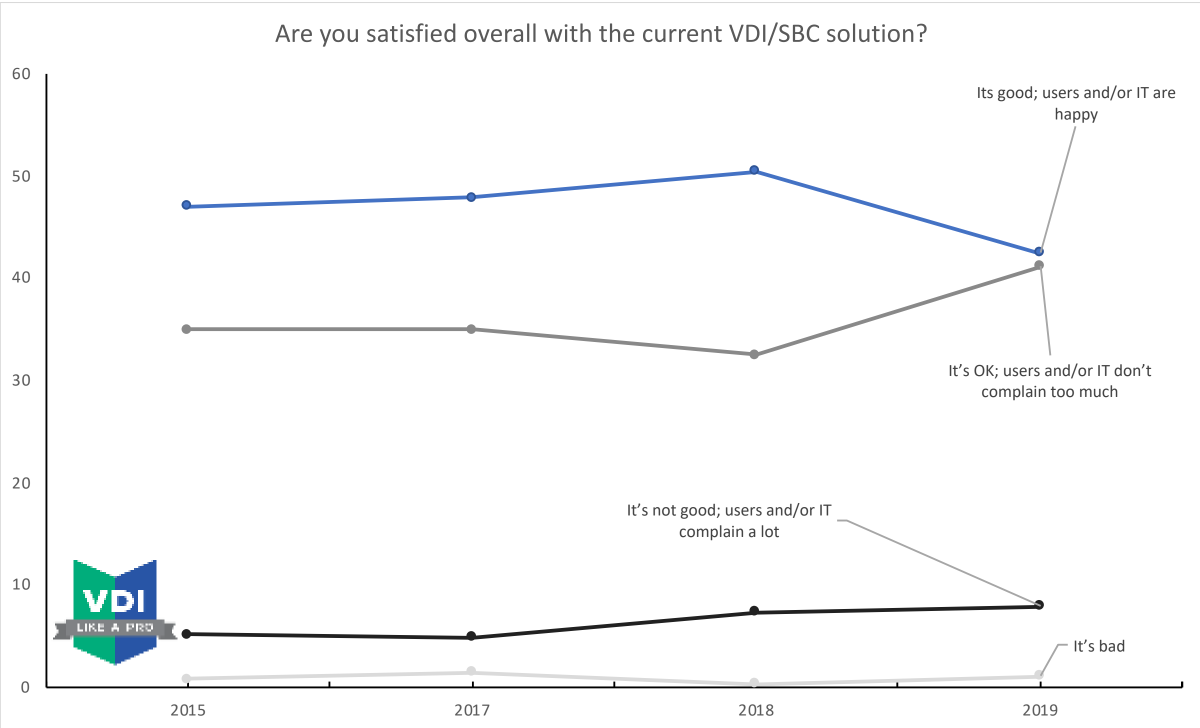
In 2018 the biggest VDI/SBC challenges are complexity, the migration to public cloud, and costs. User experience and streamline management between VDI/SBC and PC is also considered challenging. Storage costs and licensing is less of a challenge in 2018.





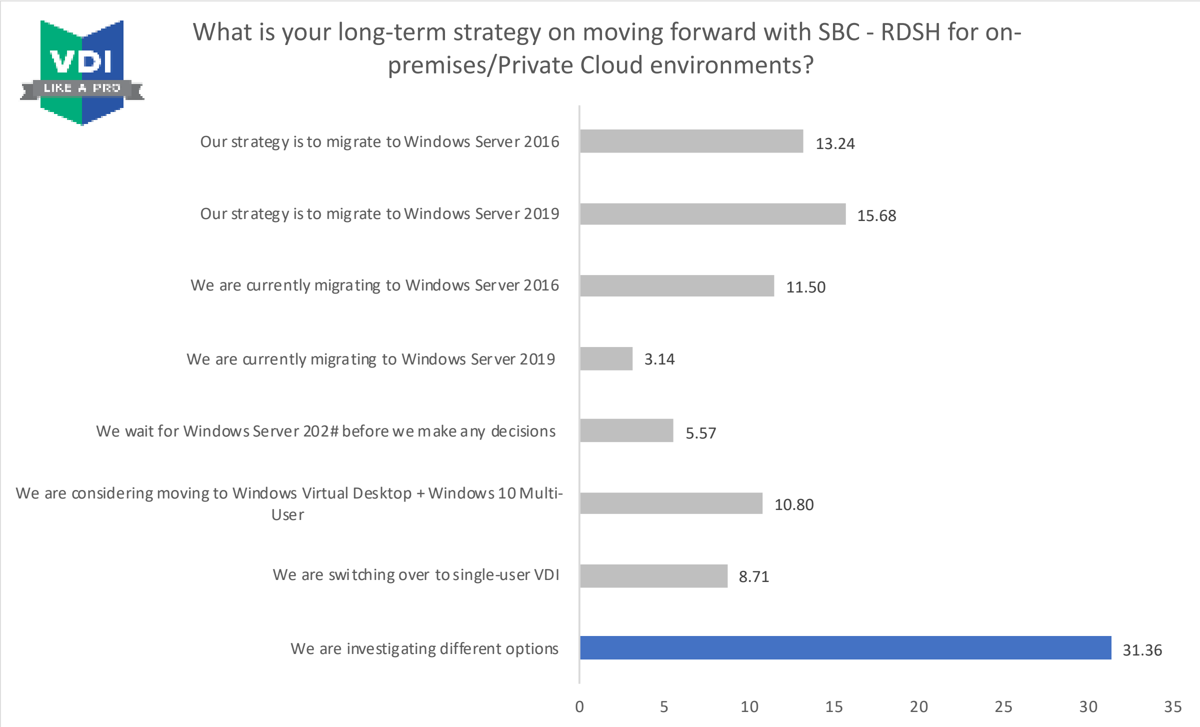
Are you satisfied overall with the current VDI/SBC solution?





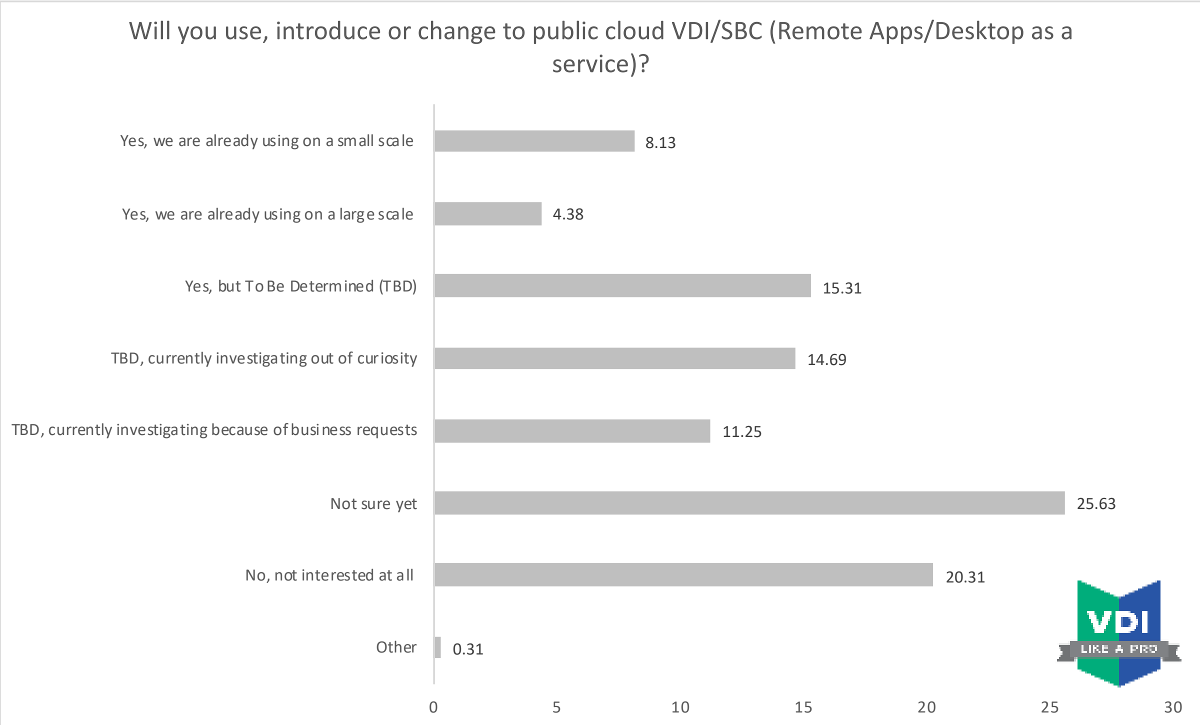
What is your long-term strategy on moving forward with SBC - RDSH for on-premises/Private Cloud environments?

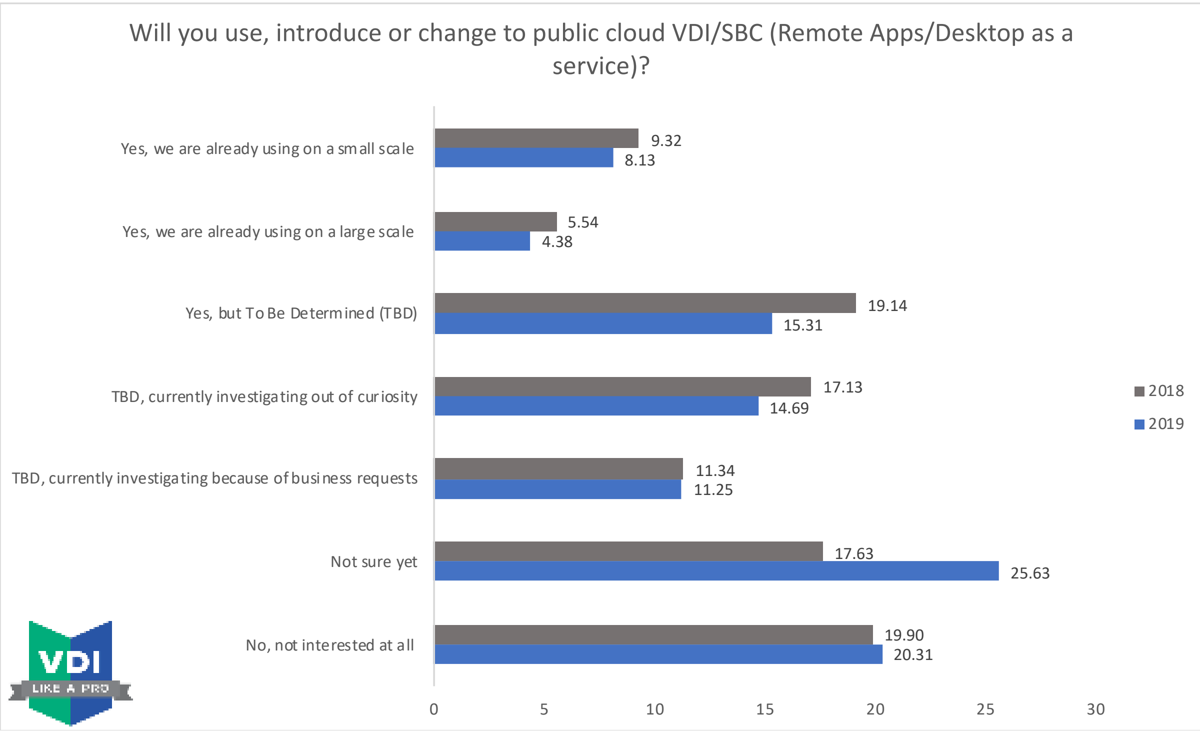
In 2019 around 8.7% of the participants are switching from SBC to VDI, 10.80% are considering Windows 10 Multi user via Windows Virtual Desktop (WVD). 31.36% is investigating different options while 15.68% will migrate to Server 2019. Interesting dynamics in the long term strategy.



Will you use, introduce or change to public cloud VDI/SBC (Remote Apps/DaaS)?

27.82% of the participants are either already using or plan on changing to public cloud Desktop as a Service / Remote Application as a Service solutions which is a decrease of 7% compared to 2018. The majority (41.25%) of the respondents will determine what to do next while 20.31% aren't interested in public cloud 'DaaS' - VDI/SBC. In a cloud-first and mobile-first world, many organizations see solutions from Amazon, Citrix, Nutanix Frame, Microsoft, VMware as great solutions to deliver applications and desktops from the public cloud.



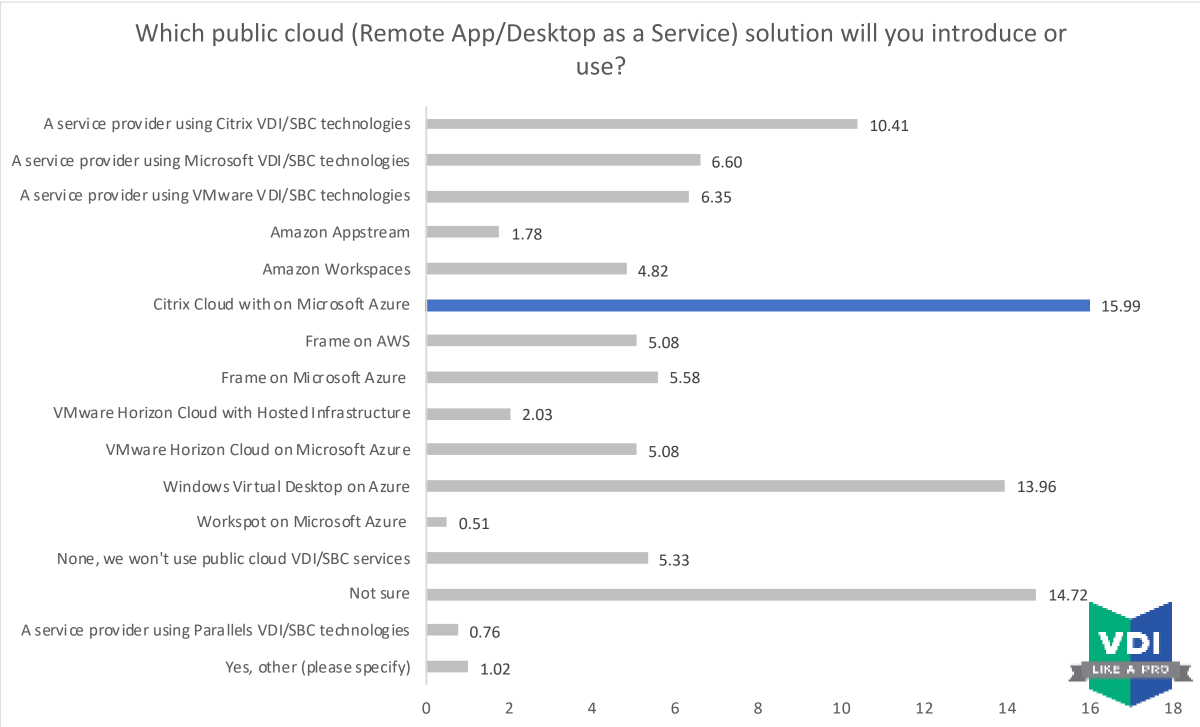


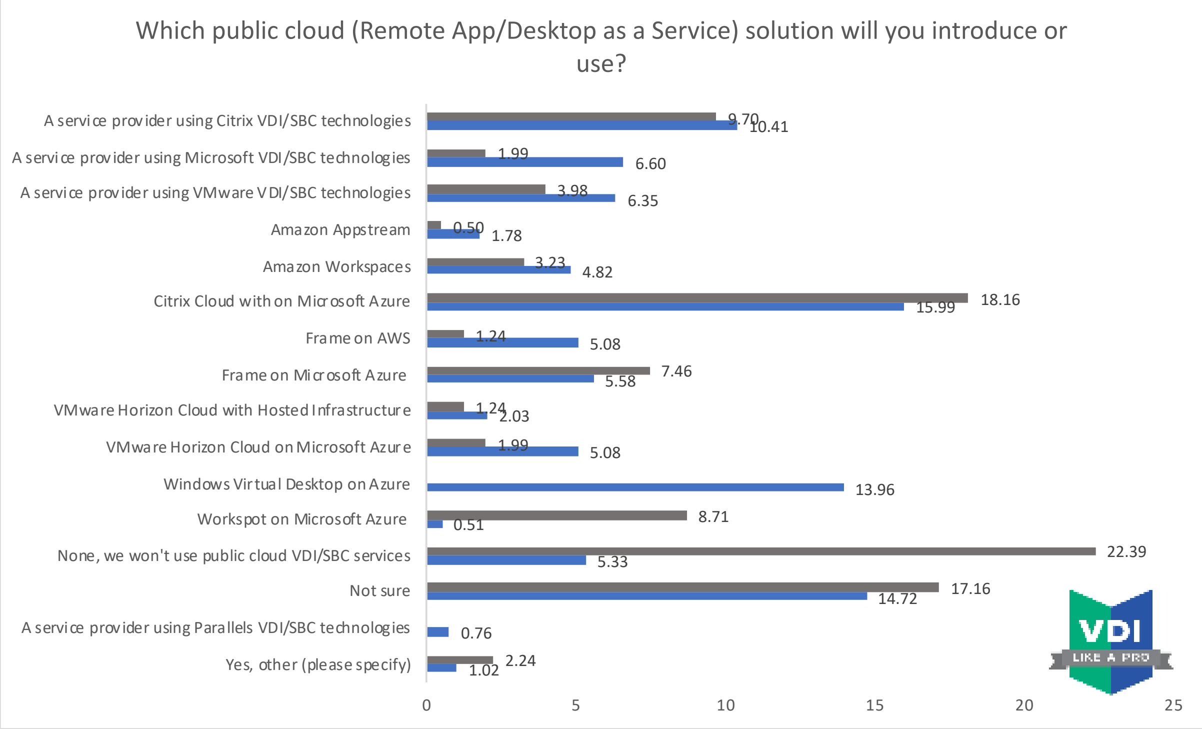
Which public cloud (Remote App/DaaS) solution will you introduce or use?

Remote application and Desktop as a Service provided by a service provider using Citrix, Microsoft or VMware solutions are being considered by 23.36% of the participants which is an increase of 7.36% compared to 2018. Citrix Cloud will be introduced or is being used by 15.99% which is a decrease of 2.17% compared to 2018.

Amazon Appstream and Workspaces combined are considered or used by 6.69% in 2019 compared to 3.73% of the participants in, the majority is interested in VDI/Workspaces. Workspot declined from 8.71% in 2018 to close to zero (0.51%) in 2019.
VMware Horizon Cloud on Azure is considered by 5.08% of participants which is a 3.09% increase compared to 2018. Nutanix Frame on both Azure and AWS is considered or being used by 10.66% of the survey respondents which is an 1.96% increase compared to 2018.
Microsoft Windows Virtual Desktop (WVD) is considered by 13.96% of the respondents.
The group of participants who won't introduce or use DaaS is declining from 22.39% in 2019 to 5.33% in 2019!

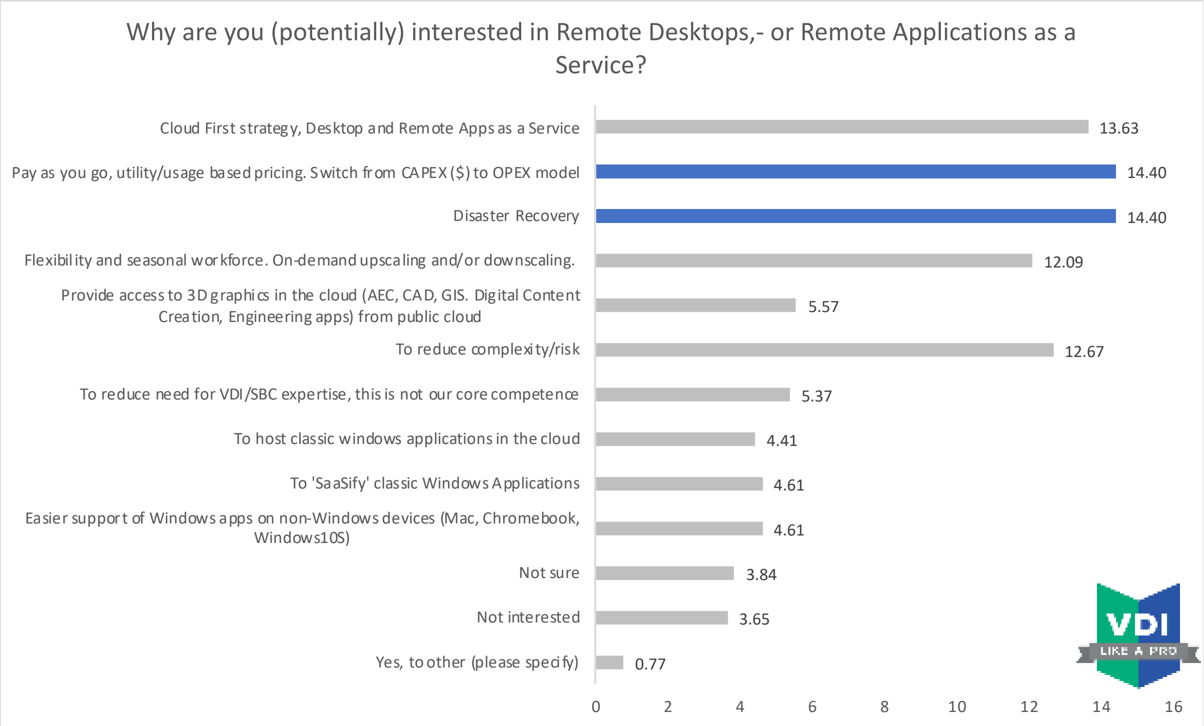
The biggest competitor for public cloud DaaS/remote application as a service isn't Amazon, Citrix, Microsoft, Nutanix or VMware -- it's the on-premises VDI/SBC solutions combined with trends to use more web/SaaS, mobile, and PCs.

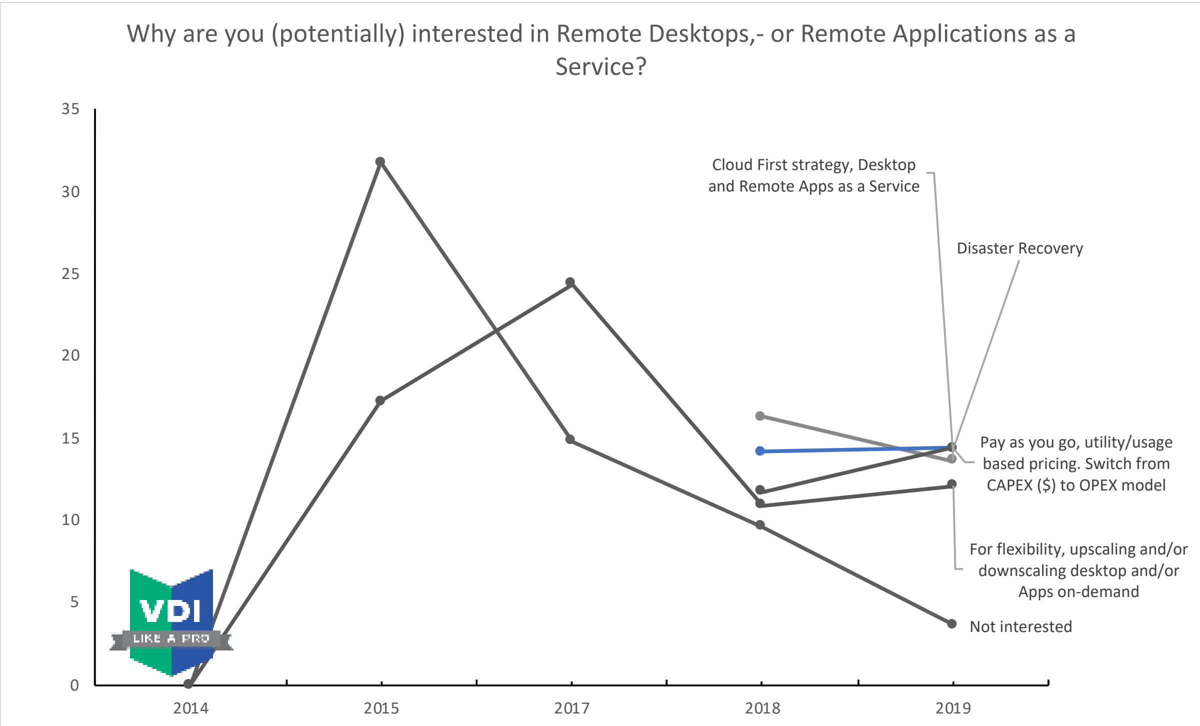



Which public cloud (Remote App/Desktop as a Service) solution will you introduce or use?
A service provider using Citrix VDI/SBC technologies
9.70
10.41
A service provider using Microsoft VDI/SBC technologies
1.99
6.60
A service provider using VMware VDI/SBC technologies
3.98
6.35
Amazon Appstream
0.50
1.78
Amazon Workspaces
3.23
4.82
Citrix Cloud with on Microsoft Azure
18.16
15.99
Frame on AWS
1.24
5.08
Frame on Microsoft Azure
7.46
5.58
VMware Horizon Cloud with Hosted Infrastructure
1.24
2.03
VMware Horizon Cloud on Microsoft Azure
1.99
5.08
Windows Virtual Desktop on Azure
13.96
Workspot on Microsoft Azure
8.71
0.51
None, we won't use public cloud VDI/SBC services
22.39
5.33
Not sure
17.16
14.72
A service provider using Parallels VDI/SBC technologies
0.76
Yes, other (please specify)
2.24
1.02
0
5
10
15
20
25
VDI
LIKE A PRO

Why are you (potentially) interested in Remote Desktops,- or Remote Applications as a Service?

Pay as you go (14.4%), Disaster Recovery (14.4%), Cloud first strategy (13.63%) and reduce risk and complexity (12.67%) are the four main reasons why participants are interested in DaaS. People who are not interested in DaaS is declining rapidly to 3.65% in 2019.

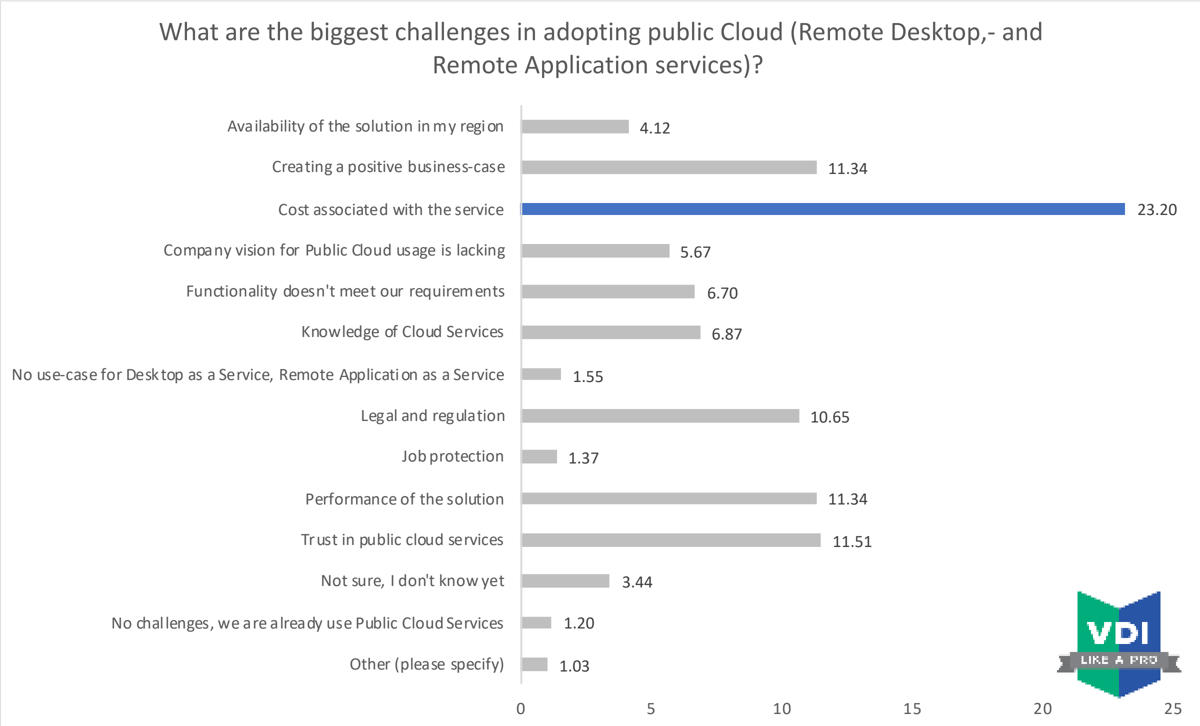


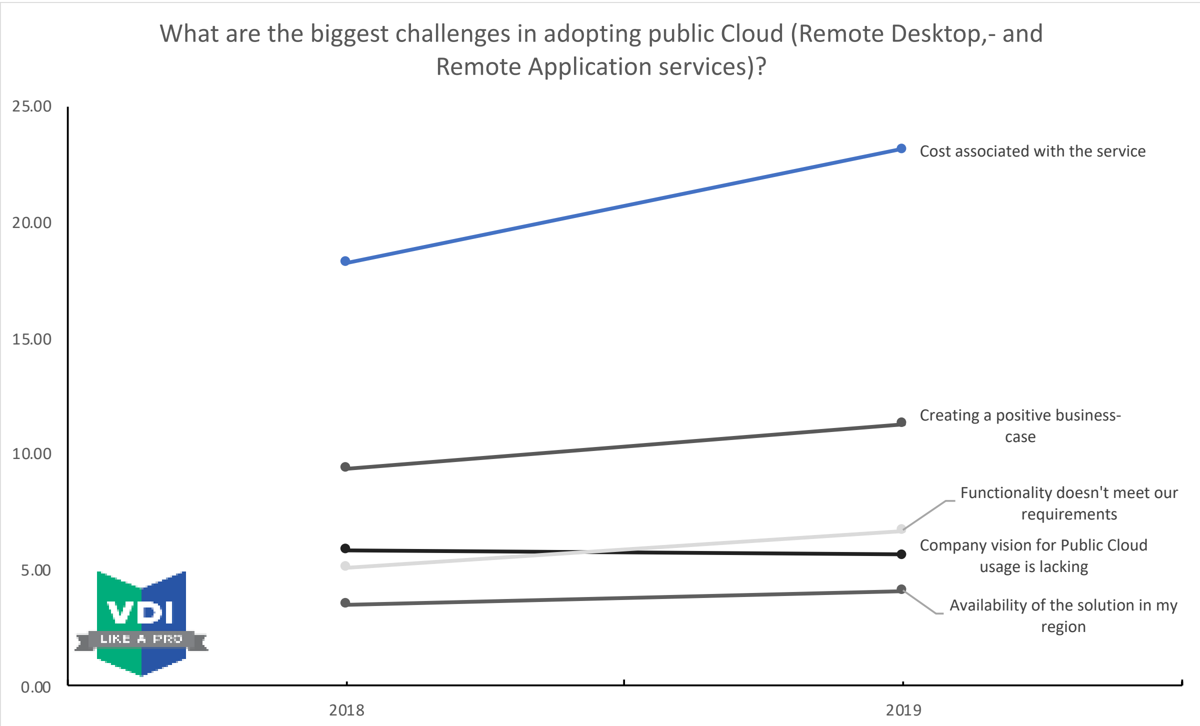


Desktop as a Service – Application Remoting as a Service related questions

What are the biggest challenges in adopting public Cloud (Remote Desktop,- and Remote Application services)?

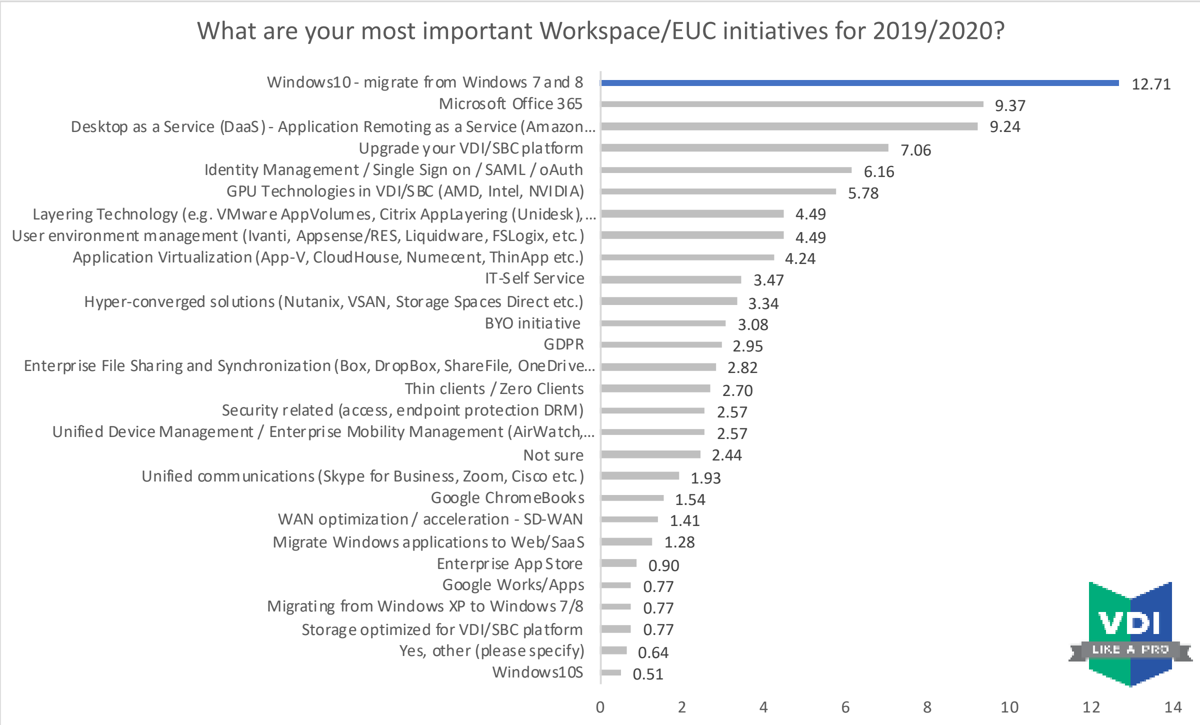
The four biggest challenges in adopting public cloud Desktop as a Service (DaaS) and application remoting as a service are cost (23.20%), trust (11.51%), creating a positive business case (11.34%) and performance (11.34%). Legal and regulation with 10.65% also is a challenge.

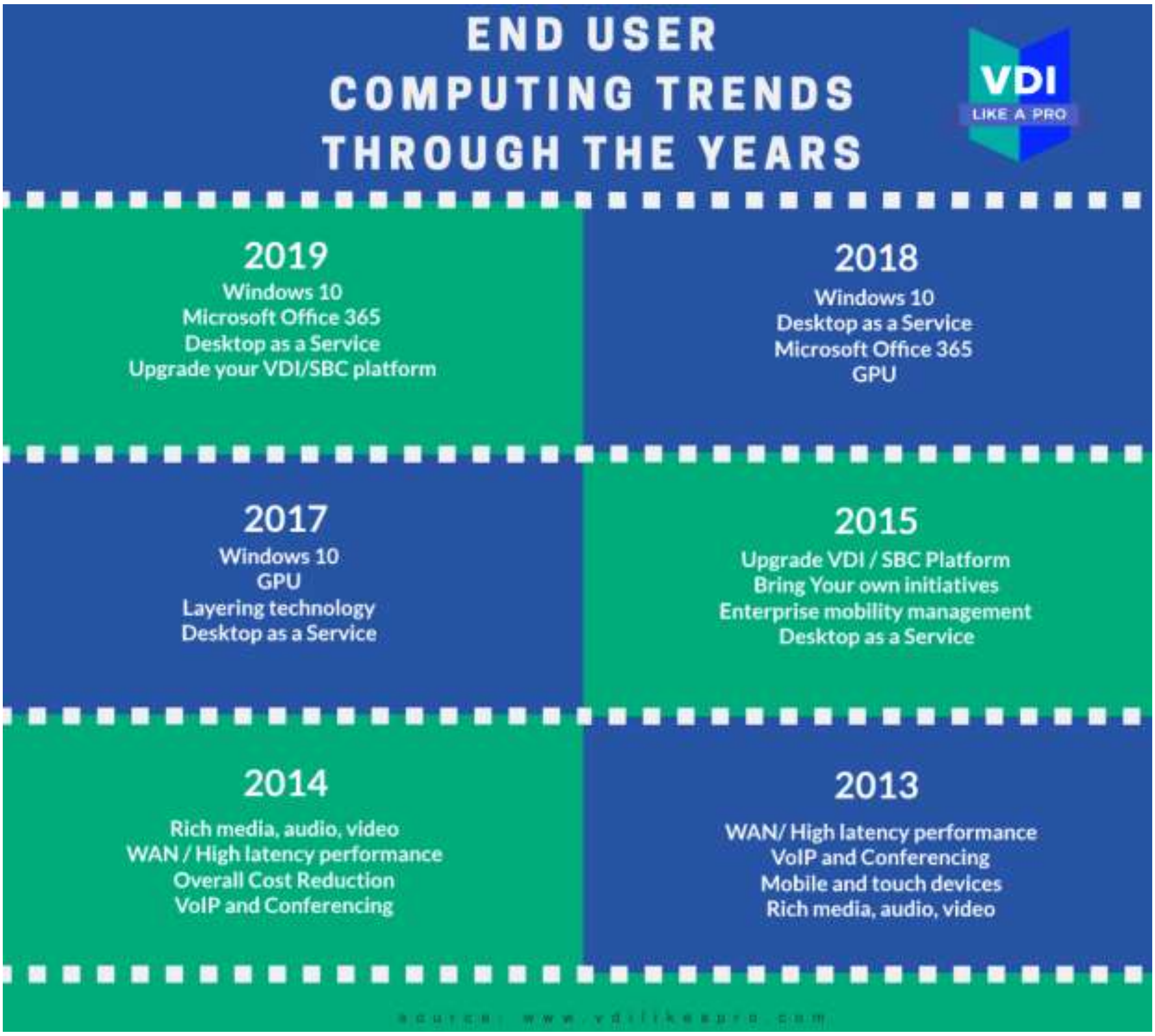




What are your most important Workspace/EUC initiatives for 2018/2019?

Unsurprisingly, most of the respondents (12.71%) are busy digging into Windows 10 and migrating their current solution to Windows 10. The second-most important initiative for 2019/2020 is Office 365 at 9.37% followed by DaaS with 9.24%. Identity Management (SSO/SAML/oAuth) is becoming more important compared to 2018 also does upgrading the existing VDI/SBC platform. GDPR becomes less important.

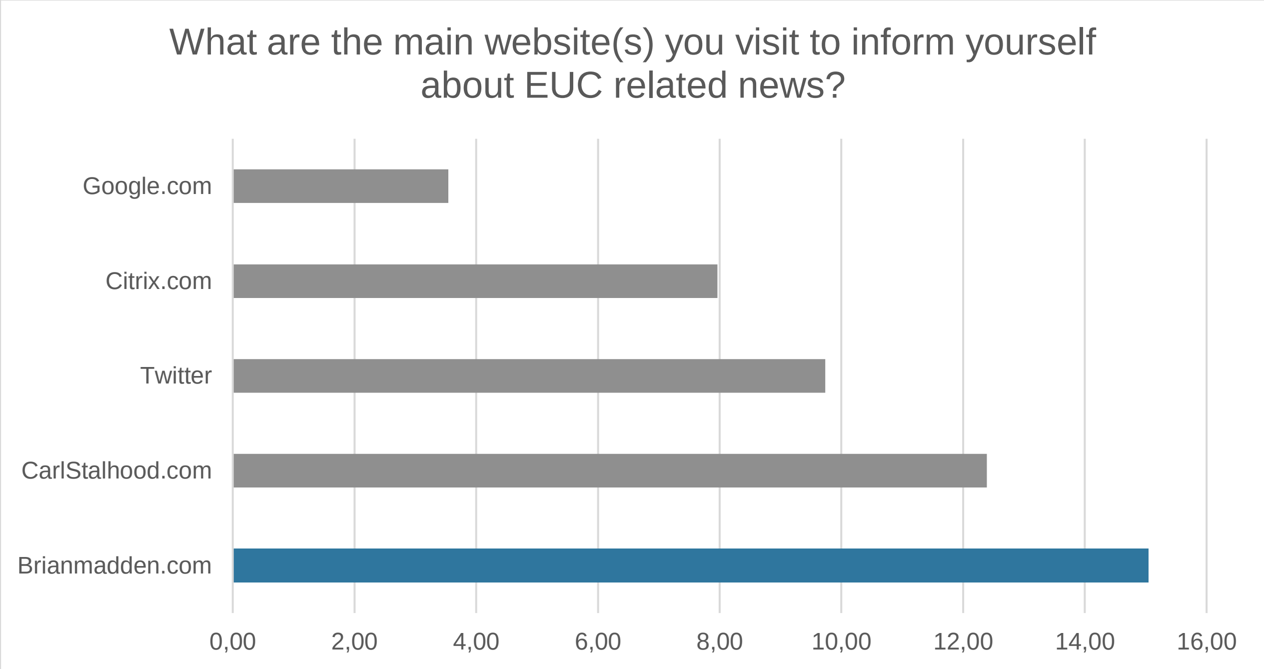



END USER
COMPUTING TRENDS
THROUGH THE YEARS
VDI
LIKE A PRO
2019
Windows 10
Microsoft Office 365
Desktop as a Service
Upgrade your VDI/SBC platform
2018
Windows 10
Desktop as a Service
Microsoft Office 365
GPU
2017
Windows 10
GPU
Layering technology
Desktop as a Service
2015
Upgrade VDI / SBC Platform
Bring Your own initiatives
Enterprise mobility management
Desktop as a Service
2014
Rich media, audio, video
WAN / High latency performance
Overall Cost Reduction
VoIP and Conferencing
2013
WAN/ High latency performance
VoIP and Conferencing
Mobile and touch devices
Rich media, audio, video

EUC knowledge gathering

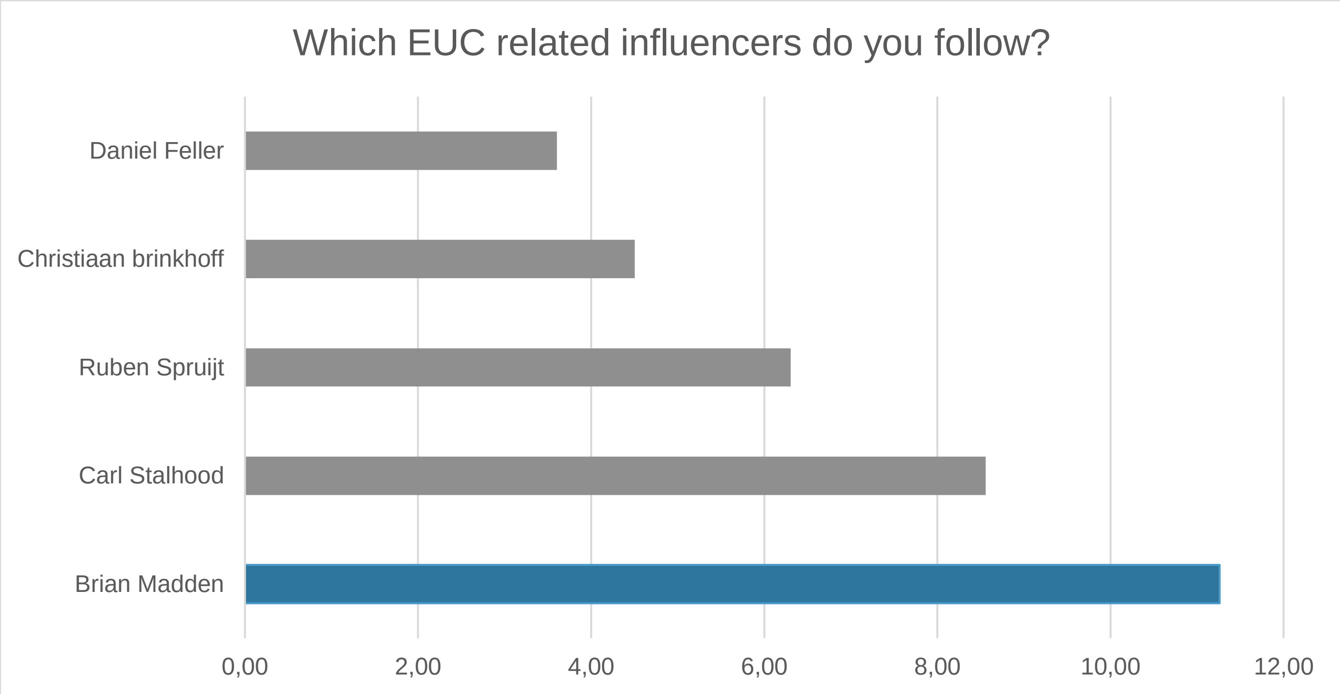
What are the main website(s) you visit to inform yourself about EUC related news?

BrianMadden.com (the website, not the person 😉) remains the most popular website dedicated to EUC for 2019, Carl Stalhood makes his appearance in the top 5 websites this year continuing to fill gaps in EUC vendor documentation.



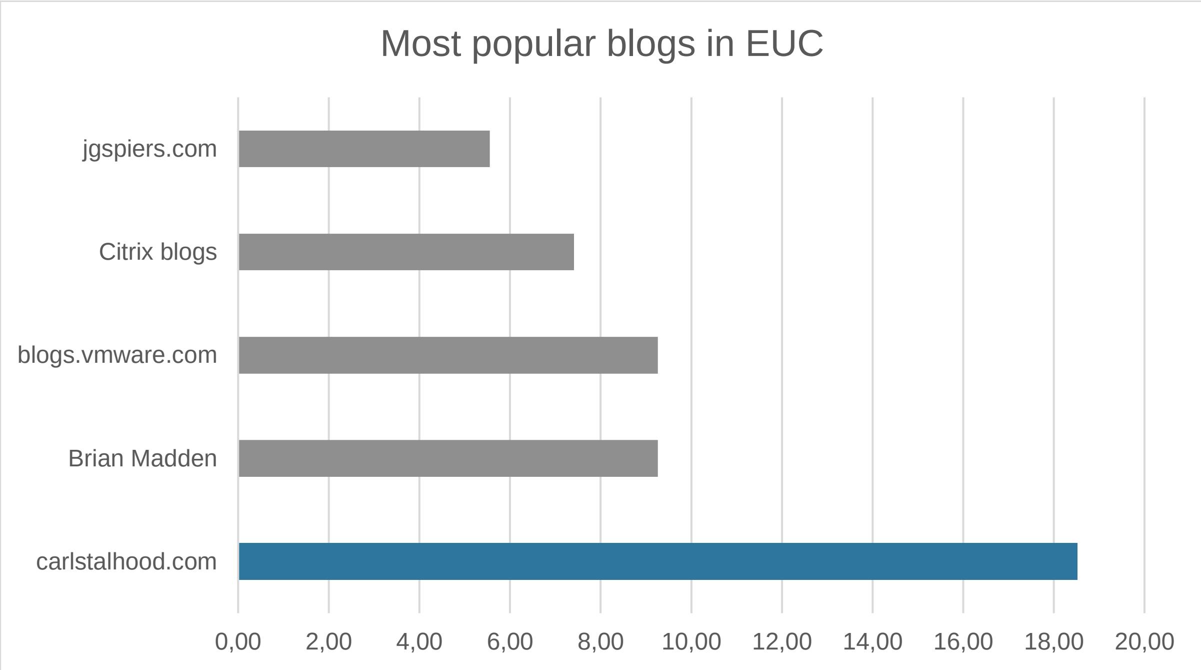
Which EUC related influencers do you follow?

New in the top 5 this year are Daniel Feller and Christiaan Brinkhoff, but with 11.2% of the votes Brian Madden remains on top position for 2019.



Do you read EUC related blogs, and if so which blogs do you read? (Not your own)

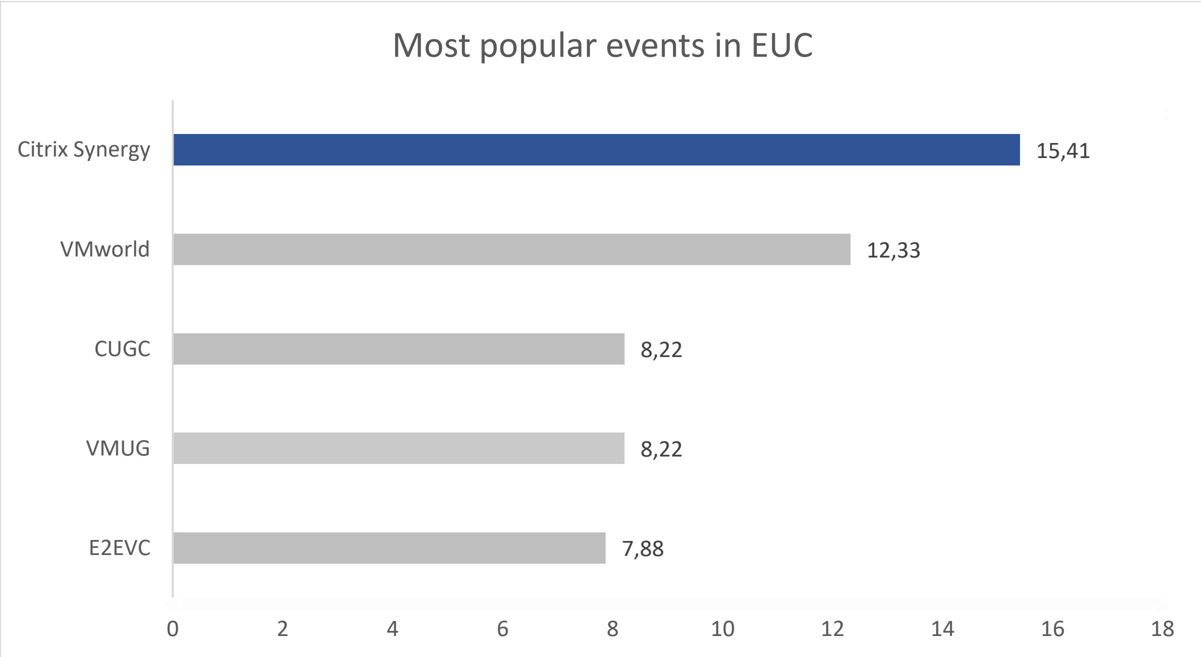
Both VMware and Citrix are making big investments in their official blog platforms producing ever more EUC related content and tools. New in this list is George Spiers.



Which EUC events, conferences and tradeshows do you visit? E.g: Online events such as webinars, user groups, vendor conferences, etc.

Among the survey participants, Citrix Synergy is the leading event with 15% followed by VMworld with 12%. Community events gain great interest. E2EVC, Citrix User Groups and VMware User groups are visited by many of the participants. In this survey it’s apparent that Citrix has a much larger and more active VDI/SBC community than others in the EUC space.

It shouldn’t be about Citrix vs Microsoft vs VMware, “rising tide will lift all boats” -- let’s work together and make the EUC community stronger.



Comments

Finally comments respondents shared with Christiaan, Mark and Ruben; Not curated – unfiltered insights.

- Talk to someone about adding some navigation to the forms.
- Some of the questions should be updated to be more relevant
- I was expecting a question about increase or decrease of vdi usage.
- I expect to use less vdi in the future
- Don't spam twitter
- thank you
- Thank You! The Survey reminded me about virtualized desktops use cases/solutions I am going to rethink.
- Keep up the good work!
- Thanks for doing this for the community!
- Thanks for all the work you all do and provide for the community.
- Thanks
- Please do suggest some other websites conducting webinars related to this topic.
- It was difficult to fill in many questions accurately, or at all, because I'm not in the IT department (I'm a software developer)
- Have a nice day
- thank you glad to help
- Can you add a back button next year? I misunderstood a couple of questions and needed to go back and change my previous answer but couldn't. Thanks!
- You guys need a back button so we can correct our answers if we flub something up. I starting seeing redundant questions, and I realized I might have misinterpreted the first set as questions about hosted solutions rather than on-prem. I didn't even have a way to go back and see what the questions were, let alone correct my answers. GIGO.
- Thank you
- Thank you team :)
- Well done again this year! Thank you for your community work!!! =)
- Great survey
- Always a pleasure to contribute to this and am looking forward to the summary.
- Thank you for your help, your Passion, and sharing your Know-how to the public ‼
- Keep Rocking!
- :)