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Highlights

VDI Like a Pro conducted the fifth worldwide ‘End User Computing – State of the Union’ survey in 2018. Over the years, similar surveys were conducted in 2012, 2014, 2015 and 2017. 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 750 people who supported the survey.

Highlights include:

- There were slightly more SBC environments this year compared to 2017 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.

- Newly designed SBC environments are declining from 1.61% in 2017 to 0.81% in 2018. Also, SBC pilot/pre-production and migration/rollout-related activities are declining -- the 2018 results are nearly at zero.

- VMware remains by far the largest vendor delivering virtual infrastructure for SBC, although the usage is slowly decreasing from 61% in 2017 to 59% in 2018. While VMware usage is decreasing, Microsoft and Citrix are increasing. Citrix is up from 17.9% in 2017 to 18.6% in 2018, and Microsoft increased from 11.9% in 2017 to 13.3% in 2018. Adoption of KVM (predominantly Nutanix) is growing from 1.49% in 2017 to 5.27% in 2018.

- Nearly 8% of the participants are interested in changing the hypervisor for SBC workloads or at least interested in investigating their options. Respondents seriously considering public cloud (IaaS) totaled 8.8%. Nutanix is being seriously considered as a new or additional hypervisor by 9.09%.

- Within SBC, it’s clear that Citrix is in the lead. However, there is a notable decline of Citrix usage since last year. In 2017, more than 70% of respondents used Citrix -- the 2018 survey reflects a drop down to 64%. VMware horizon has drastically increased from 8.3% in 2017 to 16.79% in 2018. Microsoft-only RDSH environments are being used in 11.2% of the scenarios which is a small increase compared to 2017. The small percentage of Workspot usage mildly increased to 3.7%. Dell Workspace and Parallels RAS usage is minimal, close to 0%.

- Virtual Desktop Infrastructure (VDI) is gaining ground. In 2017, more than 77% of the respondents were using VDI while 82% are using VDI this year.

- Compared to the survey results of past years, we clearly see more VDI environments running 2-4 years and 5 years and older. Newly designed VDI environments are declining from 3.07% in 2017 to 1.18% in 2018. Virtual Desktop Infrastructure pilot/pre-production and migration/rollout-related activities are declining in 2018.

- Environments with 1,000 – 4,999 virtual desktop instances have increased in 2018. Smaller VDI deployments are decreasing, likely due to Desktop as a Service (DaaS), mobile, and SaaS/web application delivery. Large enterprise VDI deployment of 25,000-99,000 instances are similar this year compared to 2017.

- Most participants do use Citrix VDI on-premises technology, 57.7% in 2018. VMware is a very strong competitor and is being used in 26.9% of the deployments. 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 community is much stronger and more active compared to the VMware EUC community. Microsoft RDVH/VDI adoption is still very small but increased from 2% in 2017 to 4.6% in 2018. The strong growth rate of Workspot in 2017 is little less in 2018 but still increased from 6.36% in 2017 to 7.82% in 2018.

- In 2014, 71.1% of the respondents didn’t consider changing their VDI/SBC solution, while in 2017, 55% didn’t consider changing the VDI/SBC broker. In 2018, 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 offerings -- 12.57% in 2018, with 10.61% investigating their options. While Workspot adoption of VDI increased from 6.36% in 2017 to 7.82% in 2018, no one seems to be considering Workspot as a new on-premises VDI/SBC solution.

- With more than 43%, usage of Windows 10 surpassed Windows 7 (40%) 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 to 63.17% in 2018. In 2017 15.31% were using VMware vSphere version 6.5 while 6.5 is now used by 27.02% in 2018. Citrix XenServer adoption has increased from 16.67% in 2017 to 18.88% in 2018. Microsoft Hyper-V usage is stable from 8.33% in 2017 to 8.16% in 2018. Adoption of KVM/Nutanix is up more than 3x and growing fast, 2.13% in 2017 to 6.99% in 2018.

- As of 2018, 57.8% of participants don’t have any plans to change their hypervisor. 12.50% of the participants in 2018 are seriously considering migrating to public cloud (IaaS such as Azure and AWS). Also, 10.17% are seriously considering Nutanix AHV. Nutanix and public cloud IaaS are both leading in areas of growth.

- Most organizations use user environment management (UEM) solutions from Citrix, Microsoft or VMware, totaling 76.2% in 2018. UEM from 3rd party solutions such as Ivanti (Appsense and RES), FSLogix, and Liquidware are used within 21.8% of the organizations. Both Microsoft and Citrix user environment management solutions have seen increasing usage in 2018 while usage of AppSense and RES solutions (both from Ivanti) is declining rapidly. FSLogix Profile containers are gaining more traction with 3.90% usage in 2018.

- While Citrix Provisioning Services (PVS) remains the popular choice in many Citrix VDI/SBC environments, we do see a drop-in popularity from 30.9% in 2017 to 25.80% in 2018. Citrix Machine Creation Services (MCS) usage has increased from 15.78% in 2017 to 18.72% in 2018. VMware instant and linked clones are used in 18.7% of the VDI/SBC scenarios

- Microsoft OMS/SCOM is the most popular solution to monitor the SBC/VDI environment, 14.38% of the respondents are using the Microsoft solution in 2018. VMware VROPS (10.25%), Citrix EdgeSight (10.08%) and ControlUP (9.09%) are close to each other and following Microsoft adoption.

- 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. Microsoft App-V is the main application virtualization solution in VDI/SBC with 37.5% which is a small increase of 2.5% compared to 2017. While VMware ThinApp, with 8.96%, is the second most common application virtualization solution for VDI and SBC. It’s interesting to see Cloudhouse with 4.38%, 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 -- both with 1.04% usage in 2018.

- While most respondents aren’t using layering solutions in VDI/SBC, 74.16% in 2017 and 66.59% in 2018, it is interesting to see more people are using Citrix, VMware, and Liquidware solutions. Citrix is leading with 13.94%, followed by VMware with 7.69% and Liquidware with 3.85%.

- Most participants are using Microsoft Office 2016, 30.12%, delivered via the Microsoft Office 365 subscription. Microsoft Office 2013 is used in 25.30% and Microsoft Office 2010 is used in 15.18% of the environments. Microsoft Office 2016 procured via a Microsoft Enterprise Agreement is used in 21.20% of the scenarios.

- Most respondents (28.4%) use a single full HD display, closely followed by 27.16% of the participants using a dual full HD display configuration. All dual display configurations combined totals 51.85% and are more popular than a single display configuration at 41.49%.

- With nearly 28.2%, HPE is the server vendor being used the most with VDI and SBC workloads, closely followed by Dell with 26.11%. We see a gradual decrease for HPE—from 45% in 2014, 40% in 2015, 35% in 2017 and now down to 28.24% in 2018. While Dell is slowly increasing its market share—from 23% in 2015, 25% in 2017 and 26.11% in 2018. After a huge jump from 10.9% in 2014 to 15% in 2015, Cisco’s marketing share declined to 12% in 2017 and increased to 17.4% in 2018. Lenovo declined from 8% in both 2014 and 2015 to just 2% in 2017 and IBM/Lenovo increased to 6% in 2018. Finally, Nutanix jumped from just 1% in 2014 and 2015 to nearly 6% in 2017 and growing rapidly to 11.03% in 2018 becoming the 4th largest platform to run VDI/SBC workloads.

- Central storage with SSD, HDD, or a hybrid is being used in 67.8% of the VDI/SBC scenarios, an increase of 12.8% compared to 2017. SAN Hybrid storage continues to decline, while all-flash SAN usage is increasing from 11.73% in 2017 to 15.53% in 2018. It’s interesting to see more people use local HDD in 2018 compared to 2017. We’re not sure why but it may be related to technology leveraging RAM and HDD in such scenarios. With more than 30%, the largest storage platform hosting VDI/SBC workloads in 2018 is SDS/HCI.

- 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. These 3-tier storage solutions took 91% of the market share in 2014, 87% in 2015, 54% in 2017 with the current 2018 usage is at 47.78%. Pure storage adoption is increasing from 2.81% in 2017 to 4.72% in 2018. 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.

- 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 to 44.92% in 2018.

- 34% of the participants are either already using or plan on changing to public cloud Desktop as a Service / Remote Application as a Service solutions. The majority (47.61%) of the respondents will determine what to do next while 19.90% aren’t interested in public cloud VDI/SBC. In a cloud-first and mobile-first world, many organizations see solutions from Amazon, Citrix, Frame, Microsoft, VMware, or Workspot as great solutions to deliver applications and desktops from the public cloud.
Remote application and Desktop as a Service provided by a service provider using Citrix, Microsoft or VMware solutions are being considered by 15.67% of the participants. 18.16% of the respondents will introduce or use Citrix Cloud while Amazon Appstream and Workspaces is just considered or used by 3.73% of the participants -- a decline from 7.17% in 2017. Workspot increased from 5.61% to 8.71% and VMware Horizon Cloud is considered by 3.23% of participants. Frame on both Azure and AWS is considered or being used by 8.70% of the survey respondents -- a strong increase of 6.93% compared to 2017. The biggest competitor for public cloud DaaS/remote application as a service isn’t Citrix, Frame, Amazon, VMware, or Microsoft -- it’s the on-premises VDI/SBC solutions combined with trends to use more web/SaaS, mobile, and PCs.

Cloud First, Pay as you go, DR, flexibility and reduced complexity are the main areas of interest to use public cloud Desktop as a Service (DaaS) and application remoting as a service.

The biggest challenges in adopting public cloud Desktop as a Service (DaaS) and application remoting as a service are cost, legal/regulation, and performance. Trust and creating a positive business-case is also considered challenging.

Unsurprisingly, most of the respondents (13.70%) are busy digging into Windows 10 and migrating their current solution to Windows 10. The second-most important initiative for 2018/2019 is Desktop as a service / Application remoting as a service with 9.82%, followed by Office 365 at 8.38%. 
**Introduction**

Welcome to the “VDI Like a Pro” - End User Computing – State of the Union 2018 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 2019. 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 750 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, CTO at Frame and Mark Plettenberg, Senior Product manager at Login VSI.

Both Frame and Login VSI actively support Mark and Ruben in their community activities, however, they aren’t involved in the survey results presented in this whitepaper, community blog, or presentations. This community effort is fully unbiased and independent.

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 750 respondents participated in the survey, making this research initiative one of the largest on the EUC market currently. The survey closed on the 31st of March, 2018.

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, 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 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.

Frame
Frame (www.fra.me) lets you run any Windows software, including full desktops, in a browser. Applications run on virtual machines in the public cloud (e.g. AWS, Azure, etc.) and their user interface can be streamed to any device. IT organizations in enterprise and government, managed service providers, and software vendors use Frame to create and manage secure, software-defined workspaces in the cloud.
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 for running earlier surveys as TeamVRC
- The Login VSI marketing team for their support
- Login VSI and Frame 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) or Ruben Spruit (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 750 people supported the survey and on average, completed the survey in less than 13 minutes. Participants from almost 50 different countries around the globe took part in the survey, with a majority in North America. Approximately 36% 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, 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, and vExperts -- but that's just bragging about the Dutch and isn't based on survey results.
What is the most important business vertical to use your End User Computing (VDI/SBC) environment for?

Healthcare continues to be the largest business vertical market for server based computing. In 2017, 17.83% of the respondents in healthcare were using SBC compared to the current 14.91% in 2018. Financial and Technology markets are the 2nd and 3rd-largest verticals currently using SBC.
What is the total amount of users within your business?

In 2017, the survey respondents working in an organization with 100,000+ users totaled 5.31%. This year, the percentage totals 6.61%. 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

SBC (server based computing) 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 (legacy) applications and desktop via on-premises and public cloud infrastructure.

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

There were slightly more SBC environments this year compared to 2017 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 of flex working and power users is gaining more interested compared to 2017'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 1.61% in 2017 to 0.81% in 2018. Also, SBC pilot/pre-production and migration/rollout-related activities are declining -- the 2018 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 fewer larger (100,000+ users) SBC environments in 2018 compared to 2017. Customers are likely using VDI and/or DaaS instead of SBC while some have been moved to physical devices such as mobile, laptop, ultrabooks. However, in medium-sized enterprises (5,000-24,999 users) we do see an increase of SBC usage. Interesting to see this response on the survey question "will you introduce or change to new on-premises VDI/SBC broker vendor?" 23% are investigating and seriously considering public cloud services while the transition to PCs is just 2%.

![Bar chart showing the distribution of SBC environments by user count in 2018.](chart1.png)

![Line chart showing the percentage of SBC environments by year.](chart2.png)
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 to 59% in 2018. While VMware usage is decreasing, Microsoft and Citrix are increasing. Citrix is up from 17.9% in 2017 to 18.6% in 2018, and Microsoft increased from 11.9% in 2017 to 13.3% in 2018. Running SBC workloads on a bare-metal physical server platform declined from 2.4% to 1.1% in 2018. Adoption of KVM (predominantly Nutanix) is growing from 1.49% in 2017 to 5.27% in 2018. 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.
Will you introduce or change to a different hypervisor for you SBC workload?
This year 55.3% of participants stated they didn't have any plans to change their hypervisor. Nearly 8% of the participants are interested in changing the hypervisor or at least interested in investigating their options. Respondents seriously considering public cloud (IaaS) totaled 8.8%. Nutanix is being seriously considered as a new or additional hypervisor by 9.09%. Nutanix and Public cloud IaaS are both areas of growth for SBC and remote application as a service scenario.

![Survey Results](chart.png)
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 last year. In 2017, more than 70% of respondents used Citrix -- the 2018 survey reflects a drop down to 64%. VMware horizon has drastically increased from 8.3% in 2017 to 16.79% in 2018. Microsoft-only RDSH environments are being used in 11.2% of the scenarios which is a small increase compared to 2017. The small percentage of Workspot usage mildly increased to 3.7%. Dell vWorkspace and Parallels RAS usage is minimal, close to 0%.
When looking only at Citrix solutions, we can see that a lot of participants are still using XenApp version 6.x (or older) -- 23.76% to be precise. While this can be explained by legacy application hosting, we would like to point out that this version will reach end of life as of the 30th of June, 2018. Updates will cease for most customers. More information here: https://support.citrix.com/article/CTX201343
Which OS is currently deployed for the SBC (VMs or Bare-metal)?

The adoption of Windows Server 2016 in server-based computing is already at 25.33%, while 41.40% of the participants are currently using Windows Server 2012 R2. We expect Server 2016 will surpass Server 2012 R2 usage in 2019. This is interesting to see, 26.09% of the participants are also using Server 2008(R2), most likely to deliver legacy Windows applications.

![Percentage of OS Usage](chart.png)
Hosted Virtual Desktop Infrastructure (VDI) questions

Virtual Desktop Infrastructure (VDI) is gaining ground. In 2017, more than 77% of the respondents were using VDI while 82% are using VDI this year. 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, 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 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, DaaS with Remote Access, and support of remote locations are the most important reasons to use VDI. It’s great to see the increase in usage of VDI to support high-end graphics and as well as power users.
In what phase is your on-premises VDI environment?

Compared to the survey results of past years, we clearly see more VDI environments running 2-4 years and 5 years and older. Newly designed VDI environments are declining from 3.07% in 2017 to 1.18% in 2018. Virtual Desktop Infrastructure pilot/pre-production and migration/rollout-related activities are declining in 2018.

Despite all the marketing buzz, there wasn’t a "year of VDI" and there won’t be a "year of VDI." People will continue to use a mixture of mobile, web, and Windows applications delivered on a virtual or physical device. In a cloud and mobile-first world, organizations are transitioning to public cloud services which includes VDI and Remote Application as a Service.
What is the capacity of your on-premises VDI environment?

Environments with 1,000 – 4,999 virtual desktop instances have increased in 2018. Smaller VDI deployments are decreasing, likely due to Desktop as a Service (DaaS), mobile, and SaaS/web application delivery. Large enterprise VDI deployment of 25,000-99,000 instances are similar this year compared to 2017.
Which on-premises VDI solution is used to provide access to the virtual desktops?

Most participants do use Citrix VDI on-premises technology, 57.7% in 2018. VMware is a very strong competitor and is being used in 26.9% of the deployments. 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 community is much stronger and more active compared to the VMware EUC community. Microsoft RDVH/VDI adoption is still very small but increased from 2% in 2017 to 4.6% in 2018. The strong growth rate of Workspot in 2017 is little less in 2018 but still increased from 6.36% in 2017 to 7.82% in 2018.
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 2017, 55% didn’t consider changing the VDI/SBC broker. In 2018, 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 offerings -- 12.57% in 2018, with 10.61% investigating their options. While Workspot adoption of VDI increased from 6.36% in 2017 to 7.82% in 2018, no one seems to be considering Workspot as a new on-premises VDI/SBC solution.
What operating systems are used for desktop VMs?

With more than 43%, usage of Windows 10 surpassed Windows 7 (40%) as the main platform for VDI. Many organizations today are migrating away from Windows 7 and adopting Windows 10. With just 2% of respondents using Windows XP and 1.30 % 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, and now 2.97% in 2018. 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.

<table>
<thead>
<tr>
<th>Operating System</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows 10 x64</td>
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<td>11,13</td>
</tr>
<tr>
<td>Windows Server 2012(R2)</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Windows Server 2016</td>
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</tr>
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<td></td>
<td>0,56</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0,19</td>
</tr>
</tbody>
</table>

![Operating System Usage Chart](chart.png)
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 to 63.17% in 2018. In 2017 15.31% were using VMware vSphere version 6.5 while 6.5 is now used by 27.02% in 2018. Citrix XenServer adoption has increased from 16.67% in 2017 to 18.88% in 2018. Microsoft Hyper-V usage is stable from 8.33% in 2017 to 8.16% in 2018. Adoption of KVM/Nutanix is up more than 3x and growing fast, 2.13% in 2017 to 6.99% in 2018. It’s also good to mention that multiple hypervisors could be selected in this year’s survey. Selecting your hypervisor is a long-term commitment, organizations are updating their solutions but migration to another platform isn’t occurring much.
Will you introduce or change to a different hypervisor for your VDI workload?
As of 2018, 57.8% of participants don’t have any plans to change their hypervisor. 12.50% of the participants in 2018 are seriously considering migrating to public cloud (IaaS such as Azure and AWS). Also, 10.17% 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?)

26.1% of the respondents are using VDI in a 100% stateless fashion, which is an increase of 3% compared to 2017. While 15.79% of the respondents are using VDI in a 100% stateful/persistent setup, a small increase of 1.5% compared to 2017. The majority are using VDI in a mixed setup, where stateless/pooled has an advantage over stateful/persistent.
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. We believe historical challenges, such as cost, complexity, and performance have been solved with GPUs and SDS/HCI solutions.
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 76.2% in 2018. UEM from 3rd party solutions such as Ivanti (Appsense and RES), FSlogix, and Liquidware are used within 21.8% of the organizations.

Both Microsoft and Citrix user environment management solutions have seen increasing usage in 2018 while usage of AppSense and RES solutions (both from Ivanti) is declining rapidly. FSlogix Profile containers are gaining more traction with 3.90% usage in 2018.
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. 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 to 21.86% in 2018. Microsoft WDS/MDT is increasing from 4.87% in 2017 to 9.60% in 2018. Usage of layering technologies from Citrix and VMware is still small but is increasing. RES (Ivanti) Automation Manager is declining from 7.23% in 2017 to 4.73% in 2018.
Which image deployment and/or cloning solution is currently used for VDI/SBC?

While Citrix Provisioning Services (PVS) remains the popular choice in many Citrix VDI/SBC environments, we do see a drop-in popularity from 30.9% in 2017 to 25.80% in 2018. Citrix Machine Creation Services (MCS) usage has increased from 15.78% in 2017 to 18.72% in 2018. VMware instant and linked clones are used in 18.7% of the VDI/SBC scenarios.

![Image of survey results]

- Citrix Provisioning Services: 25.80%
- Citrix Machine Creation Services: 18.72%
- VMware Linked clones: 12.82%
- Full clones: 11.13%
- Microsoft SCCM: 9.61%
- VMware Instant clones: 5.90%
- None: 5.40%
- Not sure: 5.06%
- Yes, other (Please specify): 3.04%
- Citrix Personal vDisk: 2.53%

![Graph showing percentage changes over years]

- Citrix Provisioning Services
- Citrix Machine Creation Services
- VMware Linked clones
- Full clones
- VMware Instant clones
- Not sure
- Citrix Personal vDisk

How often do you patch your systems?
Just over half the respondents (50.12%) patch their systems once per month, while almost 20.47% patch multiple times per month. We can see a decrease in people who patch less than once a month, 17.54% in 2017 is now down to 13.65% in 2018.
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, 14.38% of the respondents are using the Microsoft solution in 2018. VMware VROPS (10.25%), Citrix EdgeSight (10.08%) and ControlUP (9.09%) are close to each other and following Microsoft adoption.
Which application virtualization solution is used within this VDI/SBC environment? (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 36.67% 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. Microsoft App-V is the main application virtualization solution in VDI/SBC with 37.5% which is a small increase of 2.5% compared to 2017. While VMware ThinApp, with 8.96%, is the second most common application virtualization solution for VDI and SBC. It’s interesting to see Cloudhouse with 4.38%, 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 -- both with 1.04% usage in 2018.
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 to 26.32% in 2018. On the other hand, we can also see that the 1-40% application virtualization category is shrinking from 22% in 2017 to 12.68% in 2018.
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 and 66.59% in 2018, it is interesting to see more people are using Citrix, VMware, and Liquidware solutions. Citrix is leading with 13.94%, followed by VMware with 7.69% and Liquidware with 3.85%.
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 to 16.07% in 2018, McAfee solutions declined from 20.32% in 2017 to 14.38% in 2018 and TrendMicro declined from 18.88% in 2017 to 13.90% in 2018. Sophos, F-Secure, and Bitdefender increased in popularity. We may see a change in this list in 2019 due to governments banning anti-virus products from untrusted countries.
Which Office version is current standard in the VDI/SBC (on-premises and cloud) environment?

Most participants are using Microsoft Office 2016, 30.12%, delivered via the Microsoft Office 365 subscription. Microsoft Office 2013 is used in 25.30% and Microsoft Office 2010 is used in 15.18% of the environments. Microsoft Office 2016 procured via a Microsoft Enterprise Agreement is used in 21.20% of the scenarios. While Google Works/Apps wasn’t being used that much at all in 2017 it is being used in 1.93% of the 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.
What is the ratio of devices being used to access SBC/VDI desktops and/or applications?

It is surprising to see Linux thin clients surpassing the laptop as the main device accessing SBC/VDI environments. 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%. With the amount and quality of choices in the thin client space, we expect more buzz around cheaper devices such as Raspberry Pi. This can also be explained since participants had the option to select multiple devices in the survey. We see an increase of adoption of Chromebooks, 0.77% in 2017 and 2.68% in 2018.
What is the most common display configuration in your company? (approximately)

Most respondents (28.4%) use a single full HD display, closely followed by 27.16% of the participants using a dual full HD display configuration. All dual display configurations combined totals 51.85% and are more popular than a single display configuration at 41.49%.
Which server hardware brand is used to host the VDI/SBC environment?

With nearly 28.2%, HPE is the server vendor being used the most with VDI and SBC workloads, closely followed by Dell with 26.11%. We see a gradual decrease for HPE—from 45% in 2014, 40% in 2015, 35% in 2017 and now down to 28.24% in 2018. While Dell is slowly increasing its market share—from 23% in 2015, 25% in 2017 and 26.11% in 2018. After a huge jump from 10.9% in 2014 to 15% in 2015, Cisco’s marketing share declined to 12% in 2017 and increased to 17.4% in 2018. Lenovo declined from 8% in both 2014 and 2015 to just 2% in 2017 and IBM/Lenovo increased to 6% in 2018. Finally, Nutanix jumped from just 1% in 2014 and 2015 to nearly 6% in 2017 and growing rapidly to 11.03% in 2018 becoming the 4th largest platform to run VDI/SBC workloads.
Which storage technologies (not products) are used to host these desktops?

Central storage with SSD, HDD, or a hybrid is being used in 67.8% of the VDI/SBC scenarios, an increase of 12.8% compared to 2017. SAN Hybrid storage continues to decline, while all-flash SAN usage is increasing from 11.73% in 2017 to 15.53% in 2018. It’s interesting to see more people use local HDD in 2018 compared to 2017. We’re not sure why but it may be related to technology leveraging RAM and HDD in such scenarios. With more than 30%, the largest storage platform hosting VDI/SBC workloads in 2018 is SDS/HCI.

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 to 13.71% in 2018. EMC from 22.8% in 2014, 13.3% in 2017 to 12.58% in 2018. HPE from 18% in 2014, 10.6% in 2017 to 7.87% in 2018. These 3-tier storage solutions took 91% of the market share in 2014, 87% in 2015, 54% in 2017 with the current 2018 usage is at 47.78%. Pure storage adoption is increasing from 2.81% in 2017 to 4.72% in 2018. 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.

<table>
<thead>
<tr>
<th>Storage Vendor</th>
<th>2014 Usage</th>
<th>2017 Usage</th>
<th>2018 Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>NetApp</td>
<td>28.5%</td>
<td>17%</td>
<td>13.71%</td>
</tr>
<tr>
<td>Nutanix</td>
<td>12.81%</td>
<td>12.58%</td>
<td>9.21%</td>
</tr>
<tr>
<td>EMC</td>
<td>22.8%</td>
<td>13.3%</td>
<td>12.58%</td>
</tr>
<tr>
<td>Dell</td>
<td>18%</td>
<td>10.6%</td>
<td>7.87%</td>
</tr>
<tr>
<td>HP</td>
<td>6.97%</td>
<td>5.17%</td>
<td>4.49%</td>
</tr>
<tr>
<td>VMware vSAN</td>
<td>4.72%</td>
<td>4.49%</td>
<td>3.60%</td>
</tr>
<tr>
<td>Not sure</td>
<td></td>
<td></td>
<td>3.37%</td>
</tr>
<tr>
<td>Pure Storage</td>
<td></td>
<td></td>
<td>2.47%</td>
</tr>
<tr>
<td>Local storage</td>
<td></td>
<td></td>
<td>2.02%</td>
</tr>
<tr>
<td>Atlantis / Hive-IO</td>
<td></td>
<td></td>
<td>2.47%</td>
</tr>
<tr>
<td>Nimble</td>
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<td></td>
<td>2.47%</td>
</tr>
<tr>
<td>Hitachi Data Systems (HDS)</td>
<td></td>
<td></td>
<td>2.47%</td>
</tr>
<tr>
<td>Other, Please specify</td>
<td></td>
<td></td>
<td>2.47%</td>
</tr>
<tr>
<td>IBM</td>
<td></td>
<td></td>
<td>2.47%</td>
</tr>
<tr>
<td>Cisco HyperFlex (Springpath)</td>
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<td>1.35%</td>
<td>1.12%</td>
</tr>
<tr>
<td>Sandisk (FusionIO)</td>
<td>1.35%</td>
<td>1.35%</td>
<td>0.90%</td>
</tr>
<tr>
<td>Simplivity (HPE)</td>
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<td>1.35%</td>
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<tr>
<td>Fujitsu</td>
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<td>1.35%</td>
<td>0.90%</td>
</tr>
<tr>
<td>Microsoft storage spaces direct</td>
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<td>1.35%</td>
<td>0.90%</td>
</tr>
<tr>
<td>Scale computing</td>
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<tr>
<td>Huawei</td>
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<td>Datrium</td>
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<tr>
<td>Nexenta</td>
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</tr>
<tr>
<td>Panzura</td>
<td>1.35%</td>
<td>1.35%</td>
<td>0.90%</td>
</tr>
<tr>
<td>ScaleIO (Dell/EMC)</td>
<td>1.35%</td>
<td>1.35%</td>
<td>0.90%</td>
</tr>
<tr>
<td>Tegile</td>
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</tr>
<tr>
<td>Tintri</td>
<td>1.35%</td>
<td>1.35%</td>
<td>0.90%</td>
</tr>
<tr>
<td>Pivot3</td>
<td>1.35%</td>
<td>1.35%</td>
<td>0.90%</td>
</tr>
</tbody>
</table>
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 to 44.92% in 2018. “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 and now to 40.60% in 2018. Many organizations have GPUs on their VDI/SBC roadmap for 2018/2019 in on-premises and public cloud EUC scenarios. Results may vary however, while your GPU improves graphics performance, your CPU might be impacted as it has to work harder. For example, the compression of the remoting protocol can heavily impact performance. A scalability increase of the environment is not a guarantee when adding GPUs.
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 to 37.90% in 2018. We can see an extremely strong adoption of unified communications, it is the new normal.
Do you perform load tests in your VDI/SBC environment?

In total 36.12% perform load tests in their VDI/SBC environment. 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 19.1% 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.

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall complexity reduction of the technology stack</td>
<td>11.36</td>
</tr>
<tr>
<td>Migrating to the cloud</td>
<td>11.25</td>
</tr>
<tr>
<td>Overall cost reduction of the complete technology stack</td>
<td>10.57</td>
</tr>
<tr>
<td>Increase desktop session density / capacity per physical</td>
<td>10.23</td>
</tr>
<tr>
<td>User experience / performance rich media; audio video</td>
<td>9.32</td>
</tr>
<tr>
<td>Streamline management &amp; user experience between VDI/SBC and PC</td>
<td>9.20</td>
</tr>
<tr>
<td>Security</td>
<td>8.30</td>
</tr>
<tr>
<td>User experience / performance in a WAN /High latency</td>
<td>8.18</td>
</tr>
<tr>
<td>User experience / performance with voice, webcam,</td>
<td>6.36</td>
</tr>
<tr>
<td>Simplify licensing</td>
<td>5.68</td>
</tr>
<tr>
<td>Storage costs</td>
<td>2.61</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>2.50</td>
</tr>
<tr>
<td>Not sure</td>
<td>2.39</td>
</tr>
<tr>
<td>User experience / performance with mobile and</td>
<td>2.05</td>
</tr>
</tbody>
</table>
Are you satisfied overall with the current VDI/SBC solution?
This is one of the questions where the responses historically have been the most stable over the years. While technologies are maturing and skilled IT staff for VDI/SBC have become a commodity, the overall satisfaction with the environments is increasing, user complaints are declining.
Will you use, introduce or change to public cloud VDI/SBC (Remote Apps/DaaS)?

34% of the participants are either already using or plan on changing to public cloud Desktop as a Service / Remote Application as a Service solutions. The majority (47.61%) of the respondents will determine what to do next while 19.90% aren’t interested in public cloud VDI/SBC. In a cloud-first and mobile-first world, many organizations see solutions from Amazon, Citrix, Frame, Microsoft, VMware, or Workspot as great solutions to deliver applications and desktops from the public cloud.

![Bar Chart]

- Yes, we are already using on a small scale: 9,32
- Yes, we are already using on a large scale: 5,54
- Yes, but To Be Determined (TBD): 19,14
- TBD, currently investigating out of curiosity: 17,13
- TBD, currently investigating because of business requests: 11,34
- Not sure yet: 17,63
- No, not interested at all: 19,90

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![Bar Chart]

- Region: World
- Region: NL
- Region: USA

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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 15.67% of the participants. 18.16% of the respondents will introduce or use Citrix Cloud while Amazon Appstream and Workspaces is just considered or used by 3.73% of the participants -- a decline from 7.17% in 2017. Workspot increased from 5.61% to 8.71% and VMware Horizon Cloud is considered by 3.23% of participants. Frame on both Azure and AWS is considered or being used by 8.70% of the survey respondents -- a strong increase of 6.93% compared to 2017. The biggest competitor for public cloud DaaS/remote application as a service isn’t Citrix, Frame, Amazon, VMware, or Microsoft -- it’s the on-premises VDI/SBC solutions combined with trends to use more web/SaaS, mobile, and PCs.
When we combine the results, and compare DaaS and remote application solutions based on Microsoft Azure and Amazon, Microsoft is clearly leading in the businesses and enterprises of the respondents. We believe this is due to a strong partner ecosystem and stronger direct touch with customer-organizations in medium and large enterprises. Also, adoption of Microsoft Office 365 and the winds of change within Microsoft as a cloud-first company is resonating with our participants.
Why are you (potentially) interested in Remote Desktops, or Remote Applications as a Service?

Cloud First, Pay as you go, DR, flexibility and reduced complexity are the main areas of interest to use public cloud Desktop as a Service (DaaS) and application remoting as a service.
End User Computing – State of the Union - 2018

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 biggest challenges in adopting public cloud Desktop as a Service (DaaS) and application remoting as a service are cost, legal/regulation, and performance. Trust and creating a positive business-case is also considered challenging.

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Region: USA</th>
<th>Region: NL</th>
<th>Region: World</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost associated with the service</td>
<td>18,30</td>
<td>15,04</td>
<td>15,04</td>
</tr>
<tr>
<td>Legal and regulation</td>
<td>10,53</td>
<td>9,77</td>
<td>9,40</td>
</tr>
<tr>
<td>Performance of the solution</td>
<td>9,77</td>
<td>9,40</td>
<td>9,40</td>
</tr>
<tr>
<td>Trust in public cloud services</td>
<td>9,40</td>
<td>9,40</td>
<td>9,40</td>
</tr>
<tr>
<td>Creating a positive business-case</td>
<td>9,40</td>
<td>9,40</td>
<td>9,40</td>
</tr>
<tr>
<td>Company vision for Public Cloud usage is lacking</td>
<td>5,89</td>
<td>5,89</td>
<td>5,89</td>
</tr>
<tr>
<td>Knowledge of Cloud Services</td>
<td>5,89</td>
<td>5,51</td>
<td>5,51</td>
</tr>
<tr>
<td>Not sure, I don't know yet</td>
<td>5,51</td>
<td>5,14</td>
<td>5,14</td>
</tr>
<tr>
<td>Functionality doesn't meet our requirements</td>
<td>5,14</td>
<td>4,26</td>
<td>4,26</td>
</tr>
<tr>
<td>No challenges, we are already use Public Cloud Services</td>
<td>4,26</td>
<td>3,51</td>
<td>3,13</td>
</tr>
<tr>
<td>Availability of the solution in my region</td>
<td>3,51</td>
<td>3,13</td>
<td>3,13</td>
</tr>
<tr>
<td>No use-case for Desktop as a Service, Remote Application...</td>
<td>3,13</td>
<td>1,88</td>
<td>1,75</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>1,88</td>
<td>1,75</td>
<td>1,75</td>
</tr>
<tr>
<td>Job protection</td>
<td>1,75</td>
<td>1,75</td>
<td>1,75</td>
</tr>
</tbody>
</table>

The chart above shows the distribution of responses across different regions for various challenges. The data is based on a sample of 755 respondents.
What are your most important Workspace/EUC initiatives for 2018/2019?

Unsurprisingly, most of the respondents (13.70%) are busy digging into Windows 10 and migrating their current solution to Windows 10. The second-most important initiative for 2018/2019 is Desktop as a service / Application remoting as a service with 9.82%, followed by Office 365 at 8.38%.

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows 10 - migrate from Windows 7 and 8</td>
<td>13.70%</td>
</tr>
<tr>
<td>Desktop as a Service (DaaS) - Application Remoting as a service</td>
<td>9.82%</td>
</tr>
<tr>
<td>Microsoft Office 365</td>
<td>8.38%</td>
</tr>
<tr>
<td>GPU Technologies in VDI/SBC (AMD, Intel, NVIDIA)</td>
<td>7.46%</td>
</tr>
<tr>
<td>Upgrade your VDI/SBC platform</td>
<td>5.52%</td>
</tr>
<tr>
<td>GDPR</td>
<td>5.42%</td>
</tr>
<tr>
<td>BYO initiative</td>
<td>4.81%</td>
</tr>
<tr>
<td>Layering Technology (e.g. VMware AppVolumes, Citrix)</td>
<td>4.70%</td>
</tr>
<tr>
<td>Hyper-converged solutions (Nutanix, VSAN, Storage...)</td>
<td>4.50%</td>
</tr>
<tr>
<td>Identity Management / Single Sign on / SAML / oAuth</td>
<td>3.99%</td>
</tr>
<tr>
<td>Application Virtualization (App-V, CloudHouse, Numecent,...)</td>
<td>3.89%</td>
</tr>
<tr>
<td>IT-Self Service</td>
<td>3.78%</td>
</tr>
<tr>
<td>Security related (access, endpoint protection DRM)</td>
<td>2.66%</td>
</tr>
<tr>
<td>Thin clients / Zero Clients</td>
<td>2.45%</td>
</tr>
<tr>
<td>Enterprise File Sharing and Synchronization (Box,...)</td>
<td>2.35%</td>
</tr>
<tr>
<td>User environment management (Ivanti, Appsense/RES,...)</td>
<td>2.15%</td>
</tr>
<tr>
<td>Unified Device Management / Enterprise Mobility...</td>
<td>2.15%</td>
</tr>
<tr>
<td>Unified communications (Skype for Business, Zoom, Cisco...)</td>
<td>2.04%</td>
</tr>
<tr>
<td>Not sure</td>
<td>1.84%</td>
</tr>
<tr>
<td>Google ChromeBooks</td>
<td>1.53%</td>
</tr>
<tr>
<td>WAN optimization / acceleration - SD-WAN</td>
<td>1.53%</td>
</tr>
<tr>
<td>Enterprise App Store</td>
<td>1.43%</td>
</tr>
<tr>
<td>Migrate Windows applications to Web/SaaS</td>
<td>1.33%</td>
</tr>
<tr>
<td>Yes, other (please specify)</td>
<td>0.92%</td>
</tr>
<tr>
<td>Storage optimized for VDI/SBC platform</td>
<td>0.82%</td>
</tr>
<tr>
<td>Migrating from Windows XP to Windows 7/8</td>
<td>0.51%</td>
</tr>
<tr>
<td>Google Works/Apps</td>
<td>0.31%</td>
</tr>
<tr>
<td>Windows10S</td>
<td>0.00%</td>
</tr>
</tbody>
</table>
End User Computing – State of the Union - 2018

END USER COMPUTING TRENDS THROUGH THE YEARS

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

Source: www.vdilikeapro.com
EUC knowledge gathering

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

Twitter is the largest information source with 28.1%, followed by brianmadden.com with 12.3%. Citrix.com is popular as a news source with 10.5%, while XenAppBlog with 8.8% and TechTarget SearchVirtualDesktop.com with 5.3% are closing.
Which EUC related influencers do you follow?

Brian Madden and Ruben Spruijt are both the most effective EUC influencers (15.91%), followed by Carl Stalhood with 6.82%, and closing with Aaron Parker and Rory Monaghan both with 4.55%.
Do you read EUC related blogs, and if so which blogs do you read? (Not your own)

Brianmadden.com is the largest blog website with 16.1%, followed by Carl Stalhood with 12.5%, Citrix at 7.1%, Carl Webster and VMware blogs both close at 5.4%.
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 22.5%, followed by VMworld with 9.8%. Community events gain great interest. E2EVC and Citrix User Groups are visited by 8.8% of the participants, followed by VMUG with 4.9%. With 755 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.
Finally comments respondents shared with Mark Plettenberg and Ruben Spruijt; Not curated – unfiltered insights.

- Excellent question quality, good work guys!
- Thanks Guys
- "Always glad to help here. Your efforts in collecting and disseminating this information helps the community as a whole. Best regards --Tobias K."
- You guys do great things for our EUC world and we thank you!
- Please throw out this result, guys!
- I am running into more and more Workspot customers. I do not see Workspot represented in many of your DaaS related questions.
- On the breakdown for devices used to connect to the SBC/VDI environment, please include an option for BYO devices, as I don't know what someone is connecting with
- Congrats for nice job!!!
- I accidentally skipped a question but couldn't go back
- Thank You very much!
- Great work as always guys. It's really appreciated!
- Thanks for all of your hard work to the community guys.
- I tried to answer most of these questions from perspective of our “vdi as a service” customers in prod or pre-prod depending on Q. Some I marked unsure as it would be NDAish
- Great work as always guys, it is really good to see an overview of what everyone is working with, we keep hearing cloud etc, but as we know it is not the case with our customers yet.
- Cool
- Some questions have multiple option boxes but only want 1 option selected.
- Completed on one of my biggest customers actual environment and experience
- NO CLOUD!
- Few of your request, need more than 3 selection.
- Please do this every year. It's so valuable!
- Keep up the good work! Awesome you take the time to do it
- Regarding the question on the level of application virtualization it was unclear to me if you meant virtualized as in using Appv etc. or just virtualized as in running from ie. XenApp.
- Thanks
- VDI rocks and is the future!
- Great session at San Jose GTC
- Why don't you ask what branch of Windows 10 is being adopted? SAC or LTSC
- It’s a really like long survey. Try to reduce it to max 20 questions!