A Brief History of VDI 1.0 (2009-2014)

We built VDI 1.0

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Gartner 2014 Cool Vendor

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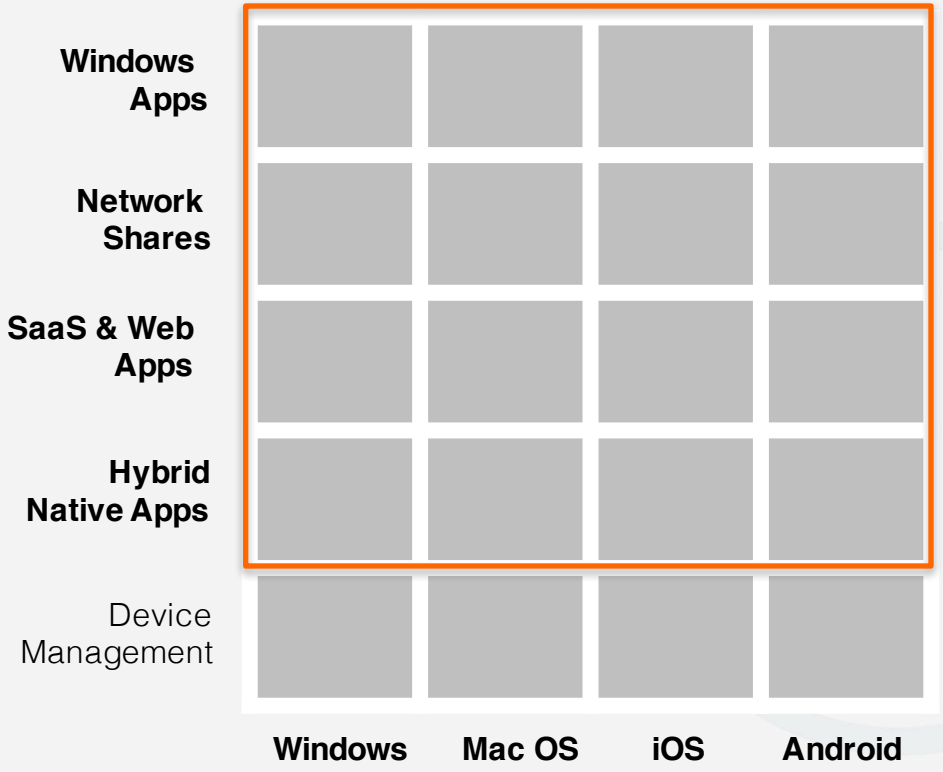
End User Computing Problem since 2009

End users want to access:

- windows apps like SAP
- network file shares
- SaaS apps like Office 365
- web apps like SharePoint
- native apps like Box

from any device



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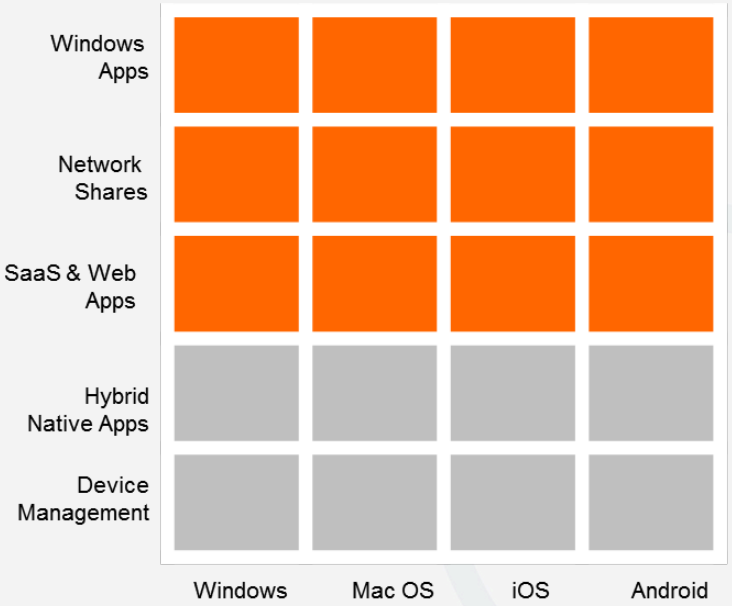
VDI was a promising solution in 2009

VDI value prop then:
Just virtualize the desktop in the data center and access from any device.

The standing ovation:
Citrix & VMW sold $1B of licenses in 18 months!

Then reality set in:
The complex architecture slowed deployment.
For most, it took more than a year to deploy.
But complexities continued to create issues post deployment.



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What happened to the promise?

Let’s start with the origins of technology behind VDI

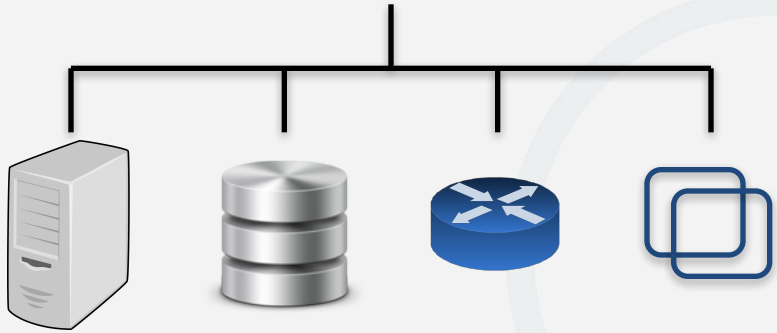
Data centers were optimized for server workloads in 2009

1. Workload Characteristics

Server virtualization products were optimized for:

- Tens to hundreds of virtual machines
- Each virtual machine needs 5-50 GB of database storage
- Each virtual machine does 80% read operations

2. Organization



- Separate teams for servers, storage, networks, and virtualization.
- Tools, workflows and org are aligned.

VDI workloads broke the data center architecture

Desktop Workload Characteristics are different

Thousands of virtual machines

Each virtual machine needs 2-10X (20-100 GB) of storage

IT couldn't just add more storage!

Data Center Storage costs $10,000/TB

Desktop storage costs $100/TB

And existing storage solutions were optimized for read workloads

Each desktop does 80% write operations (not a problem on a PC, but created havoc on shared storage performance)

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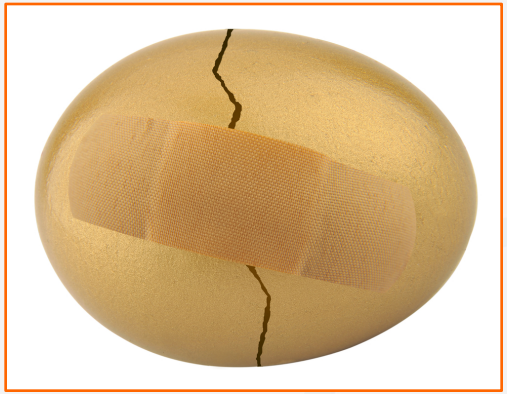
Enter the Era of the VDI workarounds

Led to the introduction of dynamic desktops

One Windows image for the entire company
Add applications dynamically
Add user profile dynamically



<u>100s of man-years</u> of investment in VDI software:

- Golden images
- Dynamic desktop provisioning
- Local disks
- New image management
- De-duplication
- App Layering

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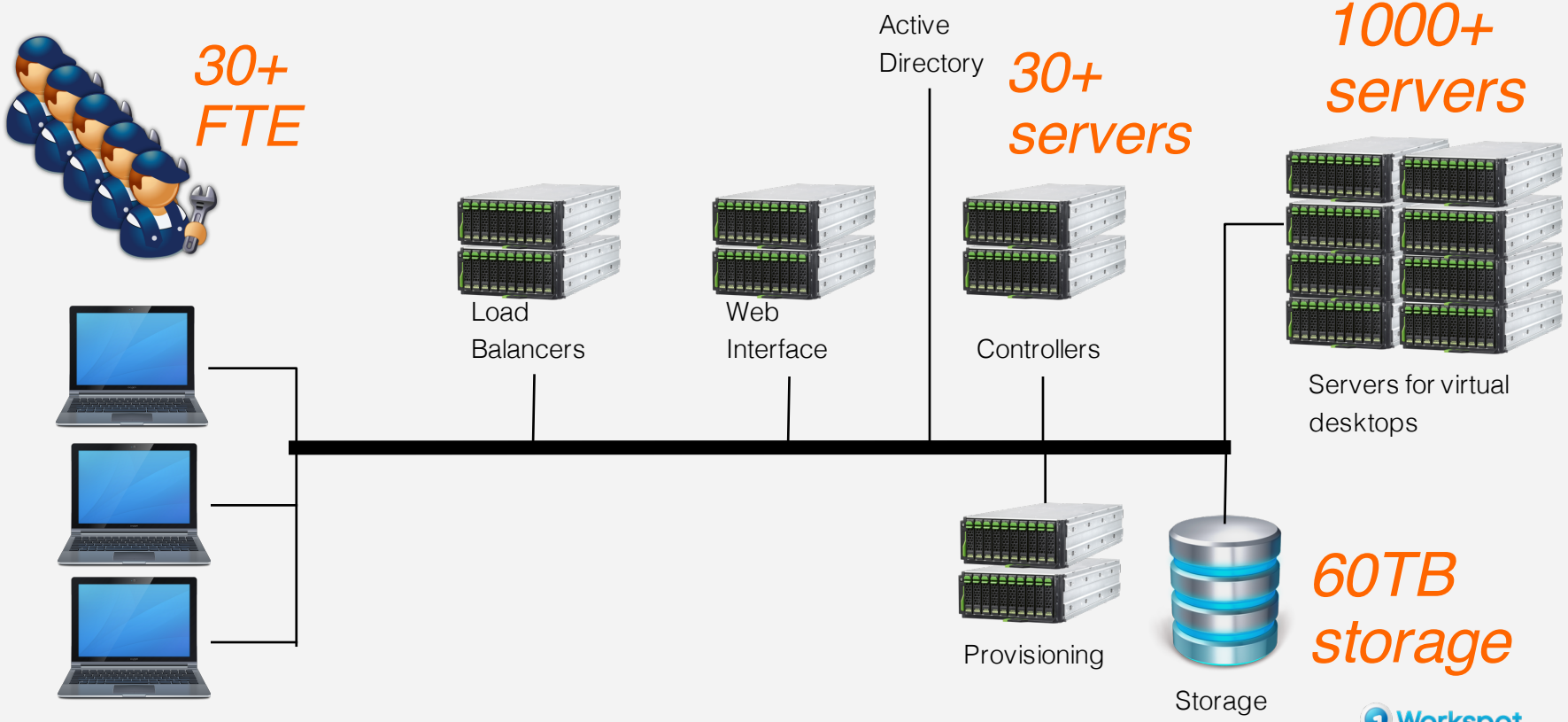
So…a VDI deployment for 30k desktops required:



Lots of operational issues - sometimes the workaround is worse than the problem!

Resulting in operational complexity and higher OpEX

- Increased headcount: 1 full time admin per 1000 desktops
- Increased calls to helpdesk
- Incurred additional CapEx costs to solve storage and server bottlenecks

Every problem spans organization boundaries

Every problem becomes a problem for five different teams:
Server/Storage/Network/Virtualization/Desktop
Whose fault is it?

That’s not all. VDI delivers poor user experience for all apps!

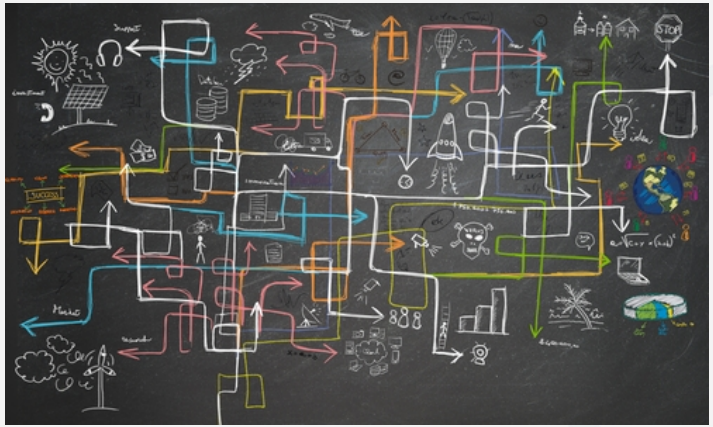
Every application becomes a remote Windows App

- How far is the user from the desktop? Latency?
- What is the bandwidth between the user and the desktop?
- What about real-time communication apps like VOIP?
- What about video? Can I watch YouTube?
- What about conferencing apps?

So the remoting protocol had to be fixed!

100s of man-years of investment in protocol (HDX/PCoIP/RDS) improvement.

- Client-side redirection of audio/video
- Improve experience on mobile
- Improve remoting protocol for Mac
- Server-side GPU for 3D graphics
- Out of band CODECs
- Add UDP channels

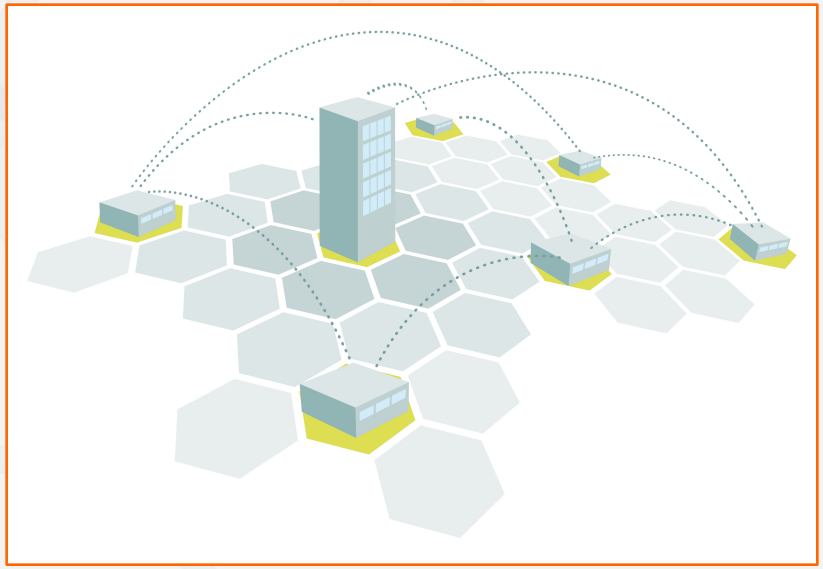


Basically, introduce more technology to workaround the problem introduced by VDI. **Not really K.I.S.S.**

But protocol improvements only go so far…

- Why should Web apps be treated like Windows Apps?
- Why should documents not be available when the user is offline?
- Why should the users have to consume a Windows desktop on a phone?

And VDI doesn’t work for ROBOs



50% of enterprise users work in ROBOs

- Network connectivity between branch and data center can go down
- VDI nobody can work in a branch if the network connection goes down
- User experience limited by bandwidth or latency of connection when it’s up

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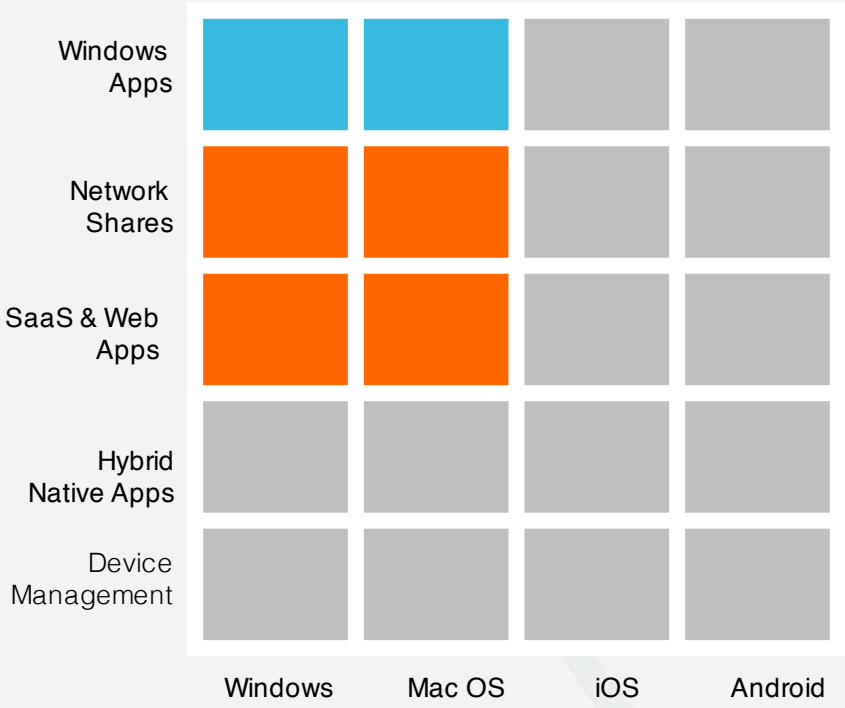
VDI went from being a 30% solution to a 8% solution!



High TCO and Complexity

- Cost of storage
- Performance of storage
- Dynamic desktops

Poor User Experience

- Limited by latency and bandwidth
- Web apps/Mobile Experience/ Offline behavior

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So what now?

- VDI is now a 8% solution.
- Workarounds created more problems for IT.
- IT still needs to solve app delivery… and now in a mobile world.

What If…

We could build a VDI solution from scratch?
And use the cloud?

Check out the e-book sequel:

VDI is dead! Long live VDI 2.0!
Built for the cloud and hyper-converged era

http://www.VDI20.com/whatsVDI20