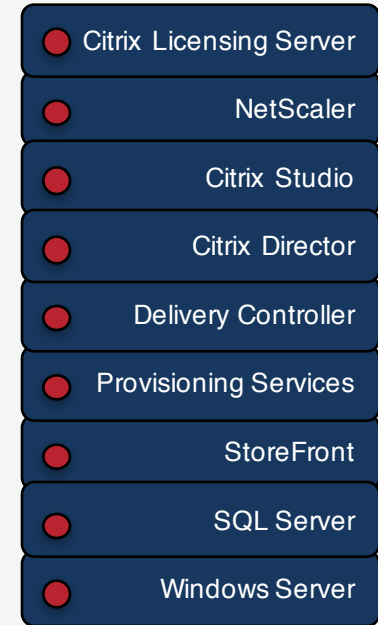# Workspot

VDI 2.0 Delivers
Better Scalability, Availability & Security
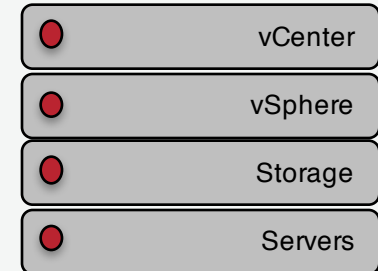# than VDI 1.0

VDI 1.0 has scalability & availability issues

A typical Citrix VDI 1.0 deployment contains multiple components deployed in highly available pairs -- SQL Servers, Load Balancers, Portals, Brokers, Licensing Servers, Provisioning Servers, etc. Multiple components are involved in every single user request, sometimes multiple times. It takes 33 steps to fulfill a login request, as described by a Citrix engineer. Through the power of compounding, even if each of the steps are 99% reliable, the overall sequence is now only 71.77% reliable ($0.99^{33} = 0.7177$). That's only if everything works. If something does go wrong and a user is unable to login, how do you figure out which one of those 33 steps failed?

Each one of those 33 handshakes puts load on each of the sub-systems. This results in increased load and hence lower scalability.

Citrix Licensing Server

NetScaler

Citrix Studio

Citrix Director

Delivery Controller

Provisioning Services

StoreFront

SQL Server

Windows Server

CITRIX

vCenter

vSphere

Storage

Servers

basvankaam.com

VDI 2.0 Eliminates Components

Eliminate Netscaler
Nearly 80% of customers already have an SSL-VPN from Cisco, F5, Pulse Secure, or Fortinet. We wanted to enable them to leverage their investment in their existing SSL-VPN. In order to do this, we added code to our clients so that they could integrate with each of these gateways. We did not do this by integrating with their VPN clients. Rather, we embedded the networking logic to connect with their gateways directly into our client. If a customer has one of those gateways, they don't need to install anything from Workspot in their DMZ, and their users continue to work with a single client. This is infinitely simpler than convincing your networking team to deploy new appliances!

Eliminate Storefront
StoreFront serves multiple funtions. Besides authentication, it supplies users with the resources they're entitled to and it aggregates resource entitlements across farms. To begin with, we built the equivalent of StoreFront for a multi-tenant cloud-native service. However, we went much further in order to simplify the underlying process.
A typical Citrix user request goes through 10+ steps in order to get access to a resource:
- (a) netscaler - storefront - controller - sql server - licensing server to get entitlements
- (b) netscaler - storefront - controller - sql server to get ica file
- (c) netscaler - storefront - controller - sql server to connect to a resource.
Our cloud not only resolves which users get what resources in real-time, it also pushes those changes to the client in real-time. This means that when a user opens their Workspot client, not only do they immediately see what resources they can access (without even talking to the cloud), they also have the information needed to connect to those resources. Thus, Workspot reduces Citrix's 10+ steps to a single step. See? 10x simpler.
This architecture also delivers better reliability and scalability. In XenDesktop, if one of those handshakes fails, the user cannot get any desktop or app. In our case, the StoreFront authentication component lives on the device. Even if the cloud is unavailable, the user can connect to the resource as long as the resource is available. Because we don't have each connection request going through multiple components multiple times, the solution is even more scalable.

Workspot

VDI 2.0 Eliminates Components

Eliminate Desktop Delivery Controller
The delivery controller is a broker and a single point of failure. If you have a large set of desktops/apps behind a single broker and it fails, then users cannot connect. To eliminate this problem, we built a multi-tenant cloud-native controller in the cloud.
Taking it a step further, we made the clients much smarter because we didn't want the cloud to be a single point of failure. Instead, we push and cache connectivity information on the clients directly. Even if the broker is not available, clients can connect to their resources so you don't have to worry about deploying controllers in high availability, or load balancers for load balancing, or SQL servers....

Eliminate PVS
In the early days of VDI, PVS was an extremely useful tool to provision desktops. At that time, the hypervisors did not have the proper tools to thin-provision. Storage did not have the ability to de-duplicate. As a result, PVS was essential for reducing the cost and improving the performance of storage. Seven years later, though, storage and virtualization have evolved dramatically. This means you no longer needed an external tool to optimize desktop provisioning. We built a stateless connector that sits on the infrastructure layer (VMware, KVM, OpenStack, Hyper-V, etc.) and can provision desktops. The connectors are configured from the cloud and run in high availability mode (Active-Active). Net result: 10x simpler.

Eliminate Licensing Server
We eliminated the licensing server, of course. Our solution runs in the cloud, and it knows whether you are licensed or not. Infinitely simpler for you not to have to worry about high availability, etc.

Workspot

VDI 2.0 is next generation control plane architecture

- No user traffic flows through cloud
- No user credentials are stored or sent through cloud
- Cloud stores configuration data about apps, desktops, users, policies, etc.
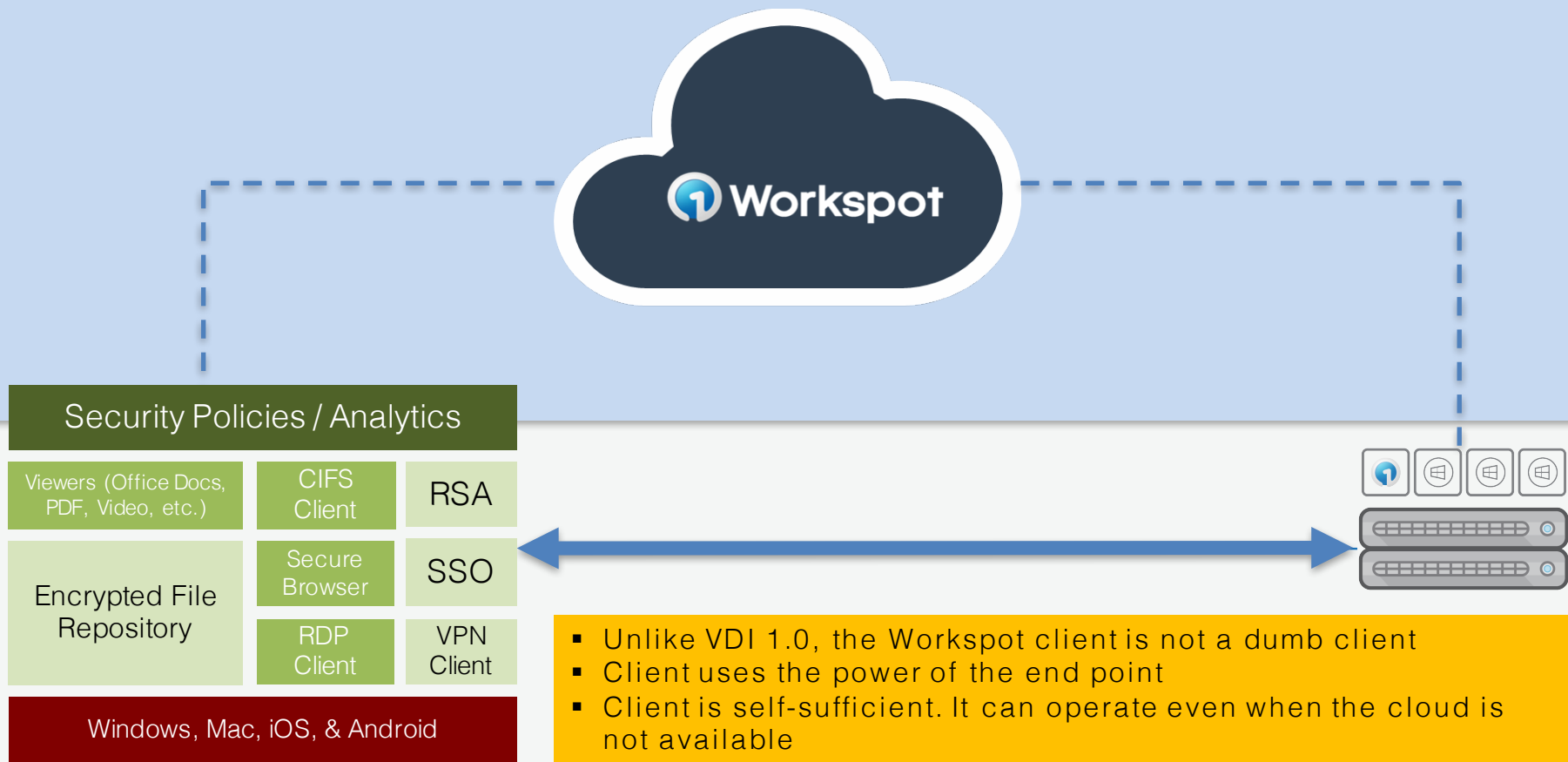- Cloud pushes configuration updates to all clients in real-time

Workspot

Control Plane

Data Plane

- End user data travels directly to data center
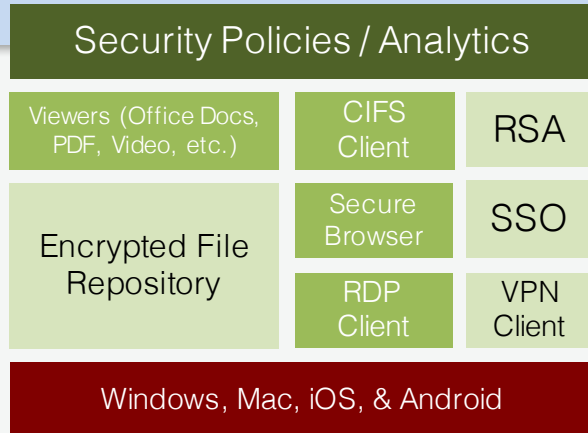- Typically requires 1 handshake with the data center, instead of 33 handshakes in VDI 1.0 solutions
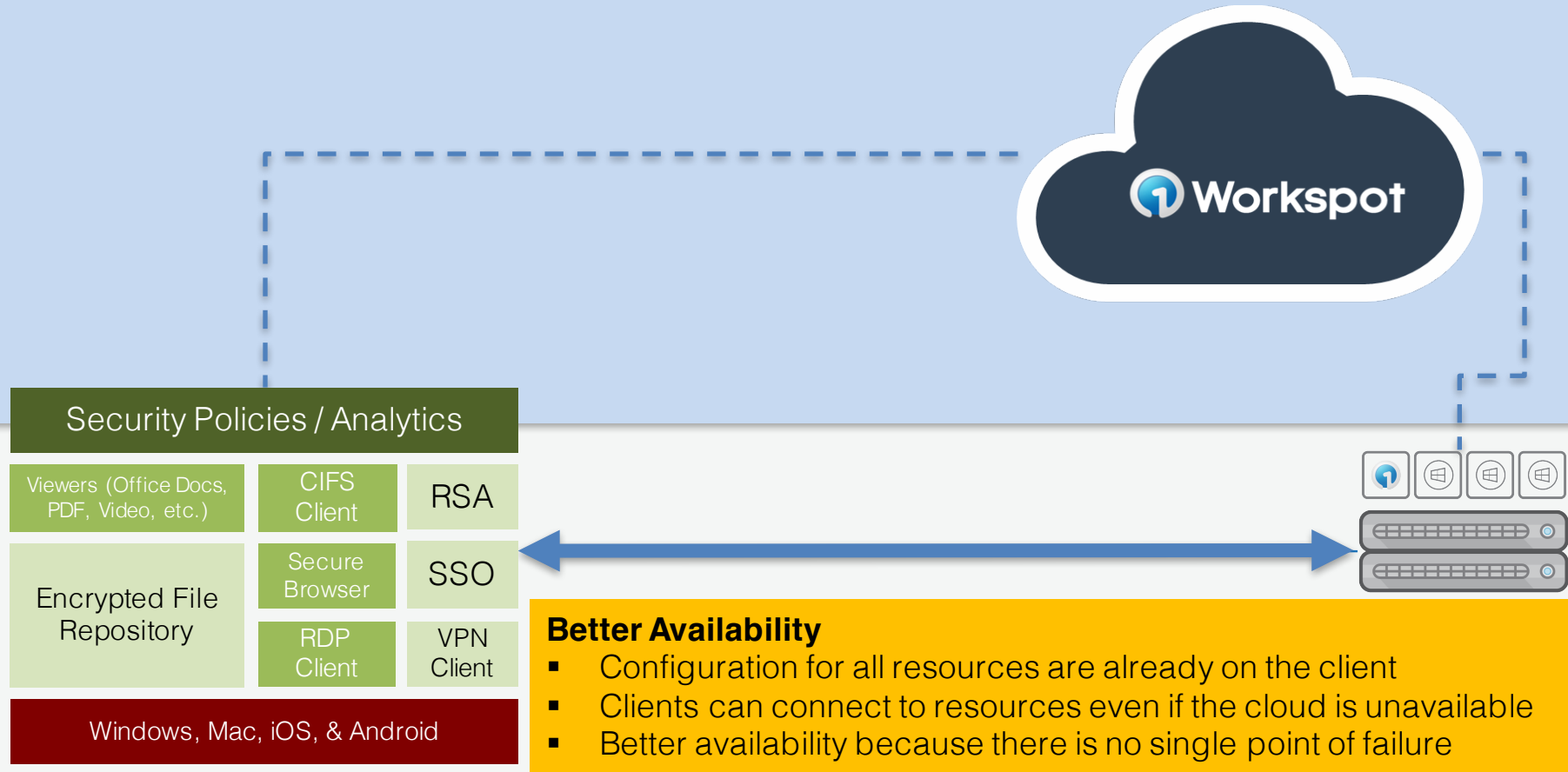
The Workspot Client is Rich and Smart

Security Policies / Analytics

Viewers (Office Docs, PDF, Video, etc.)

CIFS Client

RSA

Encrypted File Repository

Secure Browser

SSO

RDP Client

VPN Client

Windows, Mac, iOS, & Android

- Unlike VDI 1.0, the Workspot client is not a dumb client
- Client uses the power of the end point
- Client is self-sufficient. It can operate even when the cloud is not available

Workspot VDI 2.0 has Better Scalability

Better Scalability
- Cloud is not in critical path for connections
- Significantly less load on the cloud per user than VDI 1.0 brokers
- Cloud is built on a highly scalable micro-service architecture
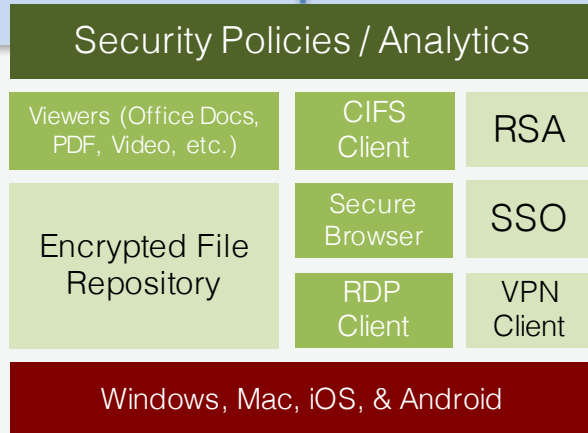- Cloud more scalable than VDI 1.0 brokers – designed for millions of users like consumer applications

Security Policies / Analytics

Viewers (Office Docs, PDF, Video, etc.)

CIFS Client

RSA

Encrypted File Repository

Secure Browser

SSO

RDP Client

VPN Client

Windows, Mac, iOS, & Android

Workspot VDI 2.0 has Better Availability

Security Policies / Analytics

Viewers (Office Docs, PDF, Video, etc.)	CIFS Client	RSA
Encrypted File Repository	Secure Browser	SSO
	RDP Client	VPN Client

Windows, Mac, iOS, & Android

Better Availability
- Configuration for all resources are already on the client
- Clients can connect to resources even if the cloud is unavailable
- Better availability because there is no single point of failure

The Power of Big Data increases Visibility

Cloud-native solutions also take advantage of another big benefit of the cloud: almost infinite, low cost data storage. What is possible when the physical and financial limitations of storage are removed? We can collect everything that is happening on the end point. For example, we can know when a user accesses application A, from device D, from location L, and we can know that it took S seconds or it failed. This is real end user data. We can send the data from each device up to the cloud in real-time. The cloud can then analyze the data in real-time to provide instant analysis.

Security Policies / Analytics

Viewers (Office Docs, PDF, Video, etc.)	CIFS Client	RSA
Encrypted File Repository	Secure Browser	SSO
	RDP Client	VPN Client

Windows, Mac, iOS, & Android

Deep Visibility for Security

Aggregate data from every end user from all their end points with data from all other systems into your SIEM system and analyze to improve security in a holistic manner

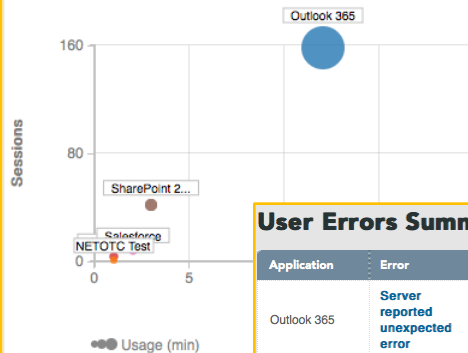| Date & Time	Event	User Name	Geo	Device
10:01 AM 07/01/2015	ryoza@workspot.com (end user) opened app SharePoint 2010	ryoza	Unknown	iPad Mini, CDMA
10:01 07/01/2015	Workspot Guest opened app Support Server ryoza@workspot.com (end user) unlocked Workspot	ryoza	Unknown	iPad Mini, CDMA
9:51 AM 07/01/2015	Workspot Guest opened app Support Server	ws-guest	California	Mac x86_64
9:51 AM 07/01/2015	Workspot Guest opened app Support Server	ws-guest	California	Mac x86_64
9:51 AM 07/01/2015	Workspot Guest unlocked Workspot	ws-guest	California	Mac x86_64
9:39 AM 07/01/2015	Jimmy Chang unlocked Workspot	jimmy	Unknown	Windows
9:02 AM 07/01/2015	Jimmy Chang unlocked Workspot	jimmy	Unknown	Windows
8:25 AM 07/01/2015	Courtney Crocker closed app %Documents%	courtney	California	iPad Mini, WiFi
8:25 AM 07/01/2015	Courtney Crocker closed document cifs://10.1.20.19/users/%25username%25/Workspot %20Quick%20Facts.docx on RDP App "Desktop" for editing	courtney	California	iPad Mini, WiFi
8:24 AM 07/01/2015	Courtney Crocker opened document cifs://10.1.20.19/users/%25username%25/Workspot %20Quick%20Facts.docx on RDP App "Desktop" for editing	courtney	California	iPad Mini, WiFi
8:24 AM 07/01/2015	Courtney Crocker unlocked Workspot	courtney	California	iPad Mini, WiFi
8:24 AM 07/01/2015	Courtney Crocker downloaded document Workspot Quick Facts.docx from cifs://10.1.20.19/users/%25username%25/Workspot %20Quick%20Facts.docx	courtney	California	iPad Mini, WiFi

Pro-actively Monitor End User Experience

Fine-grained usage, performance, and availability analytics to monitor end user experience
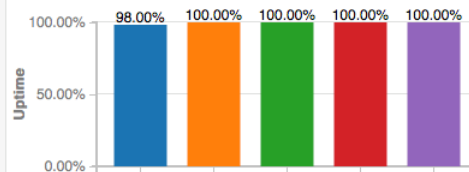
Find problems in real-time!

sales@workspot.com