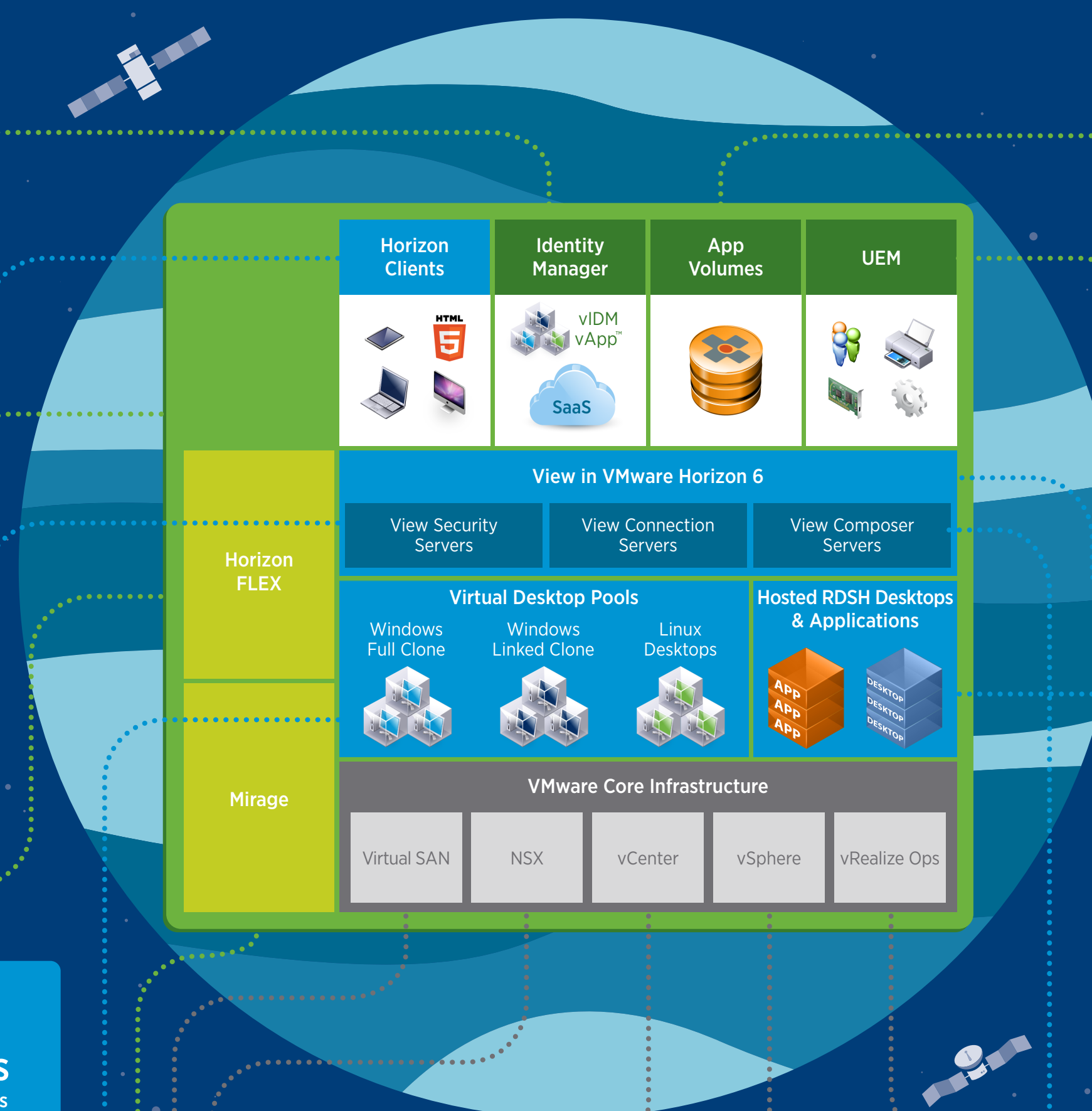


Make Your End-User-Computing Mission a Success

VMware® End-User-Computing Best Practices



Horizon Clients

Any endpoint, any network, any time

Getting blank screens on your endpoints? Check your firewall end-to-end, and then check it again. It's the leading cause of failure. Also, make sure you have the right ports for the protocol you are using—PCoIP, HTML access, or RDP.

The following networking ports are needed for the client:

- PCoIP – TCP/UDP 4172
- CDR/MMR – TCP 9427
- USB – TCP 3211
- RDP – TCP 3389
- Blast – 5443

Check out the Horizon Toolbox for session shadowing, auditing, and device access policies: www.vmware.com/go/HorizonToolbox

Identity Manager

Unified access to all mobility services

vIDM provides identity management services for vRealize Automation™ and vRealize Orchestrator™. Choose either hosted or on premises.

Use vIDM to access SAML, WS Federation, desktop, and mobile apps.

The pluggable authentication framework lets you plug in multiple adapters.

Implement granular access policies based on network, user, or device.

App Volumes™

Real-time application delivery with life cycle management

Safeguard good performance—max load is 7 to 8 AppStacks per user.

Which applications do most users access? Put them in the Base Image, not in an AppStack.

Estimated performance numbers:

- 700 to 1,000 per AppStack
- One login per user / per second / per manager
- Timeout at 300 seconds

When creating AppStacks and using UEM to apply settings to the applications, use separate VMs for App Volumes provisioning and UEM application profiling.

User Environment Manager

Delivers consistent and dynamic application and desktop experience across any device, location, or operating system

UEM scales very easily and very well—just make sure you have proper share and NTFS permissions.

Leverage settings for conditions as much as possible. When configuring applications settings, start general and become more precise for smaller use cases. Remember, one application can have multiple configurations and conditions.

Reduce the number of application packages to manage:

- Create different experiences of those applications via custom configuration settings.
- Leverage predefined settings to define what a user (or group of users) experiences when launching an application.

For larger environments, create separate Test Dev, User Acceptance, and Production environments. After you complete testing and gain user acceptance, transfer the validated configuration files to the Production environment.

View Security Servers / View Connection Servers

Advanced management, brokerage, and gateway services

Do not undersize resources, even in pilot or PoC: 4 vCPU and 12 GB of RAM.

One View Connection Server ≈ 2,000 sessions.

Secure your USB, MMR, or client drive redirection traffic using HTTP(S) Secure Gateway with a View security server.

Always use two or more View Connection Servers for resilience.

Desktop Pools

Thousands of desktops with a single point of administration

Choose from Windows full clones, Windows linked clones, or Linux desktops.

Do not build persistent desktop pools. Use a combination of App Volumes, UEM, and folder redirection wherever possible and keep your desktop images stateless.

View in Horizon 6

Deliver virtual or hosted desktops and applications through a single VDI platform

Upgrade View components, ESX® Tools, and hardware versions regularly.

Size your View infrastructure with the Horizon Sizing Tool (VMWorld 2015 U.S. session EUC4827): www.vmware.com/go/HorizonCalc

Remote Desktop Session Host Apps and Desktops

Seamless integration with Microsoft RDSH application and desktop services

Do:

- Use 100 sessions per RDSH, or 50 if your RDSH is low-end.
- Size each RDSH farm with identically sized hosts.
- Set the session limit the same on all hosts in a farm.
- Use App Volumes to deliver applications to RDSH servers. This will make updates and patching easy!
- Always use dedicated hosts or clusters to get the best performance.

Do not:

- Vary applications and configurations among RDSH servers within a farm.
- Overcommit your RDSH virtual CPU cores to physical cores. Performance matters!
- Mix your RDSH virtual machines with virtual desktops or other server workloads.

You need only RDSH services and RDSH licensing—no other RDSH components are required!

Horizon FLEX™

The flexibility IT needs to securely deliver containerized desktops to BYOD users, Mac users, contractors, and road warriors

Create a URI to launch the client and prefill the server name for your users.

Use Horizon FLEX admin settings to restrict your AD search to just the OU you need.

Build your client application deployment to pre-embed the serial key and server name.

When creating a virtual machine, leave all the options open to allow Horizon FLEX policy to control them later.

Do not put your VMs on the Horizon FLEX Policy Server. Run fast regional servers.

Virtual Desktop Master Image and Desktop Pool Configurations

A well-built master image is fundamental to desktop pool success

Use LSI Logic SAS disk and VMXNET3 network card.

Do not over-size memory. It can hurt disk space consumption.

Talk to the actual VDI users. IT people are not good sources of user requirements about VDI desktops.

Use a minimum of 2 vCPUs per VM.

Set the following PCoIP group policies:

- Turn off Build-to-Lossless feature: Enabled
- Configure the PCoIP session audio bandwidth limit: 250
- Configure clipboard redirection: Enabled in both directions
- Configure the PCoIP image quality levels
- Minimum Image Quality: 40
- Maximum Initial Image Quality: 80
- Maximum Frame Rate: 24 or fewer

Optimize your images with the OS Optimization Tool: www.vmware.com/go/optimized

View Composer™ Servers

Enabling automated desktop pools based on a single, central image

Install Composer separately, especially if performing maintenance operations such as Delete at Logoff.

When recomposing a production pool, create a small new test pool and provision it with the image you are going to use first. This will help uncover any final errors and reduce the time to provision because the originating pool can reuse the replica.

Mirage™

Next-generation desktop image management for physical desktops and POS devices

Operation concurrency drives infrastructure requirements. More concurrent operations require more servers and more bandwidth.

Limit yourself to 350–400 concurrent operations per Mirage server.

During scale-out, many small Mirage servers are better than one big one. This adds resiliency and availability.

Always use branch reflectors for image management. BRs are an essential part of a Mirage deployment:

- Use BRs whenever you have remote sites.
- Leverage BRs on the LAN to alleviate the load on Mirage servers.
- A BR should never have more than 40 active connections at any given time. Plan deployment to respect this scale, and you will be satisfied with the results. **40 active connections is not the same as 40 connections!**

If you have users on the road, deploy and configure the Mirage Gateway. With this tool, more people can sync more often, which means they stay up-to-date even when outside the corporate network.

vCenter™

Centralized platform for managing your VMware vSphere environments

One vCenter ≈ 2,000 sessions.

Ensure vCenter and View Composer have sufficient resources to handle provisioning, power, and maintenance operations.

Tune the concurrent operations to increase the speed of View Composer maintenance operations (for example, recompute, rebalance, and refresh) and provisioning operations (creation and deletion). Test these to ensure your environment can cope with any increase in concurrency.

Virtual SAN™

Radically simple, hypervisor-converged storage designed and optimized for vSphere

Using Virtual SAN? Use View Storage Accelerator (the host CBRC feature) to improve boot-storm performance even further!

Virtual SAN 6 sizing:

- 64-node cluster
- 200 VMs per hosts
- 6,400 protected VMs per datastore
- 6,400 VMs maximum (64-node cluster)
- 7 disks per group
- One flash device per disk group
- 9,000 components per host (hard limit)

NSX™

The ultimate network virtualization platform for the software-defined data center

Make troubleshooting easier by enabling logging for blocked traffic on your distributed firewall; see what is being dropped!

Multicast is no longer a prerequisite for physical switches to use VXLAN with NSX.

Deploy vRealize Log Insight and the NSX Content Pack for powerful auditing and dashboard monitoring.

Start with basic micro-segmentation before you move to full network virtualization.

vSphere™

The leading server virtualization platform with consistent management for virtual data centers

Compute recommendations:

- Use ~3.0 GHz processors in ESXi™ hosts.
- Choose higher clock speed over higher core count.
- Allocate 2 vCPUs per virtual desktop (not 1 as older docs indicate).
- Use 6 to 10 vCPUs per physical core.
- Your mileage will vary!
- Lower clock speed means fewer vCPUs per pCPUs.
- Monitor for CPU %RDY < 5.

Memory recommendations:

- Do not overcommit on ESXi hosts.
- Use 2 to 3 GB of memory for 32-bit OSes; if in doubt, start with 3 GB.
- Use 3 to 4 GB of memory for 64-bit OSes; if in doubt, start with 4 GB.
- Use 100% memory reservation in virtual desktops.
- Monitor ballooning activity; there should be none.

Storage recommendations:

- Measure storage latency performance at virtual desktop VMDKs, not the array.

vRealize™ Operations for Horizon

Powerful monitoring and reporting tool to manage your Horizon 6 and Citrix XenApp environments

Be an IT hero. Deploy vRealize Operations for Horizon to monitor View, including your RDSH servers!

Use vRealize Log Insight™ to learn more details about the trends and usage in your VDI environment.

Build dashboards that you can use daily and learn from.

Monitor trends to help you understand the norms.

Measure uptime in your environment via synthetic transactions.

Compare usage of each component in your infrastructure to expected norms.

Size your vRealize Operations™ deployment correctly: www.vmware.com/go/PROPSizing

For multiple solutions, install agents in this order:

- VMware Tools™
- View Agent
- User Environment Manager FlexEngine
- App Volumes Agent

If you update one agent, you must reinstall or update the rest!

