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Solution: VMware Horizon 6.1 with TestNav 7.5

TestNav Version	Qualified Solution Name	Software Version(s)	Qualified Browsers*	Qualified Student Endpoints
7.5	VMware Horizon 6.1 with TestNav 7.5	Horizon 6.1	IE 11, Firefox, Chrome	VMware View Zero Clients

VMware Horizon 6.1 with TestNav 7.5 implemented by following all setup requirements in conjunction with the defined student endpoints (testing devices) and adhering to the maximum number of user desktops is considered the qualified solution.

Solution Hardware Requirements Summary

VMware Horizon 6.1 with TestNav 7.5	
Qualified Solution Operating Systems(s)	Windows 7 64-bit & Windows 8.1 64-bit
Minimum vSphere Host Processor	2 x 6 core sockets, Intel model x5650 or later
Minimum vSphere Host Memory	64 GB RAM
Minimum VM Processor	2 vCPU
Minimum VM Memory	1GB RAM
Minimum Network Speed	100Mbps NIC
VIRTUAL DESKTOP SETUP AND MAXIMUM NUMBER OF CLIENTS, SINGLE HOST	
Virtual Desktop Setup	Individual User Desktops
Maximum Number of Clients per Host	30 Users
SCALING	
Contact VMware Services for scaling information. Access the reference architecture link to confirm implementation for general information regarding VMware Horizon® 6 deployment: Reference Architecture .	

Maintaining Qualification Status for Solution

VMware completed the TestNav Qualified testing and documentation process for the specific solution as described in this document. In order for the solution to remain in qualified status, all installation and setup requirements for the system and student testing devices must be followed and maintained throughout the time that the technology is used in conjunction with TestNav.

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Performance Testing for Qualification

PERFORMANCE TESTING Performance testing was completed by running all performance tests on a single Windows 7 Virtual Machine, built using VMware best practices, vSphere 6 and Horizon 6.1 connections to the host server. Extrapolations beyond single station are based on VMware host scaling guidelines and benchmarks.

The maximum number of users was determined by simultaneous testing of the most intensive item types and tools within the benchmark test form.

TestNav 7.5 Requirements Link

TESTNAV 7.5 REQUIREMENTS All TestNav 7.5 System Requirements need to be followed when using qualified products:
<https://support.assessment.pearson.com/display/TN7p5/TestNav+7.5+System+Requirements>

SystemCheck, Proctor Caching Requirements

SYSTEMCHECK The standard Pearson process running **SystemCheck** should be followed to confirm final concurrent user counts for implementation purposes.

PROCTOR CACHING The VMware Horizon 6.1 environment interacts normally with Pearson Proctor Caching. All recommended Pearson procedures for configuring and testing Proctor Caching should be followed.

Student Response File (SRF) Requirements

STUDENT RESPONSE FILES (SRF)

Primary Student Response Files (SRF) are stored locally in the student's home folder as the default. **User data must be retained at solution implementation. Follow the specific configuration guidelines to confirm that the user data is not deleted at session log off.**

VMware recommends protecting SRF files by leveraging a managed profile strategy such as Microsoft Roaming profile, VMware User Environment Manager (UEM) or a third-party solution. See the **Profile Management** section of this document to confirm options and instructions.

If any changes are made to the default during implementation regarding retention of user session data, appropriate changes to the SRF file Primary location must be made. Secondary SRF locations should follow Pearson best practices as listed in the [Pearson User Guides](#).

VMware Horizon Implementation Requirements

VMWARE HORIZON WITH TESTNAV 7.5 - SETUP REQUIREMENTS

Please access the VMware Horizon 6.1 with TestNav 7.5 link for summary setup instructions.

This implementation guide includes security requirements and device configurations for proper connectivity. You will need to follow all requirements as listed in the VMware Horizon 6.1 to ensure the student environment is secure.

<https://pubs.vmware.com/horizon-61-view/topic/com.vmware.ICbase/PDF/view-61-installation.pdf>

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VMWARE HORIZON WITH TESTNAV 7.5 – HARDWARE REQUIREMENTS

VMware Horizon 6.1 can run up to 30 clients (Horizon Desktops) per host for peak load; with **Windows 7 or Windows 8.1** as guest OS (requires a minimum processor of 2vCPU and 1GB RAM).

The qualified hardware configuration per host:

- 2 x 6 core sockets, Intel model x5650 or later
- 64 GB RAM
- 1 physical NIC, 1 GB per second

VMWARE VIEW INSTALLATION GUIDE

VMware View installation guide details the requirement for different software components such as VMware vSphere, View Composer, Database requirements, etc. The following link provides the installation guide:

<http://pubs.vmware.com/view-52/topic/com.vmware.ICbase/PDF/horizon-view-52-installation.pdf>

VMWARE VIEW CLIENT REQUIREMENTS

VMware zero clients are required to be used in concert with the qualified product in order to execute the solution implementation.

A complete list of supported VMware View Clients can be found by accessing:

<http://www.vmware.com/resources/compatibility/search.php?deviceCategory=vdm>

VMWARE VIEW DESKTOP REQUIREMENTS

Create the **Windows 7 or Windows 8.1** desktops using the following optimization guide:

<http://www.vmware.com/files/pdf/VMware-View-OptimizationGuideWindows7-EN.pdf>

ANTIVIRUS BEST PRACTICES

Follow the guidance for antivirus best practices for Horizon environment:

<http://www.vmware.com/files/pdf/VMware-View-AntiVirusPractices-TN-EN.pdf>

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VM STORAGE BEST PRACTICES Use Horizon View composer linked-clones to create virtual machines (VM) to reduce storage requirements. It is required to place the OS disk of linked cloned VM to be placed in high performance disk and follow the best practices in the link below:

<https://pubs.vmware.com/horizon-61-view/topic/com.vmware.horizon-view.installation.doc/GUID-2EOCECD1-EA36-4E6B-8C7B-3BCB9BC243BE.html>

PROFILE MANAGEMENT Administrators need to apply policy and profile settings that follow users across devices and locations. Follow the guidance and one of these options to set up the SRF files best practices for the Horizon environment:

Microsoft Roaming profile: <https://technet.microsoft.com/en-us/library/jj649079.aspx>

Environment Manager (UEM): <http://blogs.vmware.com/euc/tag/vmware-uem>
Third party solutions that focus purely on profile virtualization and the application settings, such as those from [AppSense](#), [Liquidware Labs](#) and [RES Software](#).

Additional Recommendations

VMware Services: Please consider leveraging VMware consultants to accelerate your project. Our enterprise-proven services are based on a full lifecycle methodology to help you successfully deliver concrete value to your business and internal stakeholders.

on the web at: <http://www.vmware.com/services/>

Support and Sales Contact Numbers

SALES

For Sales Inquiries: 1-877-486-9273 and ask for Sales Assistance

on the web at: http://www.vmware.com/company/contact_sales.html

SUPPORT

For Technical Assistance: 1-877-486-9273

VMWare Global Technical Support Contact for Current VMware Customers:

on the web at: <https://www.vmware.com/support/horizon-view.html>

Appendix A – Qualification Standards

The solution must pass all tests based on the qualification standards and certification agreement signed before the solution is considered qualified.

Qualification is based on the specific solution, the configuration as well as the qualified user endpoints as documented by the solution vendor. The qualified solution must adhere to all Pearson TestNav requirements specific to the TestNav version as stated on the Pearson TestNav support site. All qualified solution configuration details must be documented clearly.

Virtualization Qualification Standards

A virtual desktop should provide a comparable user experience as a non-virtual environment.

Critical Security Standards for TestNav[®]

1. The qualified solution used in conjunction with TestNav and the user desktop (device/endpoint) is secured from the point the user accesses the secure test to the point the user submits the test. The qualified solution and does not allow access beyond the TestNav test assessment delivery system to any of the following:
 - a. Any application, content, or other service.
 - b. Any screen captures, printing, saving or other electronic replication or duplication of the display screen, source code or content.
2. All data is encrypted between client and server for the entirety of the usage period. The data encryption must be AES 128 or higher.

Critical Performance Standards for TestNav[®]

1. No error messages are received when all users log in to the test concurrently.
2. No error messages are received when all users submit the test concurrently.
3. The system response for test submission for all users is within a total time of 10 seconds or less, and comparable to the baseline test.
4. The first test item/question of the test loads fully within a total time of 45 seconds or less, and is comparable to the baseline test.
5. All tools work correctly and comparable to the baseline test.
6. There is no noticeable delay when navigating from test item/question to test item/question.
7. There are no noticeable cursor lags, input lags or delays in while interacting with:
 - a. All tools and exhibits
 - b. All student functionality
 - c. All item types including Video, Audio, and Technology-Enhanced

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Appendix B – Version History

Date	Section	Change Summary
6/9/2015	Document	Initial publication

QUALIFICATION MARK AND LOGO USAGE

TestNav Qualified mark and logo are certification marks owned by NCS Pearson, Inc. and may only be used by entities that have successfully completed the TestNav Qualified testing process and executed Pearson’s TestNav Certification Mark Agreement.

The Pearson Certification Mark Usage Guidelines can be located on the Vendor Qualification page: <http://www.testnavqualified.com>