Company – Qualified Platform Identification			
Sphere 3D	Glassware 2.0 for TestNav 7.5 with Chromebooks	Chromebooks	TestNav 7.5

District Technical Information

This document provides guidance for districts and schools that choose to use the qualified product(s) with the TestNav version indicated.

Sphere 3D completed the TestNav qualification process for the specific products described in the **Qualified Products** table. The technology and setup requirements must be followed and all clients or workstations used to access TestNav must comply in order for the solution to remain in qualified status. In addition, please review all "Additional Recommendations".

Qualification Standards

TESTNAV QUALIFIED mark and logo are certification marks owned by NCS Pearson, Inc. (the "TESTNAV QUALIFIED Marks"). The TESTNAV QUALIFIED Marks may only be used by entities who have executed Pearson's TESTNAV QUALIFIED Certification Mark Agreement, and in the manner prescribed in the Pearson Certification Mark Usage Guidelines (the "Usage Guidelines"). Both documents are available on-line at http://www.testnavqualified.com; Vendor Qualification.

The Qualification Standards used to certify this solution are outlined in this document in the "**Appendix**" section of this document.

Qualified Products & Solutions Table – TestNav 7.5

Pearson and Sphere 3D Glassware jointly tested the following solutions for use with TestNav 7.5.

PERFORMANCE TESTING OVERVIEW

Performance testing has been completed by running all performance tests on a single, physical ***Sphere 3D Glassware*** Appliance. The Appliance was built using default ***Sphere 3D Glassware*** configurations. The maximum number of clients is determined through assessment of customer environment and selection of ***Sphere 3D Glassware*** Appliance(s) deployed in the environment. The maximum users determined through environment assessment and appliance model selected will have the same experience as a single user.

Sphere 3D Glassware 2.0 for TestNav 7.5 with Chromebooks	
TestNav Version	TestNav **7.5.x**
Qualified Software Version	Glassware 2.0
Minimum Processor, Minimum Memory	Included with Appliance
Operating System	Included with Appliance
Minimum Network Speed	20 KB/s per user session 2 x 1GB connections for Appliance
Maximum # of Clients	100 to 1000 determined by Appliance model deployed
Minimum Encryption	128bit AES encryption
End-point/clients supported	Chromebooks (Chrome OS)

REQUIREMENTS

All requirements must be followed in order for the solution to remain qualified. Upon delivery if this solution, Sphere 3D will provide a detailed breakdown of all security settings required as part of the set up for the solution. Any solution without the specific settings enforced as defined by the requirements will be considered no longer qualified.

SPHERE 3D GLASSWARE INFRASTRUCTURE SET-UP REQUIREMENTS

Detailed requirements for setup and running Glassware are included with the Appliance. The configuration details will be **delivered by Sphere 3D** at the time of solution installation.

Glassware Setup Summary:

1. Apply static IP address, DNS, Subnet mask, default gateway and time settings
2. Import LDAP or create local Glassware users
3. Create user groups (optional)
4. Enter district specific TestNav URLs in application tab of administrator console. Multiple TestNav URLs may be declared and granularly assigned to specific user groups for greater control and accountability of student testing sessions.

Chromebook Setup:

1. Set Chromebook screen resolution to a minimum of 1366 x 768 or greater resolution.
2. Follow Google recommendations for using Chromebooks for student assessments.
3. Sphere 3D **recommends using Single App Kiosk configurations**.
    a. Administrators should configure the single app to launch the local Chrome browser on the Chromebook, directed to the URL of the Glassware Appliance.
    b. To enable Single App Kiosk mode for managed or unmanaged Chromebooks, refer to the following Google Support document, Single App Kiosk Mode.
    c. Administrators may allow students to use their assigned login account, or create one-time, testing-only accounts.
    d. Customers may also create their own Kiosk apps and publish to public and/or private Webstores.

Network Requirements

Steady state TestNav 7.5 sessions via Glassware consume less than 20 KB/s bandwidth per student session while student is actively running the their assigned assessment.

The Appliance requires a minimum of 2 x 1 GB wired connections. The Appliance also supports 10 GB network infrastructures.

To determine bandwidth requirements: multiply 20 KB/s per student session x number of expected students testing concurrently. Run Pearson's SystemCheck to confirm test capacity.

TESTNAV 7.5 REQUIREMENTS

All TestNav 7 Hardware and Software Requirements need to be followed when using qualified products: www.PearsonOnlineTesting.com/TN7requirements.

SYSTEM CHECK

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

PROCTOR CACHING

The Glassware environment interacts normally with Pearson TestNav proctor caching. All recommended Pearson procedures for configuring and testing Proctor Caching should be followed.

SRF (STUDENT RESPONSE FILES) LOCATION SET UP

Primary and Secondary Student Response Files (SRF) must be stored in a shared network location.

In the Glassware environment, the SRF may not be accessed if configured for Pearson default (local). When a student logs in to TestNav via the Glassware environment, a mapped drive is mounted for the student and the Pearson directory and sub-directories are created in the network location for that student.

The student account must have CHANGE access (Read/Write/Delete) to the shared network location in order to map and create the Pearson directories. Based on Pearson documentation, a Secondary SRF file location is always recommended as a best-practice.

Recommendations

PILOT / INFRASTRUCTURE TRIAL

A Best Practice pilot and infrastructure trial test using all qualified Chromebook models to confirm performance is **strongly recommended** in order to validate performance.

Contact Numbers

SALES

- **For Sales Inquiries:**

  855-808-6616

  on the web at: http://Sphere 3D.com/

SUPPORT

- **For Technical Assistance (Current Clients):**

  877-336-8610

  on the web at: http://atlassian.Sphere 3D.com:8080/servicedesk/customer/user/login?destination=portals

Appendix A - Qualification Standards

The Qualification Standards used to certify this solution are outlined below:

A virtual client machine should provide the same experience as a client machine in a non-virtual environment. A baseline Electronic Practice Test (ePAT) provided by Pearson during the qualification process was used for comparison. The ePAT provided is specific for the TestNav version being qualified.

Virtualization Setup Requirements

1. Testing environment must be set up using proctor caching
2. All cache must be cleared prior to testing including Java cache. For instructions on clearing java cache, please access the following link: http://www.java.com/en/download/help/plugin_cache.xml.
3. Once setup the testing environment should use the SystemCheck tool successfully

Virtualization Qualification Standards

Qualified Products must meet all of the following criteria:

Critical Security Standards for TestNav®

1. From selection of the test to "submit test" the desktop is secure and the system does not allow access to any application, content, or other service beyond the TestNav test assessment delivery system
2. From selection of the test to "submit test" the system does not allow any screen captures, printing, saving or other electronic replication or duplication of the display screen, source code or content of the test
3. 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. While logging in concurrently, no error messages are received
2. The first test item/question of the tests loads fully at the same speed as the baseline amount of less than 45 seconds
3. While interacting with all test items/questions there are no noticeable curser lags, input lags or delays in tool engagement as compared to the baseline ePAT
4. While interacting with video, audio, and Technology Enhanced Items (TEI) there are no significant lags or delays experienced as compared to baseline ePAT
5. There is no noticeable delay when navigating from test item/question to test item/question
6. All tools work correctly as demonstrated in the baseline ePAT
7. At submit, no error message is received
8. When hitting submit the system acceptance response is at the same speed as the baseline ePAT submit speed, with a maximum of 10 seconds